BDH®
VWR ANALYTICAL

2016-2017

ANALYTICAL CHEMICALS

EXPERIENCE | VALUE | RESULTS

Lab Reagents

for Quality Control and Research

BDH® Milestones

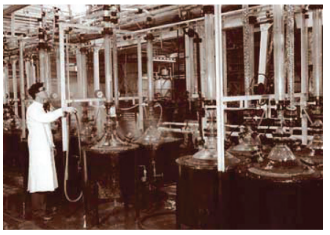
From its founding in 1908 as The British Drug Houses, BDH steadily evolved and grew to be recognized as a major supplier of laboratory and analytical grade chemicals throughout the world.

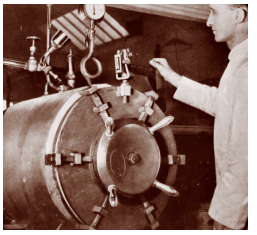
The comprehensive range of products offered in North America represents our ongoing commitment to providing high-quality, affordable chemicals and reagents for:

- Pharmaceutical Research
- Pharmaceutical Quality Control
- Environmental Testing
- Education and Medical Research
- Food and Beverage Quality Control
- Chemical and Petrochemical Quality Control

The guaranteed specifications of BDH Chemicals reflect their proud heritage. And, after more than 100 years of enabling reliable results, they continue to epitomize the exacting standards required by researchers and analysts today.

BDH VWR Analytical branded products sold in North America today are produced by a combination of VWR-owned manufacturing sites and trusted high quality chemical manufacturers audited and monitored by VWR's quality team to ensure high-quality laboratory reagents at a competitive price. The quality and reliability of these products is fully consistent with BDH values developed over the last 100 years.





THE BRITISH DRUG HOUSES Ltd.
LONDON.

MANUFACTURERS of FINE CHEMICALS and PHARMACEUTICAL PRODUCTS of the HIGHEST DEGREE of PURITY.

STAND No. A.12 & A. 36.

1900

1908: British Drug Houses, Ltd. (BDH) founded in London, UK

1910

1914-18: BDH expands into fine and lab chemicals, helping UK military with critical materials during WWI

1920

1923: BDH becomes UK's largest producer of insulin

1927: BDH invents and patents the process for extracting high purity Vitamin A from cod liver oil

1930

1934: BDH writes the book specifying purity and test methods for over 200 chemicals ("AnalaR Standards")

1940

1944: BDH becomes integrally involved in development and production of penicillin

1950

1960

1966-67: BDH launches ARISTAR® high purity reagents for trace analysis, and is renamed "BDH Chemicals"

1970

1973: BDH becomes one of the world's largest suppliers of liquid crystals used in displays

1980

1990

1995: HiPerSolv line of solvents for HPLC is introduced

2000

2004: BDH brand sold to VWR

2007: BDH Chemicals available exclusively through VWR International in US and Canada

2010

2013: BDH introduces a range of HPLC Solvents into North America

2015

2015: New BDH VWR Analytical brand launched and range continues to expand with products sourced from VWR-owned manufacturing sites

How to Use this Catalog

The BDH® catalog lists over 1000 items from the BDH chemicals portfolio. BDH has been the brand of choice for researchers desiring the best quality chemicals for over 100 years. Now, VWR has put the entire portfolio together in one place, making it your easy-to-use, one-stop source for your laboratory research and analytical reagent needs. We have also added a range of VWR branded chemicals which meet the same stringent quality requirements as the BDH Analytical range to enhance your choice.

This catalog features navigational aids designed to help you find products fast.

Product Organization

- Chemicals are listed alphabetically starting on page 18.
- Ranges of products such as ICP standards, pH buffers, pH strips, and HPLC solvents can be found in tables in the alphabetical section of the catalog.

Page Headings

- Page headings indicate the alphabetical range for each page.

Indices

- A VWR Catalog Number index is available at the end of the catalog to help you find the exact product you need.
- A CAS number index is also available at the end of the catalog.

Pricing

- This catalog is unpriced. For up-to-date pricing, please go to **vwr.com** and log on to your account. For those customers without accounts, list prices can also be found on **vwr.com**.

Shop **vwr.com** for quick, easy, secure web ordering.

Call **1.800.932.5000** to order from the VWR office nearest you.

Mail your order to a VWR office. Call **1.800.932.5000** for the location nearest you.

VWR Representative Name

Local Phone Number

VWR Account Number

Credit card orders are welcome. VWR accepts:

Discover® Visa® Master Card® American Express®

Dependable, Knowledgeable, Friendly Service

Our number one focus is to meet your needs with every order. Rely on highly trained VWR Associates committed to delivering excellence with every contact.

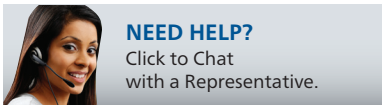
VWR Sales Representatives are focused on meeting specific customer requirements. Our Sales Specialists also provide corporate account management, global account management, and specific technical support for chemical, life science, safety, equipment, instruments, chromatography, healthcare, and furniture areas.

VWR Contact Centers are equipped with sophisticated technology to answer your questions, and place your orders with a single phone call.

VWR Technical Products Support Team gives real-time responses to your product and applications questions – call **1.888.VWR.LINE.**

VWR.com is a comprehensive, easy-to-use website offering extensive content and enhanced features including advanced search capabilities to speed up your product selection, streamlined checkout to simplify ordering, and access to order status to enhance efficiency.

Click-to-Chat offers live online assistance Monday through Friday, 8:00 AM-8:00 PM (EST) for BDH products. Just click on the icon on **vwr.com** to access a quick online chat with a live Customer Care Expert.

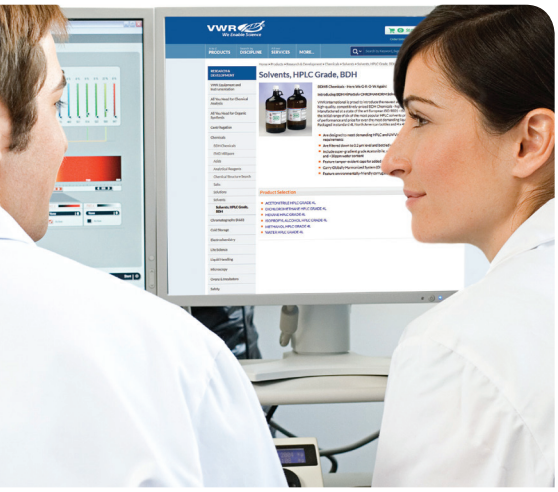


VWR's Customer Service Teams are Ready to Help

One call to VWR will get you a live VWR Associate — not voicemail — in 20 seconds or less! Here's how we do it:

- Fully accessible North American Customer Service Centers
- Highly trained Customer Care Experts who can fulfill your request or resolve your question in a single phone call
- Sophisticated VOIP technology gets you live help even faster
- Quality monitoring to ensure consistent, high quality customer interaction

Make vwr.com Your
One-Stop Supply Site



vwr.com has become one of the most advanced websites in the industry as a result of our strong customer focus, integrity, and commitment to scrupulous eCommerce security standards. Our website offers powerful, easy-to-use business tools that allow our customers to find the information they need quickly and easily.

Gain quick access to the best selection of quality products from the most respected manufacturers including BDH Chemicals. Zero in on exactly the products you need with our powerful newly improved search engine, or browse the "Program" areas that match your specific needs.

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- Enforce your procurement process by using order approval routing
- Access order history for purchasing analysis and greater transparency
- Access order details, packing slips, and invoicing documents
- Use Click-to-Chat for live online assistance Monday through Friday, 8:00 AM-8:00 PM (EST).

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Helping Customers
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North American Technical Product Support (TPS)

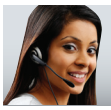
Available Monday through Friday, 8:00 AM – 8:00 PM (EST)

Send us an email at:

TechnicalProductSupportNA@vwr.com

Call us at:

888.897.5463



NEED HELP?
Click to Chat
with a Representative.

Click-to-Chat online support available on BDH products.

Overview

The VWR North American Technical Product Support (TPS) Team is a technical knowledge powerhouse, which consists of experienced scientists with backgrounds in Biotechnology, Biochemistry, Chemistry, Microbiology, Life Science, Chromatography, Healthcare and more. Annually, this multidisciplinary team answers nearly 40,000 customer phone calls, emails, and live chats.

Some of the common queries we assisted with were: selecting the right products by application, comparing product specifications, providing technical product documentation, cross referencing, and product searches.

Our Commitment

We will resolve your phone call within 3 business hours.

We will resolve your email within 1 business day.

Additional Resources

VWR Groups	Phone	Email
VWR Customer Service (Orders, Order Status)	800.932.5000	vwrcustomerservice@vwr.com
VWRCATALYST (Warranty Claims and Calibration & Validation Services) *vwr.com/vwrcatalyst*	888.793.2300	**VWR**CATALYST@vwr.com

Visit us on the web at **vwr.com/tps**

Pursue New Avenues of Innovation

With support from **VWR**CATALYST, your business can focus on maintaining a competitive edge.

We offer flexible, holistic solutions that help you accelerate productivity and drive scientific innovation. Our services re-focus scientific time where it's needed most – on initiatives that directly support your strategic outcomes.

VWRCATALYST's **comprehensive services include:**

- Procurement and Supply Management
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Over 1,200 **VWR**CATALYST associates are working worldwide today at industry-leading pharmaceutical, biotech, education, industrial, healthcare, and high-tech production institutions.

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VWR® CATALYST
We Enable Science Through Services

BDH® Brand Product Range

HPLC Solvents

- Designed to meet demanding HPLC and UV/Vis analytical and quality control requirements
- Are filtered down to 0.2µm level and bottled under nitrogen
- Feature tamper-evident caps for added peace of mind
- Feature environmentally-friendly corrugated/pulp case inserts that are fully recyclable
- Visit **vwr.com/bdh** for complete specifications, Certificates of Analysis, Safety Data Sheets, and current pricing.

Acids, High Purity

This product line consists of two grades of High Purity Acids used for quantitative Trace Metal Analysis. BDH ARISTAR® ULTRA is the highest purity acid line on the market today, with metal impurity levels in the parts-per-trillion (ppt) level. BDH ARISTAR PLUS high purity acids are equivalent or superior to other premium grades available today, with metal impurity levels in the parts-per-billon (ppb) level.

Applications include:

- Atomic Fluorescence
- Flame Atomic Absorption
- Graphite Furnace Atomic Absorption
- ICP-Mass Spectroscopy
- ICP-Optical Emission Spectroscopy
- Ion Chromatography

ACS Acids

The BDH line of acids meet or exceed ACS specifications and consistently deliver the purity you depend on for all your laboratory and production requirements. These high quality acids are available in a variety of sizes from 500mL to 200L. The five most popular acids are now available in 2.2L 'PPQ' HDPE bottles at very competitive prices. These bottles are much safer to use and give the same purity and shelf life guarantees as product packed in glass. For those who still prefer glass bottles, ACS acids are also available in poly-coated glass bottles. Custom blends and special packaging options are available.

Applications include:

- Environmental Studies
- General Analysis
- Inorganic Synthesis
- Organic Synthesis
- Preparation of Solutions

ICP and ICP-MS Standards

BDH standards are manufactured to meet detection limits in the low parts-per-billion (ppb) to parts-per-quadrillion (ppq) ranges. To ensure traceability and the highest accuracy, these standards are manufactured in an ISO-accredited facility. Raw materials are required to pass an ICP-OES/ICP-MS impurity check. As certified reference materials (CRM), each standard includes a detailed ISO compliant Certificate of Analysis. All standards come in 125 or 500mL bottles.

Applications include:

- Direct Current Plasma
- Flame Atomic Absorption
- Graphite Furnace Atomic Absorption
ICP-Mass Spectroscopy
- ICP-Optical Emission Spectroscopy

Salts

Designed to meet your analytical and general purpose laboratory needs, BDH's comprehensive line of high quality salts meet or exceed ACS specifications, are suitable for multiple applications, and are available in a variety of packaging sizes ranging from 100g to 250 lbs.

Applications include:

- Buffers for Calibration
- Normality Solutions for Titrations
- Reaction Mixtures for Experimentation
- Test Solutions for Unknowns

Reference Buffers

The BDH pH Buffers line covers the full pH range 1 through 12. All are standardized to NIST Standard Reference Materials (SRM) and most are accurate to ±0.01 pH units. All reference buffers are tested in an ISO 17025 accredited laboratory. Buffers of pH 10 and greater are packaged in special plastic bottles to reduce the absorption of carbon dioxide.

Applications include:

- Enzyme Calibration
- Fermentation
- pH Meter Calibration

Solutions

The BDH line of Solutions is designed with convenience in mind. The range includes common acid, base, and salt solutions in a variety of concentrations. Packaging sizes range from 500mL to 20L, in HDPE, glass, and Cubitainer® containers. Larger packs can also be manufactured on request. Buying ready made solutions brings your laboratory many benefits:

- Reproducible & guaranteed accuracy and precision in the concentrations you are using normally superior to that which can be achieved in your own laboratory
- Documentation to support these guarantees
- Increased safety for your laboratory associates
- Lower costs than self-manufacturing
- Focus of your lab staff on the projects that matter and not routine solution production

Applications include:

- Titrations
- Environmental Analysis
- Quality Control
- ASTM/APHA Methods Testing

ACS and General-Purpose Solvents

The BDH line of ACS and General-Purpose Solvents is a comprehensive range of solvents for analytical, process, and general laboratory applications. These high-quality solvents often meet or exceed ACS specifications, are suitable for multiple applications, and are available in a variety of packaging options. To minimize experimental variation, BDH Solvents deliver high assay, low non-volatile residue, and consistent water levels.

Applications include:

- Column Chromatography
- Glassware Cleaning
- Histology/Cytology
- Non-Aqueous Titration
- Organic Synthesis
- Sample Extractions

pH Test Strips and DoubleZone Indicator Papers

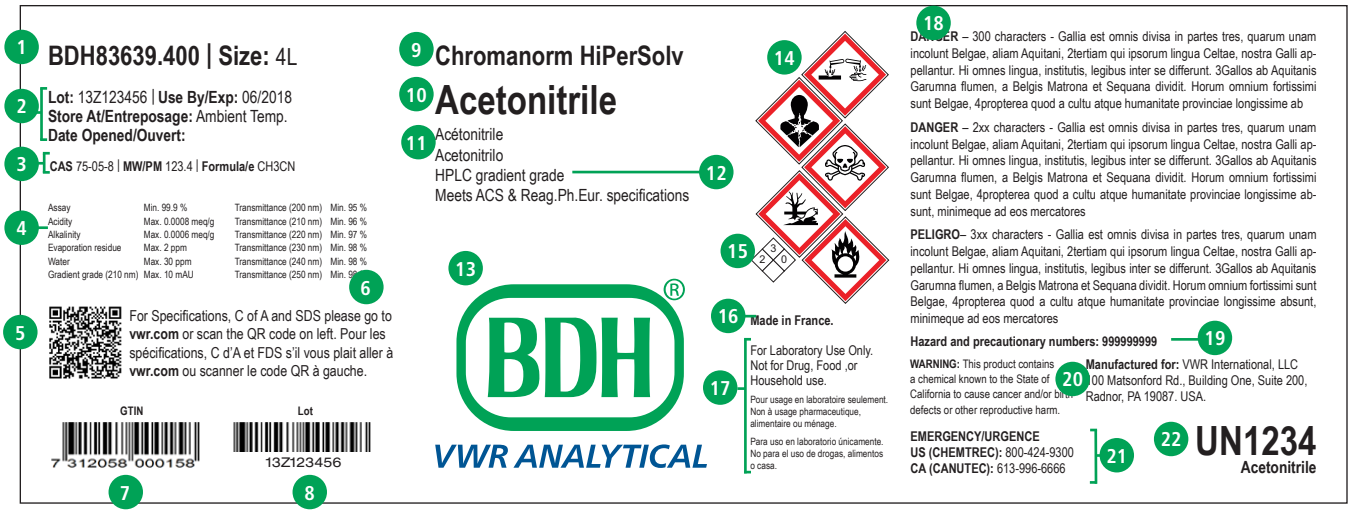
BDH's high-quality, color-fixed pH test strips are easily calibrated against the included color chart. BDH pH test strips are available in 13 different ranges to ensure optimal usability for every application.

BDH DoubleZone indicator papers are manufactured from high quality filter paper. For each pH value, these papers show a single color that can be matched with the color scale for each value at intervals of 0.3-1 pH unit.

Applications include:

- pH Adjustment of Buffers
- Field Testing of Soil and Water
- Clinical Urine Testing
- Surface Treatment Testing
- General Laboratory Applications

BDH® Label – Common Attributes



1. **Catalog Number & Pack Size**
2. **Lot, Use By, Store At & Date Opened**
   - Lot: Number used to obtain certificate of analysis for this manufactured batch
   - Use By: Date beyond which VWR will not guarantee the chemical specification
   - Store At: Recommended storage temperature
   - Date Opened: Area of label for user to write the date bottle was first opened for reference purposes
3. **CAS No., Formula & Molecular Weight**
   - CAS. No.: Chemical registry number (not shown for mixtures and solutions)
   - Formula: Chemical formula will be shown as main constituent for solutions
   - Molecular Weight: shown for main constituent (only for solutions)
4. **Specifications**
   - Chemical specification for product guaranteed by VWR For full specifications, see specification sheets on **vwr.com**
5. **QR Code**
   - Can be scanned using a QR code scanner (software available for most mobile phones and Tablets) which allows C of A and MSDS and other documents to be downloaded immediately
6. **Website Documentation Statement**
7. **GTIN Bar Code**
   - For warehouse use
8. **Bar Code for Lot Number**
9. **Brand Name**
   - Grade or BDH brand used to designate the quality and general application in which the product can be used
10. **Product Name – English**
11. **French/Spanish Translation**
12. **Other Purity & Commercial Information**
13. **BDH VWR Analytical Logo**
    - Guaranteeing the quality of the product
14. **GHS Pictograms**
    - Now required on all hazardous products
15. **NFPA Diamond**
16. **Country of Origin**
    - Country where product is manufactured
17. **Product Specific Disclaimer**
    - Advice regarding product usage
18. **Signal Words & Hazard Precautionary Statements**
    - Normally in English and French, and sometimes in Spanish if room is available, these statements help users and are required by GHS legislation
19. **Hazard & Precautionary Numbers**
    - Used as a guide to H&P phrases when labels are too small for full phrases to be printed
20. **California Prop 65 Test (When Required)**
21. **Emergency Numbers**
    - Use to obtain advice in case of spill or accident regarding this product
22. **UN Number**
    - Numbers assigned to specific Hazardous chemicals by the United Nations Committee of Experts on the Transport of Dangerous Goods

Globally Harmonized System (GHS) of Classification and Labeling of Chemicals

- Oxidizers

- Flammables
- Self Reactives
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Organic Peroxides

- Explosives
- Self Reactives
- Organic Peroxides

- Acute Toxicity (severe)

- Corrosives

- Gases Under Pressure

- Carcinogen
- Respiratory Sensitizer
- Reproductive Toxicity
- Target Organ Toxicity
- Mutagenicity
- Aspiration Toxicity

- Environmental Toxicity

- Irritant
- Dermal Sensitizer
- Acute Toxicity (harmful)
- Narcotic Effects
- Respiratory Tract
- Irritation

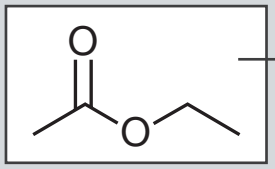
For full list of H&P phrases associated with these diamonds, please see the relevant SDS.

Key to Chemical Listing Information

Chemical Name — **ETHYL ACETATE**

Synonyms — Acetic acid ethyl ester

GHS Symbols —



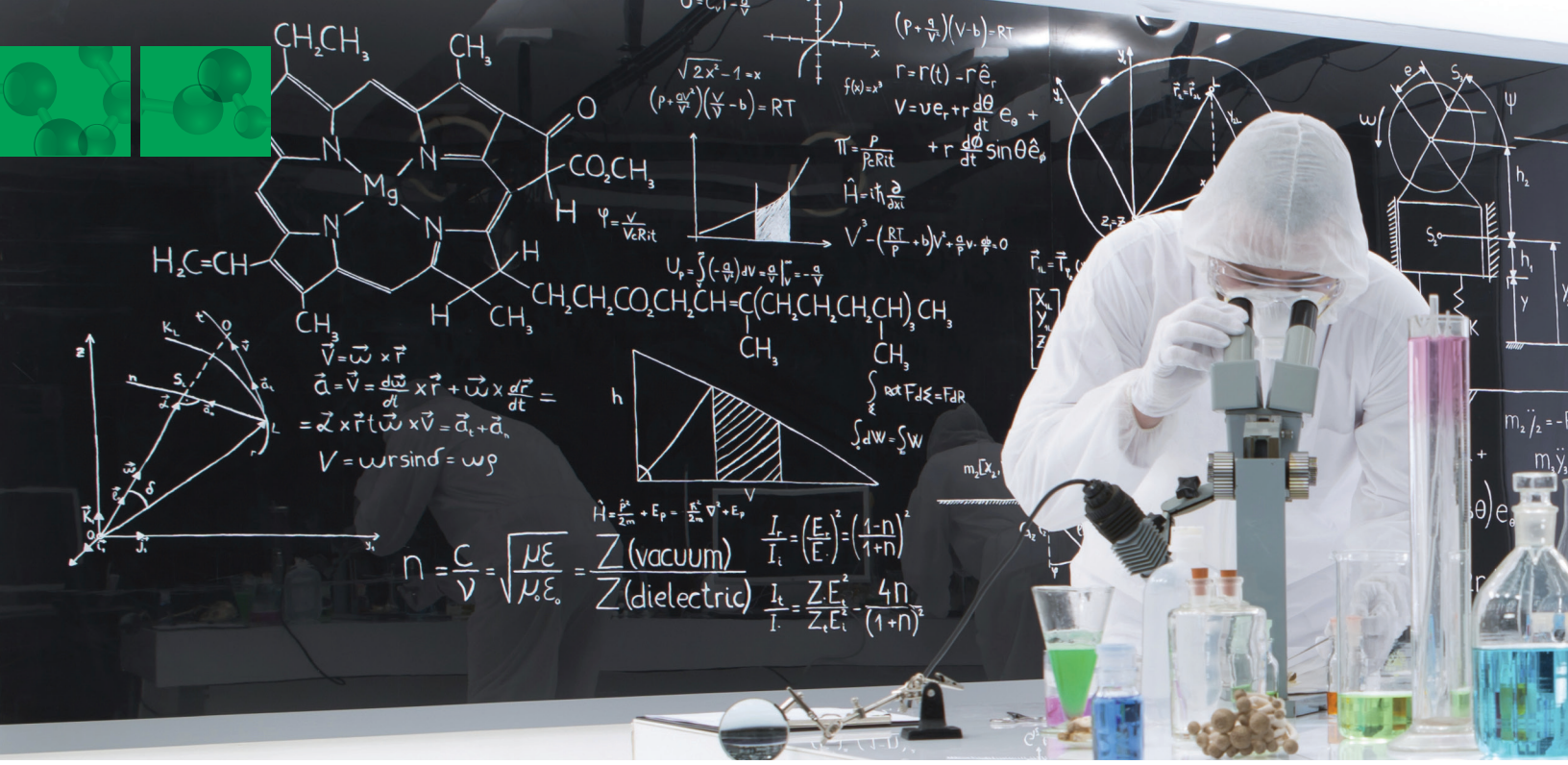
Chemical Formula

Physical and Chemical properties —

Formula: $C_4H_8O_2$
MW: 88.11 g/mol
Boiling Pt: 77.1°C (1013 hPa)
Melting Pt: –83°C
Density: 0.902 g/cm^3 (20°C)
Flash Pt: –4°C
CAS: 141-78-6
UN: 1173

CAS: Chemical Abstracts Service Registry

UN: United Nations (identical to NA or DOT number)



Reference Tools

Molar: The number of moles of solute per liter of solution.
Molar = M = Moles of Solute/Liters of Solution

Molality: The number of moles of solute per kilogram of solvent.
Molality = m = Moles of Solute/Kilograms of Solvent

Normal: The molar times equivalents per mole.
Normal = N = M x Equiv/mol

Percentage Composition: Expressed in terms of mass, volume, or mass per volume.
% by mass = (w/w) = (Mass of solute/Mass of solution) x 100
% by volume = (v/v) = (Volume of solute/Volume of solution) x 100
% by mass volume = (w/v) = (Mass of solute/Volume of solution) x 100

Density: Mass per unit of volume, usually g/mL.
Density = r = m/V

Percent to Particle Count Conversions

Percent	PPM	PPB	PPT
0.01%	100	100,000	100,000,000
0.001%	10	10,000	10,000,000
0.0001%	1	1,000	1,000,000
0.00001%	0.1	100	100,000
0.000001%	0.01	10	10,000
0.0000001%	0.001	1	1,000
1×10^{-7}	0.0001	0.1	100
1×10^{-8}	0.00001	0.01	10
1×10^{-9}	0.000001	0.001	1

Common Molar/Normal Conversions

Solution	Formula Weight	Molar	Normal
Acetic Acid	60.05	1	1
Ammonium Hydroxide	35.05	1	1
Ammonium Thiocyanate	76.12	1	1
Arsenic Trioxide	197.84	1	4
Ceric Sulfate	528.40	1	1
Hydrochloric Acid	36.46	1	1
Iron (II) Ammonium Sulfate	392.14	1	1
Mercury (II) Nitrate	342.62	1	2
Nitric Acid	63.01	1	1
Perchloric Acid	100.46	1	1
Potassium Biiodate	389.91	1	12
Potassium Bromate	167.00	1	6
Potassium Dichromate	294.18	1	6
Potassium Hydroxide	56.11	1	1
Potassium Thiocyanate	97.18	1	1
Silver Nitrate	169.87	1	1
Sodium Carbonate	105.99	1	2
Sodium Hydroxide	40.00	1	1
Sodium Thiosulfate	248.19	1	1
Sulfuric Acid	98.08	1	2
Trichloroacetic Acid	163.39	1	1

Common Unit Conversions for Standards and Samples

1 mg/mL is the same as:	1µg/mL is the same as:	1 ng/mL is the same as:
1 g/L	0.001 g/L	10^{-6} g/L
1,000 mg/L	1 mg/L	0.001 mg/L
1 mg/mL	0.001 mg/mL	10^{-6} mg/mL
1,000 µg/mL	1 µg/mL	0.001 µg/mL
1,000 ppm	1 ppm	0.001 ppm
10^6 µg/L	1,000 µg/L	1 µg/L
10^9 ng/L	10^6 ng/L	1,000 ng/L
10^6 ppb	1,000 ppb	1 ppb
0.1%	0.0001%	0.0000001%

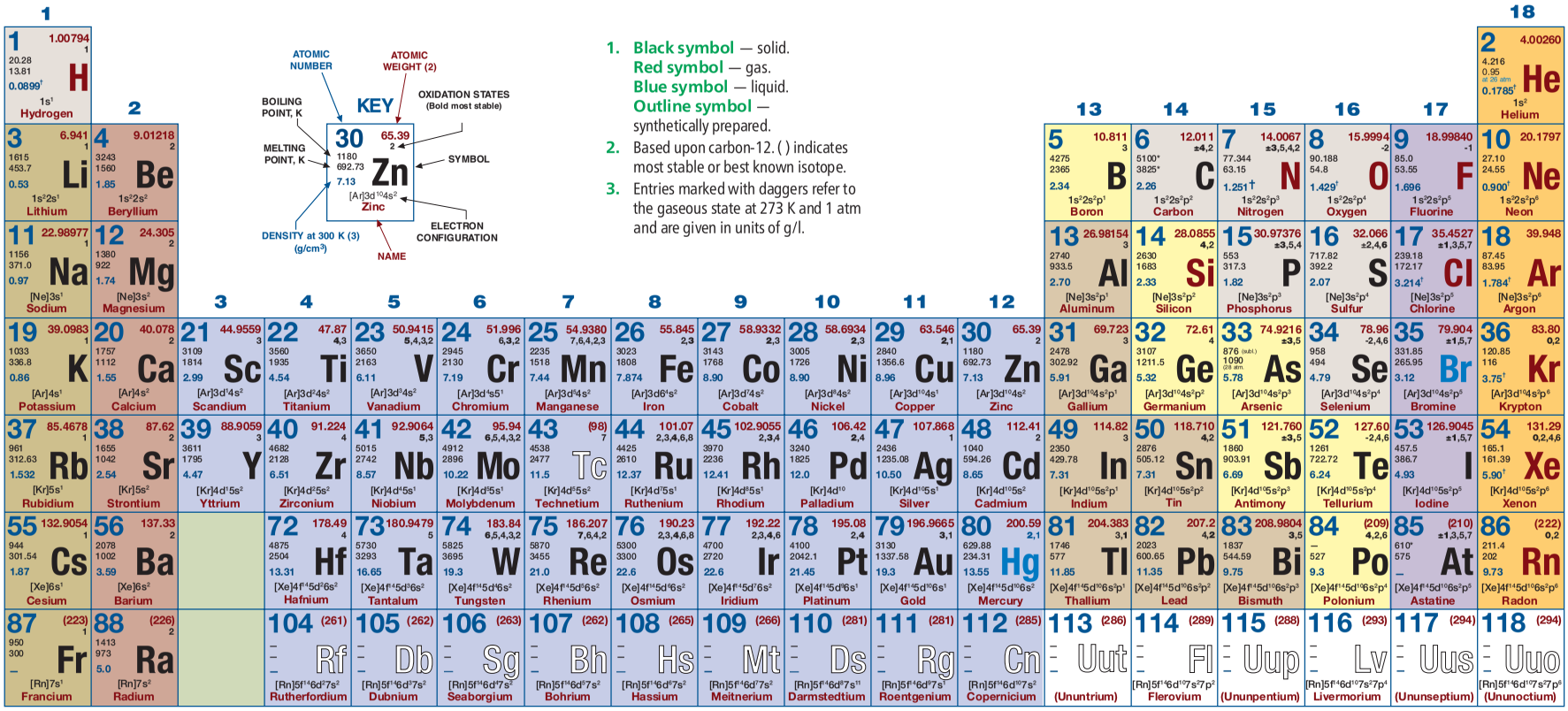
pH of Common Acids

Acids (pH < 7)	Molarity	pH
Acetic	N	2.4
Acetic	0.1N	2.9
Acetic	0.01N	3.4
Alum	0.1N	3.2
Arsenious	Saturated	5.0
Benzoic	0.1N	3.0
Boric	0.1N	5.3
Carbonic	Saturated	3.8
Citric	0.1N	2.1
Formic	0.1N	2.3
Hydrochloric	N	0.1
Hydrochloric	0.1N	1.1
Hydrochloric	0.01N	2.0
Hydrocyanic	0.1N	5.1
Hydrogen Sulfide	0.1N	4.1
Lactic	0.1N	2.4
Malic	0.1N	2.2
Orthophosphoric	0.1N	1.5
Oxalic	0.1N	1.3
Succinic	0.1N	2.7
Salicylic	Saturated	2.4
Sulfuric	N	0.3
Sulfuric	0.1N	1.2
Sulfuric	0.01N	2.1
Sulfurous	0.1N	1.5
Tartaric	0.1N	2.0
Trichloracetic	0.1N	1.2

pH of Common Bases

Bases (pH > 7)	Molarity	pH
Ammonia	N	11.6
Ammonia	0.1N	11.1
Ammonia	0.01N	10.6
Barbital Sodium	0.1N	9.4
Borax	0.01N	9.2
Calcium Carbonate	Saturated	9.4
Calcium Hydroxide	Saturated	12.4
Ferrous Hydroxide	Saturated	9.5
Lime	Saturated	12.4
Magnesia	Saturated	10.5
Potassium Acetate	0.1N	9.7
Potassium Bicarbonate	0.1N	8.2
Potassium Carbonate	0.1N	11.5
Potassium Cyanide	0.1N	11.0
Potassium Hydroxide	N	14.0
Potassium Hydroxide	0.1N	13.0
Potassium Hydroxide	0.01N	12.0
Sodium Acetate	0.1N	8.9
Sodium Benzoate	0.1N	8.0
Sodium Bicarbonate	0.1N	8.4
Sodium Carbonate	0.1N	11.6
Sodium Hydroxide	N	14.0
Sodium Hydroxide	0.1N	13.0
Sodium Hydroxide	0.01N	12.0
Sodium Metasilicate	0.1N	12.6
Sodium Sesquicarbonate	0.1N	10.1
Trisodium Phosphate	0.1N	12.0

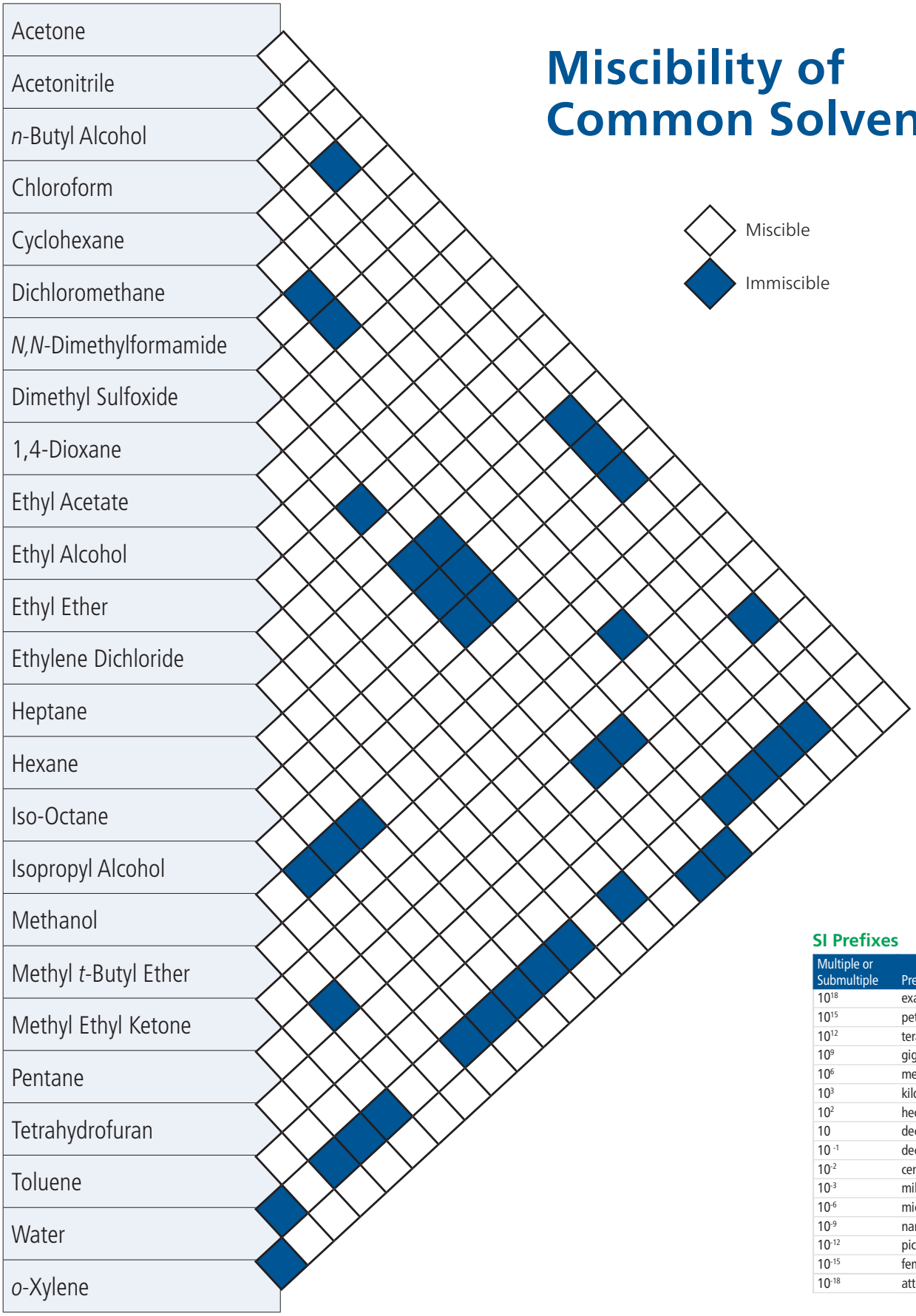
Periodic Table of Elements



* Estimated Values

NOTE: There are no electron configurations for elements 113, 115, and 117 at this time.

Miscibility of Common Solvents



SI Prefixes

Multiple or Submultiple	Prefix	Symbol
10^{18}	exa	E
10^{15}	peta	P
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{2}	hecto	h
10	deca	da
10^{-1}	deci	d
10^{-2}	centi	c
10^{-3}	milli	m
10^{-6}	micro	µ
10^{-9}	nano	n
10^{-12}	pico	p
10^{-15}	femto	f
10^{-18}	atto	a

BDH® Packaging

Cubitainer® Packaging for Buffers and Solutions

Most BDH Solutions and Reference Standard Buffers are offered in tough, yet light Cubitainer® packaging.

These innovative containers are:

- Safe and easy to dispense from
- Designed to maximize loading configuration during storage
- Made from 85% less plastic than equivalent conventional packaging
- 100% recyclable (cardboard outer layer and LDPE collapsible liner)

Safety Packaging

BDH has upgraded many of its Solutions bottles to provide you with better safety features. With the new packaging, you will experience fewer leaks, less label damage, and easier pourability.

Caps are made of thick HDPE so they don't crack as easily

Pour-out lip allows better control for dispensing

Buttress caps have deeper threads for better sealing and less leaking

High Purity Acids Poly Bottles

ARISTAR® PLUS acids are now available in high purity HDPE poly bottles designed to maintain shelf life while allowing you to save both money and the environment.

ARISTAR® Ultra acids are available in 500mL, 1L, and 2L fluoropolymer PFA or FEP bottles, which do not leach metals, helping to maintain the very high purity of these products.

BDH® HiPerSolv CHROMANORM® Solvents for HPLC

Manufactured to the most stringent requirements, both in Europe and the USA, these solvents and modifiers provide outstanding value for money.

- Solvents are available in standard 4L and 1L glass bottles and, where required, specially treated bottles are used to ensure the demanding HPLC and UV/Vis specifications are maintained during storage.
- Some solvents are available in specially treated 5L aluminum bottles which are safer to use than glass, are much lighter, and easily recycled.
- Feature tamper-evident cap for added peace of mind.
- Feature environmentally friendly corrugated pulp inserts that are fully recyclable.

Sealed

Open

PPQ Bottles for ACS Acids

The 2.2L bottle, manufactured with PPQ (high-quality) HDPE resin, provides numerous benefits over glass including safety, high-purity, ease of handling, and smaller package footprint. In addition the savings this bottle allows in manufacturing allows VWR to offer very cost competitive products compared to glass - Check out our pricing on **vwr.com**.

Product Features

- specifications and shelf life are not changed by using this packaging and you can use in all your applications with confidence
- 300 kPa Hydrostatic Pressure Certified.
- 45 mm, Tamper-Evident, Teflon lined Closure.
- Drip-lip pour feature.
- Manufactured with proprietary Clean Air Technology.
- Metallic extractables up to 80% lower.
- High molecular weight PPQ HDPE resin with narrow distribution.
- Only available in 6 x 2.2L multi-pack case.

Benefits over Glass

- Weighs 80% less than a glass bottle.
- No polystyrene overpack needed.
- Smaller package footprint.
- Non-breakable; eliminates the expense of shatter resistant coatings.
- Nitric Acid liquid and bottle do not discolor.

AA Calibration Standard

see Standards, ICP and ICP-MS

Acetate Buffer Solution

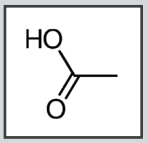
APHA 4500-C1 and ASTM 1253-91 for chlorine. Standardized at 25°C against chemicals whose certification is traceable to NIST.

VWR ANALYTICAL

Size	pH Value	Color	pH Buffer Type	Reference Temperature	Packaging	Cat. No.
1 L	4.00	Clear	Acetate	25 °C	Poly Bottle	**BDH7300-1**
4 L	4.00	Clear	Acetate	25 °C	Poly Bottle	**BDH7300-4**
20 L	4.00	Clear	Acetate	25 °C	Cubitainer	**BDH7300-7**

ACETIC ACID

Ethanoic acid, Glacial acetic acid, Methanecarboxylic acid, Vinegar acid



Formula: H_3CCOOH
Flash Pt: 38.5
CAS: 64-19-7
UN: 2789

Acetic Acid, >99%, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

VWR ANALYTICAL

Assay ..... ≥ 99%
Aluminum (Al) ..... max. 50 ppt
Aluminum (Al) ..... max. 50 ppt
Antimony (Sb) ..... max. 50 ppt
Arsenic (As) ..... max. 50 ppt
Barium (Ba) ..... max. 10 ppt
Beryllium (Be) ..... max. 10 ppt
Bismuth (Bi) ..... max. 10 ppt
Cadmium (Cd) ..... max. 10 ppt
Calcium (Ca) ..... max. 50 ppt
Cerium (Ce) ..... max. 10 ppt
Cesium (Cs) ..... max. 10 ppt
Chromium (Cr) ..... max. 10 ppt
Cobalt (Co) ..... max. 10 ppt
Copper (Cu) ..... max. 10 ppt
Dysprosium (Dy) ..... max. 1 ppt
Erbium (Er) ..... max. 1 ppt
Europium (Eu) ..... max. 1 ppt
Gadolinium (Gd) ..... max. 1 ppt
Gallium (Ga) ..... max. 10 ppt
Germanium (Ge) ..... max. 10 ppt
Hafnium (Hf) ..... max. 10 ppt
Holmium (Ho) ..... max. 1 ppt
Indium (In) ..... max. 1 ppt
Iron (Fe) ..... max. 50 ppt
Lanthanum (La) ..... max. 1 ppt
Lead (Pb) ..... max. 10 ppt
Lithium (Li) ..... max. 10 ppt
Lutetium (Lu) ..... max. 10 ppt
Magnesium (Mg) ..... max. 50 ppt
Manganese (Mn) ..... max. 10 ppt
Molybdenum (Mo) ..... max. 10 ppt
Neodymium (Nd) ..... max. 1 ppt
Nickel (Ni) ..... max. 50 ppt
Platinum (Pt) ..... max. 50 ppt
Potassium (K) ..... max. 50 ppt
Praseodymium (Pr) ..... max. 1 ppt
Rhenium (Re) ..... max. 10 ppt
Rhodium (Rh) ..... max. 50 ppt
Rubidium (Rb) ..... max. 10 ppt
Ruthenium (Ru) ..... max. 50 ppt
Samarium (Sm) ..... max. 1 ppt
Scandium (Sc) ..... max. 10 ppt
Selenium (Se) ..... Information only
Silver (Ag) ..... max. 50 ppt
Sodium (Na) ..... max. 100 ppt
Strontium (Sr) ..... max. 10 ppt
Tellurium (Te) ..... max. 1 ppt
Terbium (Tb) ..... max. 1 ppt
Thallium (Tl) ..... max. 10 ppt
Thorium (Th) ..... max. 1 ppt
Thulium (Tm) ..... max. 1 ppt
Tin (Sn) ..... max. 50 ppt
Titanium (Ti) ..... max. 10 ppt
Tungsten (W) ..... max. 10 ppt
Uranium (U) ..... max. 1 ppt
Vanadium (V) ..... max. 10 ppt
Ytterbium (Yb) ..... max. 1 ppt
Yttrium (Y) ..... max. 1 ppt
Zinc (Zn) ..... max. 1 ppt
Zirconium (Zr) ..... max. 10 ppt

Size	Packaging	Cat. No.
500 mL	FEP Bottle	**87003-212**

Acetic Acid, >99%, ARISTAR® PLUS

High purity acid for quantitative trace metal analysis at the parts-per-billion (ppb) level.

VWR ANALYTICAL

Assay ..... ≥ 99 %
Color ..... max. 10 APHA
Aluminum (Al) ..... max. 1 ppb
Antimony (Sb) ..... max. 0.5 ppb
Arsenic (As) ..... max. 0.5 ppb
Barium (Ba) ..... max. 0.5 ppb
Beryllium (Be) ..... max. 0.1 ppb
Bismuth (Bi) ..... max. 0.1 ppb
Cadmium (Cd) ..... max. 0.5 ppb
Calcium (Ca) ..... max. 1 ppb
Cerium (Ce) ..... max. 0.1 ppb
Cesium (Cs) ..... max. 0.1 ppb
Chromium (Cr) ..... max. 1 ppb
Cobalt (Co) ..... max. 0.1 ppb
Copper (Cu) ..... max. 0.5 ppb
Dysprosium (Dy) ..... max. 0.1 ppb
Erbium (Er) ..... max. 0.1 ppb
Europium (Eu) ..... max. 0.1 ppb
Gadolinium (Gd) ..... max. 0.1 ppb
Gallium (Ga) ..... max. 0.1 ppb
Germanium (Ge) ..... max. 0.5 ppb
Hafnium (Hf) ..... max. 0.1 ppb
Holmium (Ho) ..... max. 0.1 ppb
Indium (In) ..... max. 0.1 ppb
Iron (Fe) ..... max. 1 ppb
Lanthanum (La) ..... max. 0.1 ppb
Lead (Pb) ..... max. 0.1 ppb
Lithium (Li) ..... max. 0.1 ppb
Lutetium (Lu) ..... max. 0.1 ppb
Magnesium (Mg) ..... max. 0.5 ppb
Manganese (Mn) ..... max. 0.5 ppb
Mercury (Hg) ..... max. 1 ppb
Molybdenum (Mo) ..... max. 0.5 ppb
Neodymium (Nd) ..... max. 0.1 ppb
Nickel (Ni) ..... max. 0.5 ppb
Platinum (Pt) ..... max. 0.5 ppb
Potassium (K) ..... max. 1 ppb
Praseodymium (Pr) ..... max. 0.1 ppb
Rhenium (Re) ..... max. 0.1 ppb
Rhodium (Rh) ..... max. 0.5 ppb
Rubidium (Rb) ..... max. 0.1 ppb
Ruthenium (Ru) ..... max. 0.5 ppb
Samarium (Sm) ..... max. 0.1 ppb

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Scandium (Sc) ..... max. 0.1 ppb
Selenium (Se) ..... max. 1 ppb
Silver (Ag) ..... max. 1 ppb
Sodium (Na) ..... max. 1 ppb
Strontium (Sr) ..... max. 0.5 ppb
Tellurium (Te) ..... max. 0.5 ppb
Terbium (Tb) ..... max. 0.1 ppb
Thallium (Tl) ..... max. 0.1 ppb
Thorium (Th) ..... max. 0.1 ppb
Thulium (Tm) ..... max. 0.1 ppb
Tin (Sn) ..... max. 0.5 ppb
Titanium (Ti) ..... max. 0.5 ppb
Tungsten (W) ..... max. 0.5 ppb
Uranium (U) ..... max. 0.1 ppb
Vanadium (V) ..... max. 0.5 ppb
Ytterbium (Yb) ..... max. 0.1 ppb
Yttrium (Y) ..... max. 0.1 ppb
Zinc (Zn) ..... max. 1 ppb
Zirconium (Zr) ..... max. 0.1 ppb
Chloride (Cl-) ..... max. 1 ppm
Phosphate (PO_{43}-) ..... max. 1 ppm
Substances Reducing Dichromate (K_2Cr2O_7) ..... to pass test
Substances Reducing Permanganate ($KMnO_4$) ..... to pass test
Sulfate (SO_{42}-) ..... max. 0.5 ppm

Size	Packaging	Cat. No.
500 mL	Poly bottle	**87003-239**
2.5 L	Poly bottle	**87003-241**

Acetic Acid, HiPerSolv CHROMANORM®, for HPLC

VWR ANALYTICAL

Assay ..... Min. 99.9 %
Evaporation residue ..... Max. 10 ppm
Water ..... Max. 0.15 %
Transmittance (254 nm) ..... Min. 5 %
Transmittance (280 nm) ..... Min. 95 %

Size	Packaging	Cat. No.
1 L	Glass bottle	**BDH20108.292**

Acetic Acid, >99.7%, ACS

Clear, colorless liquid.

Meets reagent specifications for testing USP/NF monographs.

VWR ANALYTICAL

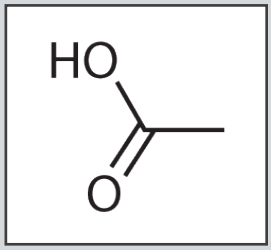
Acetic Anhydride ..... 0.01% max.
Assay (CH_3COOH) ..... 99.7 - 100.5%
Chloride (Cl) ..... 1 ppm max.
Color (APHA) ..... 10 max.
Congealing temperature ..... 15.6 C min.
Dilution test ..... To pass test
Heavy metals (as Pb) ..... 0.5 ppm max.
Identification acetate <191> ..... To pass test
Identification: FCC ..... To pass test
Iron (Fe) ..... 0.2 ppm max.
Oxidizable substances ..... To pass test
Residue after evaporation ..... 0.001% max.
Substances reducing dichromate ..... To pass test
Substances reducing permanganate ..... To pass test
Sulfate ..... 1 ppm max.
Titrable base ..... 0.0004 meq/g max.

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH3092-500MLP**
6 x 2.2 L	PPQ Bottle	**BDH3093-2.2LP**
2.5 L	Glass Bottle	**BDH3094-2.5LG**
2.5 L	Poly-Coated Glass Bottle	**BDH3096-2.5LPC**
3.8 L	Poly Bottle	**BDH3098-3.8LP**
19 L	Vent Flow Carboy	**BDH3100-19L**
201 L	Poly Drum	**BDH3102-201L**

ACETIC ACID SOLUTION (< 1.5 MOL/L)

Ethanoic acid, Glacial acetic acid, Methanecarboxylic acid, Vinegar acid

Formula: H_3CCOOH
CAS: 64-19-7



Acetic Acid, Solution 1.0000N +/- 0.0005N

Standardized at 25°C against chemicals whose certification is traceable to NIST. Made with high purity acid and deionized water. Suitable as a titrant.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.998 - 1.002 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7236-1**

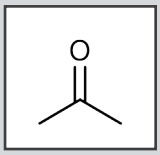
Acetic Acid Ammonium Salt

see Ammonium Acetate

ACETONE

Dimethyl ketone, Dimethylformaldehyde, DMK, Propanone, 2-Propanone

Formula: CH_3COCH_3
M.W. 58.08 g/mol
Boiling Pt: 56.2 °C (1013 hPa)
Melting Pt: –95.4 °C
Density: 0.792 g/cm^3 (20 °C)
Flash Pt: Max. –20 °C (closed cup)
CAS: 67-64-1
UN: 1090



Acetone, HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

Assay (on anhydrous substance) ..... Min. 99.8 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Evaporation Residue ..... Max. 5 ppm
Water ..... Max. 0.2 %
Transmittance (345 nm) ..... Min. 50 %
Transmittance (350 nm) ..... Min. 80 %
Transmittance (360 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH20067.400**

Acetone, Semi Grade

Acetone $(CH_3)_2CO$ ..... 99.5% Min.
Color (APHA) ..... 10 Max.
Solubility in Water ..... Passes
Moisture (H_2O) ..... 0.5% Max.
NVR ..... 5000 ppb Max.
Acidity ..... 0.3 µeq/g Max.
Particles 1.0µm/ml ..... 8 Max.
Alkalinity ..... 0.5 µeq/g Max.
Chloride (Cl) ..... 200 ppb Max.
Phosphate (PO_4) ..... 50 ppb Max.
Particles 0.5µm/ml ..... 100 Max.
Arsenic/Antimony as As ..... 5 ppb Max.
Arsenic/Antimony as As ..... 5 ppb Max.
Al Impurities ..... 50 ppb Max.
As Impurities ..... 5 ppb Max.
Ba Impurities ..... 20 ppb Max.
Be Impurities ..... 10 ppb Max.
Bi Impurities ..... 20 ppb Max.
B Impurities ..... 10 ppb Max.
Cd Impurities ..... 10 ppb Max.
Ca Impurities ..... 25 ppb Max.
Cr Impurities ..... 10 ppb Max.
Co Impurities ..... 10 ppb Max.
Cu Impurities ..... 10 ppb Max.
Ga Impurities ..... 10 ppb Max.
Ge Impurities ..... 10 ppb Max.
Au Impurities ..... 20 ppb Max.
Fe Impurities ..... 20 ppb Max.
Pb Impurities ..... 10 ppb Max.
Li Impurities ..... 10 ppb Max.
Mg Impurities ..... 20 ppb Max.
Mn Impurities ..... 10 ppb Max.
Mo Impurities ..... 10 ppb Max.
Ni Impurities ..... 10 ppb Max.
Nb Impurities ..... 50 ppb Max.
K Impurities ..... 10 ppb Max.
Si Impurities ..... 50 ppb Max.
Na Impurities ..... 10 ppb Max.
Ag Impurities ..... 10 ppb Max.
Sr Impurities ..... 10 ppb Max.
Ta Impurities ..... 50 ppb Max.
Sn Impurities ..... 20 ppb Max.
Tl Impurities ..... 10 ppb Max.
Ti Impurities ..... 10 ppb Max.
V Impurities ..... 10 ppb Max.
Zn Impurities ..... 20 ppb Max.
Zr Impurities ..... 10 ppb Max.

Size	Packaging	Cat. No.
4 x 1 gal.	HDPE Bottle	**BDH2025-1GLP**
5 gal.	Pail	**BDH2025-5GLP**

Acetone, ACS

Suitable for histology and cytology applications.

Appearance ..... Clear, colorless liquid
Water (KF) ..... Less than 0.50%
Residue ..... Less than 0.001% (0.0010 g/127 mL)
GC Purity ..... Greater than 99.5%
Solubility in water ..... Passes test (Solution remains clear for 30 minutes)
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.3 eq/g (No more than 1.0 mL of 0.01N sodium hydroxide)
Titrable base ..... Less than 0.6 eq/g (No more than 1.0 mL of 0.01N hydrochloric acid)
Aldehyde (as HCHO) ..... Less than 0.002% (Passes test - Turbidity of sample less than that of the standard)
Isopropyl alcohol ..... Less than 0.05%
Methanol ..... Less than 0.05%
Substances reducing permanganate ..... Passes test (Pink solution after 15 min.)

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1101-1LP**
4 L	Glass Bottle	**BDH1101-4LG**
4 L	Poly Bottle	**BDH1101-4LP**
19 L	Steel Can	**BDH1101-19L**
204 L	Steel Drum	**BDH1101-204L**

Acetone, ACS for production

Clear, colorless liquid.

Aldehyde (as HCHO) ..... 0.002% max.
Assay (by GC) ..... 99.5% min.
Color (APHA) ..... 10 max.
Methanol ..... 0.05% max.
2-Propanol ..... 0.05% max.
Residue after evaporation ..... 0.001% max.
Reducing substances ..... Pass test

Size	Packaging	Cat. No.
1 gal.	Poly Bottle	**BDH2002-1GLP**
5 gal.	Metal Pail	**BDH2002-5GLMS**
55 gal.	Metal Drum	**BDH2002-55GLM**

ACETONITRILE

Cyanomethane, Ethanenitrile, Ethanoic acid nitrile, Methane, cyano-, Methyl cyanide, Methanecarbonitrile

Formula: H_3CCN
M.W. 41.05 g/mol
Boiling Pt: 81.6 °C (1013 hPa)
Melting Pt: –45.7 °C
Density: 0.782 g/cm^3 (20 °C)
Flash Pt: 2 °C (closed cup)
CAS: 75-05-8
UN: 1648

Acetonitrile, HiPerSolv CHROMANORM®, for LC-MS

VWR ANALYTICAL

Assay (on anhydrous substance)	Min. 99.9 %
Acidity	Max. 0.0001 mEq/g
Alkalinity	Max. 0.0002 meq/g
Coloration	Max. 10 APHA
Density (20/4)	0.781-0.784
n 20/D	1.343-1.345
Evaporation residue	Max. 2 ppm
Water	Max. 0.02 %
Al (Aluminium)	Max. 50 ppb
Ca (Calcium)	Max. 50 ppb
Fe (Iron)	Max. 50 ppb
K (Potassium)	Max. 50 ppb
Mg (Magnesium)	Max. 10 ppb
Na (Sodium)	Max. 100 ppb
Transmittance (191 nm)	Min. 30 %
Transmittance (195 nm)	Min. 80 %
Transmittance (200 nm)	Min. 95 %
Transmittance (210 nm)	Min. 96 %
Transmittance (215 nm)	Min. 98 %
Transmittance (220 nm)	Min. 98 %
Transmittance (230 nm)	Min. 99 %
Transmittance (from 240 nm)	Min. 99 %
Fluorescence (as quinine) (254/450 nm)	Max. 1 ppb
Gradient grade (210 nm)	Max. 3 mAU
Gradient grade (254 nm)	Max. 1 mAU
Mode: ESI 200 µl pos | APCI 200 µl pos	Max. 2 ppb
Mode: ESI 200 µl neg | APCI 200 µl	Max. 20 ppb
Conforms to Reag. Ph.Eur.	Passes test

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH83640.400**

Acetonitrile, HiPerSolv CHROMANORM® Super gradient for HPLC

VWR ANALYTICAL

From the exclusive family of high-quality, competitively-priced BDH Chemicals — high purity solvents for HPLC applications. These solvents are manufactured at a state of the art European ISO 9001/ISO 14001 solvent production facilities and feature an unparalleled combination of performance and price for even the most demanding liquid chromatography applications

Assay	Min. 99.9 %
Solution (100 g/L)	Neutral
Acidity	Max. 0.0008 meq/g
Alkalinity	Max. 0.0006 meq/g
Coloration	Max. 10 APHA
n 20/D	1.343 to 1.345
Evaporation Residue	Max. 2 ppm
Water	Max. 30 ppm
Absorbance (200 nm)	Max. 0.10
Transmittance (190 nm)	Min. 10 %
Transmittance (195 nm)	Min. 80 %
Transmittance (200 nm)	Min. 95 %
Transmittance (210 nm)	Min. 96 %
Transmittance (220 nm)	Min. 97 %
Transmittance (230 nm)	Min. 98 %
Transmittance (240 nm)	Min. 99 %
Transmittance (250 nm)	Min. 99 %
Transmittance (240 to 420 nm)	Min. 99 %
Fluorescence (as quinine) (254 nm)	Max. 1 ppb
Gradient grade (210 nm)	Max. 10 mAU
Conforms to ACS	Passes Test
Conforms to ACS (HPLC/UV)	Passes Test
Conforms to Reag. Ph.Eur.	Passes Test
Conforms to USP	Passes Test

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle with 45 mm Neck	**BDH83639.100E**
4 L	Amber Glass Bottle	**BDH83639.400**
5 L	Aluminum Bottle	**BDH83639.500**

Acetonitrile, ACS, Low Water

VWR ANALYTICAL

Clear liquid. Packaged in a glass bottle with a special 1 1/2-turn threaded neck to facilitate use on synthesizers.

Appearance	Clear
Water (K.F.)	Less than 0.003%
Residue	Less than 0.005% (0.0010g/50mL)
GC Purity	Greater than 99.5%
Color (APHA)	Less than 10
Titrable acid	Less than 8 meq/g (No more than 8.0 mL of 0.01N sodium hydroxide)
Titrable base	Less than 0.6 meq/g (No more than 4.5 mL of 0.01N hydrochloric acid)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1105-4LG**

Acetonitrile, ACS

VWR ANALYTICAL

Clear liquid.

Appearance	Clear
Water (K.F.)	Less than 0.30%
Residue	Less than 0.005% (0.0010g/50mL)
GC Purity	Greater than 99.5% Less than 10
Color (APHA)	Less than 10
Titrable acid	Less than 8 meq/g (No more than 8.0 mL of 0.01N sodium hydroxide)
Titrable base	Less than 0.6 meq/g (No more than 4.5 mL of 0.01N hydrochloric acid)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1103-4LG**
4 L	Poly Bottle	**BDH1103-4LP**
19 L	Steel Can	**BDH1103-19L**

Alkali Earth

see Standards, ICP and ICP-MS

Aluminium

see Standards, ICP and ICP-MS

ALUMINIUM SULFATE OCTADECAHYDRATE

Formula: $Al_2(SO_4)_3 \cdot 18H_2O$
M.W. 666.43 g/mol
Melting Pt: 86 °C
Density: 1.69 g/cm³ (20 °C)
CAS: 7784-31-8

$$Al_2(SO_4)_3 \cdot xH_2O$$

Aluminum Sulfate Octadecahydrate, Crystallized, ACS

VWR ANALYTICAL

Assay	(~14-18 H_2O) 98.0 - 102.0 %
Molecules of water (x H_2O)	14 - 18
Heavy metals (as Pb)	Max. 0.001 %
Insoluble matter	Max. 0.01 %
Cl (Chloride)	Max. 0.005 %
Ca (Calcium)	Max. 0.01 %
K (Potassium)	Max. 0.005 %
Fe (Iron)	Max. 0.002 %
Mg (Magnesium)	Max. 0.002 %
Na (Sodium)	Max. 0.02 %

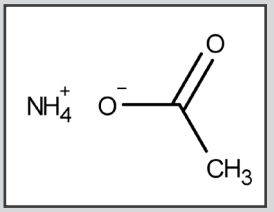
Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4552-500G**

2-Amino-2-(Hydroxymethyl)Propane-1,3-diol Hydrochloride

see TRIS Hydrochloride

AMMONIUM ACETATE

Acetic acid ammonium salt



Formula: $H_3CCOONH_4$
M.W. 77.08 g/mol
Melting Pt: 114 °C
Density: 1.17 g/cm³ (20 °C)
Flash Pt: 136 °C
CAS: 631-61-8

Ammonium Acetate, ACS

Meets reagent specifications for testing USP/NF monographs.

Hygroscopic solid

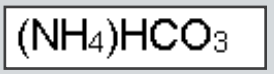
VWR ANALYTICAL

Chloride	<= 0.0005 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Iron	<= 0.0005 %
Nitrate	<= 0.001 %
pH (5%, Water) @25C	6.7 - 7.3
Purity	>= 97.0 %
Residue after Ignition	<= 0.01 %
Sulfate	<= 0.001 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	BDH9204-500G
2.5 kg	Poly Bottle	BDH9204-2.5KG
12 kg	Poly Pail	BDH9204-12KG

AMMONIUM BICARBONATE

Ammonium Hydrogen Carbonate



Formula: NH_4HCO_3
M.W. 78.05 g/mol
Melting Pt: 35 °C
Density: 1.57 g/cm³ (20 °C)
CAS: 1066-33-7

Ammonium Bicarbonate, Reagent

Meets reagent specifications for testing USP/NF monographs.

Contains 1% flow agent.

White crystalline.

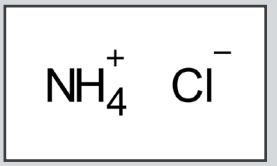
VWR ANALYTICAL

Arsenic	<= <3 ppm
Chloride	<= <30 ppm
Heavy Metals (as Pb)	<= <10 ppm
pH (1%, Water) @25C	9-Jul
Purity	>= 99.0 %
Sulfur Compounds	<= <70 ppm

Size	Packaging	Cat. No.
2.5 kg	Poly Bottle	BDH9206-2.5KG
12 Kg	Poly Pail	BDH9206-12KG

AMMONIUM CHLORIDE

Ammonium muriate



Formula: NH_4Cl
M.W. 53.49 g/mol
Melting Pt: 335 °C
Density: 1.5256 g/cm³ (20 °C)
CAS: 12125-02-9

Ammonium Chloride, ACS

Meets reagent specifications for testing USP/NF monographs.

White solid

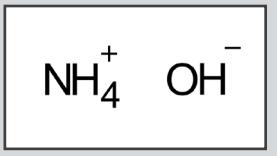
VWR ANALYTICAL

Calcium	<= 0.001 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Iron	<= 0.0002 %
Magnesium	<= 0.0005 %
pH (5%, Water) @25C	4.5 - 5.5
Phosphate	<= 0.0002 %
Purity	>= 99.5 %
Residue on Ignition	<= 0.01 %
Sulfate	<= 0.002 %

Size	Packaging	Cat. No.
2 kg	Poly Bottle	BDH9208-2KG
500 g	Poly Bottle	BDH9208-500G

AMMONIUM HYDROXIDE SOLUTION

Formula: NH_4OH
M.W. 35.05 g/mol
Density: 0.92 g/cm³ (20 °C)
CAS: 1336-21-6
UN: 2672



REDISHIP Protector® XStream® and Premier® Laboratory Hoods and REDISHIP SpillStopper™ Work Surfaces, Labconco®

Popular models of Protector® XStream® and Premier® Laboratory Hoods and supporting matching work surfaces (sold separately) are available from VWR stock for immediate shipment. Visit **vwr.com** for more information.

Description	Electrical	Cat. No.
4′ REDISHIP Protector® XStream® Hood	115V	89260-058
4′ REDISHIP Protector® Premier® Hood	115V	89260-050

Ammonium Hydroxide, 20-22%, BDH ARISTAR® ULTRA

Ultra high purity solution for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

VWR ANALYTICAL

Assay	20 - 22%
Aluminum (Al)	max. 20 ppt
Aluminum (Al)	max. 20 ppt
Antimony (Sb)	max. 10 ppt
Arsenic (As)	max. 10 ppt
Barium (Ba)	max. 10 ppt
Beryllium (Be)	max. 10 ppt
Bismuth (Bi)	max. 10 ppt
Cadmium (Cd)	max. 10 ppt
Calcium (Ca)	max. 10 ppt
Cerium (Ce)	max. 10 ppt
Cesium (Cs)	max. 10 ppt
Chromium (Cr)	max. 10 ppt
Cobalt (Co)	max. 10 ppt
Copper (Cu)	max. 10 ppt
Dysprosium (Dy)	max. 10 ppt
Erbium (Er)	max. 10 ppt
Europium (Eu)	max. 10 ppt
Gadolinium (Gd)	max. 10 ppt
Gallium (Ga)	max. 10 ppt
Germanium (Ge)	max. 10 ppt
Gold (Au)	max. 10 ppt
Hafnium (Hf)	Information Only
Holmium (Ho)	max. 10 ppt
Indium (In)	max. 10 ppt
Iron (Fe)	max. 10 ppt
Lanthanum (La)	max. 10 ppt
Lead (Pb)	max. 10 ppt
Lithium (Li)	max. 10 ppt
Lutetium (Lu)	max. 10 ppt
Magnesium (Mg)	max. 10 ppt
Manganese (Mn)	max. 10 ppt
Mercury (Hg)	max. 200 ppt
Molybdenum (Mo)	max. 10 ppt
Neodymium (Nd)	max. 10 ppt
Nickel (Ni)	max. 10 ppt
Niobium (Nb)	max. 10 ppt
Palladium (Pd)	Information Only
Platinum (Pt)	Information Only
Potassium (K)	max. 10 ppt
Praseodymium (Pr)	max. 10 ppt
Rhenium (Re)	Information Only
Rhodium (Rh)	max. 10 ppt
Rubidium (Rb)	max. 10 ppt
Ruthenium (Ru)	Information Only
Samarium (Sm)	max. 10 ppt
Scandium (Sc)	max. 10 ppt
Selenium (Se)	Information Only
Silver (Ag)	max. 10 ppt
Sodium (Na)	max. 20 ppt
Strontium (Sr)	max. 10 ppt
Tellurium (Te)	max. 10 ppt
Terbium (Tb)	max. 10 ppt
Thallium (Tl)	max. 10 ppt
Thorium (Th)	max. 10 ppt
Thulium (Tm)	max. 10 ppt
Tin (Sn)	max. 10 ppt
Titanium (Ti)	max. 10 ppt
Tungsten (W)	max. 10 ppt
Uranium (U)	max. 10 ppt
Vanadium (V)	max. 10 ppt
Ytterbium (Yb)	max. 10 ppt
Yttrium (Y)	max. 10 ppt
Zinc (Zn)	max. 10 ppt
Zirconium (Zr)	max. 10 ppt

Size	Packaging	Cat. No.
500 mL	HDPE Bottle	**87003-214**
1 L	HDPE Bottle	**87003-656**

Ammonium Hydroxide, 20-22%, BDH ARISTAR® PLUS

High purity solution for quantitative trace metal analysis in the parts-per-billion (ppb) level.

VWR ANALYTICAL

Assay	20 - 22%
Color	max. 10 APHA
Aluminum (Al)	max. 1 ppb
Antimony (Sb)	max. 0.5 ppb
Arsenic (As)	max. 1 ppb
Barium (Ba)	max. 0.1 ppb
Beryllium (Be)	max. 0.1 ppb
Bismuth (Bi)	max. 0.1 ppb
Cadmium (Cd)	max. 0.5 ppb
Calcium (Ca)	max. 1 ppb
Cerium (Ce)	max. 0.1 ppb
Cesium (Cs)	max. 0.1 ppb
Chromium (Cr)	max. 0.5 ppb
Cobalt (Co)	max. 0.5 ppb
Copper (Cu)	max. 0.5 ppb
Dysprosium (Dy)	max. 0.1 ppb
Erbium (Er)	max. 0.1 ppb
Europium (Eu)	max. 0.1 ppb
Gadolinium (Gd)	max. 0.1 ppb
Gallium (Ga)	max. 0.1 ppb
Germanium (Ge)	max. 0.1 ppb
Gold (Au)	max. 0.5 ppb
Hafnium (Hf)	Information Only
Holmium (Ho)	max. 0.1 ppb
Indium (In)	max. 0.1 ppb
Iron (Fe)	max. 1 ppb
Lanthanum (La)	max. 0.1 ppb
Lead (Pb)	max. 0.1 ppb
Lithium (Li)	max. 0.1 ppb
Lutetium (Lu)	max. 0.1 ppb
Magnesium (Mg)	max. 1 ppb
Manganese (Mn)	max. 0.5 ppb
Mercury (Hg)	max. 0.2 ppb
Molybdenum (Mo)	max. 0.5 ppb
Neodymium (Nd)	max. 0.1 ppb
Nickel (Ni)	max. 0.5 ppb
Niobium (Nb)	max. 0.1 ppb
Palladium (Pd)	Information Only
Platinum (Pt)	Information Only
Potassium (K)	max. 1 ppb
Praseodymium (Pr)	max. 0.1 ppb
Rhenium (Re)	Information Only
Rhodium (Rh)	max. 0.5 ppb
Rubidium (Rb)	max. 0.1 ppb
Ruthenium (Ru)	Information Only
Samarium (Sm)	max. 0.1 ppb
Scandium (Sc)	max. 0.1 ppb
Selenium (Se)	max. 1 ppb
Silver (Ag)	max. 0.5 ppb
Sodium (Na)	max. 1 ppb
Strontium (Sr)	max. 0.1 ppb
Tellurium (Te)	max. 0.1 ppb
Terbium (Tb)	max. 0.1 ppb
Thallium (Tl)	max. 0.1 ppb
Thorium (Th)	max. 0.1 ppb
Thulium (Tm)	max. 0.1 ppb
Tin (Sn)	max. 0.5 ppb
Titanium (Ti)	max. 0.5 ppb
Tungsten (W)	max. 0.1 ppb
Uranium (U)	max. 0.1 ppb
Vanadium (V)	max. 0.5 ppb
Ytterbium (Yb)	max. 0.1 ppb
Yttrium (Y)	max. 0.1 ppb
Zinc (Zn)	max. 0.5 ppb
Zirconium (Zr)	max. 0.1 ppb
Chloride (Cl-)	max. 0.5 ppm
Phosphate (PO_{43}-)	max. 0.01 ppm
Sulfate (SO_4^{2-})	max. 1 ppm

Size	Packaging	Cat. No.
500 mL	HDPE Bottle	**87003-245**
4 L	HDPE Bottle	**87003-246**

Ammonium Hydroxide Solution, 32%, HiPerSolv CHROMANORM®, for HPLC

VWR ANALYTICAL

Non-volatile residue ..... Max. 20 ppm
Fe (Iron) ..... Max. 0.2 ppm
Pb (Lead) ..... Max. 0.05 ppm
Transmittance (215 nm) (1 mol/l) ..... Min. 10 %
Transmittance (254 nm) (1 mol/l) ..... Min. 97 %

Size	Packaging	Cat. No.
100 mL	Glass bottle	**BDH153312K**

Ammonium Hydroxide, ACS, 28-30%

Clear and free from particulates.

VWR ANALYTICAL

Appearance ..... Colorless, free from susp. matter
Assay (NH_3) ..... 28 - 30%
Carbon dioxide (CO_2) ..... 0.002% max.
Chloride (Cl) ..... 0.5 ppm max.
Heavy metals (as Pb) ..... 0.5 ppm max.
Iron (Fe) ..... 0.2 ppm max.
Nitrate (NO_3) ..... 2 ppm max.
Phosphate (PO_4) ..... 2 ppm max.
Residue after ignition ..... 0.002% max.
Substances reducing permanganate ..... To pass test
Total sulfur (as SO_4) ..... 2 ppm max

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH3014-500MLP**
2.2 L	PPQ Bottle	**BDH3126-2.2LP**
2.5 L	Glass Bottle	**BDH3016-2.5LG**
2.5 L	Poly-Coated Glass Bottle	**BDH3018-2.5LPC**
3.8 L	Poly Bottle	**BDH3020-3.8LP**
194 L	Poly Drum	**BDH3022-194L**

Ammonium Hydroxide, Solution 50% (v/v)

1 + 1 formulation (v/v)

VWR ANALYTICAL

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7571-1**
4 L	Poly Bottle	**BDH7571-4**

Ammonium Hydroxide, Solution 20% (v/v)

ASTM for water hardness.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7868-1**

Ammonium Hydroxide, Solution 10% (v/v)

APHA.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7938-1**

Ammonium Hydroxide, Solution 6.0N

41.4% (v/v) in water.

Suitable as a titrant

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 5.980 - 6.020 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7641-2**

Ammonium Hydroxide, Solution 5.0N

APHA.

Suitable as a titrant

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 4.980 - 5.020 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7615-1**

AMMONIUM HEPTAMOLYBDATE TETRAHYDRATE

Ammonium heptamolybdate 4-hydrate, Ammonium molybdate (para) 4-hydrate, Ammonium molybdate (para) tetrahydrate, Ammonium paramolybdate 4-hydrate, Ammonium paramolybdate tetrahydrate, Hexaammonium heptamolybdate 4-hydrate, Hexaammonium heptamolybdate tetrahydrate

$$(NH_4)_6Mo_7O_{24} \cdot 4\ H_2O$$

Formula: $(NH_4)_6Mo_7O_{24} \cdot 4H_2O$
M.W. 1235.86 g/mol
Density: 2.498 g/cm^3 (20 °C)
CAS: 12054-85-2

Ammonium Molybdate Tetrahydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid; sometimes slight green/yellow tint

VWR ANALYTICAL

Arsenate, Phosphate and Silicate ..... <= 0.001 %
Chloride ..... <= 0.002 %
Heavy Metals (as Pb) ..... <= 0.001 %
Insolubles ..... <= 0.005 %
Magnesium ..... <= 0.005 %
MoO_3 ..... 81.0 - 83.0 %
Nitrate ..... <= 0.003 %
Phosphate ..... <= 0.0005 %
Potassium ..... <= 0.01 %
Sodium ..... <= 0.01 %
Sulfate ..... <= 0.02 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9210-500G**

Ammonium Muriate

see Ammonium Chloride

AMMONIUM IODIDE

Formula: NH_4I
M.W. 144.94 g/mol
Melting Pt: 551 °C
Density: 2.51 g/cm³ (20 °C)
CAS: 12027-06-4

$(NH_4)I$

Ammonium Iodide, ACS

VWR ANALYTICAL

Assay	Min. 99.0 %
Heavy metals (as Pb)	Max. 0.001 %
Insoluble matter	Max. 0.005 %
Residue after ignition	Max. 0.05 %
Cl + Br (as Cl)	Max. 0.005 %
PO_4 (Phosphate)	Max. 0.001 %
SO_4 (Sulphate)	Max. 0.05 %
Ba (Barium)	Max. 0.002 %
Fe (Iron)	Max. 5 ppm

Size	Packaging	Cat. No.
500 g	Amber Glass Bottle	**BDH4600-500G**

Ammonium Peroxodisulfate

see Ammonium Persulfate

AMMONIUM PERSULFATE (APS)

Ammonium persulfate, di-Ammonium peroxodisulfate, Diammonium peroxodisulphate

Formula: $(NH_4)_2S_2O_8$
M.W. 228.2 g/mol
Melting Pt: 120 °C
Density: 1.98 g/cm³ (20 °C)
CAS: 7727-54-0
UN: 1444

Ammonium Persulfate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

VWR ANALYTICAL

Chloride & Chlorate	<= 0.001 %
Heavy Metals (as Pb)	<= 0.005 %
Insolubles	<= 0.005 %
Iron	<= 0.001 %
Manganese	<= 0.00005 %
Purity	>= 98.0 %
Residue on Ignition	<= 0.05 %
Titrable Free Acid	<= 0.04 meq/g

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9214-500G**

AMMONIUM SULFATE

Formula: $(NH_4)_2SO_4$
M.W. 132.14 g/mol
Melting Pt: 336 to 339 °C
Density: 1.78 g/cm³ (20 °C)
CAS: 7783-20-2

Ammonium Sulfate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless powder or solid

VWR ANALYTICAL

Chloride	<= 0.0005 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Iron	<= 0.0005 %
Nitrate	<= 0.001 %
pH (5%, Water) @25C	5.0 - 6.0
Phosphate	<= 0.0005 %
Purity	>= 99.0 %
Residue on Ignition	<= 0.005 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9216-500G**
2.5 kg	Poly Bottle	**BDH9216-2.5KG**

Anhydrous Dextrose

see Dextrose

Antimony

see Standards, ICP and ICP-MS

Arsenic

see Standards, ICP and ICP-MS

L(+)-ASCORBIC ACID

Acidum ascorbicum, Antiscorbic vitamin, Vitamin C

Formula: $C_6H_8O_6$
M.W. 176.13 g/mol
Boiling Pt: 553 °C (1013 hPa)
Melting Pt: 190 to 192 °C
Density: 1.694 g/cm³ (20 °C)
CAS: 50-81-7

Ascorbic Acid, ACS

White solid

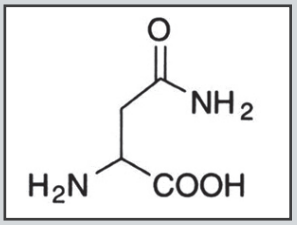
VWR ANALYTICAL

Heavy Metals (as Pb)	<= 0.002 %
Iron	<= 0.001 %
Purity	>= 99.0 %
Residue on Ignition	<= 0.1 %
Specific Rotation	+20.5 - +21.5 degrees

Size	Packaging	Cat. No.
100 g	Poly Bottle	**BDH9242-100G**
250 g	Poly Bottle	**BDH9242-250G**

L(+)-ASPARAGINE

(S)-(+)-Asparagine



Formula: $H_2NCOCH_2CH(NH_2)CO_2H$
M.W. 132.12 g/mol
Boiling Pt: 343 °C (1013 hPa)
Melting Pt: 234 to 235 °C
CAS: 70-47-3

Asparagine, Anhydrous, Bioprocessing

VWR BIOPROCESSING

Suitable for bioprocessing. BSE/TSE Free. Manufactured in USA. Custom Packaging and Testing Available. Change Management. Sample availability.

Appearance	white crystalline powder
Assay (on dried basis, by titration)	98.0% to 102.0%
Identification (by IR)	conforms to structure
Aspartic Acid Content	NMT 2%
Loss On Drying (@105ºC/3hrs.)	NMT 0.5%
Residue On Ignition	NMT 0.1%
Solubility (10% solution in dilute HCl)	clear, complete, and colorless
Specific Rotation (on dried basis, C=10, 6N HCl)	+33.0º to +36.5º
Bioburden	NMT 100 CFU/g
Heavy Metals (as Pb)	NMT 15 ppm
Chloride (Cl)	NMT 0.02%
Sulfate (SO_4)	NMT 0.03%
Cytotoxicity	passes test
Endotoxin (measured at 2g/L)	NMT 0.04 EU/mg
DNase	none detected
RNase	none detected
Protease	none detected

Size	Packaging	Cat. No.
100 g	HDPE Bottle	**VWRB15005-100G**
1 kg	HDPE Bottle	**VWRB15005-1KG**
25 kg	HDPE Pail	**VWRB15005-25KG**
5 kg	HDPE Pail	**VWRB15005-5KG**

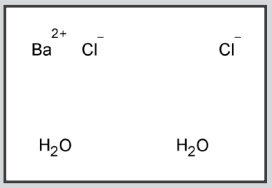
Aqua Fortis

see Nitric Acid (20 - <lt/> 40%)

Barium

see Standards, ICP and ICP-MS

BARIUM CHLORIDE DIHYDRATE



Formula: $BaCl_2 \cdot 2H_2O$
M.W. 244.27 g/mol
Boiling Pt: 1560 °C (1013 hPa)
Melting Pt: 960 °C
Density: 3.86 g/cm³ (25 °C)
CAS: 10326-27-9
UN: 1564

Barium Chloride Dihydrate, ACS

BDH VWR ANALYTICAL

Meets reagent specifications for testing USP/NF monographs.

White solid

Assay	>= 99.0 %
Calcium	<= 0.05 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Iron	<= 0.0002 %
Loss on Drying	14.0 - 16.0 %
Oxidizing Substances (as NO_3)	<= 0.005 %
pH (5%, Water) @25C	5.2 - 8.2
Potassium	<= 0.0025 %
Sodium	<= 0.005 %
Strontium	<= 0.1 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9220-500G**

BARIUM CHLORIDE IN AQUEOUS SOLUTION

Formula: $BaCl_2$
M.W. 208.24 g/mol
Boiling Pt: Min. 100 °C (1013 hPa)
CAS: 10361-37-2
UN: 3287

Barium Chloride, Solution 10% (w/v)

BDH VWR ANALYTICAL

Made with deionized water.

Appearance/color	Clear to slightly turbid liquid
Shelf-life	1 year
N.I.S.T. traceable to SRM 919	Yes
Normality	9.50 - 10.50 N

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7238-1**

Beryllium

see Standards, ICP and ICP-MS

Bismuth

see Standards, ICP and ICP-MS

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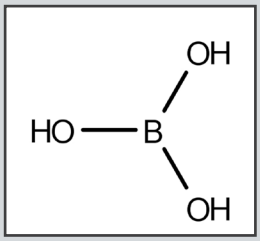
BORIC ACID

Boracic acid, Boron hydroxide, Boron trihydroxide, Orthoboric acid



Formula: $B(OH)_3$
M.W. 61.83 g/mol
Boiling Pt: 185 °C (1013 hPa)
Melting Pt: 160 °C
Density: 1.44 g/cm^3 (25 °C)
CAS: 10043-35-3

Boric Acid, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

VWR ANALYTICAL

Calcium	<= 0.005 %
Chloride	<= 0.001 %
Heavy Metals (as Pb)	<= 0.001 %
Insolubles (Methanol)	<= 0.005 %
Iron	<= 0.001 %
Nonvolatiles (Methanol)	<= 0.05 %
Phosphate	<= 0.001 %
Purity	>= 99.5 %
Sulfate	<= 0.01 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	BDH9222-500G
2.5 kg	Poly Bottle	BDH9222-2.5KG

Boric Acid, Solution 2% (w/v)

Made with deionized water.

VWR ANALYTICAL

Appearance/color	Clear liquid
Shelf-life	1 year

Size	Packaging	Cat. No.
4 L	Poly Bottle	BDH7386-4

Borofluoric Acid

see Fluoroboric Acid in Aqueous Solution

Boron

see Standards, ICP and ICP-MS

Boron Trihydroxide

see Boric Acid

Bromate Bromide, Solution 0.1N

APHA for phenols.

VWR ANALYTICAL

Appearance/color	Clear liquid
Normality	0.0995 - 0.1005 N

Size	Packaging	Cat. No.
1 L	Amber Poly Bottle	BDH7862-1

BROMINE

M.W. 159.81 g/mol
Boiling Pt: 58.7 °C (1013 hPa)
Melting Pt: -7.2 °C
Density: 3.12 g/cm^3 (20 °C)
CAS: 7726-95-6
UN: 1744

Br_2

Bromine, Laboratory Reagent

VWR ANALYTICAL

Assay	Min. 99.5 %
Heavy metals (as Pb)	Max. 2 ppm
Residue after evaporation	Max. 50 ppm
Cl (Chlorine)	Max. 0.05 %

Size	Packaging	Cat. No.
500 mL	Polycoated glass bottle	BDH4576-500ML

BROMOCRESOL

Bromocresol Green/Methyl Red in Alcohol

Bromocresol green and methyl red in denatured alcohol (SDA-3A).

VWR ANALYTICAL

Appearance/color	Clear liquid
Identification	Passes test

Size	Packaging	Cat. No.
500 mL	Poly Bottle	BDH7388-2

BROMOPHENOL BLUE IN AQUEOUS SOLUTION

CAS: 115-39-9

Bromophenol Blue, Sodium Salt, Solution 0.04% (w/v)

Made with deionized water.

VWR ANALYTICAL

Appearance/color	Purple liquid
Shelf-life	2 years

Size	Packaging	Cat. No.
500 mL	Poly Bottle	BDH7392-2

BROMOTHYMOL BLUE SODIUM SALT IN AQUEOUS SOLUTION

CAS: 34722-90-2

Bromothymol Blue, Sodium Salt, Solution 0.04% (w/v)

Made with deionized water.

Appearance/color ..... Blue liquid
Shelf-life ..... 2 years

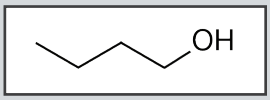
Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7393-2**

Buffers for pH Calibration

see pH Reference Standards

1-BUTANOL

Butanol, Butan-1-ol, Butyl alcohol, n-Butyl alcohol, n-Butanol, n-Butan-1-ol, Butyl hydroxide, 1-Hydroxybutane, Methylolpropane, Propylcarbinol



Formula: $H_3C(CH_2)_2CH_2OH$
M.W. 74.12 g/mol
Boiling Pt: 117.6 °C (1013 hPa)
Melting Pt: -89 °C
Density: 0.812 g/cm³ (20 °C)
Flash Pt: 30 °C
CAS: 71-36-3
UN: 1120

1-Butanol, ACS Grade. Stabilized with amylene

Carbonyl compounds (as butyraldehyde) ..... 0.01% max.
Water ..... 0.1% max.
Titrable acid ..... 0.8 µeq/g max.
Residue after evaporation ..... 0.0005% max.
Color (APHA) ..... 10 max.
Butyl ether ..... 0.2% max.
Assay by GC analysis ..... 99.4% min.
Meets ACS specifications for general use ..... Pass

Size	Packaging	Cat. No.
19 L	Steel Can	**BDH1107-19L**

Butanone

see Methyl Ethyl Ketone

2-Butanone

see Methyl Ethyl Ketone

Butyl Alcohol

see 1-Butanol

Butyl Hydroxide

see 1-Butanol

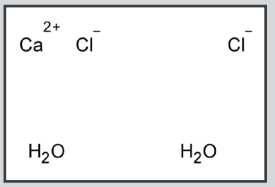
Cadmium

see Standards, ICP and ICP-MS

Calcium

see Standards, ICP and ICP-MS

CALCIUM CHLORIDE DIHYDRATE



Formula: $CaCl_2.2H_2O$
M.W. 147.01 g/mol
Boiling Pt: 1600 °C (1013 hPa)
Melting Pt: 176 °C
Density: 1.85 g/cm³ (20 °C)
CAS: 10035-04-8

Calcium Chloride Dihydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white hygroscopic solid

Ammonium ..... <= 0.005 %
Assay ..... 99.0 - 105.0 %
Barium ..... <= 0.005 %
Heavy Metals (as Pb) ..... <= 0.0005 %
Insolubles ..... <= 0.01 %
Iron ..... <= 0.001 %
Magnesium ..... <= 0.005 %
Oxidizers (as NO_3) ..... <= 0.003 %
pH (5%, Water) @25C ..... 4.5 - 8.5
Potassium ..... <= 0.01 %
Sodium ..... <= 0.02 %
Strontium ..... <= 0.1 %
Sulfate ..... <= 0.01 %

Size	Packaging	Cat. No.
1 kg	Poly Bottle	**BDH9224-1KG**
12 kg	Poly Pail	**BDH9224-12KG**

CALCIUM CHLORIDE IN AQUEOUS SOLUTION

Formula: $CaCl_2$
CAS: 10043-52-4

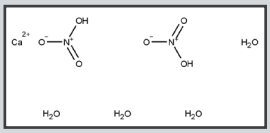
Calcium Chloride, Solution 2.75% (w/v)

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year
Assay (w/v) ..... 2.73 - 2.77 %

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7308-1**

CALCIUM NITRATE TETRAHYDRATE



Formula: $Ca(NO_3)_2.4H_2O$
M.W. 200.12 g/mol
Melting Pt: ~ 42 °C
Density: 1.86 g/cm^3 (20 °C)
CAS: 13477-34-4
UN: 1454

Calcium Nitrate Tetrahydrate, ACS

Colorless, hygroscopic solid

VWR ANALYTICAL

Barium	<= 0.005 %
Chloride	<= 0.005 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Iron	<= 0.0005 %
Magnesium	<= 0.05 %
Nitrite	<= 0.001 %
pH (5%, Water) @25C	5.0 - 7.0
Potassium	<= 0.005 %
Purity	99.0 - 103.0 %
Sodium	<= 0.01 %
Strontium	<= 0.05 %
Sulfate	<= 0.002 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9226-500G**
2.5 kg	Poly Bottle	**BDH9226-2.5KG**

Carbamide

see Urea

Carbinol

see Methanol

Calibration Standard

see Standards, ICP and ICP-MS

Carbon

see Standards, ICP and ICP-MS

Carbon Standard, Organic Solution 1mL = 1mg Carbon

APHA for total organic carbon. Meets EPA 415-1.

VWR ANALYTICAL

Appearance/color	Clear liquid
Preservative (Hydrochloric acid)	Passes test
Certified TOC value	980 - 1020

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7880-2**

Caustic Potash

see Potassium Hydroxide

Caustic Soda

see Sodium Hydroxide

Ceric Sulfate, Solution 0.1N

Made with purified water and dilute ACS grade sulfuric acid.

VWR ANALYTICAL

Normality	0.0995 - 0.1005 N
Appearance/color	Clear orange liquid

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7253-1**
4 L	Amber Glass Bottle	**BDH7253-4**

Cerium

see Standards, ICP and ICP-MS

Cesium

see Standards, ICP and ICP-MS

Chloride

see Standards, ICP and ICP-MS

CHLORIDE STANDARD SOLUTION, 1,000 MG/L CL- IN WATER

Halite, Rock salt, Saline, Salt, Sea salt

Density: 0.998 g/cm^3 (20 °C)

Chloride Standard, Solution 1mL=1mg Chloride

Made with deionized water.

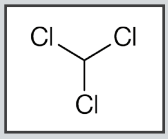
VWR ANALYTICAL

Appearance/color	Clear liquid
N.I.S.T. Traceable to SRM 919	Yes
Shelf-life	1 year
Assay	995 - 1005 ppm

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7396-2**

CHLOROFORM

Methane, trichloro-, Trichloroform, Trichloromethane



Formula: $CHCl_3$
M.W. 119.38 g/mol
Boiling Pt: 61.7 °C (1013 hPa)
Melting Pt: –63 °C
Density: 1.4832 g/cm^3 (20 °C)
CAS: 67-66-3
UN: 1888

Chloroform, HiPerSolv CHROMANORM® for HPLC

Stabilized with amylene.

VWR ANALYTICAL

Assay	Min. 99.8 %
Water	Max. 0.05 %
Nonvolatile Residue	Max. 0.001 %
Acidity	Max. 0.0005 meq/g
Alkalinity	Max. 0.0002 meq/g
Transmittance (250 nm)	Min. 50 %
Transmittance (260 nm)	Min. 84 %
Transmittance (280 nm)	Min. 95 %
Transmittance (300 nm)	Min. 98 %
Conforms to BDH 15283	Passes Test

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH83626.400**

Chloroform, Stabilized, ACS

Stabilized with amylene.

VWR ANALYTICAL

Appearance	Clear, colorless liquid
Water (K.F.)	Less than 0.020%
Residue	Less than 0.001% (0.0010g/67 mL)
GC Purity	Greater than 99.8%
Amylene (Capillary GC-FID)	Record value
Color (APHA)	Less than 10
Acetone and aldehyde	Passes test (less than 0.005% as acetone. No turbidity should develop.)
Acid and chloride	Passes test (Blue litmus paper should not change color. No turbidity should be produced.)
Free chlorine (Cl)	Passes test (Lower layer should not show a violet tint.)
Lead (Pb)	Less than 0.05 ppm (Purplish hue of sample should not exceed that of the standard.)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1109-4LG**
19 L	Steel Can	**BDH1109-19L**
204 L	Steel Drum	**BDH1109-204L**

Chloroiodide

see Iodine Monochloride

Chromatography Solvents

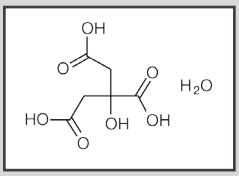
see HPLC Solvents

Chromium

see Standards, ICP and ICP-MS

CITRIC ACID MONOHYDRATE

Formula: $HOC(COOH)(CH_2COOH)_2 \cdot H_2O$
M.W. 210.14 g/mol
Melting Pt: 135 to 152 °C
Density: 1.552 g/cm³ (20 °C)
Flash Pt: 173.9 °C (closed cup)
CAS: 5949-29-1



Citric Acid Monohydrate, ACS

Colorless or white solid

VWR ANALYTICAL

Carbonizable Substances	PASS
Chloride	<= 0.001 %
Insolubles	<= 0.005 %
Iron	<= 3 ppm
Lead	<= 2 ppm
Oxalate Test	PASS
Phosphate	<= 0.001 %
Purity	99.0 - 102.0 %
Residue after Ignition	<= 0.02 %
Sulfur Compounds (as SO_4)	<= 0.002 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9228-500G**
2.5 kg	Poly Bottle	**BDH9228-2.5KG**

CITRIC ACID IN AQUEOUS SOLUTION

CAS: 77-92-9

Citric Acid, Solution 1M

Made with deionized water.

VWR ANALYTICAL

Appearance/color	Clear pale yellow liquid
N.I.S.T. traceable to SRM 84	Yes
Molarity	0.995 - 1.005 M
Shelf-life	1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7397-1**

Citric Acid, 10% Aqueous Solution

Made with deionized water.

VWR ANALYTICAL

Appearance/color	Pale yellow clear liquid
Shelf-life	2 years
Assay (w/v)	9.50 - 10.50 %

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7949-1**

Citric Acid Trisodium Salt Dihydrate

see Tri-Sodium Citrate Dihydrate

Cobalt

see Standards, ICP and ICP-MS

Conductivity Standard Solution, 1000 µmhos/cm

Suitable as a calibration standard.

VWR ANALYTICAL

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7921-2**
1 L	Poly Bottle	**BDH7921-1**

Conductivity Standards

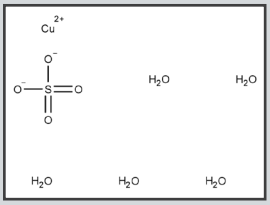
see Standards, ICP, ICP-MS, and CRM

Copper

see Standards, ICP and ICP-MS

COPPER (II) SULFATE PENTAHYDRATE

Copper (II) sulfate, Copper (II) sulfate 5-hydrate, Copper sulfate pentahydrate, Cupric sulphate pentahydrate



Formula: $CuSO_4 \cdot 5H_2O$
M.W. 249.69 g/mol
Density: 2.284 g/cm³ (20 °C)
CAS: 7758-99-8
UN: 3077

Copper (II) Sulfate Pentahydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Blue solid

Calcium	<= 0.005 %
Chloride	<= 0.001 %
Insolubles	<= 0.005 %
Iron	<= 0.003 %
Nickel	<= 0.005 %
Nitrogen Compounds (as N)	<= 0.002 %
Potassium	<= 0.01 %
Purity	98.0 - 102.0 %
Sodium	<= 0.02 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	BDH9312-500G
2.5 kg	Poly Bottle	BDH9312-2.5KG

Corn Sugar

see Dextrose

CUPRIC NITRATE HEMIPENTAHYDRATE

Copper dinitrate hemipentahydrate, Copper (II) nitrate hemipentahydrate

$Cu(NO_3)_2 \cdot 2.5\ H_2O$

Formula: $Cu(NO_3)_2 \cdot 2{,}5H_2O$
M.W. 232.59 g/mol
Melting Pt: 255 °C
Density: Min. 1 g/cm³ (20 °C)
CAS: 19004-19-4
UN: 1477

Cupric Nitrate 2.5-Hydrate, Crystallized, ACS

Assay	98.0 - 102.0 %
Insoluble matter	Max. 0.01 %
Cl (Chloride)	Max. 0.002 %
SO_4 (Sulphate)	Max. 0.01 %
Ca (Calcium)	Max. 0.005 %
Fe (Iron)	Max. 0.005 %
K (Potassium)	Max. 0.005 %
Na (Sodium)	Max. 0.01 %
Ni (Nickel)	Max. 0.01 %
Pb (Lead)	Max. 0.001 %

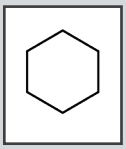
Size	Packaging	Cat. No.
500 g	Amber Glass Bottle	BDH4558-500G

Cupric Sulfate Pentahydrate

see Copper (II) Sulfate Pentahydrate

CYCLOHEXANE

Hexahydro-Benzene, Hexamethylene



Formula: C_6H_{12}
M.W. 84.16 g/mol
Boiling Pt: 81 °C (1013 hPa)
Melting Pt: 7 °C
Density: 0.7785 g/cm³ (20 °C)
Flash Pt: -18 °C
CAS: 110-82-7
UN: 1145

Cyclohexane, HiPerSolv CHROMANORM® for HPLC

Assay	Min. 99.5 %
Water (by KF coulometry)	Max. 0.01 %
Nonvolatile Residue	Max. 0.0005 %
Acidity	Max. 0.0005 meq/g
Alkalinity	Max. 0.0002 meq/g
Transmittance (230 nm)	Min. 75 %
Transmittance (240 nm)	Min. 80 %
Transmittance (250 nm)	Min. 98 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	BDH83629.400

Cyclohexane, ACS

Clear liquid.

Appearance	Clear
Water (K.F.)	Less than 0.02%
Residue	Less than 0.002% (0.0020 g/129 mL)
GC Purity	Greater than 99.0%
Color (APHA)	Less than 10
Substances darkened by sulfuric acid	Passes test (Neither the cyclohexane nor acid layer should be darkened.)

Size	Packaging	Cat. No.
4 L	Glass Bottle	BDH1111-4LG
19 L	Steel Can	BDH1111-19L
204 L	Steel Drum	BDH1111-204L

CYCLOHEXANONE

Formula: $C_6H_{10}(=O)$
M.W. 98.15 g/mol
Boiling Pt: 155.6 °C (1013 hPa)
Melting Pt: -31 °C
Density: 0.9478 g/cm³ (20 °C)
Flash Pt: 43 °C
CAS: 108-94-1
UN: 1915

Cyclohexanone, ACS

VWR ANALYTICAL

Assay ..... Min. 99.0 %
Color ..... Max. 10 APHA
Residue after evaporation ..... Max. 0.05 %
Water ..... Max. 0.05 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH4612-4L**

Cytology

see Histology Stains and Reagents

D(+)-Glucose

see Dextrose

Decalcifying Solution

Made with formic acid.

VWR ANALYTICAL

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7797-1**

Decolorizer

see Histology Stains and Reagents

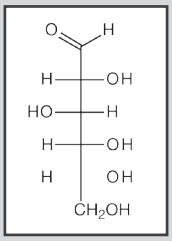
Denatured Ethanol

see Ethanol Denatured

DEXTROSE

Anhydrous dextrose, Corn sugar, Glucolin, Glucose, D-Glucose

Formula: $C_6H_{12}O_6$
M.W. 180.16 g/mol
Melting Pt: 146 °C
Density: 1.54 g/cm³ (20 °C)
CAS: 50-99-7



Dextrose, Anhydrous, ACS

Meets reagent specifications for testing USP/NF monographs.

White solid

VWR ANALYTICAL

Chloride ..... <= 0.01 %
Heavy Metals (as Pb) ..... <= 0.0005 %
Insolubles ..... <= 0.005 %
Iron ..... <= 0.0005 %
Loss on Drying ..... <= 0.2 %
Residue on Ignition ..... <= 0.02 %
Specific Rotation ..... +52.5 - +53.0 degrees
Starch ..... PASS
Sulfate & Sulfite ..... <= 0.005 %
Titrable Acid ..... <= 0.002 meq/g

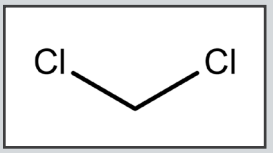
Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9230-500G**
2.5 kg	Poly Bottle	**BDH9230-2.5KG**

Diammonium Peroxodisulfate

see Ammonium Persulfate

DICHLOROMETHANE

Methane dichloride, Methylene chloride



Formula: CH_2Cl_2
M.W. 84.93 g/mol
Boiling Pt: 39.8 °C (1013 hPa)
Melting Pt: -95 °C
Density: 1.322 g/cm³ (20 °C)
CAS: 75-09-2
UN: 1593

Dichloromethane HiPerSolv CHROMANORM® for HPLC, Stabilized

VWR ANALYTICAL

From the exclusive family of high-quality, competitively-priced BDH Chemicals — high purity solvents for HPLC applications. These solvents are manufactured at a state of the art European ISO 9001/ISO 14001 solvent production facilities and feature an unparalleled combination of performance and price for even the most demanding liquid chromatography applications.

Stabilized with ±0.002% 2-methyl-2-butene.

Assay (GC) ..... Min. 99.8 %
Water ..... Max. 0.05 %
Non-volatile residue ..... Max. 0.001 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Transmittance (240 nm) ..... Min. 50 %
Transmittance (245 nm) ..... Min. 80 %
Transmittance (260 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH23373.400**
1 L	Amber Glass Bottle with 45 mm Neck	**BDH23373.100E**

Dichloromethane, ACS, Stabilized

Clear liquid. Contains cyclohexene as a preservative.

VWR ANALYTICAL

Appearance ..... Clear
Water (K.F.) ..... Less than 0.020%
Residue ..... Less than 0.002% (0.0010 g/76 mL)
GC Purity ..... Greater than 99.5% (Typical - 99.9+%)
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.3 eq/g (No more than 0.90 mL of 0.01N sodium hydroxide)
Free halogens ..... Passes test (Lower layer should not show a violet tint.)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1113-4LG**
19 L	Steel Can	**BDH1113-19L**
204 L	Steel Drum	**BDH1113-204L**

Diethyl Ether

see Ether

1,2-Dihydroxyethane

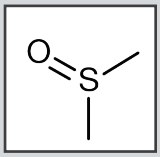
see Ethylene Glycol

Dimethyl Ketone

see Acetone

DIMETHYL SULFOXIDE

DMSO



Formula: $(CH_3)_2SO$
M.W. 78.14 g/mol
Boiling Pt: 189 °C (1013 hPa)
Melting Pt: 18.5 °C
Density: 1.101 g/cm³ (20 °C)
Flash Pt: 87 °C
CAS: 67-68-5

Dimethyl Sulfoxide, ACS

VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.10%
Residue ..... Less than 0.01% (0.0010g/91mL)
GC Purity ..... Greater than 99.9%
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 1µeq/g (Not more than 5.0mL of of 0.01N sodium hydroxide)

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1115-1LP**
4 L	Poly Bottle	**BDH1115-4LP**

Dimethylbenzene

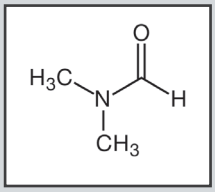
see Xylene

Dimethylformaldehyde

see Acetone

N,N-DIMETHYLFORMAMIDE

Dimethylformamide, DMF, DMFA, Formic acid dimethylamide, Formyldimethylamine, N-Formyldimethylamine



Formula: $HCOON(CH_3)_2$
M.W. 73.1 g/mol
Boiling Pt: 153 °C (1013 hPa)
Melting Pt: –61 °C
Density: 0.949 g/cm³ (20 °C)
Flash Pt: 59 °C (closed cup)
CAS: 68-12-2
UN: 2265

N,N-Dimethylformamide HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

Assay ..... Min. 99.9 %
Water (by KF coulometry) ..... Max. 0.02 %
Nonvolatile Residue ..... Max. 0.0005 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Transmittance (270 nm) ..... Min. 10 %
Transmittance (275 nm) ..... Min. 50 %
Transmittance (290 nm) ..... Min. 80 %
Transmittance (300 nm) ..... Min. 90 %
Transmittance (330 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH83634.100**
4 L	Amber Glass Bottle	**BDH83634.400**

N,N-Dimethylformamide, ACS

Clear liquid.

VWR ANALYTICAL

Appearance ..... Clear, colorless liquid (can be slightly yellow)
Water (K.F.) ..... Less than 0.15%
Residue ..... Less than 0.005% (0.0010 g/21 mL)
GC Purity ..... Greater than 99.8%
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.5 meq/g (Not more than 1.0 mL of 0.01N sodium hydroxide)
Titrable base ..... Less than 3 meq/g (Not more than 3.0 mL of 0.01N sodium hydroxide)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1117-4LG**
4 L	Poly Bottle	**BDH1117-4LP**
19 L	Steel Can	**BDH1117-19L**
204 L	Steel Drum	**BDH1117-204L**

N,N-Dimethylformamide, Low Water

Low water. Low amine content.

VWR ANALYTICAL

Appearance ..... Clear, colorless liquid (can be slightly yellow)
Water (K.F.) ..... Less than 300 ppm
GC Purity ..... Greater than 99.5%
Color (APHA) ..... Less than 15
Amines [as dimethylamine (DMA)] ..... Less than 10 ppm

Size	Packaging	Cat. No.
19 L	Steel Can	**BDH1119-19L**

Dipotassium Diiodide
see Potassium Iodide

di-Potassium Hydrogen Orthophosphate
see Potassium Phosphate Dibasic

Disodium EDTA
see EDTA Disodium Salt

Di-Sodium Ethylenediaminetetraacetic Acid
see EDTA Disodium Salt

di-Sodium Hydrogen Phosphate Heptahydrate
see Sodium Phosphate Dibasic Heptahydrate

di-Sodium Peroxide
see Sodium Peroxide

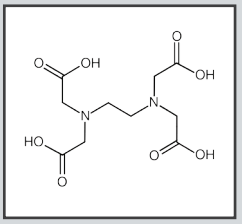
DMF
see N,N-Dimethylformamide

DMK
see Acetone

DMSO
see Dimethyl Sulfoxide

Dysprosium
see Standards, ICP and ICP-MS

EDTA (ETHYLENEDIAMINE TETRAACETIC ACID)
Edetic Acid, Ethylenediaminetetraacetic acid



Formula: $C_{10}H_{16}N_2O_8$
M.W. 292.25 g/mol
Boiling Pt: 614 °C (1013 hPa)
Melting Pt: 220 °C
Density: 0.86 g/cm^3 (20 °C)
Flash Pt: Min. 100 °C
CAS: 60-00-4

EDTA, ACS
White solid.

VWR ANALYTICAL

Calcium ..... <= 0.001 %
Heavy Metals (as Pb) ..... <= 0.001 %
Insoluble in Dilute NH_4OH ..... <= 0.005 %
Iron ..... <= 0.005 %
Magnesium ..... <= 0.0005 %
Nitrilotriacetic Acid ..... <= 0.1 %
Purity ..... 99.4 - 100.6 %
Residue after Ignition ..... <= 0.2 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9232-500G**

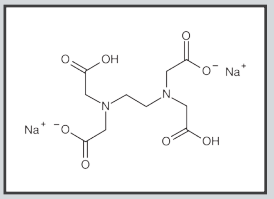
EDTA, Standard Solution, 0.5M
N.I.S.T traceable to SRM 919. Suitable as a titrant or testing standard.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Traceable to NIST SRM 915 ..... Yes
Molarity ..... 0.499 - 0.501 M
Shelf-life ..... 18 months
pH at 25 °C ..... 7.95 - 8.05

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7830-1**

EDTA DISODIUM SALT IN AQUEOUS SOLUTION
Di-Sodium Ethylenediaminetetraacetic acid, Disodium EDTA



Formula: $C_{10}H_{14}N_2Na_2O_8$
CAS: 139-33-3

EDTA Disodium Salt Dihydrate, ACS

VWR ANALYTICAL

Assay ..... 99.0 - 101.0 %
pH (25°C; 5 %) ..... 4.0 - 6.0
Heavy metals (as Pb) ..... Max. 0.005 %
Insoluble matter ..... Max. 0.005 %
Nitrilotriacetic acid ..... Max. 0.1 %
Fe (Iron) ..... Max. 0.01 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4616-500G**

EDTA, Disodium Salt Dihydrate, Solution 0.100M (0.200N)
Suitable as a titrant. Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 915 ..... Yes
Molarity ..... 0.0995 - 0.1005 M

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7314-1**
4 L	Poly Bottle	**BDH7314-4**
200 L	Poly Drum	**BDH7314-10**

EDTA, Disodium Salt Dihydrate, Solution Reagent Grade 0.25M
Made with deionized water.

Suitable as a Titrant.

VWR ANALYTICAL

Molarity ..... 0.2495 - 0.2505 M
N.I.S.T. Traceable to SRM 915 ..... Yes
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7590-2**

EDTA, Disodium Salt Dihydrate, Solution 0.05M

Made with deionized water.

Suitable as a titrant

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 915 ..... Yes
Molarity ..... 0.0495 - 0.0505 M
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7497-1**
4 L	Poly Bottle	**BDH7497-4**

EDTA, Disodium Salt Dihydrate, Solution 0.0575M

Suitable as a titrant. Made with deionized water.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 915 ..... Yes
Molarity ..... 0.0570 -0.0580 M
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7315-1**

EDTA, Disodium Salt Dihydrate, Solution 0.0100M

Suitable as a titrant. Made with deionized water.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 915 ..... Yes
Molarity ..... 0.0095 - 0.0105 M
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7621-1**
4 L	Poly Bottle	**BDH7621-4**

Eosin

see Histology Stains and Reagents

Epsom Salt

see Magnesium Sulfate

Erbium

see Standards, ICP and ICP-MS

Ethanediol

see Ethylene Glycol

Ethanoic Acid

see Acetic Acid

ETHANOL DENATURED (REAGENT ALCOHOL)

Denatured ethanol, Ethyl alcohol, Ethyl hydrate, Ethyl hydroxide, Methylcarbinol, Reagent alcohol

Ethanol Denatured (Reagent Alcohol), ACS

- Total alcohol: 99.5%
- Ethyl alcohol: 89-91%
- Denaturant: 4-6% methyl alcohol and 4-6% 2-propanol

Meets ACS specifications for general use.

Appearance ..... Clear, colorless liquid
Water (K. F.) ..... Less than 0.50%
Residue ..... Less than 0.001% (0.0010 g/124 mL)
Assay (Ethanol + Methanol) ..... 94.0 – 96.0 %
Assay (Isopropyl Alcohol) 4.0-6.0%
Color (APHA) ..... Less than 10

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1156-1LP**
4 L	Poly Bottle	**BDH1156-4LP**
5 gal.	Cubitainer®	**BDH1156-5GL**
19 L	Steel Can	**BDH1156-19L**

Product not available in Canada

US ONLY

Ethanol, Denatured, 95% (Reagent Alcohol 95%)

- Total alcohol: 95%
- Ethyl alcohol: 85-87%
- Denaturant: 4-5% methanol and 4.5–5.5% 2-propanol.

Appearance ..... Clear, colorless liquid
Water ..... 4.0 – 6.0%
Residue Less than 0.001% ..... Less than 0.001%
(0.0010g/122mL) 63.0-64.0%
GC Purity Ethanol 85.0-87.0%
GC Purity Methanol 4.5-5.0%
GC Purity Isopropyl Alcohol 4.5-5.5%
Color (APHA) ..... Less than 10
Specific gravity @ 20ºC 0.806-0.813

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH1158-4LP**
19 L	Steel Can	**BDH1158-19L**

Product not available in Canada

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Description	Cat. No.
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MICROGRIP® PURPLE NITRILE® Exam Gloves	**40101-346**
Hazmat Spill Response Kit	**89168-998**
First Aid Kit	**56613-213**

Ethanol, Denatured Solution 90% (Reagent Alcohol 90%)

- Total alcohol: 90%
- Ethyl alcohol: 81%
- Denaturant: 3.8–4.5% methanol and 4.0–5.0% 2-propanol.

Clear, colorless liquid. Denatured with 3.8–4.5% methanol and 4.0–5.0% 2-propanol. Suitable for cytology and histology.

Appearance ..... Clear, colorless liquid
Water ..... 9.0 – 11.0%
Residue ..... Less than 0.001% (0.0010g/124mL)
GC Purity (Ethanol) 81.0-82.0%
GC Purity (Methanol) 3.8-4.5%
GC Purity (Isopropyl Alcohol) 4.0-5.0%
Color (APHA) ..... Less than 10
Specific gravity @ 20ºC 0.822-0.829
Acidity ..... Less than 0.0025%

Size	Packaging	Cat. No.
4 L	Poly Bottle	BDH1160-4LP

Product not available in Canada

US ONLY

Ethanol, Denatured Solution 80% (Reagent Alcohol 80%)

- Total alcohol: 80%
- Ethyl alcohol: 72%
- Denaturant: 3.4–4.0% methanol and 3.6–4.4% 2-propanol

Clear, colorless liquid. Denatured with 3.4–4.0% methanol and 3.6–4.4% 2-propanol. Suitable for cytology and histology.

Appearance ..... Clear, colorless liquid
Water 19.0-21.0%
Residue ..... Less than 0.001% (0.0010 g/118 mL)
GC Purity Ethanol 72.0-73.0%
GC Purity Methanol 3.4-4.0%
GC Purity Isopropyl Alcohol 3.6-4.4%
Color (APHA) ..... Less than 10
Specific gravity @ 20ºC 0.852-0.858
Acidity ..... Less than 0.0025%

Size	Packaging	Cat. No.
4 L	Poly Bottle	BDH1162-4LP
19 L	Steel Can	BDH1162-19L

Product not available in Canada

US ONLY

Ethanol, Denatured Solution 70%

- Total alcohol: 70%
- Ethyl alcohol: 63-34%
- Denaturant: 2.9-3.5% methanol and 3.2-3.9% 2-propanol

Appearance ..... Clear, colorless liquid
Water 29.0-31.0%
Residue ..... Less than 0.001% (0.0010 g/115mL)
GC Purity Ethanol 63.0-64.0%
GC Purity Methanol 2.9-3.5%
GC Purity Isopropyl Alcohol 3.2-3.9%
Color (APHA) ..... Less than 10
Specific gravity @ 20ºC 0.879-0.895
Acidity ..... Less than 0.0025%

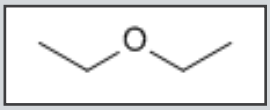
Size	Packaging	Cat. No.
4 L	Poly Bottle	BDH1164-4LP
19 L	Steel Can	BDH1164-19L

Product not available in Canada

US ONLY

ETHER

2,2′-Oxybisethane, 2,2′-Oxydiethane, Ether, Ethoxyethane, Ethyl ether, Diethyl ether



Formula: $(CH_3CH_2)_2O$
M.W. 74.12 g/mol
Boiling Pt: 35 °C (1013 hPa)
Melting Pt: -123 °C
Density: 0.7135 g/cm³ (20 °C)
Flash Pt: -40 °C
CAS: 60-29-7
UN: 1155

Ether (Ethyl Ether), ACS Stabilized with BHT

Alcohol (CH_3CH_2OH) ..... To pass test (0.05%)
Assay ($(CH_3CH_2)2O$) ..... 99% min.
Carbonyl (as HCHO) ..... 0.001% max.
Color (APHA) ..... 10 max.
Peroxide (as H_2O_2) ..... 1 ppm max.
Preservative (BHT) level ..... Record only
Residue after evaporation ..... 0.001% max.
Titrable acid ..... 0.0002 meq/g max.
Water (H_2O) ..... 0.03% max.

Size	Packaging	Cat. No.
1 L	Metal Can	BDH3116-1L

Ether (Ethyl Ether) Stabilized with BHT, ACS

Suitable for organic synthesis, cleaning, and prep scale synthesis. Contains ~1ppm BHT as preservative.

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.030%
Residue ..... Less than 0.001% (0.0010 g/141 mL)
GC Purity ..... Greater than 99.0%
Peroxides (TiCl4; mg/L) ..... Less than 1.0 mg/L as H_2O_2 (Typical - Not detected (less than 0.1 mg/L))
Peroxides (TiCl4; mg/Kg) ..... Less than 1.0 mg/Kg as H_2O_2 (Typical - Not detected (less than 0.1 mg/Kg))
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.2 meq/g (Not more than 0.30 mL of 0.01N sodium hydroxide)
Carbonyl (as HCHO) .....
Less than 0.001% (The total diffusion current should not be greater than ½ that of sample plus aldehyde)
Alcohol (as CH_2CH_3OH) ..... Passes test

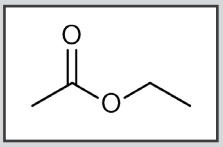
Size	Packaging	Cat. No.
1 L	Poly-Coated Glass Bottle	BDH1121-1LPC
4 L	Poly-Coated Glass Bottle	BDH1121-4LPC
19 L	Steel Can	BDH1121-19L

Ethoxyethane

see Ether

ETHYL ACETATE

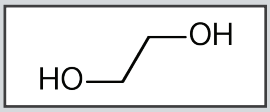
Acetic acid ethyl ester, Acetic ether, Acetidin, Acetoxyethane, Ethyl acetic ester, Ethyl ethanoate, Vinegar naphtha



Formula: $CH_3COOC_2H_5$
M.W. 88.11 g/mol
Boiling Pt: 77.1 °C (1013 hPa)
Melting Pt: –83 °C
Density: 0.902 g/cm³ (20 °C)
Flash Pt: –4 °C
CAS: 141-78-6
UN: 1173

ETHYLENE GLYCOL

1,2-Dihydroxyethane, 2-Hydroxyethanol, Dihydroxyethane, Ethanediol, Ethylene alcohol, Glycol alcohol, Monoethylene glycol



Formula: $HOCH_2CH_2OH$
M.W. 62.07 g/mol
Boiling Pt: 196 to 198 °C (1013 hPa)
Melting Pt: -13 °C
Density: 1.115 g/cm³ (20 °C)
Flash Pt: 116 °C
CAS: 107-21-1

Ethyl Acetate, HiPerSolv CHROMANORM® for HPLC

BDH® VWR ANALYTICAL

Assay ..... Min. 99.8 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Evaporation Residue ..... Max. 5 ppm
Water ..... Max. 0.1 %
Transmittance (260 nm) ..... Min. 70 %
Transmittance (270 nm) ..... Min. 90 %
Transmittance (300 nm) ..... Min. 96 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH83621.400**

Ethyl Acetate, ACS

Meets ACS Specifications for General Use

BDH® VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.20%
Residue ..... Less than 0.003% (0.0012 g/45mL)
GC Purity ..... Greater than 99.5%
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.9 meq/g (Not more than 0.80 mL of 0.01N sodium hydroxide)
Substances darkened by sulfuric acid ..... Passes test (no dark color at interface)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1123-4LG**
4 L	Poly Bottle	**BDH1123-4LP**
19 L	Steel Can	**BDH1123-19L**
204 L	Steel Drum	**BDH1123-204L**

Ethyl Alcohol (Denatured)

see Ethanol Denatured

Ethyl Ethanoate

see Ethyl Acetate

Ethyl Ether

see Ether

Ethylene Glycol, Semi Grade

BDH® VWR ANALYTICAL

Ethylene Glycol ..... 99% Min.
Color (APHA) ..... 10 Max.
Moisture (H_2O) ..... 0.2% Max.
NVR ..... 5000 ppb Max.
Acidity ..... 0.8 µeq/g Max.
Sulfate (SO_4) ..... 200 ppb Max
Particles 1.0µm/ml ..... 10 Max.
Acidity (as CH_3COOH) by weight ..... 0.01% Max
Chloride (Cl) ..... 100 ppb Max.
Phosphate (PO) ..... 200 ppb Max.
Heavy metals (as Pb) ..... 100 ppb Max.
Particles 0.5µm/ml ..... 200 Max.
As Impurities ..... 10 ppb Max.
Sb Impurities ..... 10 ppb Max.
Al Impurities ..... 50 ppb Max.
Ba Impurities ..... 20 ppb Max.
B Impurities ..... 10 ppb Max.
Ca Impurities ..... 50 ppb Max.
Cr Impurities ..... 20 ppb Max.
Cu Impurities ..... 10 ppb Max.
Au Impurities ..... 50 ppb Max.
Pb Impurities ..... 50 ppb Max.
Li Impurities ..... 10 ppb Max.
Mg Impurities ..... 50 ppb Max.
Mn Impurities ..... 10 ppb Max.
Ni Impurities ..... 10 ppb Max.
K Impurities ..... 50 ppb Max.
Na Impurities ..... 50 ppb Max.
Sn Impurities ..... 50 ppb Max.
Ti Impurities ..... 20 ppb Max.
Zn Impurities ..... 50 ppb Max.

Size	Packaging	Cat. No.
4 x 1 gal.	HDPE Bottle	**BDH2033-1GLP**

Ethylene Glycol, Laboratory Reagent

Clear, colorless liquid.

BDH® VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.20%
GC Purity ..... Greater than 99.0%
Color (APHA) ..... Less than 10

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1125-1LP**
4 L	Glass Bottle	**BDH1125-4LG**
4 L	Poly Bottle	**BDH1125-4LP**

Ethylenediaminetetraacetic Acid

see EDTA

Europium

see Standards, ICP and ICP-MS

FEHLING'S REAGENT I

Copper (II) Sulfate Solution

Formula: $CuSO_4$
M.W. 159.61 g/mol
Boiling Pt: Min. 100 °C (1013 hPa)
Density: 1 g/cm^3 (20 °C)
CAS: 7758-98-7
UN: 3082

Fehling's Solution A, Copper Sulfate Solution, 3.46% (w/v)

Made with deionized water.

Shelf-life ..... 2 years
Appearance/color ..... Clear blue liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7316-1**

FEHLING'S REAGENT II

L(+)-Potassium sodium tartrate in sodium hydroxide solution

Density: 1.2 g/cm^3 (20 °C)
UN: 1824

Fehling's Solution B, Alkaline Solution

Made with deionized water

Shelf-life ..... 2 years
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7317-1**

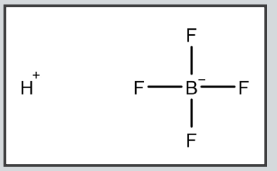
Ferric Chloride Hexahydrate

see Iron (III) Chloride Hexahydrate

FLUOROBORIC ACID IN AQUEOUS SOLUTION

Borofluoric acid, Tetrafluoroboric acid, Tetrafluorohydrogen borate

Formula: HBF_4
Density: 1.23 g/cm^3 (20 °C)
CAS: 16872-11-0
UN: 1775



Fluoroboric Acid, Solution 48-50%

Clear, colorless liquid.

Appearance ..... Clear, colorless liquid
Assay (HBF_4) ..... 48 - 50%
Boric acid (H_3BO_3) ..... 2.0% max.
Iron (Fe) ..... 10 ppm max.
Sulfate (SO_4) ..... 50 ppm max.

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH3024-500MLP**

Flouride

see Standards, ICP and ICP-MS

Fluoride Standard, Solution 1mg/mL

EPA. 1000ppm fluoride.

Appearance/color ..... Clear liquid
Assay ..... 980 - 1020 ppm

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7406-2**

Fluoride Standard, Solution 0.1mg/mL

EPA and APHA for fluoride. 100ppm fluoride.

Appearance/color ..... Clear liquid
Assay ..... 98 - 102 ppm

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7407-2**

Formaldehyde

see Histology Stains and Reagents

Formalin

see Histology Stains and Reagents

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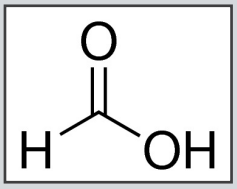
FORMIC ACID (85 - < 90%)

Methanoic acid 88%



CAS: 64-18-6
UN: 1779

Formic Acid, ACS

VWR ANALYTICAL

Assay ..... Min. 88.0 %
Dilution test ..... Passes test
SO_3 (Sulphite) Passes test
Color (Pt-Co) ..... Max. 15 APHA
Acetic acid ..... Max. 0.4 %
Heavy metals (as Pb) ..... Max. 5 ppm
Residue after evaporation ..... Max. 0.002 %
Cl (Chloride) ..... Max. 0.001 %
NH_4 (Ammonium) ..... Max. 0.005 %
SO_4 (Sulphate) ..... Max. 0.002 %
Fe (Iron) ..... Max. 5 ppm

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH4554-500ML**

Gadolinium

see Standards, ICP and ICP-MS

Gallium

see Standards, ICP and ICP-MS

Germanium

see Standards, ICP and ICP-MS

Glacial Acetic Acid

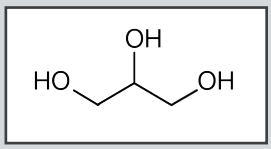
see Acetic Acid

Glucose

see Dextrose

GLYCEROL

Glycerin, Glyceritol, Glycerol, Glycyl alcohol, Glyrol, Glysanin, Osmoglyn, Propanetriol, Trihydroxypropane



Formula: $HOCH_2CH(OH)CH_2OH$
M.W. 92.1 g/mol
Boiling Pt: 290 °C (1013 hPa)
Melting Pt: 18.6 °C
Density: 1.26 g/cm³ (20 °C)
Flash Pt: 177 °C ()
CAS: 56-81-5

Glycerol, Laboratory Reagent

Clear liquid. Suitable for organic synthesis, cleaning, and prep scale synthesis.

VWR ANALYTICAL

Appearance ..... Clear
Identification ..... Passes test
Water (K.F.) ..... Less than 0.3%
Residue after Ignition ..... Less than 0.01%
Assay (calc from Specific Gravity, use % Glycerine test) ..... Greater than 99.7%
Color (APHA) ..... Less than 20
Specific Gravity (25°C/25°C) ..... 1.2613 or greater
Chlorides ..... Less than 10 ppm
Sulfates ..... Less than 20 ppm
Heavy Metals (as Pb) ..... Less than 5 ppm
Chlorinated Compounds (as Cl) ..... Less than 30 ppm
Passes test ..... Fatty Acids and Esters

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1172-1LP**
4 L	Glass Bottle	**BDH1172-4LG**
4 L	Poly Bottle	**BDH1172-4LP**
19 L	Steel Can	**BDH1172-19L**

Glycol Alcohol

see Ethylene Glycol

Glycerine

see Glycerol

Gold

see Standards, ICP and ICP-MS

Gram Stains

see Histology Stains and Reagents

Guanidine HCl, 8M, Buffered

In deionized water buffered with sodium hydroxide solution and TRIS hydrochloride.

VWR ANALYTICAL

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7427-1**

Hafnium

see Standards, ICP and ICP-MS

Hematology Stains

see Histology Stains and Reagents

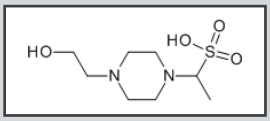
Hematoxylin

see Histology Stains and Reagents

HEPES FREE ACID

4-(2-Hydroxyethyl)piperazin-1-ylethanesulfonic acid

Formula: $C_8H_{18}N_2O_4S$
M.W. 238.31 g/mol
Melting Pt: 210 to 215 °C
Density: 1.448 g/cm^3 (20 °C)
CAS: 7365-45-9



HEPES Free Acid

VWR BIOPROCESSING

Suitable for bioprocessing. BSE/TSE Free. Manufactured in USA. Custom Packaging and Testing Available. Change Management. Sample availability.

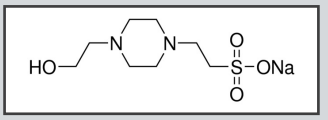
Appearance	white crystalline powder
Assay (By titration)	NLT 99.5%
Absorbance (1M solution in H_2O) 260nm	NMT 0.10
Absorbance (1M solution in H_2O) 280nm	NMT 0.10
Identification (by IR)	conforms to structure
pKa (@ 20ºC)	7.45 to 7.65
Residue On Ignition	NMT 0.3%
Solubility (1M solution in H_2O)	clear, colorless, complete
Water (KFT)	NMT 0.5%
Heavy Metals (as Pb)	NMT 5 ppm
Calcium (Ca)	NMT 5 ppm
Copper (Cu)	NMT 5 ppm
Iron (Fe)	NMT 5 ppm
Magnesium (Mg)	NMT 5 ppm
Manganese (Mn)	NMT 5 ppm
Bioburden	NMT 100 CFU/g
Cell Culture Toxicity (at 12g/L)	Passes test
Endotoxin (0.2% solution in H_2O)	NMT 0.1 EU/mg
DNase	none detected
RNase	none detected
Protease	none detected
Additional Information	Retest Date (3 Yrs form Manufacture)
Additional Information	**Country of Origin:** USA
Additional Information	Material is of non-animal, non-human origin
Additional Information	**Storage Conditions:** 15°C to 30°C

Size	Packaging	Cat. No.
1 kg	HDPE Bottle	**VWRB30487-1KG**
25 kg	HDPE Pail	**VWRB30487-25KG**
5 kg	HDPE Pail	**VWRB30487-5KG**

HEPES SODIUM SALT

Sodium 4-(2-hydroxyethyl)piperazin-1-ylethanesulfonate

Formula: $C_8H_{17}N_2NaO_4S$
M.W. 260.29 g/mol
Melting Pt: Min. 105 °C
CAS: 75277-39-3



HEPES Sodium Salt

VWR BIOPROCESSING

Suitable for bioprocessing. BSE/TSE Free. Manufactured in USA. Custom Packaging and Testing Available. Change Management. Sample availability.

Appearance	white crystalline powder
Assay (By titration)	NLT 99.5%
Absorbance (1M solution in H_2O) 260nm	NMT 0.05
Absorbance (1M solution in H_2O) 280nm	NMT 0.05
Identification (by IR)	conforms to structure
Loss On Drying (2 hours at 110ºC)	NMT 2.0%
pH (1% solution in H_2O)	9.5 to 10.5
pKa (25ºC)	7.4 to 7.7
Solubility (1M solution in H_2O)	clear and complete
Heavy Metals (as Pb)	NMT 5 ppm
Calcium (Ca)	NMT 5 ppm
Copper (Cu)	NMT 5 ppm
Iron (Fe)	NMT 5 ppm
Magnesium (Mg)	NMT 5 ppm
Manganese (Mn)	NMT 5 ppm
Zinc (Zn)	NMT 5 ppm
Bioburden.	NMT 100 CFU/g
Cell Culture Toxicity	NMT 0.1 EU/mg
DNase	none detected
RNase	none detected
Protease	none detected
Additional Information	Retest Date (3 Yrs form Manufacture)
Additional Information	**Country of Origin:** USA
Additional Information	Material is of non-animal, non-human origin
Additional Information	**Storage Conditions:** 15°C to 30°C

Size	Packaging	Cat. No.
1 kg	HDPE Bottle	**VWRB30567-1KG**
25 kg	HDPE Pail	**VWRB30567-25KG**
5 kg	HDPE Pail	**VWRB30567-5KG**

VWR® Titramax™ Digital Burets are Safer and More Accurate than Glass

VWR COLLECTION

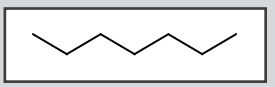
Burets offer accurate and reliable titration results with the convenience of a large digital display. The buret attaches directly to the reagent bottle, and the reagent flow is tightly controlled by easy-to-turn wheels. Unique recirculating valves purge air from the system without loss of reagents. 360° swivel neck.

Description	Electrical	Cat. No.
Digital Buret	115V	**40000-090**
Digital Buret with Fine Volume Control	115V	**82017-946**
Digital Buret with Fine Volume Control	230V	**82017-948**

For more information and accessories, visit **vwr.com**

N-HEPTANE

Dipropylmethane, Eptani, Heptan, Heptane, Heptanen, Heptyl hydride, Skellysolve c



Formula: $H_3C(CH_2)_5CH_3$
M.W. 100.2 g/mol
Boiling Pt: 98.4 °C (1013 hPa)
Melting Pt: -90.6 °C
Density: 0.6838 g/cm^3 (20 °C)
Flash Pt: -4 °C
CAS: 142-82-5
UN: 1206

n-Heptane, HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

Assay (on anhydrous substance) ..... Min. 99 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Evaporation Residue ..... Max. 10 ppm
Water ..... Max. 100 ppm
Transmittance (210 nm) ..... Min. 50 %
Transmittance (220 nm) ..... Min. 80 %
Transmittance (245 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH24539.100**
4 L	Amber Glass Bottle	**BDH24539.400**

Heptane, Laboratory Reagent

Clear liquid.

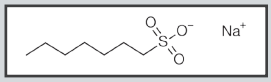
VWR ANALYTICAL

Appearance ..... Clear
Water (K.F.) ..... Less than 0.010%
Residue ..... Less than 0.001% (0.0010 g/146 mL)
GC Purity ..... Greater than 99.9% n-heptane (n-C_7) and C_7 isomers (Typical - 99.9+%)
n-Heptane ..... Greater than 99.0%
Color (APHA) ..... Less than 10

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1127-4LG**
4 L	Poly Bottle	**BDH1127-4LP**
19 L	Steel Can	**BDH1127-19L**
204 L	Steel Drum	**BDH1127-204L**

1-HEPTANESULFONIC ACID SODIUM SALT

Sodium 1-heptanesulfonate



Formula: $H_3C(CH_2)_5CH_2SO_3Na$
M.W. 202.25 g/mol
Melting Pt: 300 °C
CAS: 22767-50-6

1-Heptanesulfonic Acid, HiPerSolv CHROMANORM® for HPLC

Ion pairing reagent.

VWR ANALYTICAL

Assay ..... Min. 99 %
IR Spectrum ..... Passes test
pH (10 %) 5.5-7.5
Loss on drying (120°C; under vacuum) ..... Max. 2.0 %
Transmittance (200 nm) (0.005 mol/l) ..... Min. 70 %
Transmittance (220 nm) (0.005 mol/l) ..... Min. 90 %
Transmittance (250 nm) (0.005 mol/l) ..... Min. 96 %

Size	Cat. No.
100 g	**BDH152783K**

Hexaammonium Heptamolybdate Tetrahydrate

see Ammonium Heptamolybdate Tetrahydrate

Hexamethylene

see Cyclohexane

N-HEXANE

Hexane, Hexanen, Hexyl hydride

Formula: $H_3C(CH_2)_4CH_3$
M.W. 86.18 g/mol
Boiling Pt: 69 °C (1013 hPa)
Melting Pt: -94.3 °C
Density: 0.659 g/cm^3 (20 °C)
Flash Pt: -22 °C
CAS: 110-54-3
UN: 1208

n-Hexane, 97%, HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

From the exclusive family of high-quality, competitively-priced BDH Chemicals — high purity solvents for HPLC applications. These solvents are manufactured at a state of the art European ISO 9001/ISO 14001 solvent production facilities and feature an unparalleled combination of performance and price for even the most demanding liquid chromatography applications.

Assay (GC) ..... Min. 97 %
Water ..... Max. 0.005 %
Non-volatile residue ..... Max. 0.0005 %
Acidity ..... Max. 0.0003 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Transmittance (210 nm) ..... Min. 50 %
Transmittance (220 nm) ..... Min. 80 %
Transmittance (245 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
1 L	Bottle with 45mm neck	**BDH24575.100E**
4 L	Amber Glass Bottle	**BDH24575.400**

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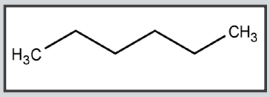
JENCONS
a VWR Brand

A leading manufacturer and distributor to the worldwide scientific community since 1946, today we are a leading worldwide supplier of liquid handling products including Powerpette® manual and motorized pipette controllers, Safetypette™ manual and motorized pipette controllers, Zippette™ bottle-top dispensers, Digitrate® Bottle-Top Burets, and the Perimatic Premier Pump Dispenser.For more information, visit **vwr.com/jencons** today!

HEXANE (MIXTURE OF ISOMERS)

n-Hexane, Hexanen, Hexyl hydride

Formula: $H_3C(CH_2)_4CH_3$
M.W. 86.18 g/mol
Boiling Pt: 68 to 70 °C (1013 hPa)
Melting Pt: –95 °C
Density: 0.66 g/cm^3 (20 °C)
Flash Pt: –22 °C
CAS: 110-54-3
UN: 1208



Hexanes, ACS

Meets ACS specifications for general use.

BDH® VWR ANALYTICAL

Appearance ..... Clear
Water (K.F.) ..... Less than 0.010%
Residue ..... Less than 0.001% (0.0010 g/145 mL)
GC Purity ..... Greater than 98.5% n-hexane (n-C_6) and C_6 isomers (Typical - 99.9+%)
n-Hexane ..... Greater than 60.0%
Color (APHA) ..... Less than 10
Water-soluble titrable acid ..... Less than 0.3 meq/g (Not more than 1.0 mL of
Sulfur compounds (as S) ..... Less than 0.005% (Absence of precipitate)
Thiophene ..... Passes test (Acid layer should not be blue or green)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1129-4LG**
4 L	Poly Bottle	**BDH1129-4LP**
19 L	Steel Can	**BDH1129-19L**
204 L	Steel Drum	**BDH1129-204L**

VWR has everything you need to stay safe in your lab!

VWR® COLLECTION

- Chemical burn station features Neutral-Sol™, a sterile 6.9pH buffer for emergency treatment of acid and alkaline chemical burns.
- Self-contained Eye-Lert™ stations feature pull-out bottles of sterile, soothing normal saline solution for use in accidents involving caustics, acids, and other water-soluble irritants.
- The 25-person first aid kit contains everything needed to treat most laboratory emergencies in a sturdy metal cabinet with wall-mounted bracket.
- Hazmat spill response kit absorbs up to 34.1L of acids, caustics, and bases. Includes pads, socks, gloves, safety goggles, and water-resistant bag.

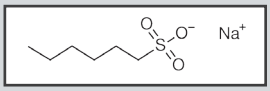
Description	Cat. No.
Chemical Burn Station	**56612-602**
Eye-Lert™ Station, 0.5 L (16 oz.)	**45000-801**
Eye-Lert™ Station, 0.9 L (32 oz.)	**45000-803**
First Aid Kit	**56613-213**
Hazmat Spill Response Kit	**89168-998**

For additional first aid supplies and refill components, visit **vwr.com**

1-HEXANESULFONIC ACID SODIUM SALT

Sodium 1-hexanesulfonate

Formula: $C_6H_{13}O_3SNa$
M.W. 188.22 g/mol
Melting Pt: 300 °C
CAS: 2832-45-3



1-Hexanesulfonic Acid, HiPerSolv CHROMANORM® for HPLC

Ion pairing reagent.

BDH® VWR ANALYTICAL

Assay ..... Min. 99 %
IR Spectrum ..... Passes test
pH (10 %) 5.5-7.5
Loss on drying (120°C; under vacuum) ..... Max. 2.0 %
Transmittance (200 nm) (0.005 mol/l) ..... Min. 70 %
Transmittance (220 nm) (0.005 mol/l) ..... Min. 90 %
Transmittance (250 nm) (0.005 mol/l) ..... Min. 96 %

Size	Cat. No.
100 g	**BDH152793M**

VWR® Hematology Stain Sets and Reagents

VWR® COLLECTION

VWR® brand hematology stain offerings satify the needs of laboratory professionals following manual, rapid stain or automated protocols.

Single step stains are offered in Wright's and Wright Giemsa formulations and use deionized water to complete the staining process. Three step stain offering yields results comparable to Wright Giemsa stain with results available as soon as 15 seconds.

Individual stains, reagents and packs have been used in the automated market on the Hematek®, Midas®, Sysmex® and Sakura® instruments.

Ordering Information: Hematology stain products are manufactured using dyes certified by the Biological Stain Commission. All products undergo Quality Control evaluation using fresh blood.

Description	Size	Cat. No.
Stain Sets		
Wright Stain Pack for Hematek Stainer	Pack	**10143-062**
Wright Giemsa Stain Pack for Hematek Stainer	Pack	**10143-064**
Three Step Set, Wright Giemsa	3 x 90 mL (3 x 3 oz.)	**10143-224**
Three Step Set, Wright Giemsa	3 x 474 mL (3 x 16 oz.)	**10143-226**
Reagents		
Single Step Wright's	474 mL (16 oz.)	**10143-066**
Three Step Fixative	474 mL (16 oz.)	**10143-228**
Three Step Fixative	3.8 L (1 gal.)	**10143-234**
Three Step Solution I	474 mL (16 oz.)	**10143-230**
Three Step Solution I	3.8 L (1 gal.)	**10143-236**
Three Step Solution II	474 mL (16 oz.)	**10143-232**
Three Step Solution II	3.8 L (1 gal.)	**10143-238**
Wright Giemsa Stain	948 mL (32 oz.)	**10143-160**

VWR® Histology Reagents

VWR Histology Reagents are manufactured from high quality raw materials in an ISO 13485 facility, ensuring optimal performance in your histology lab.

Our complete line of fixatives, dehydrants, and clearing agents make us the one source for all of your tissue processing needs.

Description	Size		Cat. No.
Formaldehyde			
37% Formaldehyde	1 L	16155470	**10790-708**
37% Formaldehyde	1 gal.	16155471	**10790-710**
37% Formaldehyde, Cube	5 gal.	16155472	**10790-712**
Formalin			
10% Neutral Buffered Formalin	1 L	16155473	**10790-714**
10% Neutral Buffered Formalin	1 gal.	9851508	**89370-094**
10% Neutral Buffered Formalin, Cube with Spigot	5 gal.	4009278	**16004-128**
10% Neutral Buffered Formalin, Drum	55 gal.	16155474	**10790-716**

VWR® Histology/Cytology Stains

Hematoxylin and Eosin solutions are designed to provide crisp, clear staining of the nucleus and a well defined cytoplasm. Traditional and Gill Hematoxylin formulations are available in both progressive and regressive stains to satisfy the most subjective histology laboratory.

In addition to the multiple offerings of Hematoxylins, Papanicolaou stains are available in the classical EA-36, EA-50, EA-65 and OG-6 formulations. These counterstains are used in both gynecological and non-gynecological controlled cytoplasmic staining.

Ordering Information: All VWR stain solutions are available in multiple sizes and are ready-to-use, requiring no dilution.

Description	Size	Cat. No.
Hematoxylin Harris Mercury Free	474 mL (16 oz.)	**10143-606**
Hematoxylin Harris Mercury Free	3.8 L (1 gal.)	**10143-608**
Hematoxylin Harris Mercury Free Acidified	474 mL (16 oz.)	**10143-610**
Hematoxylin Harris Mercury Free Acidified	3.8 L (1 gal.)	**10143-612**
Eosin Y 1% Alcoholic	948 mL (32 oz.)	**10143-130**
Eosin Y 1% Alcoholic	3.8 L (1 gal.)	**10143-132**
Eosin Y Intensified	948 mL (32 oz.)	**10143-134**
Eosin Y Intensified	3.8 L (1 gal.)	**10143-136**
Eosin Phloxine	948 mL (32 oz.)	**10143-138**
Eosin Phloxine	3.8 L (1 gal.)	**10143-140**
Hematoxylin Gill 1X	474 mL (16 oz.)	**10143-142**
Hematoxylin Gill 1X	3.8 L (1 gal.)	**10143-144**
Hematoxylin Gill 2X	3.8 L (1 gal.)	**10143-148**
Hematoxylin Gill 3X	3.8 L (1 gal.)	**10143-152**
Papanicolaou Stain EA-36	3.8 L (1 gal.)	**10143-156**
Papanicolaou Stain EA-65	948 mL (32 oz.)	**10143-188**
Papanicolaou Stain OG-6	948 mL (32 oz.)	**10143-616**

VWR® Gram Stain Sets and Reagents

Gram Stain Sets include all the necessary solutions to fully differentiate Gram positive and Gram negative specimens.

Description	Size	Cat. No.
Reagents		
Crystal Violet	3.8 L (1 gal.)	**10143-260**
1:1 Decolorizer	3.8 L (1 gal.)	**10143-602**
Decolorizer	3.8 L (1 gal.)	**10143-264**
Iodine Lugol's Working	3.8 L (1 gal.)	**10143-262**
Safranin	3.8 L (1 gal.)	**10143-604**
Stabilized Iodine	3.8 L (1 gal.)	**10143-180**
Replacement Sets		
Crystal Violet Replacement Set	4 x 474 mL (16 oz.)	**10143-182**
1:1 Decolorizer Replacement Set	4 x 237 mL (8 oz.)	**10143-174**
1:1 Decolorizer Replacement Set	4 x 474 mL (16 oz.)	**10143-252**
Decolorizer Replacement Set	4 x 237 mL (8 oz.)	**10143-172**
Decolorizer Replacement Set	4 x 474 mL (16 oz.)	**10143-184**
Gram Stain Set	4 x 237 mL (8 oz.)	**10143-178**
Gram Stain Set	4 x 474 mL (16 oz.)	**10143-258**
Safranin Replacement Set	4 x 474 mL (16 oz.)	**10143-254**
Stabilized Iodine Replacement Set	4 x 237 mL (8 oz.)	**10143-170**
Stabilized Iodine Replacement Set	4 x 474 mL (16 oz.)	**10143-256**

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HPLC: BDH® HiperSolv CHROMANORM® Solvents and Modifiers

The BDH range of high purity HPLC solvents continues to expand, growing to include several new solvents like Acetonitrile for LC-MS and a range of high purity modifiers to aid more difficult separations that meet the exacting requirements of all HPLC customers. Manufactured in carefully controlled conditions in a high quality environment, both in Europe and the USA, these solvents and modifiers provide outstanding value.

Solvents are packed in 1L and 4L glass bottles, with some products available in 5L aluminum bottles. Solvents in aluminum bottles have the same guaranteed high quality specifications and shelf life as the solvents in glass bottles. For full specifications, please see individual entries for the products in the alphabetical listing in this catalog or on **vwr.com**.

- Designed to meet demanding HPLC and UV/VIS analytical and quality control requirements
- Filtered down to 0.2µm and bottled under nitrogen
- Feature tamper-evident caps for added peace-of-mind
- Have labels meeting all GHS requirements and carrying a QR code, which when scanned with a smart phone or tablet, allows all relevant documents, including SDS and the C of A, for that individual lot of product to be downloaded immediately
- Feature environmentally-friendly corrugated pulp case inserts that are recyclable
- Bulk packs of HPLC grade Acetonitrile are also available on request. Please contact your VWR Representative with your requirements.

Description	Size	Packaging	Cat. No.
HiPerSolv CHROMANORM Solvents for HPLC			
Acetone	4 L	Glass Bottle	**BDH20067.400**
Acetonitrile, Super Gradient	1 L	Glass Bottle with 45mm Neck	**BDH83639.100E**
Acetonitrile, Super Gradient	4 L	Glass Bottle	**BDH83639.400**
Acetonitrile, Super Gradient	5 L	Aluminum Bottle	**BDH83639.500**
Chloroform, Stabilized with Amylene	4 L	Glass Bottle	**BDH83626.400**
Chloroform, Stabilized with Ethanol	4 L	Glass Bottle	**BDH83627.400**
Cyclohexane	4 L	Glass Bottle	**BDH83629.400**
Dichloroethane	4 L	Glass Bottle	**BDH6700.400**
Dichloromethane	1 L	Glass Bottle with 45mm Neck	**BDH23373.100E**
Dichloromethane	4 L	Glass Bottle	**BDH23373.400**
N,N-Dimethylacetamide	4 L	Glass Bottle	**BDH83636.400**
Dimethyl Formamide	1 L	Glass Bottle	**BDH83634.100**
Dimethyl Formamide	4 L	Glass Bottle	**BDH83634.400**
Dimethyl Sulfoxide	4 L	Glass Bottle	**BDH67001.400**
1,4- Dioxane	4 L	Glass Bottle	**BDH83628.400**
Ethyl Alcohol (Ethanol), Denatured		Glass Bottle	**BDH67002.400**
Ethyl Acetate	4 L	Glass Bottle	**BDH83621.400**
Ethyl Ether, Not stabilized	4 L	Glass Bottle	**BDH67003.400**
Ethyl Ether, Stabilized with Ethanol	4 L	Glass Bottle	**BDH83624.400**
Heptane	4 L	Glass Bottle	**BDH24539.400**
Hexane	1 L	Amber Glass Bottle with 45mm Neck	**BDH24575.100E**
Hexane	4 L	Glass Bottle	**BDH24575.400**
Isopropyl Alcohol (IPA)	1 L	Amber Glass Bottle with 45mm Neck	**BDH20880.100E**
Isopropyl Alcohol (IPA)	4 L	Glass Bottle	**BDH20880.400**
Methanol, Gradient Grade	1 L	Amber Glass Bottle with 45mm Neck	**BDH20864.100E**
Methanol, Gradient Grade	4 L	Glass Bottle	**BDH20864.400**
Methanol, Gradient Grade	5 L	Aluminum Bottle	**BDH20864.500**

Description	Size	Packaging	Cat. No.
Methyl tert-Butyl Ether	4 L	Glass Bottle	**BDH67005.400**
Methyl Ethyl Ketone	4 L	Glass Bottle	**BDH25643.400**
Methyl Isobutyl Ketone	4 L	Glass Bottle	**BDH67004.400**
Methyl-2-Pyrrolidinone	4 L	Glass Bottle	**BDH67006.400**
N-Pentane, 99%	4 L	Glass Bottle	**BDH83632.400**
N-Propyl Alcohol	4 L	Glass Bottle	**BDH83635.400**
Pyridine	4 L	Glass Bottle	**BDH67007.400**
Tetrahydrofuran	1 L	Glass Bottle	**BDH28559.100**
Tetrahydrofuran	4 L	Glass Bottle	**BDH28559.400**
Tetrahydrofuran, Stabilized with BHT	4 L	Glass Bottle	**BDH67008.400**
Toluene	4 L	Glass Bottle	**BDH83625.400**
1,2,3 Trichlorobenzene	4 L	Glass Bottle	**BDH67009.400**
2,2,4-Trimethylpentane	4 L	Glass Bottle	**BDH83630.400**
Water	1 L	Glass Bottle with 45mm Neck	**BDH23595.100E**
Water	4 L	Glass Bottle	**BDH23595.400**
HiPerSolv CHROMANORM Solvents LC-MS			
Acetonitrile	4 L	Glass Bottle	**BDH83640.400**
Water	4 L	Glass Bottle	**BDH83645.400**
Modifiers			
Acetic Acid, 100%	1 L	Glass Bottle	**BDH20108.292**
Ammonia Solution, 32%	100 mL	Glass Bottle	**BDH153312K**
1-Heptanesulphonic Acid, Sodium Salt	100 g	PE Bottle	**BDH152783K**
1-Hexanesulphonic Acid, Sodium Salt	100 g	PE Bottle	**BDH152793M**
1-Octanesulphonic Acid, Sodium Salt	100 g	PE Bottle	**BDH152803U**
1-Pentanesulphonic Acid, Sodium Salt	100 g	PE Bottle	**BDH152813W**
o-Phosphoric Acid, 85%	500 mL	Glass Bottle	**BDH153155E**
Potassium Dihydrogen Phosphate	500 g	PE Bottle	**BDH153184U**
Trifluoroacetic Acid	1 L	Glass Bottle	**BDH15311.100**

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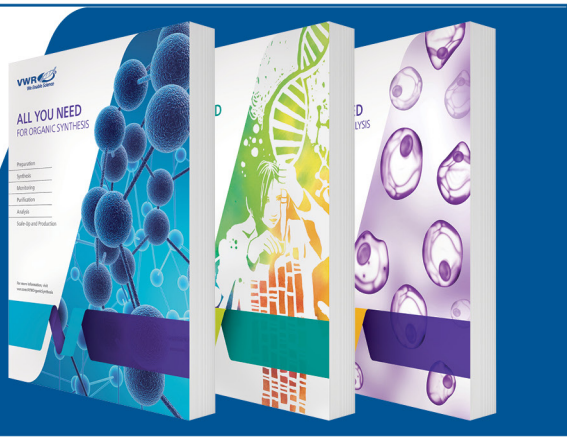
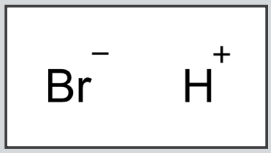


HYDROBROMIC ACID

Anhydrous hydrobromic acid, Hydrogen bromide



M.W. 80.91 g/mol
Boiling Pt: -66.7 °C (1013 hPa)
Melting Pt: -86 °C
Density: 1.49 g/cm^3 (20 °C)
CAS: 10035-10-6
UN: 1048

Hydrobromic Acid, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

BDH® VWR ANALYTICAL

Assay	44 - 49 %
Aluminum (Al)	max. 100 ppt
Antimony (Sb)	Information Only
Barium (Ba)	max. 100 ppt
Beryllium (Be)	max. 100 ppt
Bismuth (Bi)	max. 100 ppt
Boron (B)	Information Only
Cadmium (Cd)	max. 100 ppt
Calcium (Ca)	max. 100 ppt
Cerium (Ce)	max. 10 ppt
Cesium (Cs)	max. 10 ppt
Chromium (Cr)	max. 100 ppt
Cobalt (Co)	max. 100 ppt
Copper (Cu)	max. 100 ppt
Dysprosium (Dy)	max. 10 ppt
Erbium (Er)	max. 10 ppt
Europium (Eu)	max. 10 ppt
Gadolinium (Gd)	max. 10 ppt
Gallium (Ga)	max. 100 ppt
Gold (Au)	max. 100 ppt
Hafnium (Hf)	max. 10 ppt
Holmium (Ho)	max. 10 ppt
Indium (In)	max. 10 ppt
Iron (Fe)	max. 100 ppt
Lanthanum (La)	max. 10 ppt
Lead (Pb)	max. 1 ppt
Lithium (Li)	max. 100 ppt
Lutetium (Lu)	max. 10 ppt
Magnesium (Mg)	max. 100 ppt
Manganese (Mn)	max. 100 ppt
Molybdenum (Mo)	max. 100 ppt
Neodymium (Nd)	max. 10 ppt
Nickel (Ni)	max. 100 ppt
Niobium (Nb)	max. 10 ppt
Palladium (Pd)	max. 100 ppt
Platinum (Pt)	max. 100 ppt
Potassium (K)	max. 100 ppt
Praseodymium (Pr)	max. 10 ppt
Rhenium (Re)	max. 100 ppt
Rhodium (Rh)	max. 100 ppt
Rubidium (Rb)	max. 100 ppt
Ruthenium (Ru)	max. 100 ppt
Samarium (Sm)	max. 10 ppt
Scandium (Sc)	max. 100 ppt
Silver (Ag)	max. 100 ppt
Sodium (Na)	max. 100 ppt
Strontium (Sr)	max. 100 ppt
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 10 ppt
Terbium (Tb)	max. 10 ppt
Thallium (Tl)	max. 10 ppt
Thorium (Th)	max. 1 ppt
Thulium (Tm)	max. 10 ppt
Tin (Sn)	max. 100 ppt
Titanium (Ti)	max. 100 ppt
Tungsten (W)	max. 100 ppt
Uranium (U)	max. 1 ppt
Vanadium (V)	max. 100 ppt
Ytterbium (Yb)	max. 10 ppt
Yttrium (Y)	max. 10 ppt
Zinc (Zn)	max. 100 ppt
Zirconium (Zr)	max. 10 ppt

Size	Packaging	Cat. No.
500 mL	FEP Bottle	**87003-654**

Hydrobromic Acid, ACS, 48%

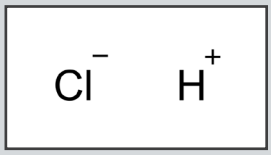
BDH® VWR ANALYTICAL

Assay	47.0 - 49.0 %
Heavy metals (as Pb)	Max. 5 ppm
Residue after ignition	Max. 0.002 %
Sulphate and sulphite (as SO_4)	Max. 0.003 %
Cl (Chloride)	Max. 0.05 %
I (Iodide)	Max. 0.003 %
PO_4 (Phosphate)	Max. 0.001 %
Fe (Iron)	Max. 1 ppm
Se (Selenium)	Max. 0.01 ppm

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH4572-500ML**

HYDROCHLORIC ACID (25 - 38%)

Chlorohydric acid, Hydrochloric acid gas, Hydrochloride, Hydrogen chloride gas, Muriatic acid



Formula: HCl
M.W. 36.46 g/mol
Boiling Pt: 110 °C (1013 hPa)
Melting Pt: –30 °C
Density: 1.18 g/cm^3 (20 °C)
CAS: 7647-01-0
UN: 1789

A Complete Line of Electrochemistry Meters for All your Testing and Measurement Needs

VWR® COLLECTION

VWR® sympHony™ benchtop and portable meters offer a user-friendly design and interface with step-by-step on screen prompts. Consistently accurate and reliable measurements. All meters can be configured to meet your specific needs. VWR three-year limited warranty.

Description	Cat. No.
B10C Meter - Conductivity	**89231-676**
B20PI Meter - pH, ISE	**89231-692**
B30PCI Meter - pH, Conductivity, ISE	**89231-696**
B40PCID Meter - pH, Conductivity, ISE, Dissolved Oxygen	**89231-684**
H30PCD Portable Meter - pH, Conductivity, Dissolved Oxygen	**89231-688**
H30PCO Portable Meter - pH, Conductivity, ORP	**89231-700**

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Hydrochloric Acid, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

Assay	32 - 35 %
Aluminum (Al)	max. 20 ppt
Aluminum (Al)	max. 20 ppt
Antimony (Sb)	max. 20 ppt
Arsenic (As)	max. 50 ppt
Barium (Ba)	max. 10 ppt
Beryllium (Be)	max. 10 ppt
Bismuth (Bi)	max. 10 ppt
Boron (B)	max. 100 ppt
Cadmium (Cd)	max. 10 ppt
Calcium (Ca)	max. 10 ppt
Cerium (Ce)	max. 10 ppt
Cesium (Cs)	max. 10 ppt
Chromium (Cr)	max. 10 ppt
Cobalt (Co)	max. 10 ppt
Copper (Cu)	max. 10 ppt
Dysprosium (Dy)	max. 1 ppt
Erbium (Er)	max. 1 ppt
Europium (Eu)	max. 1 ppt
Gadolinium (Gd)	max. 1 ppt
Gallium (Ga)	max. 10 ppt
Gold (Au)	max. 50 ppt
Hafnium (Hf)	max. 10 ppt
Holmium (Ho)	max. 1 ppt
Indium (In)	max. 1 ppt
Iron (Fe)	max. 10 ppt
Lanthanum (La)	max. 1 ppt
Lead (Pb)	max. 10 ppt
Lithium (Li)	max. 10 ppt
Lutetium (Lu)	max. 10 ppt
Magnesium (Mg)	max. 10 ppt
Manganese (Mn)	max. 10 ppt
Mercury (Hg)	max. 50 ppt
Molybdenum (Mo)	max. 10 ppt
Neodymium (Nd)	max. 1 ppt
Nickel (Ni)	max. 20 ppt
Niobium (Nb)	max. 1 ppt
Palladium (Pd)	Information Only
Platinum (Pt)	Information Only
Potassium (K)	max. 10 ppt
Praseodymium (Pr)	max. 1 ppt
Rhenium (Re)	max. 10 ppt
Rhodium (Rh)	max. 10 ppt
Rubidium (Rb)	max. 10 ppt
Ruthenium (Ru)	max. 10 ppt
Samarium (Sm)	max. 1 ppt
Scandium (Sc)	max. 10 ppt
Selenium (Se)	Information Only
Silver (Ag)	max. 10 ppt
Sodium (Na)	max. 10 ppt
Strontium (Sr)	max. 10 ppt
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 1 ppt
Terbium (Tb)	max. 1 ppt
Thallium (Tl)	max. 10 ppt
Thorium (Th)	max. 1 ppt
Thulium (Tm)	max. 1 ppt
Tin (Sn)	max. 20 ppt
Titanium (Ti)	max. 10 ppt
Tungsten (W)	max. 10 ppt
Uranium (U)	max. 1 ppt
Vanadium (V)	max. 10 ppt
Ytterbium (Yb)	max. 1 ppt
Yttrium (Y)	max. 1 ppt
Zinc (Zn)	max. 10 ppt
Zirconium (Zr)	max. 10 ppt

Size	Packaging	Cat. No.
500 mL	PFA Bottle	**87003-216**
1 L	PFA Bottle	**87003-218**
2 L	FEP Bottle	**87003-220**

Hydrochloric Acid, ARISTAR® PLUS

High purity acid for quantitative trace metal analysis at the parts-per-billion (ppb) level.

Assay	34 - 37 %
Color	max. 10 APHA
Aluminum (Al)	max. 1 ppb
Antimony (Sb)	max. 0.5 ppb
Arsenic (As)	max. 0.5 ppb
Barium (Ba)	max. 0.1 ppb
Beryllium (Be)	max. 0.1 ppb
Bismuth (Bi)	max. 0.1 ppb
Boron (B)	max. 1 ppb
Cadmium (Cd)	max. 0.1 ppb
Calcium (Ca)	max. 1 ppb
Cerium (Ce)	max. 0.1 ppb
Cesium (Cs)	max. 0.1 ppb
Chromium (Cr)	max. 0.5 ppb
Cobalt (Co)	max. 0.1 ppb
Copper (Cu)	max. 0.5 ppb
Dysprosium (Dy)	max. 0.1 ppb
Erbium (Er)	max. 0.1 ppb
Europium (Eu)	max. 0.1 ppb
Gadolinium (Gd)	max. 0.1 ppb
Gallium (Ga)	max. 0.1 ppb
Gold (Au)	max. 0.5 ppb
Hafnium (Hf)	max. 0.1 ppb
Holmium (Ho)	max. 0.1 ppb
Indium (In)	max. 0.1 ppb
Iron (Fe)	max. 1 ppb
Lanthanum (La)	max. 0.1 ppb
Lead (Pb)	max. 0.1 ppb
Lithium (Li)	max. 0.1 ppb
Lutetium (Lu)	max. 0.1 ppb
Magnesium (Mg)	max. 0.5 ppb
Manganese (Mn)	max. 0.1 ppb
Mercury (Hg)	max. 0.1 ppb
Molybdenum (Mo)	max. 0.1 ppb
Neodymium (Nd)	max. 0.1 ppb
Nickel (Ni)	max. 0.5 ppb
Niobium (Nb)	max. 0.1 ppb
Palladium (Pd)	Information Only
Platinum (Pt)	Information Only
Potassium (K)	max. 1 ppb
Praseodymium (Pr)	max. 0.1 ppb
Rhenium (Re)	max. 0.1 ppb
Rhodium (Rh)	max. 0.1 ppb
Rubidium (Rb)	max. 0.1 ppb
Ruthenium (Ru)	max. 0.1 ppb
Samarium (Sm)	max. 0.1 ppb
Scandium (Sc)	max. 0.1 ppb
Selenium (Se)	max. 1 ppb
Silver (Ag)	max. 1 ppb
Sodium (Na)	max. 1 ppb
Strontium (Sr)	max. 0.1 ppb
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 0.1 ppb

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Terbium (Tb) ..... max. 0.1 ppb
Thallium (Tl) ..... max. 0.1 ppb
Thorium (Th) ..... max. 0.1 ppb
Thulium (Tm) ..... max. 0.1 ppb
Tin (Sn) ..... max. 0.5 ppb
Titanium (Ti) ..... max. 0.5 ppb
Tungsten (W) ..... max. 0.1 ppb
Uranium (U) ..... max. 0.1 ppb
Vanadium (V) ..... max. 0.5 ppb
Ytterbium (Yb) ..... max. 0.1 ppb
Yttrium (Y) ..... max. 0.1 ppb
Zinc (Zn) ..... max. 1 ppb
Zirconium (Zr) ..... max. 0.1 ppb
Bromide (Br-) ..... max. 10 ppm
Free Chlorine (Cl2) ..... max. 0.5 ppm
Total Phosphorus (P) ..... max. 0.01 ppm
Total Sulfur (S) ..... max. 0.3 ppm

Size	Packaging	Cat. No.
500 mL	HDPE Bottle	**87003-251**
2.5 L	HDPE Bottle	**87003-253**

Hydrochloric Acid, ACS 36.5-38%

Free from particulates. Meets reagent specifications for testing USP/NF monographs.

Ammonium (NH_4) ..... 0.0003% max.
Appearance ..... Clear, colorless fuming liquid
Appearance (EP) ..... To pass test
Arsenic (As) ..... 10 ppb max.
Assay (HCl) 36.5-38.0%
Assay (HCl) Be' ..... 22.7 deg Be' min.
Bromide or iodide ..... 0.005% max.
Clarity of solution ..... Free from suspended matter/sediment
Color (APHA) ..... 10 max.
Extractable organic substances ..... To pass test (0.0005% max.)
Free bromine or chlorine ..... To pass test (0.0001% max.)
Heavy metals (as Pb) ..... 0.0001% max.
Iron (Fe) ..... 0.00002% max
Reducing substances ..... To pass test
Residue after ignition ..... 0.0005% max.
Specific gravity @ 60F ..... Record only (approx. 1.17-1.20)
Sulfate (SO_4) ..... 0.0001% max.
Sulfite (SO_3) ..... 0.0001% max.

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH3026-500MLP**
2.5 L	Glass Bottle	**BDH3028-2.5LG**
2.5 L	Poly-Coated Glass Bottle	**BDH3030-2.5LPC**
3.8 L	Poly Bottle	**BDH3032-3.8LP**
19 L	Poly Carboy	**BDH3034-19L**
54 L	Poly Drum	**BDH3036-54L**
191 L	Poly Drum	**BDH3038-191L**
6 x 2.2 L	PPQ Bottle	**BDH3128-2.2LP**

Hydrochloric Acid, Solution 50% (v/v, 1+1)

Made with deionized water.

Appearance/color ..... Clear liquid
Normality ..... 5.950 - 6.050 N
Shelf-life ..... 3 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7418-1**
4 L	Poly Bottle	**BDH7418-4**

Hydrochloric Acid, Solution 20% (v/v, 1+4)

Made with deionized water.

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7871-1**
4 L	Poly Bottle	**BDH7871-4**

Hydrochloric Acid, 20%

Appearance ..... Clear liquid

Size	Packaging	Cat. No.
200 L	Poly Drum	**BDH7871-10**

Hydrochloric Acid, Solution 10% (v/v, 1+9)

APHA and ASTM.

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7417-1**
4 L	Poly Bottle	**BDH7417-4**
20 L	Cubitainer	**BDH7417-7**

Hydrochloric Acid, Solution 6.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
Color (APHA) ..... 0 - 10
Normality ..... 5.950 - 6.050 N
Shelf-life ..... 2 years
N.I.S.T. traceable to SRM 723 ..... Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7204-1**
4 L	Poly Bottle	**BDH7204-4**

Hydrochloric Acid, Solution 5.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
Normality ..... 4.980 - 5.020 N
Shelf-life ..... 2 years
Colouration (APHA) ..... 10 max.

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7419-1**
4 L	Poly Bottle	**BDH7419-4**

Hydrochloric Acid, Solution 25% (v/v, 1+3)

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Prepared conforms to ASTM D_{3712} ..... Yes

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7614-4**

Hydrochloric Acid, Solution 3.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 2.994 - 3.006 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7375-1**

Hydrochloric Acid, Solution 2.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 1.996 - 2.004 N
Shelf-life ..... 2 years
Certified total organic carbon (ppm) ..... 0.0 - 4
Colouration (APHA) ..... 10 max.

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7203-2**
1 L	Poly Bottle	**BDH7203-1**
4 L	Poly Bottle	**BDH7203-4**

Hydrochloric Acid, Solution 1.0N

Meets AOAC 936.15 standard and ASTM E200-91 standard. Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.998 - 1.002 N
Shelf-life ..... 2 years
Certified total organic carbon ..... 0.0 - 2 ppm

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7202-2**
1 L	Poly Bottle	**BDH7202-1**
4 L	Poly Bottle	**BDH7202-4**
20 L	Cubitainer	**BDH7202-7**

Hydrochloric Acid, Solution 0.600N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance ..... Clear, colorless liquid
Assay (HCl) ..... 0.5990 - 0.6010N
Color (APHA) ..... 10 max.
Manufacture Date ..... Record

Size	Packaging	Cat. No.
20 L	Cubitainer	**BDH3021-20L**

Hydrochloric Acid, Solution 0.5N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.499 - 0.501 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7201-1**
4 L	Poly Bottle	**BDH7201-4**
20 L	Cubitainer	**BDH7201-7**

Hydrochloric Acid, Solution 0.25N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.2495 - 0.2505 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7416-1**

Hydrochloric Acid, Solution 0.2N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.1995 - 0.2005 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7593-1**
4 L	Poly Bottle	**BDH7593-4**

Hydrochloric Acid, Solution 0.10N

Meets AOAC 936.15 standard and ASTM E200-91 standard. Made with high purity acid and deionized water. Suitable as a titrant.

BDH® VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.0995 - 0.1005 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7200-1**
4 L	Poly Bottle	**BDH7200-4**
20 L	Cubitainer	**BDH7200-7**

Hydrochloric Acid, Solution 0.05N

Made with high purity acid and deionized water. Suitable as a titrant.

BDH® VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.0495 - 0.0505 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7325-1**

Hydrochloric Acid, Solution 0.01N

Made with high purity acid and deionized water. Suitable as a titrant.

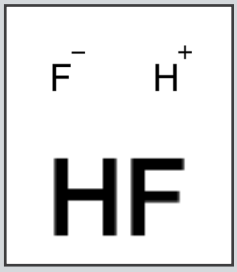
BDH® VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.0095 - 0.0105 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7237-1**

HYDROFLUORIC ACID

Formula: HF
CAS: 7664-39-3
UN: 1790



Hydrofluoric Acid, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

BDH® VWR ANALYTICAL

Assay (HF, w/w) ..... 47 - 51%
Total Sulfur (S) ..... 100 ppb (ng/g) max.
Aluminum (Al) ..... 20 ppt (pg/g) max.
Antimony (Sb) ..... 20 ppt (pg/g) max.
Arsenic (As) ..... 50 ppt (pg/g) max.
Barium (Ba) ..... 10 ppt (pg/g) max.
Beryllium (Be) ..... 10 ppt (pg/g) max.
Bismuth (Bi) ..... 10 ppt (pg/g) max.
Boron (B) ..... 100 ppt (pg/g) max.
Cadmium (Cd) ..... 10 ppt (pg/g) max.
Calcium (Ca) ..... 10 ppt (pg/g) max.
Cerium (Ce) ..... 10 ppt (pg/g) max.
Cesium (Cs) ..... 10 ppt (pg/g) max.
Chromium (Cr) ..... 10 ppt (pg/g) max.
Cobalt (Co) ..... 10 ppt (pg/g) max.
Copper (Cu) ..... 10 ppt (pg/g) max.
Dysprosium (Dy) ..... 1 ppt (pg/g) max.
Erbium (Er) ..... 1 ppt (pg/g) max.
Europium (Eu) ..... 1 ppt (pg/g) max.
Gadolinium (Gd) ..... 1 ppt (pg/g) max.
Gallium (Ga) ..... 10 ppt (pg/g) max.
Germanium (Ge) ..... 10 ppt (pg/g) max.
Gold (Au) ..... 20 ppt (pg/g) max.
Hafnium (Hf) ..... 10 ppt (pg/g) max.
Holmium (Ho) ..... 1 ppt (pg/g) max.
Indium (In) ..... 1 ppt (pg/g) max.
Iron (Fe) ..... 10 ppt (pg/g) max.
Lanthanum (La) ..... 10 ppt (pg/g) max.
Lead (Pb) ..... 10 ppt (pg/g) max.
Lithium (Li) ..... 10 ppt (pg/g) max.
Lutetium (Lu) ..... 1 ppt (pg/g) max.
Magnesium (Mg) ..... 10 ppt (pg/g) max.
Manganese (Mn) ..... 10 ppt (pg/g) max.
Mercury (Hg) ..... 50 ppt (pg/g) max.
Molybdenum (Mo) ..... 10 ppt (pg/g) max.
Neodymium (Nd) ..... 1 ppt (pg/g) max.
Nickel (Ni) ..... 20 ppt (pg/g) max.
Niobium (Nb) ..... 10 ppt (pg/g) max.
Palladium (Pd) ..... 20 ppt (pg/g) max.
Platinum (Pt) ..... 20 ppt (pg/g) max.
Potassium (K) ..... 10 ppt (pg/g) max.
Praseodymium (Pr) ..... 1 ppt (pg/g) max.
Rhenium (Re) ..... 10 ppt (pg/g) max.
Rhodium (Rh) ..... 20 ppt (pg/g) max.
Rubidium (Rb) ..... 20 ppt (pg/g) max.
Ruthenium (Ru) ..... 20 ppt (pg/g) max.
Samarium (Sm) ..... 1 ppt (pg/g) max.
Scandium (Sc) ..... 10 ppt (pg/g) max.
Selenium (Se) ..... Information only
Silver (Ag) ..... 10 ppt (pg/g) max.
Sodium (Na) ..... 10 ppt (pg/g) max.
Strontium (Sr) ..... 10 ppt (pg/g) max.
Tantalum (Ta) ..... Information only
Tellurium (Te) ..... 1 ppt (pg/g) max.
Terbium (Tb) ..... 1 ppt (pg/g) max.
Thallium (Tl) ..... 10 ppt (pg/g) max.
Thorium (Th) ..... 1 ppt (pg/g) max.
Thulium (Tm) ..... 1 ppt (pg/g) max.
Tin (Sn) ..... 20 ppt (pg/g) max.
Titanium (Ti) ..... 20 ppt (pg/g) max.
Tungsten (W) ..... 20 ppt (pg/g) max.
Uranium (U) ..... 1 ppt (pg/g) max.
Vanadium (V) ..... 10 ppt (pg/g) max.
Ytterbium (Yb) ..... 1 ppt (pg/g) max.
Yttrium (Y) ..... 1 ppt (pg/g) max.
Zinc (Zn) ..... 10 ppt (pg/g) max.
Zirconium (Zr) ..... 10 ppt (pg/g) max.

Size	Packaging	Cat. No.
500 mL	PFA Bottle	**87003-222**
2 L	FEP Bottle	**87003-223**

Hydrofluoric Acid, ARISTAR® PLUS

High purity acid for quantitative trace metal analysis at the parts-per-billion (ppb) level.

Assay	47 - 51 %
Color	max. 10 APHA
Aluminum (Al)	max. 1 ppb
Antimony (Sb)	max. 0.2 ppb
Arsenic (As)	max. 0.5 ppb
Barium (Ba)	max. 0.1 ppb
Beryllium (Be)	max. 0.1 ppb
Bismuth (Bi)	max. 0.1 ppb
Boron (B)	max. 1 ppb
Cadmium (Cd)	max. 0.1 ppb
Calcium (Ca)	max. 1 ppb
Cerium (Ce)	max. 0.1 ppb
Cesium (Cs)	max. 0.1 ppb
Chromium (Cr)	max. 1 ppb
Cobalt (Co)	max. 0.1 ppb
Copper (Cu)	max. 0.5 ppb
Dysprosium (Dy)	max. 0.1 ppb
Erbium (Er)	max. 0.1 ppb
Europium (Eu)	max. 0.1 ppb
Gadolinium (Gd)	max. 0.1 ppb
Gallium (Ga)	max. 0.1 ppb
Germanium (Ge)	max. 0.1 ppb
Gold (Au)	max. 0.2 ppb
Hafnium (Hf)	max. 0.1 ppb
Holmium (Ho)	max. 0.1 ppb
Indium (In)	max. 0.1 ppb
Iron (Fe)	max. 1 ppb
Lanthanum (La)	max. 0.1 ppb
Lead (Pb)	max. 0.1 ppb
Lithium (Li)	max. 0.1 ppb
Lutetium (Lu)	max. 0.1 ppb
Magnesium (Mg)	max. 1 ppb
Manganese (Mn)	max. 0.1 ppb
Mercury (Hg)	max. 1 ppb
Molybdenum (Mo)	max. 0.1 ppb
Neodymium (Nd)	max. 0.1 ppb
Nickel (Ni)	max. 0.5 ppb
Niobium (Nb)	max. 0.1 ppb
Palladium (Pd)	max. 0.2 ppb
Platinum (Pt)	max. 0.2 ppb
Potassium (K)	max. 1 ppb
Praseodymium (Pr)	max. 0.1 ppb
Rhenium (Re)	max. 0.1 ppb
Rhodium (Rh)	max. 0.1 ppb
Rubidium (Rb)	max. 0.1 ppb
Ruthenium (Ru)	max. 0.1 ppb
Samarium (Sm)	max. 0.1 ppb
Scandium (Sc)	max. 0.1 ppb
Selenium (Se)	max. 1 ppb
Silver (Ag)	max. 0.5 ppb
Sodium (Na)	max. 1 ppb
Strontium (Sr)	max. 0.1 ppb
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 0.1 ppb
Terbium (Tb)	max. 0.1 ppb
Thallium (Tl)	max. 0.1 ppb
Thorium (Th)	max. 0.1 ppb
Thulium (Tm)	max. 0.1 ppb
Tin (Sn)	max. 0.5 ppb
Titanium (Ti)	max. 1 ppb
Tungsten (W)	max. 0.5 ppb
Uranium (U)	max. 0.1 ppb
Vanadium (V)	max. 0.1 ppb
Ytterbium (Yb)	max. 0.1 ppb
Yttrium (Y)	max. 0.1 ppb
Zinc (Zn)	max. 1 ppb
Zirconium (Zr)	max. 0.1 ppb
Chloride (Cl-)	max. 4 ppm
Fluosilicic Acid (SiF_6)	max. 20 ppm
Total Phosphorus (P)	max. 0.05 ppm
Total Sulfur (S)	max. 0.1 ppm

Size	Packaging	Cat. No.
500 mL	LDPE Widemouth Bottle	**87003-257**

Hydrofluoric Acid, ACS 48-51%

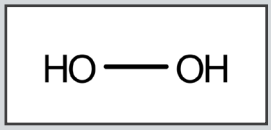
Arsenic (As)	0.05 ppm max.
Assay (HF)	48 - 51%
Chloride (Cl)	5 ppm max.
Copper (Cu)	0.1 ppm max.
Fluosilicic acid (H_2SiF_6)	0.01% max.
Heavy metals (as Pb)	0.5 ppm max.
Iron (Fe)	1 ppm max.
Phosphate (PO_4)	1 ppm max.
Residue after ignition	5 ppm max.
Sulfate and sulfite (as SO_4)	5 ppm max.

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH3040-500MLP**
3.8 L	Poly Bottle	**BDH3042-3.8LP**

HYDROGEN PEROXIDE (30-40%)

Dihydrogen dioxide, Hydrogen dioxide, Hydrogen oxide

Formula: H_2O_2
M.W. 34.02 g/mol
Boiling Pt: ~ 107 °C (1013 hPa)
Melting Pt: Max. 0 °C
Density: 1.11 g/cm^3 (20 °C)
CAS: 7722-84-1
UN: 2014



Hydrogen Peroxide, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

BDH® VWR ANALYTICAL

Assay	30 - 32 %
Aluminum (Al)	max. 50 ppt
Antimony (Sb)	max. 10 ppt
Arsenic (As)	max. 100 ppt
Barium (Ba)	max. 10 ppt
Beryllium (Be)	max. 10 ppt
Bismuth (Bi)	max. 10 ppt
Boron (B)	max. 100 ppt
Cadmium (Cd)	max. 10 ppt
Calcium (Ca)	max. 100 ppt
Cerium (Ce)	max. 1 ppt
Cesium (Cs)	max. 1 ppt
Chromium (Cr)	max. 10 ppt
Cobalt (Co)	max. 10 ppt
Copper (Cu)	max. 10 ppt
Dysprosium (Dy)	max. 1 ppt
Erbium (Er)	max. 1 ppt
Europium (Eu)	max. 1 ppt
Gadolinium (Gd)	max. 1 ppt
Gallium (Ga)	max. 10 ppt
Germanium (Ge)	max. 10 ppt
Gold (Au)	max. 10 ppt
Hafnium (Hf)	max. 1 ppt
Holmium (Ho)	max. 1 ppt
Indium (In)	max. 1 ppt
Iron (Fe)	max. 20 ppt
Lanthanum (La)	max. 1 ppt
Lead (Pb)	max. 10 ppt
Lithium (Li)	max. 10 ppt
Lutetium (Lu)	max. 1 ppt
Magnesium (Mg)	max. 20 ppt
Manganese (Mn)	max. 10 ppt
Mercury (Hg)	max. 50 ppt
Molybdenum (Mo)	max. 10 ppt
Neodymium (Nd)	max. 1 ppt
Nickel (Ni)	max. 20 ppt
Niobium (Nb)	max. 10 ppt
Palladium (Pd)	max. 10 ppt
Potassium (K)	max. 20 ppt
Praseodymium (Pr)	max. 1 ppt
Rhenium (Re)	max. 10 ppt
Rhodium (Rh)	max. 10 ppt
Rubidium (Rb)	max. 10 ppt
Ruthenium (Ru)	max. 10 ppt
Samarium (Sm)	max. 1 ppt
Scandium (Sc)	max. 10 ppt
Selenium (Se)	max. 100 ppt
Silver (Ag)	max. 10 ppt
Sodium (Na)	max. 50 ppt
Strontium (Sr)	max. 10 ppt
Tantalum (Ta)	max. 10 ppt
Tellurium (Te)	max. 1 ppt
Terbium (Tb)	max. 1 ppt
Thallium (Tl)	max. 1 ppt
Thorium (Th)	max. 1 ppt
Thulium (Tm)	max. 1 ppt
Tin (Sn)	max. 50 ppt
Titanium (Ti)	max. 20 ppt
Tungsten (W)	max. 20 ppt
Uranium (U)	max. 1 ppt
Vanadium (V)	max. 10 ppt
Ytterbium (Yb)	max. 1 ppt
Yttrium (Y)	max. 1 ppt
Zinc (Zn)	max. 50 ppt
Zirconium (Zr)	max. 10 ppt

Size	Packaging	Cat. No.
500 mL	FEP Bottle	**87003-224**

VWR has everything you need to stay safe in your lab!

VWR® COLLECTION

- Chemical burn station features Neutral-Sol™, a sterile 6.9pH buffer for emergency treatment of acid and alkaline chemical burns.
- Self-contained Eye-Lert™ stations feature pull-out bottles of sterile, soothing normal saline solution for use in accidents involving caustics, acids, and other water-soluble irritants.
- The 25-person first aid kit contains everything needed to treat most laboratory emergencies in a sturdy metal cabinet with wall-mounted bracket.
- Hazmat spill response kit absorbs up to 34.1L of acids, caustics, and bases. Includes pads, socks, gloves, safety goggles, and water-resistant bag.

Description	Cat. No.
Chemical Burn Station	**56612-602**
Eye-Lert™ Station, 0.5 L (16 oz.)	**45000-801**
Eye-Lert™ Station, 0.9 L (32 oz.)	**45000-803**
First Aid Kit	**56613-213**
Hazmat Spill Response Kit	**89168-998**

For additional first aid supplies and refill components, visit **vwr.com**

VWR® Labmax™ Bottle-Top Dispensers

VWR® COLLECTION

- Unique, chemical-resistant direct displacement piston system provides safe, smooth dispensing. Air purging system prevents loss of reagents and eliminates dripping or splashing. An exclusive reagent guard valve prohibits accidental recharge and eliminates the need for capping when not in use.
- Basic dispensers have a PTFE system for broad general use. Choose a PTFE-lined dispenser for applications using hydrofluoric acid or a glass-lined dispenser for use with organic solvents.

Description	Volume	Cat. No.
Basic Dispenser	0.3–2.5 mL	**40000-060**
Basic Dispenser	1–5 mL	**40000-062**
Basic Dispenser	2–10 mL	**40000-064**
Basic Dispenser	5–25 mL	**40000-066**
Basic Dispenser	10–50 mL	**40000-068**
Basic Dispenser	20–100 mL	**40000-070**
Dispenser for Hydrofluoric Acids	2–10 mL	**40000-065**
Dispenser for Hydrofluoric Acids	5–25 mL	**40000-067**
Dispenser for Solvents	2–10 mL	**82017-766**
Dispenser for Solvents	5–25 mL	**82017-768**
Dispenser for Solvents	10–50 mL	**82017-770**

For more information or adapters, visit **vwr.com**

Hydrogen Peroxide, 35%, Stabilized

Flammable and corrosive.

Color (APHA)	25 max.
Shelf-life	2 years
pH	2.0 - 4.0
Assay	34.0 - 36.0 %
Stabilizer (organic phosphate)	Passes test
Specific gravity	1.130 - 1.140

Size	Packaging	Cat. No.
2.4 L	Poly Bottle	**BDH7814-3**

Hydrogen Peroxide, ACS, 30%, Stabilized

Ammonium (NH_4)	5 ppm max.
Assay	29.0 - 32.0 %
Chloride (Cl)	3 ppm max.
Color (APHA)	10 max.
Heavy Metals (as Pb)	1 ppm max.
Iron (Fe)	0.5 ppm max.
Nitrate (NO_3)	2 ppm max.
Phosphate (PO_4)	2 ppm max.
Residue after evaporation	0.002 % max.
Sulfate (SO_4)	5 ppm max.
Titratable Acid	0.0006 mEq/g
Stabilizer (sodium stannate)	Passes test

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7690-1**
2.4 L	Poly Bottle	**BDH7690-3**

Hydrogen Peroxide, ACS, 30%, Stabilized

Stabilized with Sodium Stannate.

Color (APHA)	10 max.
Shelf-life	2 years
Heavy metals (as Pb)	1 ppm max.
Chloride	3 ppm max.
Iron (Fe) wt by 6010B	0.5 ppm max.
Ammonium (NH_4)	5 ppm max.
Phosphate (PO_4)	2 ppm max.
Sulfate (SO_4)	5 ppm max.
Nitrate (NO_3)	2 ppm max.
Titratable acid	0.0006 mEq/g max.
Assay	29.0 - 32.0 %
Residue after evaporation	0.002 % max.

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7742-1**
20 L	Jerrican	**BDH7742-7**

Hydrogen Peroxide 30% Semi Grade

Assay (H_2O_2)	30.0–32.0%
Color (APHA)	10 Max.
Free Acid	0.6 ueq/g Max.
T.O.C.	20 ppm Max.
Chloride (Cl)	2 ppm Max.
Phosphate (PO_4)	2 ppm Max.
Sulfate (SO_4)	5 ppm Max.
Arsenic and Antimony (as As)	0.01 ppm Max.
Al Impurities	1.0 ppm Max.
B Impurities	0.1 ppm Max.
Ca Impurities	0.2 ppm Max.
Cr Impurities	0.05 ppm Max.
Cu Impurities	0.05 ppm Max.
Au Impurities	0.3 ppm Max.
Fe Impurities	0.1 ppm Max.
Pb Impurities	0.3 ppm Max.
Mg Impurities	0.1 ppm Max.
Mn Impurities	0.05 ppm Max.
Ni Impurities	0.05 ppm Max.
K Impurities	1.0 ppm Max.
Na Impurities	1.0 ppm Max.
Sn Impurities	1.0 ppm Max.
Ti Impurities	0.3 ppm Max.
Zn Impurities	0.1 ppm Max.
Particles in bottles ≥1.0 µm/mL	25 Max.

Size	Packaging	Cat. No.
5 gal.	Pail	**BDH2031-5GLP**

HYDROGEN PEROXIDE (5 - < 8%)

Dihydrogen dioxide, Hydrogen dioxide, Hydrogen oxide

Formula: H_2O_2
M.W. 34.01 g/mol
Density: 1.022 g/cm^3 (20 °C)
CAS: 7722-84-1

Hydrogen Peroxide, 6% Stabilized Aqueous Solution

Made with purified water.

Assay	5.80 - 6.40 %
Appearance/color	Clear liquid
Stabilizer (acetanilide)	Passes test

Size	Packaging	Cat. No.
500 mL	Amber Poly Bottle	**BDH7103-2**

Hydrogen Peroxide, Stabilized Aqueous Solution 3% (w/w)

Appearance/color	Clear liquid
N.I.S.T. Traceable	Yes
Shelf-life	18 months
Stabilizer (Acetanilide)	Passes test
Assay	3.00 - 3.50 %

Size	Packaging	Cat. No.
500 mL	Amber Poly Bottle	**BDH7540-2**
4 L	Black Poly Bottle	**BDH7540-4**

Hydrogen Peroxide, Stabilized Aqueous Solution 3% (w/w)

Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 8040 ..... Yes
Assay ..... 3.00 - 3.50 %
Stabilizer (Acetanilide) ..... Passes test

Size	Packaging	Cat. No.
1 L	Amber Poly Bottle	**BDH7637-1**

2-Hydroxy-sec-Propyl Alcohol

see Isopropyl Alcohol

Hydroxybenzene

see Phenol

1-Hydroxybutane

see 1-Butanol

4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic Acid

see HEPES Free Acid

HYDROXYLAMMONIUM CHLORIDE

Hydroxylamine hydrochloride , Hydroxylamine HCl

Formula: $NH_2OH{\cdot}HCl$
M.W. 69.49 g/mol
Boiling Pt: 306 °C (1013 hPa)
Melting Pt: 151 °C
Density: 1.67 g/cm³ (20 °C)
CAS: 5470-11-1
UN: 2923

Hydroxylamine Hydrochloride, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless, hygroscopic solid

VWR ANALYTICAL

Ammonium (P/F) ..... PASS
Clarity of Alcohol Solution ..... PASS
Heavy Metals ..... <= 0.0005 %
Iron ..... <= 0.0005 %
Purity ..... >= 96.0 %
Residue on Ignition ..... <= 0.05 %
Sulfur Compounds ..... <= 0.005 %
Titrable Free Acid ..... <= 0.25 meq/g

Size	Packaging	Cat. No.
1 kg	Poly Bottle	**BDH9236-1KG**
500 g	Poly Bottle	**BDH9236-500G**

1-Hydroxypropane

see n-Propyl Alcohol

ICP-MS

see Standards, ICP and ICP-MS

Iodide

see Standards, ICP and ICP-MS

Iodine

see Histology Stains and Reagents

IODINE

Formula: I_2
M.W. 253.81 g/mol
Boiling Pt: 184.3 °C (1013 hPa)
Melting Pt: 114 °C
Density: 4.9 g/cm³ (20 °C)
CAS: 7553-56-2
UN: 3495

Iodine, Resublimed, Crystallized, ACS

VWR ANALYTICAL

Assay ..... Min. 99.8 %
Non-volatile matter ..... Max. 0.01 %
Cl2 + Br2 (as Cl) ..... Max. 0.005 %

Size	Packaging	Cat. No.
500 g	Amber Glass Bottle	**BDH4620-500G**

IODINE IN AQUEOUS SOLUTION

Formula: I_2
CAS: 7553-56-2
UN: 3264

Iodine, Solution 0.1N

Made with iodine crystals, potassium iodide and deionized water.

VWR ANALYTICAL

Normality ..... 0.0995 - 0.1005 N
Appearance/color ..... Dark brown liquid

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7207-1**
4 L	Amber Glass Bottle	**BDH7207-4**

Iodine, Solution 0.0282N

Made with iodine crystals, potassium iodide and deionized water.

VWR ANALYTICAL

Normality ..... 0.0277 - 0.0288 N
Appearance/color ..... Dark brown liquid

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7422-1**

Iodine, Solution 0.025N

Made with iodine crystals, potassium iodide and deionized water.

VWR ANALYTICAL

Normality ..... 0.0200 - 0.0300 N
Appearance/color ..... Passes test

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7206-1**

Iodine, Solution, 0.01N

Made with iodine crystals, potassium iodide and deionized water.

VWR ANALYTICAL

Normality ..... 0.0095 - 0.0105 N
Appearance/color ..... Clear dark brown liquid

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7897-1**

IODINE MONOCHLORIDE

Chloroiodide, Iodine chloride

M.W. 162.36 g/mol
Boiling Pt: 97.3 °C (1013 hPa)
Melting Pt: 26 °C
Density: 3.1 g/cm^3 (29 °C)
CAS: 7790-99-0
UN: 1792

Iodine Monochloride, Solution 1.6% (w/w) in Acetic Acid

Meets AOAC standards for iodine absorption number of oils and fats.

VWR ANALYTICAL

Appearance/color ..... Brown liquid
Prepared according to formulation on file ..... Yes
Prepared conforms to AOAC method ..... Yes

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7327-1**
4 L	Amber Glass Bottle	**BDH7327-4**

Indium

see Standards, ICP and ICP-MS

IPA

see Isopropyl Alcohol

Iridium

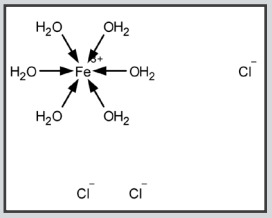
see Standards, ICP and ICP-MS

Iron

see Standards, ICP and ICP-MS

IRON (III) CHLORIDE HEXAHYDRATE

Ferric chloride 6-hydrate, Ferric chloride hexahydrate, Iron (III) chloride 6-hydrate, Iron trichloride 6-hydrate, Iron trichloride hexahydrate



Formula: $FeCl_3 \cdot 6H_2O$
M.W. 270.3 g/mol
Boiling Pt: 280 to 285 °C (1013 hPa)
Melting Pt: 37 °C
Density: 1.82 g/cm^3 (20 °C)
CAS: 10025-77-1
UN: 3260

Iron (III) Chloride Hexahydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Brownish-yellow deliquescent solid

VWR ANALYTICAL

Calcium ..... <= 0.01 %
Copper ..... <= 0.003 %
Ferrous Iron ..... <= 0.002 %
Insolubles ..... <= 0.01 %
Magnesium ..... <= 0.005 %
Nitrate ..... <= 0.01 %
Phosphorus Compounds (as PO_4) ..... <= 0.01 %
Potassium ..... <= 0.005 %
Purity ..... 97.0 - 102.0 %
Sodium ..... <= 0.05 %
Sulfate ..... <= 0.01 %
Zinc ..... <= 0.003 %

Size	Packaging	Cat. No.
500 g	Glass Bottle	**BDH9234-500G**

Iron (III) Chloride, Solution 0.025% (w/v)

VWR ANALYTICAL

Appearance/color ..... Clear orange liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7318-1**

IRON (II) AMMONIUM SULFATE IN AQUEOUS SOLUTION

Formula: $(NH_4)_2Fe(SO_4)_2$
CAS: 10045-89-3

Iron (II) Ammonium Sulfate Hexahydrate, Solution 0.1N in Dilute Sulfuric Acid

Made with deionized water and high purity sulfuric acid.

VWR ANALYTICAL

Appearance/color ..... Pale blue-green liquid
Normality ..... 0.0995 - 0.1005 N
Shelf-life ..... 6 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7320-1**

Isobutyltrimethylethane

see 2,2,4-Trimethylpentane

Isobutyltrimethylmethane

see 2,2,4-Trimethylpentane

Isooctane

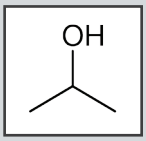
see 2,2,4-Trimethylpentane

Isopropanol

see Isopropyl Alcohol

ISOPROPYL ALCOHOL

2-Hydroxypropane, IPA, Isopropanol, 2-Propanol, sec-Propanol, Propan-2-ol, Propane, 2-hydroxy-, sec-Propyl Alcohol, 2-Propanol



Formula: $(CH_3)_2CHOH$
M.W. 60.1 g/mol
Boiling Pt: 82 °C (1013 hPa)
Melting Pt: –89 °C
Density: 0.786 g/cm³ (20 °C)
Flash Pt: 12 °C
CAS: 67-63-0
UN: 1219

Isopropyl Alcohol, HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

From the exclusive family of high-quality, competitively-priced BDH Chemicals — high purity solvents for HPLC applications. These solvents are manufactured at a state of the art European ISO 9001/ISO 14001 solvent production facilities and feature an unparalleled combination of performance and price for even the most demanding liquid chromatography applications.

Assay (GC) ..... Min. 99.8 %
Water ..... Max. 0.1 %
Non-volatile residue ..... Max. 0.0005 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Transmittance (220 nm) ..... Min. 50 %
Transmittance (230 nm) ..... Min. 80 %
Transmittance (250 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH20880.100**
4 L	Amber Glass Bottle	**BDH20880.400**
1 L	Amber Glass Bottle with 45 mm Neck	**BDH20880.100E**

Jencons - A VWR Brand

JENCONS
a VWR Brand

A leading manufacturer and distributor to the worldwide scientific community since 1946, today we are a leading worldwide supplier of liquid handling products including Powerpette® manual and motorized pipette controllers, Safetypette™ manual and motorized pipette controllers, Zippette™ bottle-top dispensers, Digitrate® Bottle-Top Burets, and the Perimatic Premier Pump Dispenser.For more information, visit **vwr.com/jencons** today!

Isopropyl Alcohol, ACS

Suitable for histology and cytology applications. Soluble in water. Meets ACS Specifications for general use.

VWR ANALYTICAL

Appearance ..... Clear
Water (K.F.) ..... Less than 0.20%
Residue ..... Less than 0.001% (0.0010 g/128 mL)
GC Purity ..... Greater than 99.5%
Solubility in water ..... Passes test (Solution should be as clear as an equal volume of water.)
Color (APHA) ..... Less than 10
Titrable acid or base .....
Less than 0.1 meq/g (No more than 0.10 mL of either 0.01N sodium hydroxide or 0.01N hydochloric acid)
Carbonyl compounds ..... Less than 0.002% each (as acetone or propionaldehyde)

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1133-1LP**
4 L	Glass Bottle	**BDH1133-4LG**
4 L	Poly Bottle	**BDH1133-4LP**
5 gal.	Cubitainer®	**BDH1133-5GL**
19 L	Steel Can	**BDH1133-19L**
204 L	Steel Drum	**BDH1133-204L**

Isopropyl Alcohol, ACS, Production Grade

Soluble in water. Meets ACS specifications.

VWR ANALYTICAL

GC Purity ($CH_3CHOHCH_3$) ..... 99.5% Min.
Solubility in Water ..... To Pass Test
Carbonyl Compounds: Acetone ..... 0.002% Max.
Carbonyl Compounds: Propionaldehyde ..... 0.002% Max.
Color (APHA) ..... 10 APHA Max.
Residue upon Evaporation ..... 0.001% Max.
Titrable Acid (µeq/g) ..... 0.1 µeq/g Max.
Titrable Base(µeq/g) ..... 0.1 µeq/g Max.
Water ..... 0.2% Max.

Size	Packaging	Cat. No.
1 gal.	Poly Bottle	**BDH2016-1GLP**
5 gal.	Poly Pail	**BDH2016-5GLP**
55 gal.	Metal Drum	**BDH2016-55GLM**
55 gal.	Poly Drum	**BDH2016-55GLP**

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Isopropyl Alcohol, 99% Semi Grade

For use in semiconductor and microelectronics manufacturing.

2-Propanol	99.5% Min.
Particles under 0.2µm	5000 Max
Particles under 0.3µm	5000 Max
Particles 0.5µm	50/ml Max.
Particles under 1µm	8/ml Max.
Color (APHA)	10 Max.
Moisture (H_2O)	0.05% Max.
NVR	4000 ppb Max.
Acidity	0.2 µeq/g Max.
Alkalinity	0.1 µeq/g Max.
Chloride (Cl)	100 ppb Max.
Phosphate (PO_4)	300 ppb Max.
Solubility in Water	Pass Test
As Impurities	10 ppb Max.
Sb Impurities	10 ppb Max.
Al Impurities	50 ppb Max.
Ba Impurities	20 ppb Max.
Be Impurities	10 ppb Max.
Bi Impurities	10 ppb Max.
B Impurities	10 ppb Max.
Cd Impurities	20 ppb Max.
Ca Impurities	50 ppb Max.
Cr Impurities	20 ppb Max.
Co Impurities	20 ppb Max.
Cu Impurities	10 ppb Max.
Ga Impurities	50 ppb Max.
Ge Impurities	50 ppb Max.
Au Impurities	20 ppb Max.
Pb Impurities	200 ppb Max.
Fe Impurities	50 ppb Max.
Pb Impurities	20 ppb Max.
Li Impurities	50 ppb Max.
Mg Impurities	20 ppb Max.
Mn Impurities	15 ppb Max.
Mo Impurities	10 ppb Max.
Nb Impurities	10 ppb Max.
Ni Impurities	10 ppb Max.
K Impurities	40 ppb Max.
Si Impurities	50 ppb Max.
Ag Impurities	20 ppb Max.
Na Impurities	50 ppb Max.
Sr Impurities	20 ppb Max.
Sn Impurities	10 ppb Max.
Ta Impurities	20 ppb Max.
Tl Impurities	10 ppb Max.
Ti Impurities	20 ppb Max.
V Impurities	10 ppb Max.
Zn Impurities	50 ppb Max.
Zr Impurities	10 ppb Max.

Size	Packaging	Cat. No.
4 x 1 gal.	HDPE Bottle	BDH2027-1GLP
5 gal.	Pail	BDH2027-5GLP

Isopropyl Alcohol, Laboratory Reagent

Laboratory reagent suitable for general laboratory use, as well as for cytology and histology.

Tested to USP specifications.

Identification by FTIR	Equivalent to standard
Appearance	Clear, colorless liquid
Water (K.F.)	Less than 0.050 %
Refractive index (20 °C)	1.3772 ± 0.0010
Nonvolatile Residue	Less than 5 mg/l (0.0005 g/100 ml)
Assay	Greater than 99.8 %
Specific Gravity (25 °C)	0.783 - 0.787
Color (APHA)	Less than 10
Acidity	Passes test

Size	Packaging	Cat. No.
4 L	Plastic Bottle	BDH1174-4LP

Isopropyl Alcohol, 70% Laboratory Reagent

Clear, colorless liquid.

Meets ACS specifications for general use.

Appearance	Clear, colorless liquid
Isopropyl Alcohol	68.0-72.0%
Water	28.0-32.0%
Specific gravity @ 20ºC	0.863-0.883
Color (APHA)	Less than 10

Size	Packaging	Cat. No.
1 L	Poly Bottle	BDH1131-1LP
4 L	Poly Bottle	BDH1131-4LP
5 gal.	Cubitainer®	BDH1131-5GL
204 L	Steel Drum	BDH1131-204L

Isopropyl Alcohol, 70% v/v

Made with deionized water.

Appearance/color	Clear liquid
Shelf-life	2 years
Specific gravity	0.873 - 0.883
Assay (v/v)	69.0 - 71.0 %

Size	Packaging	Cat. No.
4 L	Poly Bottle	BDH7999-4

Isopropyl Alcohol, 70% Production Grade

Clear, colorless liquid.

Appearance	Clear, Colorless
Specific Gravity at 60°F	(0.872–0.883) g/mL

Size	Packaging	Cat. No.
1 gal.	Poly Bottle	BDH2014-1GLP
5 gal.	Metal Pail	BDH2014-5GLMS
5 gal.	Poly Pail	BDH2014-5GLP
55 gal.	Metal Drum	BDH2014-55GLM
55 gal.	Poly Drum	BDH2014-55GLP

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Protective eyewear are designed for both men and women. Impact-resistant, scratch-resistant polycarbonate lenses that offer 99.9% UV protection. Wrap-around visitor specs fit over most prescription glasses. Eyewear with wrap-around lenses feature rubberized temple tips and integrated nosepiece for comfort and a sleek appearance. Eyewear with adjustable temples that lock into place also features ultralightweight nylon frames and soft PVC nosepads to prevent slipping.

Description	Cat. No.
Visitor Specs	89187-988
Eyewear with Wraparound Lens	89187-986
Eyewear with Adjustable Temples	89187-984

For more options, visit **vwr.com**

Lanthanum

see Standards, ICP and ICP-MS

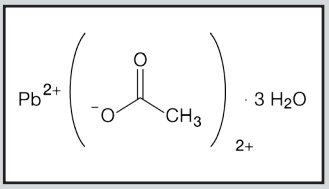
Lead

see Standards, ICP and ICP-MS

LEAD (II) ACETATE TRIHYDRATE

Acetic acid lead (II) salt trihydrate , Lead diacetate trihydrate

Formula: $(H_3CCOO)_2Pb.3H_2O$
M.W. 379.34 g/mol
Boiling Pt: 280 °C (1013 hPa)
Melting Pt: 75 °C
Density: 2.55 g/cm^3 (20 °C)
CAS: 6080-56-4
UN: 1616



Lead Acetate Trihydrate, Crystallized, ACS

VWR ANALYTICAL

Assay	99.0 - 103.0 %
Insoluble matter	Max. 0.01 %
Cl (Chloride)	Max. 5 ppm
$NO_3 + NO_2$ (as NO_3)	Max. 0.005 %
Ca (Calcium)	Max. 0.005 %
Cu (Copper)	Max. 0.002 %
Fe (Iron)	Max. 0.001 %
K (Potassium)	Max. 0.005 %
Na (Sodium)	Max. 0.01 %

Size	Packaging	Cat. No.
500 g	Amber Glass Bottle	**BDH4578-500G**

Lithium

see Standards, ICP and ICP-MS

Lutetium

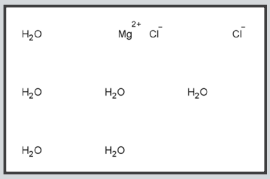
see Standards, ICP and ICP-MS

Magnesium

see Standards, ICP and ICP-MS

MAGNESIUM CHLORIDE HEXAHYDRATE

Formula: $MgCl_2.6H_2O$
M.W. 203.3 g/mol
Boiling Pt: 1412 °C (1013 hPa)
Melting Pt: 117 °C
Density: 1.57 g/cm^3 (25 °C)
CAS: 7791-18-6



Magnesium Chloride, Hexahydrate ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless, deliuescent solid

VWR ANALYTICAL

Purity	99.0-102.0 %
Ammonium	≤0.002 %
Barium	≤0.005 %
Calcium	≤0.01 %
Heavy Metals (as Pb)	≤0.0005 %
Insolubles	≤0.005 %
Iron	≤0.0005 %
Manganese	≤0.0005 %
Nitrate	≤0.001 %
Phosphate	≤0.0005 %
Potassium	≤0.005 %
Sodium	≤0.005 %
Strontium	≤0.005 %
Sulfate	≤0.002 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9244-500G**
2.5 kg	Poly Bottle	**BDH9244-2.5KG**

MAGNESIUM CHLORIDE (50 - 60%) IN AQUEOUS SOLUTION

Formula: $MgCl_2$
M.W. 95.21 g/mol
CAS: 7786-30-3

Magnesium Chloride, Solution, Reagent Grade, 51% (w/v)

Made with deionized water.

VWR ANALYTICAL

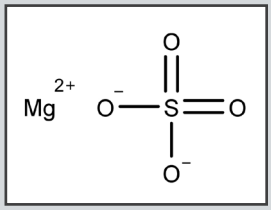
Appearance/color	Clear to slightly turbid liquid
Shelf-life	2 years
Magnesium chloride	48.5 - 53.5 %

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7899-1**

MAGNESIUM SULFATE

Bitter salt, Epsom salt, Magnesium(II) sulfate, Sulfuric acid magnesium salt (1:1)

Formula: $MgSO_4$
M.W. 120.37 g/mol
Melting Pt: 1127 °C
Density: 2.65 g/cm^3 (20 °C)
CAS: 7487-88-9



Magnesium Sulfate, Anhydrous, Reagent Grade

White powder.

VWR ANALYTICAL

Purity	<= 0.2 %
Moisture	>= 98.0 %

Size	Packaging	Cat. No.
500 g	Glass Bottle	**BDH9246-500G**

Magnesium Sulfate, Solution 2.25% (w/v)

APHA for BOD (biological oxygen demand).

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7328-1**

MANGANESE (II) SULFATE MONOHYDRATE, SOLUTION

Manganese (II) Sulfate Monohydrate, Solution 364g/L (38%)

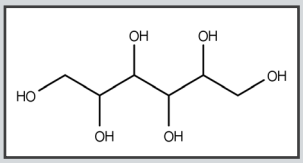
APHA and ASTM for DO (dissolved oxygen).

Appearance/color ..... Clear pink liquid
Specific gravity (20°C) ..... 1.268 - 1.272

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7329-1**

D(-)-MANNITOL

Formula: $HOH_2C(CH(OH))_4CH_2OH$
M.W. 182.17 g/mol
Boiling Pt: 290 to 295 °C (4 hPa)
Melting Pt: 164 to 169 °C
Density: 1.49 g/cm^3 (20 °C)
CAS: 69-65-8



Mannitol, ACS

White solid.

Heavy Metals ..... <= 0.0005 %
Insoluble Matter ..... <= 0.01 %
Loss on Drying ..... <= 0.05 %
Reducing Sugars Test ..... PASS
Residue after Ignition ..... <= 0.01 %
Specific Rotation Test ..... +23.3 - +24.3 degrees
Titrable Acid ..... <= 0.0008 meq/g

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9248-500G**

MEK

see Methyl Ethyl Ketone

Mercury

see Standards, ICP and ICP-MS

MERCURY (II) CHLORIDE

Mercuric chloride , Mercury dichloride

Formula: $HgCl_2$
M.W. 271.5 g/mol
Boiling Pt: 302 °C (1013 hPa)
Melting Pt: 273 °C
Density: 5.44 g/cm^3 (20 °C)
CAS: 7487-94-7
UN: 1624

$HgCl_2$

Mercury Chloride, Crystallized, ACS

Assay ..... Min. 99.5 %
Solution in ethyl ether ..... Passes test
Residue after reduction ..... Max. 0.02 %
Fe (Iron) ..... Max. 0.002 %

Size	Packaging	Cat. No.
500 g	Amber Glass Bottle	**BDH4622-500G**

MERCURY NITRATE, SOLUTION 0.0141N

UN: 3287

Mercury (II) Nitrate, Solution 0.0141N in Dilute Nitric Acid

APHA for chloride. 1mL = 0.5 mg sodium chloride. Contains 0.25 to 2.5% (w/v) mercury (II) nitrate and 0.25-0.5% (w/v) nitric acid.

Normality ..... 0.0136 - 0.0146 N
N.I.S.T. Traceable to SRM 919 ..... Yes
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7430-1**

Methanecarboxylic Acid

see Acetic Acid

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METHANOL

Carbinol, Methyl alcohol, Methyl hydroxide, Methylol, Monohydroxymethane, Wood alcohol

—OH

Formula: CH_3OH
M.W. 32.04 g/mol
Boiling Pt: 64.6 °C (1013 hPa)
Melting Pt: –98 °C
Density: 0.7918 g/cm^3 (20 °C)
Flash Pt: 11 °C (closed cup)
CAS: 67-56-1
UN: 1230

Methanol, HiPerSolv CHROMANORM® gradient for HPLC

From the exclusive family of high-quality, competitively-priced BDH Chemicals — high purity solvents for HPLC applications. These solvents are manufactured at a state of the art European ISO 9001/ISO 14001 solvent production facilities and feature an unparalleled combination of performance and price for even the most demanding liquid chromatography applications.

Assay (on anhydrous substance)	Min. 99.8 %
Acidity	Max. 0.0003 meq/g
Alkalinity	Max. 0.0002 meq/g
Evaporation residue	Max. 5 ppm
Water	Max. 0.03 %
Transmittance (220 nm)	Min. 50 %
Transmittance (235 nm)	Min. 80 %
Transmittance (260 nm)	Min. 98 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH20864.400**
5 L	Aluminum Bottle	**BDH20864.500**
1 L	Amber Glass Bottle with 45 mm Neck	**BDH20864.100E**

Methanol Semi Grade

Assay (CH_3OH)by GC	99.9% Min.
Color (APHA)	10 Max.
Solubility in Water	Passes Test
Moisture (H_2O)	0.05% Max.
NVR	5000 ppb Max.
Acidity	0.3 µeq/g Max.
Sulfate (SO_4)	500 ppb Max.
Particles 1.0µm/ml	25 Max.
Alkalinity	0.1 µeq/g Max.
Chloride (Cl)	200 ppb Max.
Phosphate (PO_4)	300 ppb Max.
Heavy metals (as Pb)	100 ppb Max.
Particles under 0.5µm/ml	250 Max.
As Impurities	5 ppb Max.
Sb Impurities	5 ppb Max.
Al Impurities	50 ppb Max.
Ba Impurities	20 ppb Max.
B Impurities	10 ppb Max.
Cd Impurities	20 ppb Max.
Ca Impurities	50 ppb Max.
Cr Impurities	20 ppb Max.
Co Impurities	20 ppb Max.
Cu Impurities	10 ppb Max.
Ga Impurities	50 ppb Max.
Ge Impurities	50 ppb Max.
Au Impurities	20 ppb Max.
Fe Impurities	50 ppb Max.
Pb Impurities	50 ppb Max.
Li Impurities	50 ppb Max.
Mg Impurities	50 ppb Max.
Mn Impurities	10 ppb Max.
Mo Impurities	300 ppb Max.
Ni Impurities	10 ppb Max.
K Impurities	50 ppb Max.
Si Impurities	50 ppb Max.
Na Impurities	50 ppb Max.
Ag Impurities	20 ppb Max.
Sr Impurities	10 ppb Max.
Sn Impurities	50 ppb Max.
Ti Impurities	20 ppb Max.
V Impurities	300 ppb Max.
Zn Impurities	50 ppb Max.
Zr Impurities	300 ppb Max.
Ti Impurities	10 ppb Max.
V Impurities	10 ppb Max.
Zn Impurities	20 ppb Max.
Zr Impurities	10 ppb Max.

Size	Packaging	Cat. No.
4 x 1 gal.	HDPE Bottle	**BDH2029-1GLP**
5 gal.	Pail	**BDH2029-5GLP**

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We Enable Science Through Services

Methanol, ACS

Clear liquid. Suitable for histology and cytology applications. Soluble in water.

VWR ANALYTICAL

Assay (by GC) ..... 99.8% min.
Water (K. F.) ..... Less than 0.10%
Residue ..... Less than 0.001% (0.0010 g/125 mL)
GC Purity ..... Greater than 99.8%
Solubility in water ..... Passes test (Solution should be as clear as an equal volume of water)
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.3 meq/g (No more than 0.50 mL of 0.01N sodium hydroxide)
Titrable base ..... Less than 0.2 meq/g (No more than 0.40 mL of 0.01N hydrochloric acid)
Carbonyl compounds (as acetone, formaldehyde, and acetaldehyde) ..... Less than 0.001% each
Substances darkened by sulfuric acid ..... Passes test (Solution should be colorless, or have no more color than the acid or methanol before mixing)
Substances reducing permanganate ..... Passes test (Pink color should not be entirely discharged)

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1135-1LP**
4 L	Glass Bottle	**BDH1135-4LG**
4 L	Poly Bottle	**BDH1135-4LP**
19 L	Steel Can	**BDH1135-19L**
204 L	Steel Drum	**BDH1135-204L**

Methanol, ACS for production

Clear liquid. Soluble in water. Meets ACS specifications.

VWR ANALYTICAL

Appearance ..... Clear
GC Purity (CH_3OH) ..... 99.99 %
Solubility in Water ..... Passes Test
Carbonyl Compound (Acetone) ..... Less than 0.001 %
Carbonyl Compound (Formaldehyde) ..... Less than 0.001 %
Carbonyl Compound (Acetaldehyde) ..... Less than 0.001 %
Color (APHA) ..... Less than 5
Residue upon Evaporation ..... Less than 0.0003 %
Substances Darkened by Sulfuric Acid ..... Passes Test
Substances Reducing Permanganate ..... Passes Test
Titratable Acid ..... Less than 0.3 µeq/g
Titratable Base ..... Less than 0.2 µeq/g
Water (H_2O) ..... 0.027 %

Size	Packaging	Cat. No.
1 gal.	Poly Bottle	**BDH2018-1GLP**
5 gal.	Poly Pail	**BDH2018-5GLP**

Methanol, Solution 50% (v/v)

Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7498-4**

Methanol, Solution 20% (v/v)

VWR ANALYTICAL

Assay (Methanol) (v/v) ..... 18.0 - 22.0 %
Water (v/v) ..... 78.0 - 82.0 %
Density ..... 0.950 - 0.990
Appearance/color ..... Clear liquid
Non-volatile residue ..... 100 ppm max.

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7905-4**

Methanol / Nitric Acid (7+3) v/v formulation

VWR ANALYTICAL

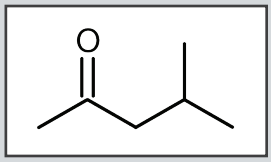
Assay (Methanol) (v/v) ..... 68.5 - 71.5 %
Assay (HNO_3) (v/v) ..... 28.5 - 31.5 %
Appearance/color ..... Clear liquid
Specific gravity (15.5 °C) ..... 0.980 - 1.020
Prepared to formulation on file ..... Yes

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7941-1**

Methyl Alcohol

see Methanol

4-METHYL-2-PENTANONE



Formula: $(CH_3)_2CHCH_2COCH_3$
M.W. 100.16 g/mol
Boiling Pt: 117.4 °C (1013 hPa)
Melting Pt: -84 °C
Density: 0.801 g/cm³ (20 °C)
Flash Pt: 16 °C
CAS: 108-10-1
UN: 1245

4-Methyl-2-pentanone, ACS

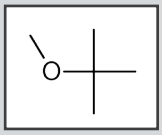
VWR ANALYTICAL

Assay ..... Min. 98.5 %
Appearance ..... Clear liquid
Titrable acid ..... Max. 0.002 meq/g
Color (Pt-Co) ..... Max. 15 APHA
Residue after evaporation ..... Max. 0.005 %
Water ..... Max. 0.1 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH4580-4L**

METHYL TERT-BUTYL ETHER

2-Methoxy-2-methylpropane, 2-Methyl-2-methoxypropane, Ether, tert-butyl methyl, Methyl 1,1-dimethylethyl ether, Methyl t-butyl ether, Methyl tert-butyl ether, MTBE



Formula: $(CH_3)_3COCH_3$
M.W. 88.15 g/mol
Boiling Pt: 55.2 °C (1013 hPa)
Melting Pt: –108.6 °C
Density: 0.7405 g/cm³ (20 °C)
Flash Pt: –28 °C
CAS: 1634-04-4
UN: 2398

Methyl tert-Butyl Ether, ACS

Meets ACS specifications for general use.

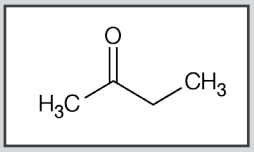
VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.05%
Residue ..... Less than 0.001% (0.0010 g/136 mL)
GC Purity ..... Greater than 99.0%
Color (APHA) ..... Less than 10
Peroxides (TiCl4; mg/L) ..... Less than 1.0 mg/L as H_2O_2 [Typical - Not detected (less than 0.1 mg/L)]
Peroxides (TiCl4; mg/Kg) ..... Less than 1.0 mg/Kg as H_2O_2 [Typical - Not detected (less than 0.1 mg/Kg)]

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1139-4LG**
19 L	Steel Can	**BDH1139-19L**

METHYL ETHYL KETONE

2-Butanone, Butan-2-one, Butanone, MEK



Formula: $C_2H_5COCH_3$
M.W. 72.11 g/mol
Boiling Pt: 79.6 °C (1013 hPa)
Melting Pt: -86 °C
Density: 0.8054 g/cm³ (20 °C)
Flash Pt: -4 °C
CAS: 78-93-3
UN: 1193

Methyl Ethyl Ketone, ACS

Meets ACS specifications for general use.

VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.20%
Residue ..... Less than 0.0025% (0.0020 g/100 mL)
GC Purity ..... Greater than 99.0%
Color (APHA) ..... Less than 15
Titrable Acid ..... Less than 0.5 µeq/g (No more than 2.0mL of 0.01N sodium hydroxide)

Size	Packaging	Cat. No.
19 L	Steel Can	**BDH1137-19L**
204 L	Steel Drum	**BDH1137-204L**

METHYL ORANGE IN AQUEOUS SOLUTION

C.I. acid orange 52, p-[[p-(dimethylamino)phenyl]azo]benzenesulfonic acid sodium salt

CAS: 547-58-0

Methyl Orange, Indicator Solution 0.1% (w/v)

Made with deionized water.

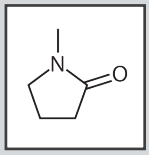
VWR ANALYTICAL

Appearance/color ..... Clear orange liquid
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7610-2**
1 L	Poly bottle	**BDH7610-1**

N-METHYL-2-PYRROLIDONE (NMP)

M-Pyrol, N-Methyl-2-pyrrolidinone, N-Methyl-2-pyrrolidone, N-Methyl-alpha-pyrrolidone, N-Methyl-gamma-butyrolactam, N-Methylpyrrolidinone, N-methylpyrrolidone, N-Methylpyrrolidone, NMP



Formula: C_5H_9NO
M.W. 99.13 g/mol
Boiling Pt: 202 °C (1013 hPa)
Melting Pt: -24 °C
Density: 1.033 g/cm³ (20 °C)
Flash Pt: 91 °C
CAS: 872-50-4

N-Methyl-2-Pyrrolidone, Semi Grade

VWR ANALYTICAL

Assay ..... 99.5% Min.
Color (APHA) ..... 20 Max.
Particles 1.0µm ..... 10/ml Max.
Particles 0.5µm ..... 50/ml Max.
Moisture (H_2O) ..... 0.05% Max.
Free amines (as CH_3NH_2) ..... 50000 ppb Max
Chloride (Cl) ..... 500 ppb Max.
Phosphate (PO_4) ..... 1000 ppb Max.
pH ..... Actual value
As Impurities ..... 10 ppb Max.
Sb Impurities ..... 10 ppb Max.
Al Impurities ..... 10 ppb Max.
Ba Impurities ..... 10 ppb Max.
B Impurities ..... 10 ppb Max.
Cd Impurities ..... 10 ppb Max.
Ca Impurities ..... 10 ppb Max.
Cr Impurities ..... 10 ppb Max.
Co Impurities ..... 10 ppb Max.
Cu Impurities ..... 10 ppb Max.
Au Impurities ..... 10 ppb Max.
Fe Impurities ..... 10 ppb Max.
Pb Impurities ..... 10 ppb Max.
Li Impurities ..... 10 ppb Max.
Mg Impurities ..... 10 ppb Max.
Mn Impurities ..... 10 ppb Max.
Ni Impurities ..... 10 ppb Max.
K Impurities ..... 10 ppb Max.
Na Impurities ..... 10 ppb Max.
Ag Impurities ..... 10 ppb Max.
Sr Impurities ..... 10 ppb Max.
Ta Impurities ..... 10 ppb Max.
Sn Impurities ..... 10 ppb Max.
Ti Impurities ..... 10 ppb Max.
V Impurities ..... 10 ppb Max.
Zn Impurities ..... 10 ppb Max.

Size	Packaging	Cat. No.
4 x 1 gal.	Poly Bottle	**BDH2037-1GLP**

N-Methyl-2-Pyrrolidone, ACS

BDH® VWR ANALYTICAL

Appearance ..... Clear
Water (K.F.) ..... Less than 0.05%
GC Purity ..... Greater than 99.0%
Color (APHA) ..... Less than 50
Chloride ..... Less than 1 ppm (Opalescence must be no greater than that in the standard.)
Free Amines (as CH_3NH_2) ..... Less than 0.01% (No more than 3.2mL of 0.01N hydrochloric acid)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1141-4LG**
4 L	Poly Bottle	**BDH1141-4LP**
19 L	Steel Can	**BDH1141-19L**

N-Methyl-2-Pyrrolidone, ACS for production

Meets ACS specifications.

BDH® VWR ANALYTICAL

Assay ($CH_3N(CH_2)3CO$) ..... 99.97 %
Chloride (Cl) ..... Less than 20 ppb
Color (APHA) 10
Phosphate (PO_4) ..... Less than 20 ppb
Water (H_2O) ..... 0.01 %
Free Amines ..... Less than 0.01 %

Size	Packaging	Cat. No.
55 gal.	Poly Drum	**BDH2022-55GLP**

Methylene Chloride

see Dichloromethane

Molybdenum

see Standards, ICP and ICP-MS

VWR® Labmax™ Bottle-Top Dispensers

VWR® COLLECTION

- Unique, chemical-resistant direct displacement piston system provides safe, smooth dispensing. Air purging system prevents loss of reagents and eliminates dripping or splashing. An exclusive reagent guard valve prohibits accidental recharge and eliminates the need for capping when not in use.
- Basic dispensers have a PTFE system for broad general use. Choose a PTFE-lined dispenser for applications using hydrofluoric acid or a glass-lined dispenser for use with organic solvents.

Description	Volume	Cat. No.
Basic Dispenser	0.3–2.5 mL	**40000-060**
Basic Dispenser	1–5 mL	**40000-062**
Basic Dispenser	2–10 mL	**40000-064**
Basic Dispenser	5–25 mL	**40000-066**
Basic Dispenser	10–50 mL	**40000-068**
Basic Dispenser	20–100 mL	**40000-070**
Dispenser for Hydrofluoric Acids	2–10 mL	**40000-065**
Dispenser for Hydrofluoric Acids	5–25 mL	**40000-067**
Dispenser for Solvents	2–10 mL	**82017-766**
Dispenser for Solvents	5–25 mL	**82017-768**
Dispenser for Solvents	10–50 mL	**82017-770**

For more information or adapters, visit **vwr.com**

MTBE

see Methyl t-Butyl Ether

Neodymium

see Standards, ICP and ICP-MS

NESSLER'S REAGENT

Mercury (II) potassium iodide, Potassium mercuric Iodide, Potassium tetraiodomercurate

Boiling Pt: Min. 100 °C (1013 hPa)
Density: 1.2 g/cm³ (20 °C)
UN: 2922

Nessler's Reagent, Solution

Made with deionized water.

BDH® VWR ANALYTICAL

Appearance/color ..... Clear yellow liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH7332-2**

Neutral Buffered Formalin

see Histology Stains and Reagents

Niobium

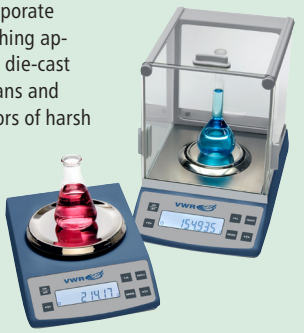
see Standards, ICP and ICP-MS

VWR® B-Series Balances

VWR® COLLECTION

VWR® B-Series Balances combine advanced weighing with intuitive operation and incorporate state-of-the-art features for advanced weighing applications. These economical balances have die-cast aluminum housing, stainless steel weigh pans and draft chamber floors that withstand the rigors of harsh environments.

- Reliable results
- Multiple weigh modes
- Worry-free five-year warranty
- Forced compensation weighing technology



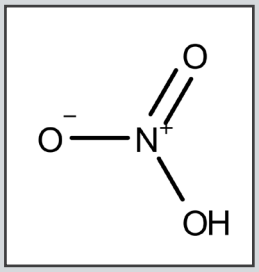
Capacity	Length & Linearity	Readability & Repeatability	Cat. No.
60 g	0.2 mg	0.1 mg	**10204-972**
120 g	0.2 mg	0.1 mg	**10204-974**
210 g	0.2 mg	0.1 mg	**10204-976**
200 g	0.2 mg	0.001 g	**10204-978**
400 g	0.2 mg	0.001 g	**10205-028**
500 g	0.002 g	0.001 g	**10205-030**
4000 g	0.02 g	0.01 g	**10205-032**
5000 g	0.02 g	0.01 g	**10205-034**

For more information, visit **vwr.com**

NITRIC ACID (65 - < 70%)

Aqua fortis, Azotic acid, Hydrogen nitrate

Formula: HNO_3
M.W. 63.01 g/mol
Boiling Pt: 120.5 °C (1013 hPa)
Melting Pt: -42 °C
Density: 1.4 g/cm^3 (20 °C)
CAS: 7697-37-2
UN: 2031



Nitric Acid, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

BDH® VWR ANALYTICAL

Assay	67 - 70%
Aluminum (Al)	max. 20 ppt
Aluminum (Al)	max. 20 ppt
Antimony (Sb)	max. 10 ppt
Arsenic (As)	max. 20 ppt
Barium (Ba)	max. 10 ppt
Beryllium (Be)	max. 10 ppt
Bismuth (Bi)	max. 10 ppt
Boron (B)	max. 10 ppt
Cadmium (Cd)	max. 10 ppt
Calcium (Ca)	max. 10 ppt
Cerium (Ce)	max. 10 ppt
Cesium (Cs)	max. 10 ppt
Chromium (Cr)	max. 10 ppt
Cobalt (Co)	max. 10 ppt
Copper (Cu)	max. 10 ppt
Dysprosium (Dy)	max. 1 ppt
Erbium (Er)	max. 1 ppt
Europium (Eu)	max. 1 ppt
Gadolinium (Gd)	max. 1 ppt
Gallium (Ga)	max. 10 ppt
Germanium (Ge)	max. 10 ppt
Gold (Au)	max. 20 ppt
Hafnium (Hf)	max. 10 ppt
Holmium (Ho)	max. 1 ppt
Indium (In)	max. 1 ppt
Iron (Fe)	max. 10 ppt
Lanthanum (La)	max. 1 ppt
Lead (Pb)	max. 10 ppt
Lithium (Li)	max. 10 ppt
Lutetium (Lu)	max. 1 ppt
Magnesium (Mg)	max. 10 ppt
Manganese (Mn)	max. 10 ppt
Mercury (Hg)	max. 50 ppt
Molybdenum (Mo)	max. 10 ppt
Neodymium (Nd)	max. 1 ppt
Nickel (Ni)	max. 20 ppt
Niobium (Nb)	max. 1 ppt
Palladium (Pd)	max. 20 ppt
Platinum (Pt)	max. 20 ppt
Potassium (K)	max. 10 ppt
Praseodymium (Pr)	max. 1 ppt
Rhenium (Re)	max. 10 ppt
Rhodium (Rh)	max. 10 ppt
Rubidium (Rb)	max. 10 ppt
Ruthenium (Ru)	max. 20 ppt
Samarium (Sm)	max. 1 ppt
Scandium (Sc)	max. 10 ppt
Selenium (Se)	Information only
Silver (Ag)	max. 10 ppt
Sodium (Na)	max. 10 ppt
Strontium (Sr)	max. 10 ppt
Tantalum (Ta)	Information only
Tellurium (Te)	max. 1 ppt
Terbium (Tb)	max. 1 ppt
Thallium (Tl)	max. 10 ppt
Thorium (Th)	max. 1 ppt
Thulium (Tm)	max. 1 ppt
Tin (Sn)	max. 20 ppt
Titanium (Ti)	max. 20 ppt
Tungsten (W)	max. 10 ppt
Uranium (U)	max. 1 ppt
Vanadium (V)	max. 10 ppt
Ytterbium (Yb)	max. 1 ppt
Yttrium (Y)	max. 1 ppt
Zinc (Zn)	max. 10 ppt
Zirconium (Zr)	max. 10 ppt

Size	Packaging	Cat. No.
500 mL	FEP Bottle	**87003-226**
1 L	FEP Bottle	**87003-228**
2 L	FEP Bottle	**87003-658**

Nitric Acid, ARISTAR® PLUS

High purity acid for quantitative trace metal analysis at the parts-per-billion (ppb) level.

BDH® VWR ANALYTICAL

Assay	67 - 70%
Color	max. 10 APHA
Aluminum (Al)	max. 1 ppb
Antimony (Sb)	max. 0.5 ppb
Arsenic (As)	max. 0.5 ppb
Barium (Ba)	max. 0.1 ppb
Beryllium (Be)	max. 0.1 ppb
Bismuth (Bi)	max. 0.1 ppb
Boron (B)	max. 1 ppb
Cadmium (Cd)	max. 0.5 ppb
Calcium (Ca)	max. 1 ppb
Cerium (Ce)	max. 0.1 ppb
Cesium (Cs)	max. 0.1 ppb
Chromium (Cr)	max. 1 ppb
Cobalt (Co)	max. 0.5 ppb
Copper (Cu)	max. 0.5 ppb
Dysprosium (Dy)	max. 0.1 ppb
Erbium (Er)	max. 0.1 ppb
Europium (Eu)	max. 0.1 ppb
Gadolinium (Gd)	max. 0.1 ppb
Gallium (Ga)	max. 0.1 ppb
Germanium (Ge)	max. 0.1 ppb
Gold (Au)	max. 0.1 ppb
Hafnium (Hf)	max. 0.1 ppb
Holmium (Ho)	max. 0.1 ppb
Indium (In)	max. 0.1 ppb
Iron (Fe)	max. 1 ppb
Lanthanum (La)	max. 0.1 ppb
Lead (Pb)	max. 0.1 ppb
Lithium (Li)	max. 0.1 ppb
Lutetium (Lu)	max. 0.1 ppb
Magnesium (Mg)	max. 1 ppb
Manganese (Mn)	max. 0.1 ppb
Mercury (Hg)	max. 0.1 ppb
Molybdenum (Mo)	max. 0.1 ppb
Neodymium (Nd)	max. 0.1 ppb
Nickel (Ni)	max. 0.5 ppb
Niobium (Nb)	max. 0.1 ppb
Palladium (Pd)	max. 0.5 ppb
Platinum (Pt)	max. 0.5 ppb
Potassium (K)	max. 1 ppb
Praseodymium (Pr)	max. 0.1 ppb
Rhenium (Re)	max. 0.1 ppb
Rhodium (Rh)	max. 0.5 ppb
Rubidium (Rb)	max. 0.1 ppb
Ruthenium (Ru)	max. 0.5 ppb
Samarium (Sm)	max. 0.1 ppb
Scandium (Sc)	max. 0.1 ppb

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Selenium (Se) ..... max. 1 ppb
Silver (Ag) ..... max. 0.1 ppb
Sodium (Na) ..... max. 1 ppb
Strontium (Sr) ..... max. 0.1 ppb
Tantalum (Ta) ..... Information Only
Tellurium (Te) ..... max. 0.1 ppb
Terbium (Tb) ..... max. 0.1 ppb
Thallium (Tl) ..... max. 0.1 ppb
Thorium (Th) ..... max. 0.1 ppb
Thulium (Tm) ..... max. 0.1 ppb
Tin (Sn) ..... max. 0.5 ppb
Titanium (Ti) ..... max. 0.5 ppb
Tungsten (W) ..... max. 0.1 ppb
Uranium (U) ..... max. 0.1 ppb
Vanadium (V) ..... max. 0.5 ppb
Ytterbium (Yb) ..... max. 0.1 ppb
Yttrium (Y) ..... max. 0.1 ppb
Zinc (Zn) ..... max. 0.5 ppb
Zirconium (Zr) ..... max. 0.1 ppb
Chloride (Cl-) ..... max. 0.2 ppm
Total Phosphorus (P) ..... max. 0.01 ppm
Total Sulfur (S) ..... max. 0.3 ppm

Size	Packaging	Cat. No.
500 mL	HDPE Bottle	**87003-259**
2.5 L	HDPE Bottle	**87003-261**

Nitric Acid, ACS 69-70%

Colorless and free from particulates.

Appearance ..... Colorless, free from susp. matter
Arsenic (As) ..... 0.01 ppm max.
Assay (HNO_3) ..... 68.0 - 70.0%
Chloride (Cl) ..... 0.5 ppm max.
Color (APHA) ..... 10 max.
Heavy metals (as Pb) ..... 0.2 ppm max.
Iron (Fe) ..... 0.2 ppm max.
Residue after ignition ..... 5 ppm max.
Sulfate (SO_4) ..... 1 ppm max.

Size	Packaging	Cat. No.
500 mL	Poly-Coated Glass Bottle	**BDH3044500MLPC**
2.5 L	Poly-Coated Glass Bottle	**BDH3046-2.5LPC**
6 x 2.2 L	PPQ Bottle	**BDH3130-2.2LP**

Nitric Acid, Solution 50% (v/v)

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7335-1**

NITRIC ACID (20 - < 40%)

Aqua fortis, Azotic acid, Hydrogen nitrate

Formula: HNO_3
M.W. 63.01 g/mol
Boiling Pt: ~ 86 °C (1013 hPa)
Melting Pt: -42 °C
Density: 1.2 to 1.4 g/cm³ (20 °C)
CAS: 7697-37-2
UN: 2031

Nitric Acid, Solution 20% (v/v)

Meets APHA standards.

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Density ..... 1.0799 - 1.1334 at 20 °C

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7904-1**

Nitric Acid, Solution 6.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 84 ..... Yes
Normality ..... 5.950 - 6.050 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7334-1**

Nitric Acid Solution 1.00N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable ..... Yes
Normality ..... 0.998 - 1.002 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7209-1**
4 L	Cubitainer	**BDH7209-5**

Nitric Acid, Solution 0.1N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable ..... Yes
Normality ..... 0.0995 - 0.1005 N
Shelf-life ..... 18 months

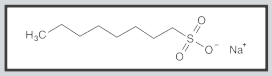
Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7208-1**

NMP

see N-Methyl-2-pyrrolidone

1-OCTANESULFONIC ACID SODIUM SALT

Sodium 1-octansulfonate



Formula: $C_8H_{17}NaO_3S$
M.W. 216.28 g/mol
Melting Pt: Min. 300 °C
CAS: 5324-84-5

1-Octanesulfonic Acid, HiPerSolv CHROMANORM® for HPLC

Ion pairing reagent.

VWR ANALYTICAL

Assay ..... Min. 99 %
IR Spectrum ..... Passes test
pH (10 %) 5.5-7.5
Loss on drying (120°C; under vacuum) ..... Max. 2.0 %
Transmittance (200 nm) (0.005 mol/l) ..... Min. 70 %
Transmittance (220 nm) (0.005 mol/l) ..... Min. 90 %
Transmittance (250 nm) (0.005 mol/l) ..... Min. 96 %

Size	Packaging	Cat. No.
100 g	HDPE Bottle	**BDH152803U**

Orthoboric Acid

see Boric Acid

Orthophosphoric Acid (10 - <lt/> 25%)

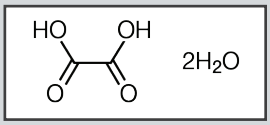
see Phosphoric Acid

Osmium

see Standards, ICP and ICP-MS

OXALIC ACID DIHYDRATE

Ethanedioic acid dihydrate



Formula: $HO_2CCO_2H \cdot {}_2H_2O$
M.W. 126.07 g/mol
Boiling Pt: 149 to 160 °C (1013 hPa)
Melting Pt: 101 °C
Density: 1.65 g/cm³ (20 °C)
CAS: 6153-56-6
UN: 3261

Oxalic Acid Dihydrate, Crystallized, ACS

VWR ANALYTICAL

Assay ..... 99.5 - 102.5 %
Substances darkened by hot H_2SO_4 ..... Passes test
Heavy metals (as Pb) ..... Max. 5 ppm
Insoluble matter ..... Max. 0.005 %
Nitrogen compounds (as N) ..... Max. 0.001 %
Residue after ignition ..... Max. 0.01 %
Cl (Chloride) ..... Max. 0.002 %
SO_4 (Sulphate) ..... Max. 0.005 %
Ca (Calcium) ..... Max. 0.001 %
Fe (Iron) ..... Max. 2 ppm

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4556-500G**

OXALIC ACID IN AQUEOUS SOLUTION

Ethanedioic acid, Oxiric acid

CAS: 144-62-7
UN: 3265

Oxalic Acid, Solution 10% (w/v)

Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Assay (w/v) ..... 9.75 - 10.25 %
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7336-1**

Palladium

see Standards, ICP and ICP-MS

Papanicolaou Stain

see Histology Stains and Reagents

Papea

see Histology Stains and Reagents

Papers and Strips, pH

see pH Papers and Strips

PARAFFIN, LIQUID

Light liquid paraffin, Mineral oil, Vaseline oil

Boiling Pt: 300 to 500 °C (1013 hPa)
Density: 0.86 g/cm³ (20 °C)
Flash Pt: 215 °C (closed cup)
CAS: 8012-95-1

Paraffin Oil, White

VWR ANALYTICAL

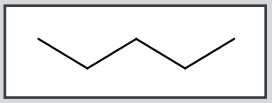
Shelf-life ..... 2 years
Specific gravity ..... 0.852 - 0.876 at 25/25 °C
Flash pt., tag closed cup ..... 400 °F max.
Odor description ..... Yes
Solid ..... Pass
Viscosity at 100 °F ASTM-D_{0445}/2161, Saybolt ..... 180.0 - 190.0
Viscosity at 40 °C, ASTM D-0445, Centistokes ..... 34.9 - 37.3 cSt
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH7338-4**

Pathology Stains

see Histology Stains and Reagents

N-PENTANE



Formula: $H_3C(CH_2)_3CH_3$
M.W. 72.15 g/mol
Boiling Pt: 35 to 36 °C (1013 hPa)
Melting Pt: -130 °C
Density: 0.63 g/cm^3 (20 °C)
Flash Pt: -40 °C
CAS: 109-66-0
UN: 1265

n-Pentane, 99%, HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

Assay (by GC-FID) (as n-Pentane) ..... Min. 99 %
Water (by KF coulometry) ..... Max. 0.01 %
Nonvolatile Residue ..... Max. 0.0005 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Fluorescence (at emmission maximum for impurites) (254 nm) ..... Max. 0.001 ppm
Fluorescence (at emmission maximum for impurites) (365 nm) ..... Max. 0.001 ppm
Transmittance (200 nm) ..... Min. 10 %
Transmittance (210 nm) ..... Min. 40 %
Transmittance (215 nm) ..... Min. 70 %
Transmittance (222 nm) ..... Min. 90 %
Transmittance (240 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH83632.400**

Pentane, Laboratory Reagent

Clear, colorless liquid.

VWR ANALYTICAL

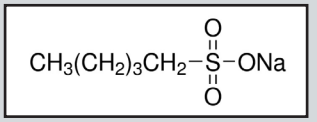
Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.010%
Residue ..... Less than 0.001% (0.0010 g/160 mL)
GC Purity ..... Greater than 99.9% n-pentane (n-C_5) and C_5 isomers
n-Pentane ..... Greater than 98.0%
Color (APHA) ..... Less than 10

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1143-4LG**
19 L	Steel Can	**BDH1143-19L**
204 L	Steel Drum	**BDH1143-204L**

1-PENTANESULFONIC ACID SODIUM SALT

Sodium 1-pentanesulfonate

Formula: $C_5H_{11}O_3SNa$
M.W. 174.2 g/mol
Melting Pt: Min. 300 °C
CAS: 22767-49-3



1-Pentanesulfonic Acid, HiPerSolv CHROMANORM® for HPLC

Ion pairing reagent.

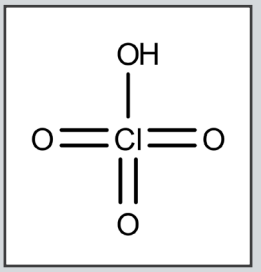
VWR ANALYTICAL

Assay ..... Min. 99 %
IR Spectrum ..... Passes test
pH (10 %) 5.5-7.5
Loss on drying (120°C; under vacuum) ..... Max. 2.0 %
Transmittance (200 nm) (0,005 mol/l) ..... Min. 70 %
Transmittance (220 nm) (0,005 mol/l) ..... Min. 90 %
Transmittance (250 nm) (0,005 mol/l) ..... Min. 96 %

Size	Packaging	Cat. No.
100 g	HDPE Bottle	**BDH152813W**

PERCHLORIC ACID

M.W. 100.46 g/mol
Boiling Pt: 39 °C (75 hPa)
Melting Pt: -101 °C
CAS: 7601-90-3
UN: 1873



VWR Technical Product Support

VWR Technical Product Support is your one source for all VWR product technical questions. Consisting of experienced scientists with backgrounds in your area of research, the team is committed to providing you with real-time response and proven industry solutions. For assistance, email us at **TechnicalProductSupportNA@vwr.com** or call us at **1.888.897.5463**.

Perchloric Acid, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

VWR ANALYTICAL

Assay	65 - 71 %
Aluminum (Al)	max. 100 ppt
Antimony (Sb)	max. 100 ppt
Arsenic (As)	max. 100 ppt
Barium (Ba)	max. 100 ppt
Beryllium (Be)	max. 100 ppt
Bismuth (Bi)	max. 10 ppt
Cadmium (Cd)	max. 10 ppt
Calcium (Ca)	max. 100 ppt
Cerium (Ce)	max. 10 ppt
Cesium (Cs)	max. 10 ppt
Cobalt (Co)	max. 100 ppt
Copper (Cu)	max. 100 ppt
Dysprosium (Dy)	max. 10 ppt
Erbium (Er)	max. 10 ppt
Europium (Eu)	max. 10 ppt
Gadolinium (Gd)	max. 10 ppt
Gallium (Ga)	max. 10 ppt
Hafnium (Hf)	Information Only
Holmium (Ho)	max. 10 ppt
Indium (In)	max. 10 ppt
Iron (Fe)	max. 100 ppt
Lanthanum (La)	max. 10 ppt
Lead (Pb)	max. 10 ppt
Lithium (Li)	max. 100 ppt
Lutetium (Lu)	max. 10 ppt
Magnesium (Mg)	max. 100 ppt
Manganese (Mn)	max. 100 ppt
Molybdenum (Mo)	max. 100 ppt
Neodymium (Nd)	max. 10 ppt
Nickel (Ni)	max. 100 ppt
Niobium (Nb)	Information Only
Palladium (Pd)	max. 10 ppt
Platinum (Pt)	max. 100 ppt
Potassium (K)	max. 100 ppt
Praseodymium (Pr)	max. 10 ppt
Rhodium (Rh)	max. 10 ppt
Rubidium (Rb)	max. 10 ppt
Samarium (Sm)	max. 10 ppt
Scandium (Sc)	max. 100 ppt
Silver (Ag)	max. 100 ppt
Sodium (Na)	max. 100 ppt
Strontium (Sr)	max. 100 ppt
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 10 ppt
Terbium (Tb)	max. 10 ppt
Thallium (Tl)	max. 100 ppt
Thorium (Th)	max. 10 ppt
Thulium (Tm)	max. 10 ppt
Tin (Sn)	max. 100 ppt
Titanium (Ti)	max. 100 ppt
Tungsten (W)	Information Only
Uranium (U)	max. 10 ppt
Vanadium (V)	max. 100 ppt
Ytterbium (Yb)	max. 10 ppt
Yttrium (Y)	max. 10 ppt
Zinc (Zn)	max. 100 ppt
Zirconium (Zr)	max. 100 ppt

Size	Packaging	Cat. No.
500 mL	FEP Bottle	**87003-230**

Perchloric Acid, ARISTAR® PLUS

High purity acid for quantitative trace metal analysis at the parts-per-billion (ppb) level.

VWR ANALYTICAL

Assay	65 - 71 %
Color	max. 10 APHA
Aluminum (Al)	max. 1 ppb
Antimony (Sb)	max. 0.5 ppb
Arsenic (As)	max. 0.5 ppb
Barium (Ba)	max. 1 ppb
Beryllium (Be)	max. 0.5 ppb
Bismuth (Bi)	max. 0.5 ppb
Cadmium (Cd)	max. 1 ppb
Calcium (Ca)	max. 1 ppb
Cerium (Ce)	max. 0.5 ppb
Cesium (Cs)	max. 0.5 ppb
Cobalt (Co)	max. 0.5 ppb
Copper (Cu)	max. 0.5 ppb
Dysprosium (Dy)	max. 0.5 ppb
Erbium (Er)	max. 0.5 ppb
Europium (Eu)	max. 0.5 ppb
Gadolinium (Gd)	max. 0.5 ppb
Gallium (Ga)	max. 0.5 ppb
Gold (Au)	max. 0.5 ppb
Hafnium (Hf)	Information Only
Holmium (Ho)	max. 0.5 ppb
Indium (In)	max. 0.5 ppb
Iron (Fe)	max. 1 ppb
Lanthanum (La)	max. 0.5 ppb
Lead (Pb)	max. 1 ppb
Lithium (Li)	max. 0.5 ppb
Lutetium (Lu)	max. 0.5 ppb
Magnesium (Mg)	max. 1 ppb
Manganese (Mn)	max. 1 ppb
Molybdenum (Mo)	max. 0.5 ppb
Neodymium (Nd)	max. 0.5 ppb
Nickel (Ni)	max. 1 ppb
Niobium (Nb)	Information Only
Palladium (Pd)	max. 0.5 ppb
Platinum (Pt)	max. 0.5 ppb
Potassium (K)	max. 1 ppb
Praseodymium (Pr)	max. 0.5 ppb
Rhodium (Rh)	max. 0.5 ppb
Rubidium (Rb)	max. 0.5 ppb
Samarium (Sm)	max. 0.5 ppb
Scandium (Sc)	max. 0.5 ppb
Silver (Ag)	max. 1 ppb
Sodium (Na)	max. 1 ppb
Strontium (Sr)	max. 0.5 ppb
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 0.5 ppb
Terbium (Tb)	max. 0.5 ppb
Thallium (Tl)	max. 0.5 ppb
Thorium (Th)	max. 1 ppb
Thulium (Tm)	max. 0.5 ppb
Tin (Sn)	max. 1 ppb
Titanium (Ti)	max. 1 ppb
Tungsten (W)	Information Only
Uranium (U)	max. 0.5 ppb
Vanadium (V)	max. 0.5 ppb
Ytterbium (Yb)	max. 0.5 ppb
Yttrium (Y)	max. 0.5 ppb
Zinc (Zn)	max. 1 ppb
Zirconium (Zr)	max. 0.5 ppb

Size	Packaging	Cat. No.
500 mL	HDPE Bottle	**87003-265**
2.5 L	HDPE Bottle	**87003-267**

Perchloric Acid, ACS, 70%

VWR ANALYTICAL

Assay	69.0 - 72.0 %
Color	Max. 10 APHA
Heavy metals (as Pb)	Max. 1 ppm
Nitrogen compounds (as N)	Max. 0.001 %
Residue after ignition	Max. 0.003 %
Cl (Chloride)	Max. 0.001 %
$SiO_4 + PO_4$ (as SiO_2)	Max. 5 ppm
SO_4 (Sulfate)	Max. 0.001 %
Fe (Iron)	Max. 1 ppm

Size	Packaging	Cat. No.
2.5 L	Clear Glass	**BDH4550-2.5L**
500 mL	Amber Glass Bottle	**BDH4550-500ML**

Perchloric Acid, Solution 0.1N in Acetic Acid

Made with high purity acetic acid, suitable as a titrant.

VWR ANALYTICAL

Appearance/color	Clear liquid
N.I.S.T. Traceable	Yes
Normality	0.0995 - 0.1005 N
Shelf-life	1 year

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH7210-2**
1 L	Amber Glass Bottle	**BDH7210-1**
4 L	Amber Glass Bottle	**BDH7210-4**

PETROLEUM ETHER 35-60°C

Hydrotreated light naphtha, Petroleum spirit 35-60°C

Boiling Pt: 35 to 60 °C (1013 hPa)
CAS: 64742-49-0
UN: 1268

Petroleum Ether, ACS (35-60°C)

Meets ACS specifications for general use.

VWR ANALYTICAL

Appearance	Clear
Water (K.F.)	Less than 0.020%
Residue	Less than 0.001% (0.0010 g/150 mL)
GC Purity	Greater than 99.0% C_5 and C_6 isomers
n-Pentane (n-C_5)	Record value
2-Methyl Pentane (n-C_6)	Record value
Color (APHA)	Less than 10
Boiling Range	35 - 60 C
Acidity	Passes test (Aqueous layer should not turn blue litmus paper to red.)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1145-4LG**
19 L	Steel Can	**BDH1145-19L**
204 L	Steel Drum	**BDH1145-204L**

Protect your Samples with Compact VWR® symphony™ Flammable Storage Refrigerators and Freezers

VWR COLLECTION

To facilitate the storage of flammable materials, sources of sparks and ignition – such as lights, thermostats, switches and fans – have been removed from the interior of these units. All units have exterior adjustable mechanical thermostats.

- Exterior adjustable mechanical thermostats
- White baked-on powder coat exterior
- Single solid door, with keyed locks

Description	Volume	Exterior Dimensions	Cat. No.
Refrigerator	566 L (20 cu. ft.)	86.4W x 90.8D x 186H cm (34 x 35¾ x 73¼")	**89498-662**
Refrigerator	849.5 L (30 cu. ft.)	89W x 89D x 183H cm (35 x 35 x 72")	**89498-658**
Freezer	566 L (20 cu. ft.)	86.4W x 90.8D x 186H cm (34 x 35¾ x 73¼")	**89498-664**
Freezer	849.5 L (30 cu. ft.)	89W x 89D x 183H cm (35 x 35 x 72")	**89498-660**

For more information, additional sizes, and accessories, please visit **vwr.com**

VWR® B-Series Balances

VWR COLLECTION

VWR® B-Series Balances combine advanced weighing with intuitive operation and incorporate state-of-the-art features for advanced weighing applications. These economical balances have die-cast aluminum housing, stainless steel weigh pans and draft chamber floors that withstand the rigors of harsh environments.

- Reliable results
- Multiple weigh modes
- Worry-free five-year warranty
- Forced compensation weighing technology

Capacity	Length & Linearity	Readability & Repeatability	Cat. No.
60 g	0.2 mg	0.1 mg	**10204-972**
120 g	0.2 mg	0.1 mg	**10204-974**
210 g	0.2 mg	0.1 mg	**10204-976**
200 g	0.2 mg	0.001 g	**10204-978**
400 g	0.2 mg	0.001 g	**10205-028**
500 g	0.002 g	0.001 g	**10205-030**
4000 g	0.02 g	0.01 g	**10205-032**
5000 g	0.02 g	0.01 g	**10205-034**

For more information, visit **vwr.com**

pH Reference Standard Buffers, BDH®

Buffers are available as either colorless or colored solutions. They are all calibrated in an ISO 17025 certified laboratory using certified Standards, and are traceable to NIST Standard Reference Materials. Store at room temperature.

Ordering Information: Buffer set BDH5100-PK comes with two 500mL bottles each of the pH 4.00 red buffer, pH 7.00 yellow buffer, and pH 10.00 blue buffer.

Size	pH Value	Color	pH Accuracy	Packed	Traceable to N.I.S.T. Standard Reference Material (SRM) Number	Cat. No.
500 mL (16.9 oz.)	1.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5002-500ML**
20 L (5.3 gal.)	1.00	Colorless	±0.01	Cubitainer®	185, 186	**BDH5004-20L**
500 mL (16.9 oz.)	1.68	Colorless	±0.01	Poly Bottle	185, 186	**BDH5006-500ML**
4 L (1.1 gal.)	1.68	Colorless	±0.01	Poly Bottle	185, 186	**BDH5008-4L**
500 mL (16.9 oz.)	2.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5010-500ML**
20 L (5.3 gal.)	2.00	Colorless	±0.01	Cubitainer®	185, 186	**BDH5012-20L**
500 mL (16.9 oz.)	3.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5014-500ML**
20 L (5.3 gal.)	3.00	Colorless	±0.01	Cubitainer®	185, 186	**BDH5000-20L**
20 mL (0.7 oz.)	4.00	Red	±0.01	Foil Package	185, 186	**BDH5016-20ML**
500 mL (16.9 oz.)	4.00	Red	±0.01	Poly Bottle	185, 186	**BDH5018-500ML**
500 mL (16.9 oz.)	4.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5024-500ML**
4 L (1.1 gal.)	4.00	Red	±0.01	Poly Bottle	185, 186	**BDH5020-4L**
4 L (1.1 gal.)	4.00	Red	±0.01	Cubitainer®	185, 186	**BDH5022-4L**
4 L (1.1 gal.)	4.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5026-4L**
20 L (5.3 gal.)	4.00	Red	±0.01	Cubitainer	185,186	**BDH0198-20L**
20 L (5.3 gal.)	4.00	Colorless	±0.01	Cubitainer®	185, 186	**BDH5028-20L**
208 L (55 gal.)	4.00	Red	±0.01	Poly Drum	185,186	**BDH0196-55GL**
4 L (1.1 gal.)	4.45	Colorless	±0.01	Poly Bottle	185, 186	**BDH5030-4L**
500 mL (16.9 oz.)	4.63	Colorless	±0.01	Poly Bottle	185, 186	**BDH5032-500ML**
500 mL (16.9 oz.)	5.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5034-500ML**
20 L (5.3 gal.)	5.00	Colorless	±0.01	Cubitainer®	185, 186	**BDH5036-20L**
500 mL (16.9 oz.)	6.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5038-500ML**
4 L (1.1 gal.)	6.00	Colorless	±0.01	Poly Bottle	185, 186	**BDH5098-4L**
500 mL (16.9 oz.)	6.86	Colorless	±0.01	Poly Bottle	185, 186	**BDH5040-500ML**
20 L (5.3 gal.)	6.86	Colorless	±0.01	Cubitainer®	185, 186	**BDH5042-20L**
20 mL (0.7 oz.)	7.00	Yellow	±0.01	Foil Package	186, 191, 192	**BDH5044-20ML**
500 mL (16.9 oz.)	7.00	Yellow	±0.01	Poly Bottle	186, 191, 192	**BDH5046-500ML**
500 mL (16.9 oz.)	7.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5052-500ML**
4 L (1.1 gal.)	7.00	Yellow	±0.01	Poly Bottle	186, 191, 192	**BDH5048-4L**
4 L (1.1 gal.)	7.00	Yellow	±0.01	Cubitainer®	186, 191, 192	**BDH5050-4L**
4 L (1.1 gal.)	7.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5054-4L**
20 L (5.3 gal.)	7.00	Yellow	±0.01	Cubitainer	186,191	**BDH0194-20L**
20 L (5.3 gal.)	7.00	Colorless	±0.01	Cubitainer®	186, 191, 192	**BDH5056-20L**
208 L (55 gal.)	7.00	Yellow	±0.01	Poly Drum	186,191	**BDH0192-55GL**
500 mL (16.9 oz.)	7.38	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5058-500ML**
500 mL (16.9 oz.)	8.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5060-500ML**
500 mL (16.9 oz.)	9.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5062-500ML**
4 L (1.1 gal.)	9.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5064-4L**
500 mL (16.9 oz.)	9.18	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5066-500ML**
20 L (5.3 gal.)	9.18	Colorless	±0.01	Cubitainer®	186, 191, 192	**BDH5068-20L**
20 mL (0.7 oz.)	10.00	Blue	±0.01	Foil Package	186, 191, 192	**BDH5070-20ML**
500 mL (16.9 oz.)	10.00	Blue	±0.01	Poly Bottle	186, 191, 192	**BDH5072-500ML**
500 mL (16.9 oz.)	10.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5078-500ML**
4 L (1.1 gal.)	10.00	Blue	±0.01	Poly Bottle	186, 191, 192	**BDH5074-4L**
4 L (1.1 gal.)	10.00	Blue	±0.01	Cubitainer®	186, 191, 192	**BDH5076-4L**
4 L (1.1 gal.)	10.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5080-4L**
20 L (5.3 gal.)	10.00	Blue	±0.01	Cubitainer	186,191	**BDH0190-20L**
20 L (5.3 gal.)	10.00	Colorless	±0.01	Cubitainer®	186, 191, 192	**BDH5082-20L**
208 L (55 gal.)	10.00	Blue	±0.01	Poly Drum	186,191	**BDH0188-55GL**
500 mL (16.9 oz.)	11.00	Colorless	±0.01	Poly Bottle	186, 191, 192	**BDH5084-500ML**
500 mL (16.9 oz.)	12.00	Colorless	±0.02	Poly Bottle	186, 191, 192	**BDH5086-500ML**
4 L (1.1 gal.)	12.00	Colorless	±0.02	Poly Bottle	186, 191, 192	**BDH5088-4L**
20 L (5.3 gal.)	12.00	Colorless	±0.02	Cubitainer®	186, 191, 192	**BDH5090-20L**
500 mL (16.9 oz.)	12.45	Colorless	±0.02	Poly Bottle	186, 191, 192	**BDH5092-500ML**
4 L (1.1 gal.)	12.45	Colorless	±0.02	Poly Bottle	186, 191, 192	**BDH5094-4L**
20 L (5.3 gal.)	12.45	Colorless	±0.02	Cubitainer®	186, 191, 192	**BDH5096-20L**
500 mL (16.9 oz.)	Buffer Set	Assorted	±0.01	Poly Bottle		**BDH5100-PK**

pH Test Strips, BDH®

Used for rapid pH testing directly at the point of interest, strips are always ready for immediate use. They are also suitable for careful testing of dangerous, poisonous, or aggressive liquids as the long handle prevents fingers from coming into contact with the sample. The dye is chemically bound to the test strip and cannot bleed into the sample, protecting against contamination and enabling measurement in weakly buffered or strongly alkaline solutions. Included color chart has 4 different color blocks for each pH value, enabling highly precise pH determination. Strips are available in 13 different pH ranges with accuracy down to 0.2 pH units. Dimensions: 85Lx6Wmm.

Ordering Information: Strips are packaged 100 to a box.

pH Graduation	pH Range	Cat. No.
Universal Range		
1.0	0–14.0	**BDH35309.606**
Intermediate Ranges		
0.3/0.5	6.0–10.0	**BDH83931.601**
0.5	0–6.0	**BDH35310.601**
0.5	2.0–9.0	**BDH83930.601**
0.5	4.5–10.0	**BDH35311.604**
0.5	7.0–14.0	**BDH35312.607**
Narrow Ranges		
0.2/0.4	7.5–9.5	**BDH35318.607**
0.2/0.4	7.9–9.8	**BDH83933.601**
0.3	1.7–3.8	**BDH35315.607**
0.3	5.1–7.2	**BDH83932.601**
0.3/0.4	0.3–2.3	**BDH35314.604**
0.3/0.5	3.6–6.1	**BDH35316.601**
0.3/0.4	6.0–7.7	**BDH35317.604**

pH Indicator Paper DoubleZone, BDH®

These indicator papers show two different colors for each pH value at intervals of 0.3–1 pH unit, increasing the accuracy of readings and allowing good estimation of intermediate values. Paper comes on a plastic reel that will protect from many environmental influences, ensuring that the paper is always ready to use. Width: 10mm. Length: 5m.

pH Graduation	pH Range	Cat. No.
1.0	1.0–12.0	**BDH35300.606**
0.3	1.0–4.3	**BDH35301.600**
0.3	3.5–6.8	**BDH35302.603**
0.3	5.0–8.0	**BDH35303.606**
0.3	7.0–10.0	**BDH70035.607**
0.5	9.5–14.0	**BDH70036.601**

1,10-PHENANTHROLINE MONOHYDRATE

1,10-Phenanthroline Monohydrate, Solution 0.1% (w/v) in Dilute Hydrochloric Acid

APHA for iron.

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
500 mL	HDPE Bottle	**BDH7443-2**

PHENOL

Carbolic acid , Hydroxybenzene , Phenylalcohol

Formula: C_6H_5OH
M.W. 94.11 g/mol
Boiling Pt: 181.7 °C (1013 hPa)
Melting Pt: 40.8 °C
Density: 1.0722 g/cm³ (20 °C)
Flash Pt: 81 °C
CAS: 108-95-2
UN: 1671

Phenol, Loose Crystals, ACS

Assay ..... Min. 99.0%
Clarity of solution ..... Passes test
Preservative (Citric acid) ..... About 20 ppm
Freezing point (dried basis) ..... Min. 40.5°C
Residue after evaporation ..... Max. 0.05%

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4626-500G**

Phenol, Liquified, Laboratory Reagent, 90%

Assay ..... Min. 89.0%
Appearance ..... Colorless to pale pink
Clarity of solution and reaction ..... Passes test
Preservative (Citric acid) ..... About 18 ppm
Non-volatile residue ..... Max. 0.05%

Size	Packaging	Cat. No.
4 L	Polycoated Glass Bottle	**BDH4624-4L**

PHENOLPHTHALEIN IN ETHANOL

1(3H)-Isobenzofuranone, 3,3-bis(4-hydroxyphenyl)-, 3,3-Bis(4-hydroxyphenyl) phthalide

Boiling Pt: Min. 78 °C (1013 hPa)
Density: ~ 0.85 g/cm^3 (20 °C)
CAS: 77-09-8
UN: 1170

Phenolphthalein, Solution 1% in Alcohol

Made with denatured ethanol.

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7344-2**
1 L	Poly Bottle	**BDH7344-1**
4 L	Poly Bottle	**BDH7344-4**

Phenolphthalein, Solution 0.5% in Isopropanol

Made with 50% isopropanol

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7342-2**
1 L	Poly Bottle	**BDH7342-1**

Phenylarsine Oxide, Solution 0.025N

Normality ..... 0.0246 - 0.0254 N
Appearance/color ..... Clear pale yellow liquid
pH at 25°C ..... 6.0 - 7.0

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7883-1**

Phenylarsine Oxide, Solution 0.0056N

APHA and ASTM. 1mL=0.2mg chloride.

Normality ..... 0.00559 - 0.00569 N
pH at 25°C ..... 6.0 - 7.0
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH7343-2**
1 L	Amber Glass Bottle	**BDH7343-1**
4 L	Amber Glass Bottle	**BDH7343-4**

Phenylmethane

see Toluene

Phosphate Buffer, pH 7.2

APHA for BOD (biological oxygen demand).

pH at 25°C ..... 7.15 - 7.25
Appearance/color ..... Clear liquid
Prepared to standard methods ..... Yes
Filtration 0.2 µm ..... Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7345-1**
4 L	Poly Bottle	**BDH7345-4**

Phosphate Buffer, pH 7.0

Suitable for method ASTM D 1253 for determination of residual chlorine.

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year
pH ..... 6.90 - 7.10
Prepared conforms to ASTM D_{1253} ..... Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7447-1**

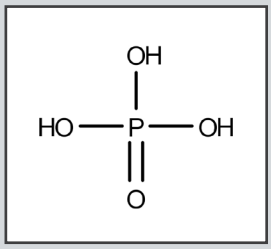
Phosphorus

see Standards, ICP and ICP-MS

PHOSPHORIC ACID

o-Phosphoric acid, Orthophosphoric acid, Phosphoric acid ortho

Formula: H_3PO_4
Density: 1.5 to 1.8 g/cm^3 (20 °C)
CAS: 7664-38-2
UN: 1805



o-Phosphoric Acid. ACS Grade.

Meets reagent specifications for testing USP/NF monographs.

Antimony (Sb) ..... 20 ppm max.
Arsenic (As) ..... 1 ppm max.
Assay (H_3PO_4) ..... 85.0% min.
Calcium (Ca) ..... 20 ppm max.
Chloride (Cl) ..... 3 ppm max.
Color (APHA) ..... 10 max.
Heavy metals (as Pb) ..... 10 ppm max.
Insol. matter ..... 10 ppm max
Iron (Fe) ..... 30 ppm max.
Magnesium (Mg) ..... 20 ppm max.
Manganese (Mn) ..... 0.5 ppm max.
Nitrate (NO_3) ..... 5 ppm max.
Potassium (K) ..... 50 ppm max.
Reducing substances ..... To pass test
Sodium (Na) ..... 250 ppm max.
Sulfate (SO_4) ..... 30 ppm max.
Volatile acids (CH_3COOH) ..... 10 ppm max.

Size	Packaging	Cat. No.
2.5 L	Poly-Coated Glass Bottle	**BDH3104-2.5LPC**
3.8 L	Poly Bottle	**BDH3118-3.8LP**
19 L	Vent Flow Carboy	**BDH3050-19L**

Orthophosphoric Acid, 85%, HiPerSolv CHROMANORM®, for HPLC

BDH® VWR ANALYTICAL

Assay ..... Min. 85 %
Volatile acids ..... Max. 0.0002 mEq/g
Fe (Iron) ..... Max. 10 ppm
Pb (Lead) ..... Max. 2 ppm
Transmittance (254 nm) (0.1 mol/l) ..... Min. 80 %

Size	Packaging	Cat. No.
500mL	Amber Glass Bottle	**BDH153155E**

o-Phosphoric Acid, 85%

Clear, colorless liquid.

Meets reagent specifications in FCC monographs.

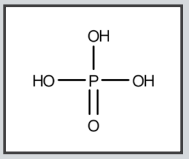
BDH® VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Arsenic (As) ..... 3 mg/kg max.
Assay (H_3PO_4) ..... 85.0 - 88.0% (W/W)
Cadmium (Cd) ..... 3 mg/kg max.
Fluoride (F) ..... 10 mg/kg max.
Identification (PO_4) ..... To pass test
Lead (Pb) ..... 3 mg/kg max.

Size	Packaging	Cat. No.
19 L	Vent Flow Carboy	**BDH3062-19L**
188 L	Poly Drum	**BDH3066-188L**

O-PHOSPHORIC ACID (10 - < 25%)

Orthophosphoric acid (10 - < 25%), Phosphoric acid, Phosphoric acid ortho, Phosphoric acid 20%



Formula: H_3PO_4
Density: ~ 1.1 g/cm^3 (20 °C)
CAS: 7664-38-2
UN: 1805

o-Phosphoric Acid, Solution 10%, v/v (1+9)

Made with deionized water.

BDH® VWR ANALYTICAL

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7346-1**

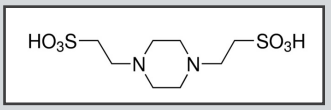
2,2'-(Piperazine-1,4-diyl)bis(ethanesulphonic) Acid

see PIPES

PIPES

2,2'-(Piperazine-1,4-diyl)bis(ethanesulphonic) acid , Piperazine-N,N'-bis-2-ethanesulphonic acid , Piperazine-1,4-bis(2-ethanesulphonic acid)

Formula: $C_8H_{18}N_2O_6S_2$
M.W. 302.37 g/mol
Boiling Pt: 499 °C (1013 hPa)
Melting Pt: 300 °C
CAS: 5625-37-6



PIPES Free Acid

VWR® BIOPROCESSING

Suitable for bioprocessing. BSE/TSE Free. Manufactured in USA. Custom Packaging and Testing Available. Change Management. Sample availability.

Appearance ..... white crystalline powder
Assay (By titration) ..... NLT 98.0%
Absorbance (1M solution in H_2O) 260nm ..... NMT 0.05
Absorbance (1M solution in H_2O) 280nm ..... NMT 0.05
Identification (by IR) ..... conforms to structure
Loss On Drying (2 hours at 110°C) ..... NMT 3.0%
Solubility (0.1M solution in 1N NaOH) ..... clear and complete
Heavy Metals (as Pb) ..... NMT 10 ppm
Bioburden ..... NMT 100 CFU/g
Cell Culture Toxicity ..... passes
Endotoxin (1.0% solution) ..... NMT 0.1 EU/mg
DNase ..... none detected
RNase ..... none detected
Protease ..... none detected
Additional Information ..... Retest Date (3 Yrs form Manufacture)
Additional Information ..... Country of Origin: USA
Additional Information ..... Material is of non-animal, non-human origin
Additional Information ..... Storage Conditions: 15°C to 30°C

Size	Packaging	Cat. No.
1 kg	HDPE Bottle	**VWRB73007-1KG**
25 kg	HDPE Pail	**VWRB73007-25KG**
5 kg	HDPE Pail	**VWRB73007-5KG**

Platinum

see Standards, ICP and ICP-MS

POLYSORBATE 80

Polysorbate 80, Solution

BDH® VWR ANALYTICAL

Appearance/color ..... Clear colourless liquid
Identification ..... Passes test
Acid value ..... 2.0 max.
Hydroxyl value ..... 65 - 80
Saponification value ..... 45 - 55
Specific gravity (25°C/25 °C) ..... 1.060 - 1.090
Viscosity (25 °C) ..... 300 - 500 cSt
Heavy metals (as Pb) ..... 10 ppm max.
Residue after ignition ..... 0.25 % max.
Water ..... 3.0 % max.
Residual solvents ..... Passes test

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH7781-2**

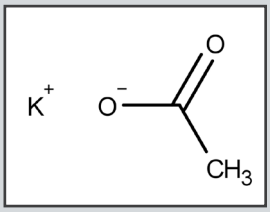
Potassium

see Standards, ICP and ICP-MS

POTASSIUM ACETATE

4-Chloro-N-furfuryl-5-sulfamoylanthranlic acid, Acetic acid potassium salt, Diuretic salt

Formula: CH_3COOK
M.W. 98.14 g/mol
Melting Pt: 304 °C
Density: 1.57 g/cm³ (25 °C)
Flash Pt: Min. 250 °C
CAS: 127-08-2



Potassium Acetate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

VWR ANALYTICAL

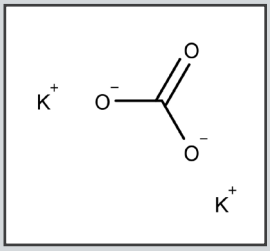
Calcium	<= 0.005 %
Chloride	<= 0.003 %
Heavy Metals	<= 0.0005 %
Insolubles	<= 0.005 %
Iron	<= 0.0005 %
Magnesium	<= 0.002 %
pH (5%, Water) @25C	6.5 - 9.0
Phosphate	<= 0.001 %
Purity	>= 99.0 %
Sodium	<= 0.03 %
Sulfate	<= 0.002 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9254-500G**

POTASSIUM CARBONATE

Carbonic acid, dipotassium salt, Carbonic acid potassium salt

Formula: K_2CO_3
M.W. 138.21 g/mol
Melting Pt: 891 °C
Density: 2.42 g/cm³ (20 °C)
CAS: 584-08-7



Potassium Carbonate, ACS

Meets reagent specifications for testing USP/NF monographs.

White, hygroscopic solid

VWR ANALYTICAL

Purity	>= 99.0 %
Insoluble matter	<= 0.01 %
Chloride (Cl)	<= 0.003 %
Phosphate (PO_4)	<= 0.001 %
Silica (SiO_2)	<= 0.005 %
Sulfur compounds (as SO_4)	<= 0.004 %
Heavy metals (as Pb)	<= 0.0005 %
Iron (Fe)	<= 0.0005 %
Calcium (Ca)	<= 0.005 %
Magnesium (Mg)	<= 0.002 %
Sodium (Na)	<= 0.02 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9256-500G**
12 kg	Poly Pail	**BDH9256-12KG**

POTASSIUM CHLORIDE

Formula: KCl
M.W. 74.55 g/mol
Boiling Pt: 1420 °C (1013 hPa)
Melting Pt: 773 °C
Density: 1.98 g/cm³ (20 °C)
CAS: 7447-40-7

Potassium Chloride, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

VWR ANALYTICAL

Barium Test	PASS
Bromide	<= 0.01 %
Calcium	<= 0.002 %
Chlorate & Nitrate (as NO_3)	<= 0.003 %
Heavy Metals	<= 0.0005 %
Insolubles	<= 0.005 %
Iodide	<= 0.002 %
Iron	<= 0.0003 %
Magnesium	<= 0.001 %
pH (5%, Water) @25C	5.4 - 8.6
Phosphate	<= 0.0005 %
Purity	99.0 - 100.5 %
Sodium	<= 0.005 %
Sulfate	<= 0.001 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9258-500G**
2.5 kg	Poly Bottle	**BDH9258-2.5KG**

Potassium Chloride, 4.0M Solution Saturated with Silver Chloride

Made with deionized water and saturated with AgCl.

VWR ANALYTICAL

Shelf-life	1 year
Appearance/color	Clear liquid

Size	Packaging	Cat. No.
500 mL	Poly bottle	**BDH7965-2**

Potassium Chloride Solution 3.0M

Made with deionized water.

VWR ANALYTICAL

Appearance/color	Clear liquid
Shelf-life	2 years

Size	Packaging	Cat. No.
100 mL	Poly Bottle	**BDH7296-0**

Potassium Chloride, Saturated Solution

For refilling calomel reference electrodes. Ionic strength adjuster for calcium ion selective electrode.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Saturated product ..... Conforms

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7242-1**
500 mL	Poly Bottle	**BDH7242-2**

Potassium Chloride, Solution 0.01M, Conductivity Standard 1413 µmhos/cm

Conductivity standard: 1413µS/m

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. Traceable ..... Yes
Shelf-life ..... 1 year
Conductivity (25°C) ..... 1409 - 1417 µS/cm

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7349-1**

POTASSIUM CHROMATE IN AQUEOUS SOLUTION

Formula: K_2CrO_4
CAS: 7789-00-6
UN: 3287

Potassium Chromate (VI), Indicator Solution, 5% (w/v)

For the titration of chlorine using silver nitrate.

VWR ANALYTICAL

Free from chlorine ..... Pass
For titration of chloride using silver nitrate ..... Suitable
Appearance/color ..... Clear yellow liquid

Size	Packaging	Cat. No.
500 mL	Amber Poly Bottle	**BDH7350-2**

POTASSIUM FLUORIDE

Formula: KF
M.W.: 58.1g/mol
Boiling Point: 1505 °C (1013 hPa)
Melting Pt: 860 °C
Density: 2.48 g/cm^3 (20 °C)
CAS: 7789-23-3
UN: 3422

Potassium Fluoride, Anhydrous, ACS

VWR ANALYTICAL

Assay ..... Min. 99.0 %
Titrable acid ..... Max. 0.03 meq/g
Titrable base ..... Max. 0.01 meq/g
Heavy metals (as Pb) ..... Max. 0.001 %
Potassium fluosilicate ..... Max. 0.1 %
Cl (Chloride) ..... Max. 0.005 %
SO_4 (Sulphate) ..... Max. 0.005 %
Fe (Iron) ..... Max. 0.001 %
Na (Sodium) ..... Max. 0.2 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4596-500G**

Potassium Fluoride, Solution 50% (w/w)

Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
pH ..... **8.0 - 8.2 of 1:**6 dilution
Density ..... 1.28 - 1.33

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7455-1**

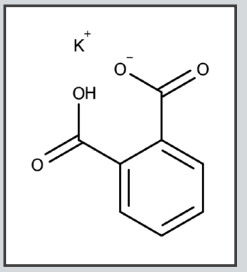
Potassium Hydrogen Phosphate

see Potassium Phosphate Dibasic

POTASSIUM HYDROGEN PHTHALATE

KHP, Phthalic acid potassium salt

Formula: $HOOCC_6H_4COOK$
M.W. 204.22 g/mol
Melting Pt: 295 to 300 °C
Density: 1.6362 g/cm^3 (20 °C)
CAS: 877-24-7



Potassium Hydrogen Phthalate, ACS

White solid.

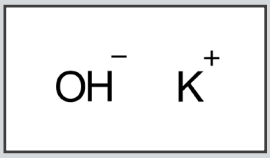
VWR ANALYTICAL

Assay (dried basis) ..... 99.95 - 100.05 %
Chlorine Compounds ..... <= 0.003 %
Heavy Metals (as Pb) ..... <= 5 ppm
Insoluble Matter ..... <= 0.005 %
Iron ..... <= 5 ppm
pH (0.05M, Water) @25C ..... 4.00 - 4.02
Sodium ..... <= 0.005 %
Sulfur Compounds ..... <= 0.002 %

Size	Packaging	Cat. No.
125 g	Poly Bottle	**BDH9260-125G**
500 g	Poly Bottle	**BDH9260-500G**

POTASSIUM HYDROXIDE

Caustic potash, Potassium hydrate



Formula: KOH
M.W. 56.11 g/mol
Boiling Pt: 1320 °C (1013 hPa)
Melting Pt: 360 °C
Density: 2.04 g/cm³ (20 °C)
CAS: 1310-58-3
UN: 1813

Potassium Hydroxide, ACS

Meets reagent specifications for testing USP/NF monographs.

White, deliquescent solid

Calcium ..... <= 0.005 %
Chloride ..... <= 0.01 %
Heavy Metals (as Ag) ..... <= 0.001 %
Iron ..... <= 0.001 %
Magnesium ..... <= 0.002 %
Nickel ..... <= 0.001 %
Nitrogen Compounds ..... <= 0.001 %
Phosphate ..... <= 5 ppm
Potassium Carbonate ..... <= 2.0 %
Purity ..... >= 85 %
Sodium ..... <= 0.05 %
Sulfate ..... <= 0.003 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9262-500G**
2.5 kg	Poly Bottle	**BDH9262-2.5KG**
12 kg	Poly Bottle	**BDH9262-12KG**

POTASSIUM HYDROXIDE (5 - 50%) IN AQUEOUS SOLUTION

Caustic potash, Potassium hydrate

Formula: KOH
CAS: 1310-58-3
UN: 1814

Potassium Hydroxide, Solution 50% (w/v)

APHA for anaerobic sludge.

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Assay (w/v) ..... 48.00 - 52.00 %

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7622-1**

Potassium Hydroxide, Solution Technical Grade 45% (w/w)

Shelf-life ..... 2 years
Assay ..... 43.00 - 47.00 %
K_2CO_3 ..... 0.2 % max.
KCl ..... 30 ppm max.
Iron (Fe) by EPA-6010B ..... 0.5 ppm max.
Heavy metals (as Pb) ..... 5 ppm max.
Sodium ..... 2500 ppm max.
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7245-1**
4 L	Poly Bottle	**BDH7245-4**

Potassium Hydroxide, Solution 10% (w/v)

Made with deionized water.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Shelf-life ..... 2 years
Assay (w/v) ..... 9.90 - 10.10 %

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7907-1**

Potassium Hydroxide, Solution 1.0N

Made with deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable ..... Yes
Normality ..... 0.998 - 1.002 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7212-1**

Potassium Hydroxide, Solution 0.1N

Made with deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.0095 - 0.1005 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7211-1**

POTASSIUM HYDROXIDE (0.1 - < 0.35 MOL/L) IN ETHANOL

Caustic potash, Potassium hydrate

Formula: KOH
Flash Pt: 12
CAS: 1310-58-3
UN: 2924

Potassium Hydroxide, Solution 0.1N in Ethanol

Made with 200 proof ethyl alcohol. Prepared to ASTM D 94.

VWR ANALYTICAL

Appearance/color	Clear to slightly turbid liquid
Molarity	0.0995 - 0.1005 M
Shelf-life	1 year
Prepared conforms to ASTM D_{94}	Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7457-1**

POTASSIUM HYDROXIDE (0.35 - < 1 MOL/L) IN METHANOL

Caustic potash, Potassium hydrate

Formula: KOH
Flash Pt: 11
CAS: 1310-58-3
UN: 3286

Potassium Hydroxide, Solution 0.5N in Methanol

Standardized at 25°C against chemicals whose certification is traceable to NIST.

VWR ANALYTICAL

Appearance/color	Clear liquid
N.I.S.T. traceable to SRM 84	Yes
Normality	0.498 - 0.502 N
Shelf-life	1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7730-1**

POTASSIUM HYDROXIDE (0.1 - < 0.35 MOL/L) IN METHANOL

Caustic potash, Potassium hydrate

Formula: KOH
Flash Pt: 11
CAS: 1310-58-3
UN: 1992

Potassium Hydroxide, Solution 0.1N in Methanol

VWR ANALYTICAL

Appearance/color	Clear liquid
N.I.S.T. traceable to SRM 84	Yes
Normality	0.0095 - 0.1005 N
Shelf-life	1 year

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7548-1**
4 L	Amber Glass Bottle	**BDH7548-4**

Potassium Hydroxide, Solution 0.1N in 2-Propanol

VWR ANALYTICAL

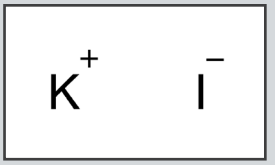
Appearance/color	Clear to turbid liquid
N.I.S.T. Traceable	Yes
Normality	0.0995 - 0.1005 N
Shelf-life	1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7630-1**

POTASSIUM IODIDE

Dipotassium diiodide, Kali iodide

Formula: KI
M.W. 166 g/mol
Boiling Pt: 1330 °C (1013 hPa)
Melting Pt: 686 °C
Density: 3.13 g/cm^3 (20 °C)
CAS: 7681-11-0



Potassium Iodide, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

VWR ANALYTICAL

Barium	<= 0.002 %
Calcium	<= 0.002 %
Chloride & Bromide	<= 0.01 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Iodate	<= 0.0003 %
Iron	<= 0.0003 %
Loss on Drying	<= 0.2 %
Magnesium	<= 0.001 %
pH (5%, Water) @25C	6.0 - 9.2
Phosphate	<= 0.001 %
Purity	>= 99.0 %
Sodium	<= 0.005 %
Sulfate	<= 0.005 %

Size	Packaging	Cat. No.
125 g	Poly Bottle	**BDH9264-125G**
500 g	Poly Bottle	**BDH9264-500G**
2.5 kg	Poly Bottle	**BDH9264-2.5KG**

VWR® Maximum Protection Lab Coats Are the Cleanest and Most Durable Available

VWR® COLLECTION

Manufactured from a specially formulated breathable microporous fabric, these coats offer exceptional comfort and superior barrier protection against fluids, biologicals, particulates, and light chemical splash. A high vapor transmission rate for comfort even through extended use.

Size	Cat. No.
Small	**414004-373**
Medium	**414004-371**
Large	**414004-369**
X-Large	**414004-368**
XX-Large	**414004-370**
3X-Large	**414004-372**
4X-Large	**414004-374**
5X Large	**414004-703**

For more from the VWR® Maximum Protection line, visit **vwr.com**

Potassium Iodide, Solution 20% (w/v)

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Amber Poly Bottle	**BDH7356-1**

Potassium Iodide, Solution 10% (w/v)

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Amber Poly Bottle	**BDH7354-1**
4 L	Poly Bottle	**BDH7354-4**

Potassium Iodide, Stabilized Solution 5% (w/v)

Made with potassium iodide, potassium hydroxide solution and deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Amber Poly Bottle	**BDH7458-1**

POTASSIUM NITRATE

Formula: KNO_3
M.W. 101.1 g/mol
Melting Pt: 334 °C
Density: 2.109 g/cm^3 (20 °C)
CAS: 7757-79-1
UN: 1486

Potassium Nitrate, Crystallized, ACS

Assay ..... Min. 99.0 %
pH (25°C; 5 %) ..... 4.5 - 8.5
Heavy metals (as Pb) ..... Max. 5 ppm
Insoluble matter ..... Max. 0.005 %
Cl (Chloride) ..... Max. 0.002 %
IO_3 (Iodate) ..... Max. 5 ppm
NO_2 (Nitrite) ..... Max. 0.001 %
PO_4 (Phosphate) ..... Max. 5 ppm
SO_4 (Sulphate) ..... Max. 0.003 %
Ca (Calcium) ..... Max. 0.005 %
Fe (Iron) ..... Max. 3 ppm
Mg (Magnesium) ..... Max. 0.002 %
Na (Sodium) ..... Max. 0.005 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4598-500G**

POTASSIUM PERMANGANATE (1% - < 10%) IN AQUEOUS SOLUTION

Formula: $KMnO_4$
M.W. 158.03 g/mol
CAS: 7722-64-7
UN: 3082

Potassium Permanganate, Solution 5% (w/v)

Made with potassium permanganate low mercury grade.

Appearance/color ..... Dark purple liquid
Potassium permanganate (w/v) ..... 4.0 - 5.1 %
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH7450-2**

Potassium Permanganate, Solution 0.1N

Suitable to be used as a titrant

Appearance/color ..... Dark purple clear liquid
N.I.S.T. Traceable to SRM 8040 ..... Yes
Normality ..... 0.0995-0.1005 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7213-1**
4 L	Amber Glass Bottle	**BDH7213-4**
20 L	Cubitainer*	**BDH7213-7**

VWR® Safety Cabinets for Flammables & Corrosives

Designed to protect both laboratory personnel and the contents, these cabinets features fully welded, 18-gauge steel construction that ensures fire protection and strength by reducing gapping. Equipped with upper and lower diametrically opposed side vents, two grounding attachment points at the rear of cabinet, double-wall construction, and an environmentally friendly, electrostatically applied powder coat finish

Capacity:	30 gal.
Dimensions:	45.7 x 109.2 x 111.8 cm (18 x 43 x 44")

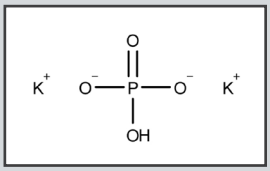
Description	Door Type	Cat. No.
Flammable Storage	Manual Close	**89522-620**
Flammable Storage	Self Close	**89522-616**
Flammable Storage	Bi-fold Self Close	**89522-618**
Corrosive Storage	Manual Close	**89522-642**
Corrosive Storage	Self Close	**89522-640**

For additional storage options, visit **vwr.com**

POTASSIUM PHOSPHATE DIBASIC

Dipotassium hydrogen phosphate, Potassium hydrogen phosphate

Formula: K_2HPO_4
M.W. 174.18 g/mol
Melting Pt: 340 °C
Density: 2.3 g/cm^3 (20 °C)
CAS: 7758-11-4



Potassium Phosphate Dibasic, ACS

White solid.

VWR ANALYTICAL

Chloride ..... <= 0.003 %
Heavy Metals (as Pb) ..... <= 0.0005 %
Insolubles ..... <= 0.01 %
Iron ..... <= 0.001 %
Loss on Drying ..... <= 1.0 %
Nitrogen Compounds ..... <= 0.001 %
pH (5%, Water) @25C ..... 8.5 - 9.6
Purity ..... >= 98.0 %
Sodium ..... <= 0.05 %
Sulfate ..... <= 0.005 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9266-500G**
2.5 kg	Plastic Bag in Pail	**BDH9266-2.5KG**

POTASSIUM PHOSPHATE MONOBASIC

Potassium dihydrogen orthophosphate, Potassium dihydrogenorthophosphate, Potassium orthophosphate monobasic, Potassium dyhydrogen phosphate

Formula: KH_2PO_4
M.W. 136.09 g/mol
Boiling Pt: ~ 100 °C (1013 hPa)
Melting Pt: 253 °C
Density: 2.3 g/cm^3 (20 °C)
CAS: 7778-77-0

Potassium Dihydrogen Phosphate, HiPerSolv CHROMANORM®, for HPLC

VWR ANALYTICAL

pH ..... 4.3-4.5 (20 °C; 5 %)
Assay Min.99.5%
Heavy metals (as Pb) ..... Max. 10 ppm
Cl (Chloride) ..... Max. 5 ppm
SO_4 (Sulphate) ..... Max. 30 ppm
Fe (Iron) ..... Max. 10 ppm
Transmittance (254 nm) (0.1 mol/l) ..... Min. 90 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH153184U**

Potassium Phosphate Monobasic, ACS

Meets reagent specifications for testing USP/NF monographs.

White or colorless solid

VWR ANALYTICAL

Chloride ..... <= 0.001 %
Heavy Metals ..... <= 0.001 %
Insolubles ..... <= 0.01 %
Iron ..... <= 0.002 %
Loss on Drying ..... <= 0.2 %
Nitrogen Compounds ..... <= 0.001 %
pH (5%, Water) @25C ..... 4.1 - 4.5
Purity ..... >= 99.0 %
Sodium ..... <= 0.005 %
Sulfate ..... <= 0.003 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9268-500G**
2.5 kg	Poly Bottle	**BDH9268-2.5KG**
12 kg	Poly pail	**BDH9268-12KG**

Potassium Phthalate, Solution 1000 ppm Carbon

TOC standard

VWR ANALYTICAL

Certified TOC value ..... 980 - 1020
Appearance/color ..... Clear liquid
Preservative (hydrochloric acid) ..... Passes test

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7510-2**

Potassium Pyroantimonate Testing Standard (TS)

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Suitability for Use ..... Dense precipitate with sodium

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7778-1**

POTASSIUM SODIUM TARTRATE TETRAHYDRATE

Formula: $KOOC(CHOH)_2COONa{\cdot}_4H_2O$
M.W. 282.22 g/mol
Melting Pt: 70 to 80 °C
Density: 1.767 g/cm^3 (20 °C)
CAS: 6381-59-5

Potassium Sodium Tartrate Tetrahydrate, ACS

Colorless or white solid

VWR ANALYTICAL

Ammonium ..... <= 0.002 %
Assay ..... 99.0 - 102.0 %
Calcium ..... <= 0.005 %
Chloride ..... <= 0.001 %
Heavy Metals ..... <= 5 ppm
Insoluble Matter ..... <= 0.005 %
Iron ..... <= 0.001 %
pH (5%, Water) @25.0C ..... 6.0 - 8.5
Phosphate ..... <= 0.002 %
Sulfate ..... <= 0.005 %

Size	Packaging	Cat. No.
500 g	HDPE Bottle	**BDH9272-500G**

POTASSIUM SULFATE

Formula: K_2SO_4
M.W. 174.26 g/mol
Boiling Pt: 1698 °C (1013 hPa)
Melting Pt: 1069 °C
Density: 2.66 g/cm^3 (20 °C)
CAS: 7778-80-5

Potassium Sulfate, Crystallized, ACS

BDH® VWR ANALYTICAL

Assay	Min. 99.0 %
Appearance	Crystals/crystall. powder
Appearance (color)	White
pH (25°C; 5 %)	5.5 - 8.5
Heavy metals (as Pb)	Max. 5 ppm
Insoluble matter	Max. 0.01 %
Nitrogen compounds (as N)	Max. 5 ppm
Cl (Chloride)	Max. 0.001 %
Ca (Calcium)	Max. 0.01 %
Fe (Iron)	Max. 5 ppm
Mg (Magnesium)	Max. 0.005 %
Na (Sodium)	Max. 0.02 %

Size	Packaging	Cat. No.
500 g	Amber Glass Bottle	**BDH4618-500G**

POTASSIUM THIOCYANATE IN AQUEOUS SOLUTION

Potassium isothiocyanate, Potassium rhodanate, Potassium rhodanide, Potassium sulfocyanate, Thiocyanic acid

Formula: KSCN
CAS: 333-20-0

Potassium Thiocyanate, Solution 0.1N

Made with deionized water.

BDH® VWR ANALYTICAL

Normality	0.0995 - 0.1005 N
Appearance/color	Clear liquid
N.I.S.T. Traceable to SRM 919	Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7807-1**

Praseodymium

see Standards, ICP and ICP-MS

Precious Metals

see Standards, ICP and ICP-MS

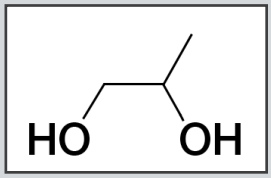
Propane

see Isopropyl Alcohol

(±)-1,2-PROPANEDIOL

(±)-1,2-Propylene glycol , (±)-1,2-Dihydroxy propane , Propylene glycol

Formula: $CH_3CH(OH)CH_2OH$
M.W. 76.1 g/mol
Boiling Pt: 187.6 °C (1013 hPa)
Melting Pt: -59 °C
Density: 1.04 g/cm^3 (20 °C)
Flash Pt: 99 °C
CAS: 57-55-6



1,2-Propanediol, ACS

BDH® VWR ANALYTICAL

Assay	Min. 99.5 %
Color	Max. 10 APHA
Titrable acid	Max. 0.0005 meq/g
Residue after ignition	Max. 0.005 %
Water	Max. 0.2 %
Cl (Chloride)	Max. 1 ppm

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH4566-4L**

Propanetriol

see Glycerol

1-Propanol

see n-Propyl Alcohol

2-Propanol

see Isopropyl Alcohol

Propanone

see Acetone

2-Propanone

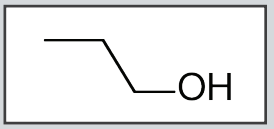
see Acetone

1-Propyl Alcohol

see n-Propyl Alcohol

n-PROPYL ALCOHOL

1-Hydroxypropane, 1-Propyl alcohol, Ethylcarbinol, n-Propan-1-ol, n-Propanol, n-Propyl alcohol, 1-Propanol, Propan-1-ol, Propanol-1, Propyl alcohol, Propylic alcohol



Formula: $H_3CCH_2CH_2OH$
M.W. 60.1 g/mol
Boiling Pt: 97 °C (1013 hPa)
Melting Pt: -127 °C
Density: 0.8053 g/cm³ (20 °C)
Flash Pt: 15 °C
CAS: 71-23-8
UN: 1274

n-Propyl Alcohol, ACS

Soluble in water.

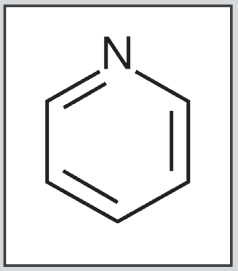
Meets ACS specifications for general use.

BDH® VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.20%
Residue ..... Less than 0.001% (0.0010 g/124 mL)
GC Purity ..... Greater than 99.5% (Typical - 99.9+%)
Solubility in water ..... Passes test (Solution as clear as an equal volume of water)
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.4 eq/g (Not more than 1.0 mL of0.01N sodium hydroxide)
Ethyl Alcohol ..... Less than 0.01%
Methanol ..... Less than 0.01%
Isopropyl Alcohol ..... Less than 0.05%
Carbonyl Compounds (as C_2H_5CO) ..... Less than 0.03%

Size	Packaging	Cat. No.
19 L	Steel Can	**BDH1147-19L**
204 L	Steel Drum	**BDH1147-204L**

PYRIDINE



Formula: C_5H_5N
M.W. 79.1 g/mol
Boiling Pt: 115 °C (1013 hPa)
Melting Pt: -44 °C
Density: 0.983 g/cm³ (20 °C)
Flash Pt: 17 °C
CAS: 110-86-1
UN: 1282

Pyridine, ACS

BDH® VWR ANALYTICAL

Assay ..... Min. 99.0 %
Reducing substances ..... Passes test
Solubility in water Passes test
Ammonia ..... Max. 0.002 %
Residue after evaporation ..... Max. 0.002 %
Water ..... Max. 0.1 %
Cl (Chloride) ..... Max. 0.001 %
SO_4 (Sulphate) ..... Max. 0.001 %
Cu (Copper) ..... Max. 5 ppm

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH4562-1L**

Quartz
see Sand

Rare Earth
see Standards, ICP and ICP-MS

Reagent Alcohol
see Ethanol Denatured

Reference Standards
see pH Reference Standards

Rhenium
see Standards, ICP and ICP-MS

Rhodium
see Standards, ICP and ICP-MS

Rock Salt
see Sodium Chloride

Rubidium
see Standards, ICP and ICP-MS

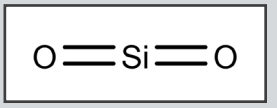
Ruthenium
see Standards, ICP and ICP-MS

Safranin
see Histology Stains and Reagents

Samarium
see Standards, ICP and ICP-MS

SAND

Quartz, Silicon dioxide, Silicium dioxide, Silicium (IV) oxide



Formula: SiO_2
M.W. 60.08 g/mol
Boiling Pt: 2230 °C (1013 hPa)
Melting Pt: 1427 °C
Density: 2.622 to 2.645 g/cm³ (20 °C)
CAS: 14808-60-7

Sand, Ottawa

Beige granules

BDH® VWR ANALYTICAL

Moisture ..... <= 0.1 %
Particle Size 30-40 mesh ..... >= 80 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9274-500G**
2.5 kg	Poly Bottle	**BDH9274-2.5KG**

Scandium
see Standards, ICP and ICP-MS

Selenium
see Standards, ICP and ICP-MS

Silicon

see Standards, ICP and ICP-MS

Silicon Dioxide

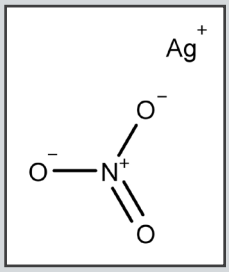
see Sand

Silver

see Standards, ICP and ICP-MS

SILVER NITRATE

Lunar caustic, Nitric acid silver salt, Silver mononitrate



Formula: $AgNO_3$
M.W. 169.87 g/mol
Boiling Pt: 444 °C (1013 hPa)
Melting Pt: 210 °C
Density: 4.35 g/cm³ (20 °C)
CAS: 7761-88-8
UN: 1493

Silver Nitrate, ACS

Colorless or white solid

Chloride ..... <= 0.0005 %
Clarity of Solution ..... PASS
Copper ..... <= 0.0002 %
Free Acid Test ..... PASS
Iron ..... <= 0.0002 %
Lead ..... <= 0.001 %
Purity ..... >= 99.0 %
Substances not Precipitated by HCl ..... <= 0.01 %
Sulfate ..... <= 0.002 %

Size	Packaging	Cat. No.
125 g	Glass Bottle	**BDH9276-125G**
500 g	Glass Bottle	**BDH9276-500G**

SILVER NITRATE (0.294 - 2 MOL/L) IN AQUEOUS SOLUTION

Lunar caustic, Nitric acid silver salt, Silver mononitrate

Formula: $AgNO_3$
CAS: 7761-88-8
UN: 3264

Silver Nitrate, Solution 0.5N

Made with deionized water.

Suitable as a titrant

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 919 ..... Yes
Normality ..... 0.499 - 0.501 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7917-1**

Silver Nitrate, Solution, 0.171N

Made with deionized water.

Suitable as a titrant

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 919 ..... Yes
Normality ..... 0.1660 - 0.1760 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH7916-4**

Silver Nitrate, Solution 0.1N

Suitable as a titrant. Made with deionized water.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 919 ..... Yes
Normality ..... 0.0995 - 0.1005 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH7214-2**
1 L	Amber Glass Bottle	**BDH7214-1**
4 L	Amber Glass Bottle	**BDH7214-4**
4 L	Cubitainer	**BDH7214-5**
20 L	Cubitainer	**BDH7214-7**

Silver Nitrate, Solution 0.0192N

APHA for cyanide. 1mL = 1mg cyanide.

Normality ..... 0.0187 - 0.0197 N
Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 919 ..... Yes

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7360-1**

Silver Nitrate, Solution 0.0141N

Suitable as a titrant

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 919 ..... Yes
Normality ..... 0.0138 - 0.0144 N

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7359-1**

SILVER SULFATE

Disilver sulfate

Ag_2SO_4

Formula: Ag_2SO_4
M.W. 311.8 g/mol
Boiling Pt: 1085 °C (1013 hPa)
Melting Pt: 655 °C
Density: 5.45 g/cm³ (20 °C)
CAS: 10294-26-5

Silver Sulfate, ACS

VWR ANALYTICAL

Assay ..... Min. 98.0 %
Insoluble matter and silver chloride ..... Max. 0.02 %
Substances not precipitated by HCl ..... Max. 0.03 %
NO_3 (Nitrate) ..... Max. 0.001 %
Fe (Iron) ..... Max. 0.001 %

Size	Packaging	Cat. No.
100 g	Amber Glass Bottle	**BDH4560-100G**

Soda Ash

see Sodium Carbonate

Sodium

see Standards, ICP and ICP-MS

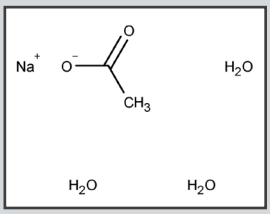
Sodium 4-(2-hydroxyethyl)piperazin-1-ylethanesulphonate

see HEPES Sodium Salt

SODIUM ACETATE TRIHYDRATE

Acetic acid sodium salt trihydrate

Formula: $H_3CCOONa.3H_2O$
M.W. 136.08 g/mol
Boiling Pt: 120 to 123 °C (1013 hPa)
Melting Pt: 58 °C
Density: 1.4 g/cm^3 (20 °C)
CAS: 6131-90-4



Sodium Acetate Trihydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

VWR ANALYTICAL

Calcium ..... <= 0.005 %
Chloride ..... <= 0.001 %
Heavy Metals (as Pb) ..... <= 0.0005 %
Insolubles ..... <= 0.005 %
Iron ..... <= 0.0005 %
Magnesium ..... <= 0.002 %
Permanganate Reducers Test ..... PASS
pH (5%, Water) @25C ..... 7.5 - 9.2
Phosphate ..... <= 0.0005 %
Potassium ..... <= 0.005 %
Purity ..... 99.0 - 101.0 %
Sulfate ..... <= 0.002 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9278-500G**
2.5 kg	Poly Bottle	**BDH9278-2.5KG**

SODIUM AZIDE IN AQUEOUS SOLUTION

Azium, Sodium trinitride

CAS: 26628-22-8
UN: 3287

Sodium Azide, Solution 5% (w/v)

N.I.S.T. traceable solution, made with purified water.

VWR ANALYTICAL

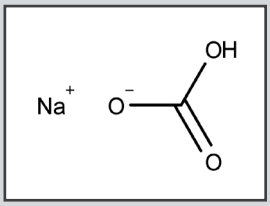
Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Assay (w/v) ..... 4.90 - 5.10 %

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7465-2**

SODIUM BICARBONATE

Sodium hydrogen carbonate

Formula: $NaHCO_3$
M.W. 84.01 g/mol
Melting Pt: 270 °C
Density: 2.159 g/cm^3 (20 °C)
CAS: 144-55-8



Sodium Bicarbonate, ACS

Meets reagent specifications for testing USP/NF monographs.

White solid

VWR ANALYTICAL

Ammonium ..... <= 0.0005 %
Calcium ..... <= 0.02 %
Chloride ..... <= 0.003 %
Heavy Metals (as Pb) ..... <= 0.0005 %
Insolubles ..... <= 0.015 %
Iron ..... <= 0.001 %
Magnesium ..... <= 0.005 %
Phosphate ..... <= 0.001 %
Potassium ..... <= 0.005 %
Purity ..... 99.7 - 100.3 %
Sulfur Compounds ..... <= 0.003 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9280-500G**
2.5 kg	Poly Bottle	**BDH9280-2.5KG**
12 kg	Poly pail	**BDH9280-12KG**

SODIUM BOROHYDRIDE

Sodium borohydride , Sodium tetrahydridoborate

$NaBH_4$

Formula: $NaBH_4$
M.W. 37.83 g/mol
Melting Pt: 400 °C
Density: 1.07 g/cm^3 (20 °C)
Flash Pt: 69 °C
CAS: 16940-66-2
UN: 1426

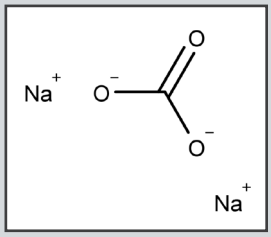
Sodium Borohydride, ACS

Assay ..... Min. 98 %

Size	Packaging	Cat. No.
100 g	Amber Glass Bottle	BDH4604-100G

SODIUM CARBONATE

Bisodium carbonate, Carbonic acid, disodium salt, Carbonic acid sodium salt, Disodium carbonate, Na-X, Soda, Soda ash



Formula: Na_2CO_3
M.W. 105.99 g/mol
Boiling Pt: 1600 °C (1013 hPa)
Melting Pt: 854 °C
Density: 2.53 g/cm³ (20 °C)
CAS: 497-19-8

Sodium Carbonate, Anhydrous, ACS

Meets reagent specifications for testing USP/NF monographs.

White solid

Calcium ..... <= 0.03 %
Chloride ..... <= 0.001 %
Heavy Metals (as Pb) ..... <= 0.0005 %
Insolubles ..... <= 0.01 %
Iron ..... <= 0.0005 %
Loss on Heating ..... <= 1.0 %
Magnesium ..... <= 0.005 %
Phosphate ..... <= 0.001 %
Potassium ..... <= 0.005 %
Purity ..... >= 99.5 %
Silica ..... <= 0.005 %
Sulfur Compounds ..... <= 0.003 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	BDH9284-500G
2.5 kg	Poly Bottle	BDH9284-2.5KG

SODIUM CARBONATE IN AQUEOUS SOLUTION

Bisodium carbonate, Carbonic acid, disodium salt, Carbonic acid sodium salt, Disodium carbonate, Na-X, Soda, Soda ash

Formula: $NaCO_3$
CAS: 497-19-8

Sodium Carbonate, Solution 1N

Made with deionized water. Suitable as a titrant.

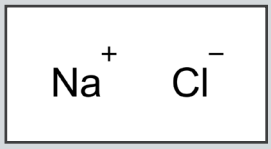
Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 723 ..... Yes
Normality ..... 0.998 - 1.002 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	BDH7971-1

SODIUM CHLORIDE

Halite, Rock salt, Saline, Salt, Sea salt

Formula: NaCl
M.W. 58.44 g/mol
Boiling Pt: 1413 °C (1013 hPa)
Melting Pt: 801 °C
Density: 2.16 g/cm³ (20 °C)
CAS: 7647-14-5



Sodium Chloride, ACS

Meets reagent specifications for testing USP/NF monographs.

White solid

Barium Test ..... PASS
Bromide ..... <= 0.01 %
Calcium ..... <= 0.002 %
Chlorate & Nitrate ..... <= 0.003 %
Heavy Metals ..... <= 0.0005 %
Insolubles ..... <= 0.005 %
Iodide ..... <= 0.002 %
Iron ..... <= 0.0002 %
Magnesium ..... <= 0.001 %
pH (5%, Water) @25C ..... 5.0 - 9.0
Phosphate ..... <= 0.0005 %
Potassium ..... <= 0.005 %
Purity ..... >= 99.0 %
Sulfate ..... <= 0.004 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	BDH9286-500G
2.5 kg	Poly Bottle	BDH9286-2.5KG
12 kg	Poly Pail	BDH9286-12KG
50 kg	Poly Drum	BDH9286-50KG
250 lbs.	Fiber Drum	BDH9286-250LB

Sodium Chloride, Solution 0.85 to 0.90% (w/v)

Made with deionized water

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 919 ..... Yes
Assay (w/v) ..... 0.89 - 0.91 %
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
500 mL	Poly Bottle	BDH7257-2
1 L	Poly Bottle	BDH7257-1
4 L	Poly Bottle	BDH7257-4
20 L	Cubitainer	BDH7257-7

Sodium Chloride, Solution 0.85% (w/v)

Made with purified water and ACS grade sodium chloride.

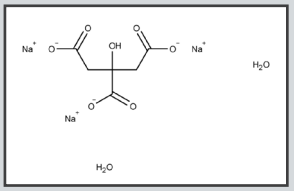
Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Assay (w/v) ..... 0.840 - 0.860
N.I.S.T. Traceable to SRM 919 ..... Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	BDH7466-1
20 L	Cubitainer	BDH7466-7

SODIUM CITRATE DIHYDRATE

Citric acid tridosium salt dihydrate, Tri-Sodium citrate dihydrate, Sodium citrate tribasic dihydrate, Trisodium citrate

Formula: $HOC(COONa)(CH_2COONa)_2 \cdot 2H_2O$
M.W. 294.1 g/mol
Melting Pt: 150 °C
Density: 1.76 g/cm^3 (20 °C)
CAS: 6132-04-3



Sodium Citrate Dihydrate, ACS

Colorless or white solid

VWR ANALYTICAL

Ammonia	<= 0.003 %
Calcium	<= 0.005 %
Chloride	<= 0.003 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Iron	<= 0.0005 %
pH (5%, Water) @25C	7.0 - 9.0
Purity	>= 99.0 %
Sulfate	<= 0.005 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9288-500G**
2.5 kg	Poly Bottle	**BDH9288-2.5KG**

Sodium Dihydrogen Phosphate Monohydrate

see Sodium Phosphate Monobasic Monohydrate

SODIUM FLUORIDE

Formula: NaF
M.W. 41.99 g/mol
Boiling Pt: 1700 °C (1013 hPa)
Melting Pt: 993 °C
Density: 2.8 g/cm^3 (20 °C)
CAS: 7681-49-4
UN: 1690

F^- Na^+

Sodium Fluoride, ACS

Meets reagent specifications for testing USP/NF monographs.

White solid

VWR ANALYTICAL

Chloride	<= 0.005 %
Heavy Metals (as Pb)	<= 0.003 %
Insolubles	<= 0.02 %
Iron	<= 0.003 %
Loss on Drying	<= 0.3 %
Potassium	<= 0.02 %
Purity	>= 99.0 %
Sodium Fluosilicate	<= 0.1 %
Sulfate	<= 0.03 %
Sulfite	<= 0.005 %
Titrable Free Acid	<= 0.03 meq/g
Titrable Free Base	<= 0.01 meq/g

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9290-500G**

Sodium Hydrogen Carbonate

see Sodium Bicarbonate

SODIUM HYDROXIDE

Caustic soda, Lye, Sodium hydrate, Soda lye

Formula: NaOH
M.W. 40 g/mol
Boiling Pt: 1390 °C (1013 hPa)
Melting Pt: 323 °C
Density: 2.13 g/cm^3 (20 °C)
CAS: 1310-73-2
UN: 1823

OH^- Na^+

Sodium Hydroxide, ACS

Meets reagent specifications for testing USP/NF monographs.

Beads.

VWR ANALYTICAL

Calcium	<= 0.005 %
Chloride	<= 0.005 %
Heavy Metals	<= 0.002 %
Iron	<= 0.001 %
Magnesium	<= 0.002 %
Mercury	<= 0.1 ppm
Nickel	<= 0.001 %
Nitrogen Compounds	<= 0.001 %
Phosphate	<= 0.001 %
Potassium	<= 0.02 %
Purity	>= 97.0 %
Sodium Carbonate	<= 1.0 %
Sulfate	<= 0.003 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9292-500G**
2.5 kg	Poly Bottle	**BDH9292-2.5KG**
12 kg	Poly Pail	**BDH9292-12KG**

Sodium Hydroxide, Solution Reagent Grade 50% (w/w)

Clear liquid. Corrosive and toxic.

VWR ANALYTICAL

Appearance/color	Clear colorless liquid
Shelf-life	3 years
Assay	49.0 - 51.0 %
Sodium carbonate	0.3 % max.
Chloride (Cl)	0.01 % max.
Heavy metals (as Ag)	0.001 % max.
Iron (Fe)	5 ppm max.
Nickel (Ni)	0.001 % max.
Nitrogen compounds (as N)	5 ppm max.
Phosphate (PO_4)	5 ppm max.
Potassium (K)	0.05 % max.
Sulfate (SO_4)	0.002 % max.

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7246-1**
4 L	Poly Bottle	**BDH7246-4**
10 L	Cubitainer	**BDH7246-8**
20 L	Cubitainer	**BDH7246-7**
30 gal.	Poly Drum	**BDH7246-9**

Sodium Hydroxide, Solution 50% (w/w)

Made with deionized water.

Assay ..... 49.0 - 51.0 %
Sodium carbonate ..... 0.3 % max.
Chloride (Cl) ..... 0.01 % max.
Heavy metals (as Ag) by EPA-6010B ..... 0.001 % max.
Iron (Fe) by EPA-6010B ..... 5 ppm max.
Nickel (Ni) ..... 0.001 % max.
Nitrogen compounds (as N) ..... 5 ppm max.
Phosphate (PO_4) ..... 5 ppm max.
Potassium (K) ..... 0.05 % max.
Appearance/color ..... Clear colourless liquid
Sulfate (SO_4) ..... 0.002 % max.

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7996-4**

Sodium Hydroxide, Solution 40% (w/w)

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 3 years
Assay ..... 39.60 - 40.40 %

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7994-4**
10 L	Cubitainer	**BDH7994-6**
20 L	Cubitainer	**BDH7994-7**

Sodium Hydroxide, Solution 33% (w/w)

Sodium hydroxide 33% (w/w) in purified water.

Appearance/color ..... Clear liquid
Assay ..... 32.60 - 33.40 %
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7363-4**

Sodium Hydroxide, Solution 30% (w/v)

Made with deionized water

Appearance/color ..... Clear liquid
Assay (w/v) ..... 29 - 31 %
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7364-4**

Sodium Hydroxide, Solution 20% (w/v)

AOAC and APHA.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Assay (w/v) ..... 19.50 - 20.50 %
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7216-1**
4 L	Poly Bottle	**BDH7216-4**

Sodium Hydroxide, Solution 10% (w/v)

Made with deionized water

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Assay (w/v) ..... 9.90 - 10.10 %
N.I.S.T. Traceable to SRM 84 ..... Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7470-1**
4 L	Poly Bottle	**BDH7470-4**

Sodium Hydroxide, Solution 10.0N

APHA. Made with deionized. Suitable as a titrant

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 9.950 - 10.050 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7247-1**
4 L	Poly Bottle	**BDH7247-4**
20 L	Cubitainer	**BDH7247-7**
20 L	Poly Drum	**BDH7247-5**
200 L	Poly Drum	**BDH7247-10**

Sodium Hydroxide, Solution 6.0N

APHA. Made with deionized. Suitable as a titrant

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 5.970 - 6.030 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7226-1**

Versatile VWR® Carboys Maximize Storage Efficiency and Save Space

VWR® COLLECTION

Ergonomic design incorporates large handles on top and molded handles on the base to provide a full, secure grip to make lifting, carrying, and pouring easy. Versatile caps offer the ultimate in connection flexibility. All carboys have their material and volume clearly imprinted on the outside of the bottle as well as large, easy-to-read metric graduation marks. Available in HDPE or autoclavable polypropylene.

Description	Capacity	Cat. No.
Rectangular Carboy w/ Spigot, Polypropylene	10 L (2.6 gal.)	**10755-094**
Round Carboy w/ Spigot, Polypropylene	10 L (2.6 gal.)	**10755-090**
Round Carboy w/ Spigot, Polypropylene	20 L (5.3 gal.)	**10755-118**
Round Carboy, Polypropylene	20 L (5.3 gal.)	**10755-114**
Heavy-Duty Round Carboy, Polypropylene	20 L (5.3 gal.)	**10755-104**

For additional sizes and accessories, visit **vwr.com**

Sodium Hydroxide, Solution 5.2N

Made with purified water.

Normality ..... 5.180 - 5.220 N
Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 84 ..... Yes

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7950-4**

Sodium Hydroxide, Solution 5.0N

Made with deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 4.990 - 5.010 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7225-1**
4 L	Poly Bottle	**BDH7225-4**
10 L	Cubitainer	**BDH7225-6**

Sodium Hydroxide, Solution 3.0N

Made with deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 2.995 - 3.005 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7472-1**

Sodium Hydroxide, Solution 2.5N

AOAC and APHA. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 2.495 - 2.505 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7224-1**

Sodium Hydroxide, Solution 2.0N

AOAC and APHA. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 1.992 - 2.008 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7223-1**
4 L	Poly Bottle	**BDH7223-4**

Sodium Hydroxide, Solution 1.0N

Meets APHA standard, AOAC 936.16 standard, and ASTM E200-91 standard. Suitable as a titrant.

Appearance/color ..... Clear liquid
Traceable to NIST SRM 84 ..... Yes
Normality ..... 0.998 -1.002 N
Shelf-life ..... 2 years
Manufacture date ..... As reported
Expiration date ..... As reported

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7222-1**
4 L	Poly Bottle	**BDH7222-4**
20 L	Cubitainer	**BDH7222-7**

SODIUM HYDROXIDE (0.13 - < 0.55 MOL) IN AQUEOUS SOLUTION

Caustic soda, Lye, Sodium hydrate, Soda lye

Formula: NaOH
Boiling Pt: Min. 105 °C (1013 hPa)
Density: 1.02 g/cm^3 (25 °C)
CAS: 1310-73-2
UN: 1824

Sodium Hydroxide, Solution 0.5N

AOAC, APHA, and ASTM. Suitable as titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.499 - 0.501 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7221-1**
4 L	Poly Bottle	**BDH7221-4**
20 L	Cubitainer	**BDH7221-7**

Sodium Hydroxide, Solution 0.25N

ASTM. Suitable as titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 919 ..... Yes
Normality ..... 0.2495 - 0.2505 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7469-1**
4 L	Poly Bottle	**BDH7469-4**

Sodium Hydroxide, Solution 0.2N

AOAC, APHA, and ASTM. Suitable as titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.1995 - 0.2005 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7220-1**
4 L	Poly Bottle	**BDH7220-4**

SODIUM HYDROXIDE (< 0.13 MOL/L) IN AQUEOUS SOLUTION

Caustic soda, Lye, Sodium hydrate, Soda lye

Formula: NaOH
Density: 1 g/cm^3 (25 °C)
CAS: 1310-73-2
UN: 1824

Sodium Hydroxide, Solution 0.1N

AOAC, APHA, and ASTM. Suitable as titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.0995 - 0.1005 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7219-1**
4 L	Poly Bottle	**BDH7219-4**
4 L	Cubitainer	**BDH7219-5**
20 L	Cubitainer	**BDH7219-7**

Sodium Hydroxide, Solution 0.05N

AOAC, APHA, and ASTM. Suitable as titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.0495 - 0.0505 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7218-1**

Sodium Hydroxide, Solution 0.02N

AOAC, APHA, and ASTM for acidity. Suitable as titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.0195 - 0.0205 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7217-1**

Sodium Hydroxide, Solution 0.01N

Made with deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 84 ..... Yes
Normality ..... 0.0095 - 0.0105 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7620-1**

SODIUM HYDROXIDE 50.0% - SODIUM THIOSULFATE SOLUTION 2.5%

UN: 1760

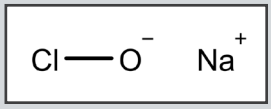
Sodium Hydroxide 50.0% - Sodium Thiosulfate Solution 2.5%

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7365-4**

SODIUM HYPOCHLORITE IN AQUEOUS SOLUTION



Formula: NaOCl
Boiling Pt: 111 °C (1013 hPa)
Melting Pt: -30 to -20 °C
Density: 1.22 to 1.25 g/cm^3 (20 °C)
CAS: 7681-52-9
UN: 1791

Sodium Hypochlorite, 12.5%

Assay ..... 10.0 - 14.0 %
Appearance ..... Clear yellow/green liquid

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7038-4L**

SODIUM IODIDE

Hydriodic acid sodium salt, Ioduril, Sodium monoiodide

Formula: NaI
M.W. 149.89 g/mol
Boiling Pt: 1300 °C (1013 hPa)
Melting Pt: 662 °C
Density: 3.67 g/cm³ (20 °C)
CAS: 7681-82-5
UN: 3077

Sodium Iodide, ACS

White solid; may become brown on exposure to air

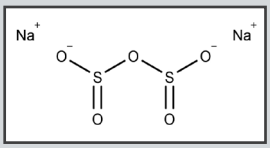
BDH® VWR ANALYTICAL

Barium	<= 0.002 %
Calcium	<= 0.002 %
Chloride & Bromide	<= 0.01 %
Heavy Metals (as Pb)	<= 5 ppm
Insolubles	<= 0.01 %
Iodate	<= 3 ppm
Iron	<= 5 ppm
Magnesium	<= 0.001 %
pH (5%, Water) @25C	6.0 - 9.0
Phosphate	<= 0.001 %
Potassium	<= 0.01 %
Purity	>= 99.5 %
Sulfate	<= 0.005 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9294-500G**

SODIUM METABISULFITE

Disodium disulfite, Pyrosulfurous acid disodium salt, Sodium disulfite, Sodium pyrosulfite



Formula: $Na_2S_2O_5$
M.W. 190.11 g/mol
Melting Pt: 150 °C
Density: 1.48 g/cm³ (20 °C)
CAS: 7681-57-4

Sodium Metabisulfite, ACS

BDH® VWR ANALYTICAL

Chloride	<=0.05%
Heavy Metals (as Pb)	<=0.001%
Insolubles	<=0.005%
Iron	<=0.002%
Assay	>= 97.0 %
Thiosulfate	<=0.05%

Size	Packaging	Cat. No.
500 g	HDPE Poly Bottle	**BDH9316-500G**

Sodium Monohydrogen Phosphate Heptahydrate

see Sodium Phosphate Dibasic Heptahydrate

SODIUM NITRATE

$NaNO_3$

Formula: $NaNO_3$
M.W. 85 g/mol
Boiling Pt: 380 °C (1013 hPa)
Melting Pt: 308 °C
Density: 2.26 g/cm³ (20 °C)
CAS: 7631-99-4
UN: 1498

Sodium Nitrate, Crystallized, ACS

BDH® VWR ANALYTICAL

Assay	Min. 99.0 %
pH (25°C; 5 %)	5.5 - 8.3
Heavy metals (as Pb)	Max. 5 ppm
Insoluble matter	Max. 0.005 %
Cl (Chloride)	Max. 0.001 %
IO_3 (Iodate)	Max. 5 ppm
NO_2 (Nitrite)	Max. 0.001 %
PO_4 (Phosphate)	Max. 5 ppm
SO_4 (Sulphate)	Max. 0.003 %
Ca (Calcium)	Max. 0.005 %
Fe (Iron)	Max. 3 ppm
Mg (Magnesium)	Max. 0.002 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4574-500G**

Sodium Orthophosphate Monobasic Monohydrate

see Sodium Phosphate Monobasic Monohydrate

SODIUM PEROXIDE

di-Sodium peroxide

Na_2O_2

Formula: Na_2O_2
M.W. 77.98 g/mol
Melting Pt: 660 °C
Density: 2.805 g/cm³ (20 °C)
CAS: 1313-60-6
UN: 1504

Sodium Peroxide, ACS

BDH® VWR ANALYTICAL

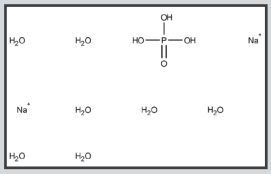
Assay	Min. 93.0 %
Heavy metals (as Pb)	Max. 0.002 %
Cl (Chloride)	Max. 0.002 %
PO_4 (Phosphate)	Max. 5 ppm
SO_4 (Sulphate)	Max. 0.001 %
Fe (Iron)	Max. 0.005 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4584-500G**

SODIUM PHOSPHATE DIBASIC HEPTAHYDRATE

di-Sodium hydrogen phosphate 7-hydrate, Disodium hydrogenorthophosphate 7-hydrate, Disodium hydrogenorthophosphate heptahydrate, Disodium phosphate (heptahydrate), Sodium monohydrogen phosphate 7-hydrate, Sodium monohydrogen phosphate heptahydrate, Sodium phosphate dibasic 7-hydrate

M.W. 268.07 g/mol
Melting Pt: 48 °C
Density: 1.7 g/cm^3 (20 °C)
CAS: 7782-85-6



Sodium Phosphate Dibasic Heptahydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Crystals.

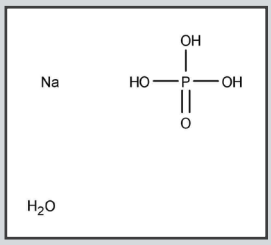
Chloride ..... <= 0.001 %
Heavy Metals (as Pb) ..... <= 0.001 %
Insolubles ..... <= 0.005 %
Iron ..... <= 0.001 %
pH (5%, Water) @25C ..... 8.7 - 9.3
Purity (as is) ..... 98.0 - 102.0 %
Sulfate ..... <= 0.005 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9296-500G**
2.5 kg	Poly Bottle	**BDH9296-2.5KG**

SODIUM PHOSPHATE MONOBASIC MONOHYDRATE

Sodium dihydrogen orthophosphate 1-hydrate, Sodium dihydrogen orthophosphate monohydrate, Sodium dihydrogen phosphate 1-hydrate, Sodium dihydrogenorthophosphate monohydrate, Sodium orthophosphate monobasic monohydrate

Formula: $NaH_2PO_4 \cdot H_2O$
M.W. 137.99 g/mol
Melting Pt: 100 °C
Density: 2.04 g/cm^3 (20 °C)
CAS: 10049-21-5



Sodium Phosphate Monobasic Monohydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

Calcium ..... <= 0.005 %
Chloride ..... <= 0.0005 %
Heavy Metals ..... <= 0.001 %
Insolubles ..... <= 0.01 %
Iron ..... <= 0.001 %
pH (5%, Water) @25C ..... 4.1 - 4.5
Potassium ..... <= 0.01 %
Purity ..... 98.0 - 102.0 %
Sulfate ..... <= 0.003 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9298-500G**
2.5 kg	Poly Bottle	**BDH9298-2.5KG**

Sodium Phosphate 0.1M, pH 7.0 Buffer

Made with sodium phosphate monobasic monohydrate, sodium hydroxide solution and deionized water.

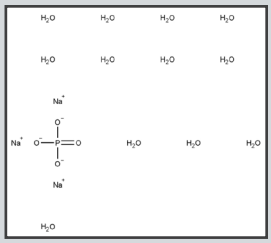
Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
pH at 25 °C ..... 6.98 - 7.02

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7895-4**

SODIUM PHOSPHATE TRIBASIC DODECAHYDRATE

Trisodium phosphate dodecahydrate

Formula: $Na_3PO_4 \cdot 12H_2O$
M.W. 380.12 g/mol
Melting Pt: ~ 75 °C
Density: 1.62 g/cm^3 (20 °C)
CAS: 10101-89-0



Sodium Phosphate Tribasic Dodecahydrate, ACS

Meets reagent specifications for testing USP/NF monographs.

Colorless or white solid

Chloride ..... <= 0.001 %
Excess Alkali ..... <= 2.5 %
Heavy Metals ..... <= 0.001 %
Insolubles ..... <= 0.01 %
Iron ..... <= 0.001 %
Purity ..... 98.0 - 102.0 %
Sulfate ..... <= 0.01 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9300-500G**

VWR® Volumetric Flasks, Class A, with [ST] Polyethylene Stopper

VWR COLLECTION

These volumetric flasks are calibrated to contain. Flasks feature a single graduation ring blasted on the neck. Flasks are supplied with a polyethylene stopper to fit in the ground neck. Meet ASTM E288, Class A requirements.

- Single graduation ring
- Calibrated to contain
- Polyethylene stopper fits in ground neck

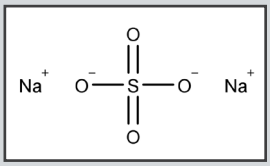
Capacity	[ST] Stopper No.	Tolerance	Cat. No.
5 mL	9	±0.02 mL	**89041-922**
10 mL	9	±0.02 mL	**89041-924**
25 mL	9	±0.03 mL	**89041-926**
50 mL	9	±0.05 mL	**89041-928**
100 mL	13	±0.08 mL	**89041-930**
250 mL	16	±0.12 mL	**89041-934**
500 mL	19	±0.20 mL	**89041-936**
1 L	22	±0.30 mL	**89041-938**
2 L	27	±0.50 mL	**89041-940**

For more information, visit **vwr.com**

SODIUM SULFATE

Bisodium sulfate, Disodium sulfate, Sulfuric acid disodium salt

Formula: Na_2SO_4
M.W. 142.04 g/mol
Boiling Pt: 1429 °C (1013 hPa)
Melting Pt: 888 °C
Density: 2.7 g/cm³ (20 °C)
CAS: 7757-82-6



Sodium Sulfate, Anhydrous, ACS

Meets reagent specifications for testing USP/NF monographs.

White solid

VWR ANALYTICAL

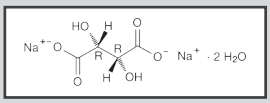
Calcium ..... <= 0.01 %
Chloride ..... <= 0.001 %
Heavy Metals (as Pb) ..... <= 0.0005 %
Insolubles ..... <= 0.01 %
Iron ..... <= 0.001 %
Loss on Ignition ..... <= 0.5 %
Magnesium ..... <= 0.005 %
Nitrogen Compounds ..... <= 0.0005 %
pH (5%, Water) @25C ..... 5.2 - 9.2
Phosphate ..... <= 0.001 %
Potassium ..... <= 0.01 %
Purity ..... >= 99.0 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9302-500G**
2.5 kg	Poly Bottle	**BDH9302-2.5KG**
12 kg	Poly pail	**BDH9302-12KG**

DI-SODIUM L(+)-TARTRATE DIHYDRATE

(R,R)-(+)-Disodium tartrate dihydrate , (R,R)-(+)-Tartaric acid disodium salt dihydrate , L(+)-Tartaric acid disodium salt dihydrate , (R,R)-(+)-Sodium tartrate dibasic dihydrate , L(+)-Sodium tartrate dibasic dihydrate , (+)-Disodium-L-tartrat dihydrate , (+)-Disodium L-tartrate dihydrate

Formula: $NaOOC(CHOH)_2COONa \cdot {}_2H_2O$
M.W. 230.08 g/mol
Melting Pt: 57 °C
Density: 1.818 g/cm³ (20 °C)
CAS: 6106-24-7



Di-Sodium L(+)-Tartrate Dihydrate, ACS

VWR ANALYTICAL

Assay ..... 99.0 - 101.0 %
Appearance ..... White crystalline powder
pH (25°C; 5 %) 7.0 - 9.0
Heavy metals (as Pb) ..... Max. 5 ppm
Insoluble matter ..... Max. 0.005 %
Loss on drying (150°C) 15.61 - 15.71 %
Cl (Chloride) ..... Max. 5 ppm
NH_4 (Ammonium) ..... Max. 0.003 %
PO_4 (Phosphate) ..... Max. 5 ppm
SO_4 (Sulphate) ..... Max. 0.005 %
Ca (Calcium) ..... Max. 0.01 %
Fe (Iron) ..... Max. 0.001 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4606-500G**

Sodium Tetrahydroborate

see Sodium Borohydride

SODIUM THIOSULFATE IN AQUEOUS SOLUTION

Formula: $Na_2S_2O_3$
CAS: 7772-98-7

Sodium Thiosulfate, Solution 0.10N

Suitable as a titrant. Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 136 ..... Yes
Normality ..... 0.0995 - 0.1005 N
Shelf-life ..... 6 months
pH ..... 6.0 Min.

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH72281**
4 L	Poly Bottle	**BDH7228-4**
20 L	Cubitainer	**BDH7228-7**

Sodium Thiosulfate, Solution 0.025N

Suitable as a titrant. Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
N.I.S.T. traceable to SRM 136 ..... Yes
Normality ..... 0.0245 - 0.0255 N
Shelf-life ..... 6 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7227-1**
4 L	Poly Bottle	**BDH7227-4**

Sodium Thiosulfate, Solution 0.01N

Suitable as a titrant. Made with deionized water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Normality ..... 0.0095 - 0.0105 N
Shelf-life ..... 6 months
N.I.S.T. traceable to SRM 136 ..... Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7256-1**
4 L	Poly Bottle	**BDH7256-4**

Stains for Pathology

see Histology Stains and Reagents

Standards: BDH® ARISTAR® Single Element ICP and ICP-MS Certified Reference Standards

Used with ICP-MS, ICP-OES, DCP, GFAA, and AA. Single element Certified Reference Materials (CRMs) are available in the BDH range for most of the periodic table, in concentrations ranging from 10, 100, 1,000, and 10,000 ppm. These ICP and ICP-MS CRMs are engineered to be stable, compatible, traceable to NIST SRMs, and are manufactured and tested under ISO Guide 34 & ISO 17025 guidelines. Certified values are based on two independent methods, uncertainties are based on detailed error budgets, and trace metallic impurities (TMI) are determined by ICP and ICP-MS for single element CRMs. Each single element ICP standard ships with a Certificate of Analysis (C of A) and Safety Data Sheet (SDS) and one year expiration. Specific lot C of A's can also be found online. Most products are available in stock at the 125mL and 500mL sizes packaged in plastic LDPE bottles.

Element	Matrix	Concentration	Pack Size	Cat. No.
Aluminum	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-122**
Aluminum	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-120**
Aluminum	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82025-942**
Aluminum	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-004**
Aluminum	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-940**
Aluminum	HNO_3	1,000 µg/mL(1,000ppm)	500 mL	**89800-002**
Aluminum	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-264**
Aluminum	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-266**
Ammonium Bromide	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**89800-006**
Ammonium Bromide	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-008**
Antimony	HNO_3 / Tartaric acid	10 µg/mL (10ppm)	125 mL	**82026-222**
Antimony	HNO_3 / Tartaric acid	100 µg/mL (100ppm)	125 mL	**82026-220**
Antimony	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-052**
Antimony	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-016**
Antimony	HNO_3 / Tartaric acid	1,000 µg/mL (1,000ppm)	125 mL	**82026-050**
Antimony	HNO_3 / Tartaric acid	1,000 µg/mL (1,000ppm)	500 mL	**89800-014**
Antimony	HNO_3 / Tartaric acid	10,000 µg/mL (10,000ppm)	125 mL	**89800-268**
Antimony	HNO_3 / Tartaric acid	10,000 µg/mL (10,000ppm)	500 mL	**89800-270**
Arsenic	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-126**
Arsenic	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-124**
Arsenic	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-944**
Arsenic	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-018**
Arsenic	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-272**
Arsenic	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-274**
Arsenic +3	HCl / NaOH / $NaHCO_3$	1,000 µg/mL (1,000ppm)	125 mL	**89800-020**
Arsenic +3	HCl / NaOH / $NaHCO_3$	1,000 µg/mL (1,000ppm)	500 mL	**89800-022**
Arsenic +5	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**89800-024**
Arsenic +5	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-026**
Barium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-134**
Barium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-132**
Barium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-952**
Barium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-028**
Barium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-276**
Barium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-278**
Beryllium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-138**
Beryllium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-136**
Beryllium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-954**
Beryllium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-030**
Beryllium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-280**
Beryllium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-282**
Bismuth	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-142**
Bismuth	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-140**
Bismuth	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-956**
Bismuth	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-032**
Bismuth	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-284**
Bismuth	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-286**
Boron	HNO_3	10 µg/mL (10ppm)	125 mL	**89800-210**
Boron	HNO_3	100 µg/mL (100ppm)	125 mL	**89800-238**
Boron	NH_4OH	1,000 µg/mL (1,000ppm)	125 mL	**82025-950**
Boron	NH_4OH	1,000 µg/mL (1,000ppm)	500 mL	**89800-034**
Boron	NH_4OH	10,000 µg/mL (10,000ppm)	125 mL	**89800-288**
Boron	NH_4OH	10,000 µg/mL (10,000ppm)	500 mL	**89800-290**
Cadmium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-150**
Cadmium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-148**
Cadmium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-962**
Cadmium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-036**

Element	Matrix	Concentration	Pack Size	Cat. No.
Cadmium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-292**
Cadmium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-294**
Calcium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-146**
Calcium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-144**
Calcium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-960**
Calcium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-038**
Calcium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-296**
Calcium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-298**
Carbon	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-958**
Carbon	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-040**
Carbon	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-300**
Carbon	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-302**
Cerium	HNO_3	10 µg/mL (10ppm)	125 mL	**89800-212**
Cerium	HNO_3	100 µg/mL (100ppm)	125 mL	**89800-240**
Cerium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-964**
Cerium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-042**
Cerium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-304**
Cerium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-306**
Cesium	HNO_3	10 µg/mL (10ppm)	125 mL	**89800-214**
Cesium	HNO_3	100 µg/mL (100ppm)	125 mL	**89800-242**
Cesium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-972**
Cesium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-044**
Cesium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-308**
Cesium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-310**
Chloride	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**89800-010**
Chloride	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-012**
Chromium +3	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-158**
Chromium +3	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-156**
Chromium +3	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**82025-968**
Chromium +3	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-046**
Chromium +3	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-314**
Chromium +6	H_2O	10 µg/mL (10ppm)	125 mL	**89800-216**
Chromium +6	H_2O	100 µg/mL (100ppm)	125 mL	**89800-244**
Chromium +6	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-048**
Chromium +6	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**82025-970**
Chromium +3	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-312**
Cobalt	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-154**
Cobalt	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-152**
Cobalt	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-966**
Cobalt	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-050**
Cobalt	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-316**
Cobalt	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-318**
Copper	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-162**
Copper	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-160**
Copper	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-974**
Copper	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-052**
Copper	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-320**
Copper	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-322**
Dysprosium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-976**
Dysprosium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-054**
Dysprosium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-324**
Dysprosium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-326**
Erbium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-978**
Erbium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-056**
Erbium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-328**
Erbium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-330**

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Element	Matrix	Concentration	Pack Size	Cat. No.
Europium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-980**
Europium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-058**
Europium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-332**
Europium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-334**
Gadolinium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-986**
Gadolinium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-060**
Gadolinium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-336**
Gadolinium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-338**
Gallium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-984**
Gallium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-062**
Gallium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-340**
Gallium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-342**
Germanium	HNO_3 / HF	10 µg/mL (10ppm)	125 mL	**82026-170**
Germanium	HNO_3 / HF	100 µg/mL (100ppm)	125 mL	**82026-168**
Germanium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82025-988**
Germanium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-064**
Germanium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-344**
Germanium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-346**
Gold	HCl	10 µg/mL (10ppm)	125 mL	**82026-130**
Gold	HCl	100 µg/mL (100ppm)	125 mL	**82026-128**
Gold	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82025-946**
Gold	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-066**
Gold	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-948**
Gold	HCl	10,000 µg/mL (10,000ppm)	125 mL	**89800-348**
Gold	HCl	10,000 µg/mL (10,000ppm)	500 mL	**89800-350**
Gold	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-068**
Hafnium	HNO_3 / HF	10 µg/mL (10ppm)	125 mL	**89800-218**
Hafnium	HNO_3 / HF	100 µg/mL (100ppm)	125 mL	**89800-246**
Hafnium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82025-990**
Hafnium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-070**
Hafnium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-352**
Hafnium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-354**
Holmium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-994**
Holmium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-072**
Holmium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-356**
Holmium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-358**
Indium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-182**
Indium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-180**
Indium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-996**
Indium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-074**
Indium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-360**
Indium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-362**
Iodide	H_2O / Stablizer	1,000 µg/mL (1,000ppm)	125 mL	**89800-208**
Iodide	H_2O / Stablizer	1,000 µg/mL (1,000ppm)	500 mL	**89800-076**
Iridium	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82025-998**
Iridium	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-078**
Iridium	HCl	10,000 µg/mL (10,000ppm)	125 mL	**89800-364**
Iridium	HCl	10,000 µg/mL (10,000ppm)	500 mL	**89800-366**
Iron	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-166**
Iron	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-164**
Iron	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-982**
Iron	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-080**
Iron	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-368**
Iron	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-370**
Lanthanum	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-002**
Lanthanum	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-082**
Lanthanum	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-372**
Lanthanum	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-374**
Lead	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-214**
Lead	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-212**
Lead	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-028**
Lead	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-084**
Lead	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-376**
Lead	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-378**
Lithium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-190**
Lithium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-188**
Lithium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-004**
Lithium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-086**
Lithium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-380**
Lithium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-382**
Lithium-6	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-118**
Lithium-6	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-116**
Lithium-6	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-936**
Lithium-6	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-000**
Lutetium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-006**
Lutetium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-088**
Lutetium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-384**
Lutetium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-386**
Magnesium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-194**
Magnesium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-192**
Magnesium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-008**
Magnesium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-090**
Magnesium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-388**
Magnesium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-390**
Manganese	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-198**
Manganese	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-196**
Manganese	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-010**
Manganese	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-092**
Manganese	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-392**
Manganese	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-394**
Mercury	HCl	10 µg/mL (10ppm)	125 mL	**82026-174**
Mercury	HNO_3	10 µg/mL (10ppm)	125 mL	**89800-220**
Mercury	HCl	100 µg/mL (100ppm)	125 mL	**82026-172**
Mercury	HNO_3	100 µg/mL (100ppm)	125 mL	**89800-248**
Mercury	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-992**
Mercury	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-094**
Mercury	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-396**
Mercury	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-398**
Molybdenum	NH_4OH	10 µg/mL (10ppm)	125 mL	**82026-202**
Molybdenum	NH_4OH	100 µg/mL (100ppm)	125 mL	**82026-200**
Molybdenum	NH_4OH	1,000 µg/mL (1,000ppm)	125 mL	**82026-012**
Molybdenum	NH_4OH	1,000 µg/mL (1,000ppm)	500 mL	**89800-096**
Molybdenum	NH_4OH	10,000 µg/mL (10,000ppm)	125 mL	**89800-400**
Molybdenum	NH_4OH	10,000 µg/mL (10,000ppm)	500 mL	**89800-402**
Neodymium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-020**
Neodymium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-098**
Neodymium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-404**
Neodymium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-406**
Nickel	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-210**
Nickel	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-208**
Nickel	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-022**
Nickel	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-100**
Nickel	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-408**
Nickel	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-410**
Niobium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-018**
Niobium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-102**
Niobium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-412**
Niobium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-414**
Osmium	HCl	10 µg/mL (10ppm)	125 mL	**89800-222**
Osmium	HCl	100 µg/mL (100ppm)	125 mL	**89800-250**
Osmium	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-024**
Osmium	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-104**
Palladium	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-030**
Palladium	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-106**
Palladium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-032**
Palladium	HCl	10,000 µg/mL (10,000ppm)	125 mL	**89800-416**
Palladium	HCl	10,000 µg/mL (10,000ppm)	500 mL	**89800-418**
Palladium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-108**
Phosphorus	H_2O	10 µg/mL (10ppm)	125 mL	**89800-224**
Phosphorus	H_2O	100 µg/mL (100ppm)	125 mL	**89800-252**
Phosphorus	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**82026-026**
Phosphorus	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-110**
Phosphorus	H_2O	10,000 µg/mL (10,000ppm)	125 mL	**89800-420**
Phosphorus	H_2O	10,000 µg/mL (10,000ppm)	500 mL	**89800-422**
Platinum	HCl	10 µg/mL (10ppm)	125 mL	**89800-226**

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Element	Matrix	Concentration	Pack Size	Cat. No.
Platinum	HCl	100 µg/mL (100ppm)	125 mL	**89800-254**
Platinum	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-036**
Platinum	HNO_3 / HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-038**
Platinum	HNO_3 / HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-118**
Platinum	HCl	10,000 µg/mL (10,000ppm)	125 mL	**89800-424**
Platinum	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-116**
Platinum	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**89800-112**
Platinum	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-114**
Platinum	HCl	10,000 µg/mL (10,000ppm)	500 mL	**89800-426**
Potassium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-186**
Potassium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-184**
Potassium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-000**
Potassium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-120**
Potassium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-428**
Potassium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-430**
Praseodymium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-034**
Praseodymium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-122**
Praseodymium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-432**
Praseodymium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-434**
Rhenium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-042**
Rhenium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-124**
Rhenium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-436**
Rhenium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-438**
Rhodium	HCl	10 µg/mL (10ppm)	125 mL	**82026-218**
Rhodium	HNO_3	10 µg/mL (10ppm)	125 mL	**89800-228**
Rhodium	HCl	100 µg/mL (100ppm)	125 mL	**82026-216**
Rhodium	HNO_3	100 µg/mL (100ppm)	125 mL	**89800-256**
Rhodium	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-044**
Rhodium	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-126**
Rhodium	HCl	10,000 µg/mL (10,000ppm)	125 mL	**89800-440**
Rhodium	HCl	10,000 µg/mL (10,000ppm)	500 mL	**89800-442**
Rhodium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**89800-128**
Rhodium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-130**
Rubidium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-040**
Rubidium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-132**
Rubidium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-444**
Rubidium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-446**
Ruthenium	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-046**
Ruthenium	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-134**
Ruthenium	HCl	10,000 µg/mL (10,000ppm)	125 mL	**89800-448**
Ruthenium	HCl	10,000 µg/mL (10,000ppm)	500 mL	**89800-450**
Samarium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-060**
Samarium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-136**
Samarium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-452**
Samarium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-454**
Scandium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-226**
Scandium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-224**
Scandium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-054**
Scandium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-138**
Scandium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-456**
Scandium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-458**
Selenium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-230**
Selenium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-228**
Selenium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-460**
Selenium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-462**
Selenium +4	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-140**
Selenium +4	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**82026-056**
Selenium +6	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**89800-142**
Selenium +6	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-144**
Silica	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-148**
Silica	NaOH	1,000 µg/mL (1,000ppm)	125 mL	**89800-150**
Silica	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**89800-146**
Silica	NaOH	1,000 µg/mL (1,000ppm)	500 mL	**89800-152**
Silicon	HNO_3 / HF	10 µg/mL (10ppm)	125 mL	**89800-230**
Silicon	HNO_3 / HF	100 µg/mL (100ppm)	125 mL	**89800-258**
Silicon	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-058**
Silicon	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-154**
Silicon	NaOH	1,000 µg/mL (1,000ppm)	125 mL	**89800-156**
Silicon	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-464**
Silicon	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-466**
Silicon	NaOH	1,000 µg/mL (1,000ppm)	500 mL	**89800-158**
Silver	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-404**
Silver	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-402**
Silver	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-160**
Silver	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82025-938**
Silver	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-468**
Silver	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-470**
Sodium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-206**
Sodium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-204**
Sodium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-016**
Sodium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-162**
Sodium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-472**
Sodium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-474**
Strontium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-238**
Strontium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-236**
Strontium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-066**
Strontium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-164**
Strontium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-476**
Strontium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-478**
Sulfur	H_2O	10 µg/mL (10ppm)	125 mL	**89800-232**
Sulfur	H_2O	100 µg/mL (100ppm)	125 mL	**89800-260**
Sulfur	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**82026-014**
Sulfur	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-166**
Sulfur	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**82026-048**
Sulfur	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-168**
Sulfur	H_2O	10,000 µg/mL (10,000ppm)	500 mL	**89800-482**
Sulfur	H_2O	10,000 µg/mL (10,000ppm)	125 mL	**89800-484**
Sulfur	H_2O	10,000 µg/mL (10,000ppm)	500 mL	**89800-486**
Sulfur	H_2O	10,000 µg/mL (10,000ppm)	125 mL	**89800-480**
Tantalum	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-068**
Tantalum	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-170**
Tantalum	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-488**
Tantalum	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-490**
Tellurium	HNO_3	10 µg/mL (10ppm)	125 mL	**89800-234**
Tellurium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-074**
Tellurium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-244**
Tellurium	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-072**
Tellurium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-174**
Tellurium	HCl	10,000 µg/mL (10,000ppm)	125 mL	**89800-492**
Tellurium	HCl	10,000 µg/mL (10,000ppm)	500 mL	**89800-494**
Tellurium	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-172**
Terbium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-242**
Terbium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-240**
Terbium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-070**
Terbium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-176**
Terbium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-496**
Terbium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-498**
Thallium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-256**
Thallium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-254**
Thallium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-080**
Thallium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-178**
Thallium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-500**
Thallium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-502**
Thorium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-248**
Thorium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-246**
Thorium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-076**
Thorium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-180**
Thorium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-504**
Thorium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-506**
Thulium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-082**
Thulium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-182**
Thulium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-508**
Thulium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-510**
Tin	HNO_3 / HF	10 µg/mL (10ppm)	125 mL	**82026-234**
Tin	HNO_3 / HF	100 µg/mL (100ppm)	125 mL	**82026-232**

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Element	Matrix	Concentration	Pack Size	Cat. No.
Tin	HCl	1,000 µg/mL (1,000ppm)	125 mL	**82026-064**
Tin	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-062**
Tin	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-512**
Tin	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-514**
Tin	HCl	1,000 µg/mL (1,000ppm)	500 mL	**89800-186**
Tin	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-184**
Titanium	HNO_3 / HF	10 µg/mL (10ppm)	125 mL	**82026-252**
Titanium	HNO_3 / HF	100 µg/mL (100ppm)	125 mL	**82026-250**
Titanium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-078**
Titanium	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-188**
Titanium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-516**
Titanium	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-518**
Tungsten	HNO_3 / HF	10 µg/mL (10ppm)	125 mL	**89800-236**
Tungsten	HNO_3 / HF	100 µg/mL (100ppm)	125 mL	**89800-262**
Tungsten	H_2O	1,000 µg/mL (1,000ppm)	500 mL	**89800-194**
Tungsten	HNO_3 / HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-088**
Tungsten	HNO_3 / HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-190**
Tungsten	HNO_3 / HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-520**
Tungsten	HNO_3 / HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-522**
Tungsten	H_2O	1,000 µg/mL (1,000ppm)	125 mL	**89800-192**
Uranium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-260**
Uranium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-258**
Uranium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-084**
Uranium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-196**
Uranium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-524**
Uranium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-526**
Vanadium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-264**

Element	Matrix	Concentration	Pack Size	Cat. No.
Vanadium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-262**
Vanadium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-086**
Vanadium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-198**
Vanadium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-528**
Vanadium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-530**
Ytterbium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-092**
Ytterbium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-200**
Ytterbium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-532**
Ytterbium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-534**
Yttrium	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-268**
Yttrium	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-266**
Yttrium	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-090**
Yttrium	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-202**
Yttrium	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-536**
Yttrium	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-538**
Zinc	HNO_3	10 µg/mL (10ppm)	125 mL	**82026-272**
Zinc	HNO_3	100 µg/mL (100ppm)	125 mL	**82026-270**
Zinc	HNO_3	1,000 µg/mL (1,000ppm)	125 mL	**82026-094**
Zinc	HNO_3	1,000 µg/mL (1,000ppm)	500 mL	**89800-204**
Zinc	HNO_3	10,000 µg/mL (10,000ppm)	125 mL	**89800-540**
Zinc	HNO_3	10,000 µg/mL (10,000ppm)	500 mL	**89800-542**
Zirconium	HF	1,000 µg/mL (1,000ppm)	125 mL	**82026-096**
Zirconium	HF	1,000 µg/mL (1,000ppm)	500 mL	**89800-206**
Zirconium	HF	10,000 µg/mL (10,000ppm)	125 mL	**89800-544**
Zirconium	HF	10,000 µg/mL (10,000ppm)	500 mL	**89800-546**

VWR® Vacuum Filtration Systems Allows Filtration and Storage in One Easy Step

VWR® COLLECTION

Designed for the preparation of buffers, tissue culture media, and other biological fluids, these systems feature large diameter Pall membranes for guaranteed performance and maximum throughput. The ergonomic design features a receiver bottle with molded finger grips and patented bottle cap.

Size	Pore Size	Cat. No.
250 mL	0.2 µm	**97066-200**
250 mL	0.45 µm	**97066-206**
500 mL	0.2 µm	**97066-202**
500 mL	0.45 µm	**97066-208**
1 L	0.2 µm	**97066-204**
1 L	0.45 µm	**97066-210**

For additional systems and accessories, visit **vwr.com**

VWR® Unisex Technology Lab Coat, Reusable

VWR® COLLECTION

Unisex Technology lab coats are designed for use in research environments and feature knit cuffs, oversized pockets, and a headphone port in the pocket. Lab coats are manufactured from durable and comfortable poly/cotton fabric (80/20 blend) for long-term wear. These industrial launderable garments feature a quick-release five-snap front, one breast pocket with a pencil slot, and two oversized hip pockets (large enough for a mini-tablet). Additionally, there are side vents for easy pants pocket access.

Size	Chest Size	Cat. No.
XX-Small	26–28″	**10141-370**
X-Small	30–32″	**10141-372**
Small	34–36″	**10141-374**
Medium	38–40″	**10141-342**
Large	42–44″	**10141-344**
X-Large	46–48″	**10141-346**
XX-Large	50–52″	**10141-348**
3X-Large	54–56″	**10141-350**

For more information, please visit **vwr.com**

Standards: BDH® ARISTAR® Multi-Element ICP and ICP-MS Certified Reference Standards

Stock multi-element ICP and ICP-MS blends can be found grouped for stability and ease of use as well as commonly used Certified Reference Materials (CRMs) recommended by many instrument manufactures.

For the pharmaceutical industry, the range includes a line of CRMs that comply with the general chapters on elemental impurity USP <232> limits and USP<233> procedures. These multi-element CRMs are available for precious metals, oral elemental and parenteral element impurities.

These ICP and ICP-MS Certified Reference Materials (CRMs) are engineered to be stable, compatible, traceable to NIST SRMs, and are manufactured and tested under ISO Guide 34 & ISO 17025 guidelines. Certified values are based on two independent methods, uncertainties are based on detailed error budgets, and trace metallic impurities (TMI) are determined by ICP and ICP-MS for single element CRMs.

Each multi-element ICP standard ships with a Certificate of Analysis (C of A) and Safety Data Sheet (SDS) and one year expiration. Specific lot C of A's can also be found online. Most products are available in stock at the 125mL and 500mL sizes packaged in plastic LDPE bottles.

Ordering Information: Uranium is depleted. The isotopic abundance is on the certificate of analysis.

Description	Size	Matrix	Elements and Concentration	Additional Information	Cat. No.
Usp 232 Oral Elemental Impurities For ICP	125 mL	HNO_3	1.5µg/mL: As 5µg/mL: Pb 15µg/mL: Hg 25µg/mL: Cd 100µg/mL: Mo, V 500µg/mL: Ni 1000µg/mL: Cu	ICP multi-element calibration standard for USP Method 232 for oral elemental impurities with 8 elements.	**89800-548**
Usp 232 Parenteral Elemental Impurities ICP	125 mL	HNO_3	1.5µg/mL: As, Hg 2.5µg/mL: Cd 5µg/mL: Pb 10µg/mL: Mo, V 50µg/mL: Ni 100µg/mL: Cu	ICP multi-element calibration standard for USP Method 232 for parenteral elemental impurities with 8 elements.	**89800-550**
Usp 232 Precious Metals Elemental Impurities For ICP	125 mL	HCl	100µg/mL: Ir, Os, Pd, Pt, Rh, Ru	ICP multi-element calibration standard for USP Method 232 for precious metals elemental impurities with 6 elements.	**89800-552**
ICP Tuning Solution Standard	125 mL	HNO_3	10µg/mL: Ce, Co, Li, Tl, Y	ICP multi-element tuning solution standard with 5 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-554**
ICP Tuning Solution Standard	125 mL	HCl / HNO_3	5µg/mL: Mg, Mn 10µg/mL: Fe, La, P, K, Sc, Ti 50µg/mL: S	ICP multi-element tuning solution standard with 9 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-556**
ICP Calibration Standard	125 mL	HNO_3 / HCl / HF	1µg/mL: Ca 2µg/mL: Be, Li, Sr 5µg/mL: Mn, Mo, Sc, Na 10µg/mL: Ce, Cu, Eu, In, Fe, Ni, P, K, Si, Ti, V, Y, Zr 50µg/mL: S	ICP multi-element calibration standard with 22 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-558**
Quality Control Standard 7	125 mL	HNO_3	50µg/mL: Si 100µg/mL: Al, Ba, B, Ag, Na 1000µg/mL: K	ICP multi-element quality control calibration standard with 7 elements, designed from in-house second source concentrates to support your daily calibration activities.	**89800-560**
Quality Control Standard 19	125 mL	HNO_3	100µg/mL: Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Tl, Ti, V, Zn	ICP multi-element quality control calibration standard with 19 elements, designed from in-house second source concentrates to support your daily calibration activities.	**89800-562**
Quality Control Standard 21	125 mL	HNO_3	100µg/mL: Pb, Mg, Mn, Mo, Ni, Se, Tl, Ti, V, Zn, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Li, Sr	ICP multi-element quality control calibration standard with 21 elements, designed from in-house second source concentrates to support your daily calibration activities.	**89800-564**
Quality Control Standard 26	125 mL	HNO_3	50µg/mL: Si 100µg/mL: Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Mg, Mn, Ni, Ag, Na, Tl, Ti, V, Zn, Pb, Mo, Se 1000µg/mL: K	ICP multi-element quality control calibration standard with 26 elements, designed from in-house second source concentrates to support your daily calibration activities.	**89800-566**
Quality Control Standard 28	125 mL	HCl / HNO_3	50µg/mL: Si 100µg/mL: Al, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Mo, Ni, Se, Ag, Na, Sr, Tl, Ti, V, Zn, Sb 1000µg/mL: K	ICP multi-element quality control calibration standard with 28 elements, designed from in-house second source concentrates to support your daily calibration activities.	**89800-568**
ICP Calibration Standard	125 mL	HNO_3	1µg/mL: Be, Sr 5µg/mL: Ba, Mn 15µg/mL: B, Fe 20µg/mL: Cd, Co, Cu, Zn 25µg/mL: Cr 50µg/mL: Ni, Ag 100µg/mL: Al 150µg/mL: Ga 200µg/mL: Bi, In, Pb 400µg/mL: Tl	ICP multi-element calibration standard with 19 elements.	**89800-570**
ICP Calibration Standard	125 mL	HNO_3	10000µg/mL: Ca, Mg, K, Na	ICP common multi-element calibration standard with 4 elements	**89800-572**
ICP Calibration Standard	125 mL	HNO_3	1000µg/mL: Ca, Mg, K, Na	ICP common multi-element calibration standard with 4 elements	**89800-574**
ICP Calibration Standard	125 mL	HNO_3	1000µg/mL: Ca, Mg, K, Al, Ba, Bi, B, Cd, Cr, Co, Cu, Ga, In, Fe, Pb, Li, Mn, Ni, Ag, Na, Sr, Tl, Zn	ICP multi-element calibration standard with 23 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-576**

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Description	Size	Matrix	Elements and Concentration	Additional Information	Cat. No.
ICP Wavelength Calibration Standard	500 mL	HCl	1µg/mL: Be, Mg, Mn, Sc, Sr, Y 2µg/mL: Ba, B, Cd, Cr, Cu, Fe, Li, Ti, Zn 5µg/mL: Hg 10µg/mL: Ca, P 20µg/mL: Al, As, Pb, Se, Na, Te 100µg/mL: K	ICP multi-element wavelength calibration standard with 26 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-578**
ICP Calibration Standard	125 mL	HNO_3	10µg/mL: Mg, K, Al, Ba, Bi, Cd, Cr, Co, Cu, Ga, Pb, Li, Mn, Mo, Ni, Rb, Ag, Na, Sr, Te, U, V, Tl 100µg/mL: As, Be, B, Fe, Se, Zn 1000µg/mL: Ca	ICP multi-element calibration standard with 30 elements.	**89800-580**
ICP Calibration Standard	125 mL	HNO_3	100µg/mL: Ca, Mg, K, Al, Ba, Be, Bi, B, Cd, Cr, Co, Cu, Ga, Fe, Pb, Li, Mn, Ni, Se, Na, Sr, Te, Tl, Zn	ICP multi-element calibration standard with 24 elements.	**89800-582**
ICP Calibration Standard - Toxic Element	125 mL	HNO_3	100µg/mL: As, Be, Cd, Pb, Ni, Se, Tl	ICP multi-element calibration standard for toxic element testing with 7 elements.	**89800-584**
ICP Calibration Standard - Surface Water	125 mL	HNO_3	10µg/L: Bi, Se, Tl 20µg/L: Be, Cd, Cr, Cu 25µg/L: Co, Pb 30µg/L: Mn 50µg/L: As, Ba, Ni, V, Zn 100µg/L: B, Fe, Mo, Sr 3000µg/L: K 8000µg/L: Na 15000µg/L: Mg 35000µg/L: Ca	ICP multi-element calibration standard for surface water testing with 23 elements.	**89800-586**
ICP Calibration Standard - Sewage Sludge	125 mL	HNO_3	10µg/mL: Cd 200µg/mL: Ni 500µg/mL: Pb 800µg/mL: Cu 900µg/mL: Cr 2500µg/mL: Zn	ICP multi-element calibration standard for sewage sludge testing with 6 elements.	**89800-588**
ICP Tuning Solution Standard	125 mL	HNO_3	10µg/mL: Ni, Ba, Be, Bi, Ce, Co, In, Pb, Li, U	ICP multi-element tuning solution standard with 10 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-590**
ICP Calibration Standard - Trace Metals	125 mL	HNO_3	25µg/mL: Cd, Se 100µg/mL: As, Be, Cr, Co, Cu, Fe, Pb, Mn, Ni, Zn 250µg/mL: V 500µg/mL: Al	ICP multi-element calibration standard for trace metals testing with 14 elements.	**89800-592**
ICP Wavelength Calibration Standard	500 mL	HCl / HNO_3 / HF	20µg/mL: As, Na, Mn, Sc, La, Li, Mo, Ni 100µg/mL: K, P, S	ICP multi-element wavelength calibration standard with 11 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-594**
ICP Calibration Standard	125 mL	HNO_3	10µg/mL: Ca, K, Fe, Li, Na	ICP multi-element calibration standard with 5 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-596**
ICP Calibration Standard - Earth Alkali	125 mL	HNO_3	1000µg/mL: Ca, Mg, Ba, Sr	ICP multi-element calibration standard for alkaline earth elemental testing with 4 elements.	**89800-598**
ICP Calibration Standard - Hcl Soluble Elements	125 mL	HCl / HNO_3 / HF	100µg/mL: Sb, Hf, Ir, Ta, Sn, Ti, Zr	ICP multi-element calibration standard for HCl soluble element testing with 7 elements.	**89800-600**
ICP Calibration Standard	125 mL	HNO_3	5µg/mL: Be, Cd 10µg/mL: Ag 20µg/mL: Cr, Fe, Mn 50µg/mL: Ba, Co, Cu, Ni 100µg/mL: Al, Sb, As, Pb, Se, Tl	ICP multi-element calibration standard with 16 elements.	**89800-602**
ICP Detection Limit Standard	125 mL	HNO_3	10µg/L: Be, Co, In, Tl, U	ICP detection limit standard with 5 elements.	**89800-604**
ICP Plasma Setup Solution	1000 mL	HNO_3 / HF	10µg/L: Ba, Cd, Ce, Cu, Ge, Pb, Mg, Rh, Sc, Tb, Tl	ICP multi-element calibration standard for plasma setup with 11 elements.	**89800-606**
ICP Calibration Standard	125 mL	HNO_3	10µg/mL: Al, As, Ba, Be, Bi, Cd, Ca, Cs, Cr, Co, Cu, Ga, In, Fe, Pb, Li, Mg, Mn, Ni, K, Rb, Se, Ag, Na, Tl, U, V, Zn, Sr	ICP multi-element calibration standard with 29 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-608**
ICP Calibration Standard	125 mL	HNO_3	200µg/L: Cd, Cu, Pb, Mg, Rh	ICP multi-element calibration standard with 5 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-610**
ICP Calibration Standard	500 mL	HNO_3	1µg/L: Ba, B, Co, Ga, In, Fe, Li, Lu, K, Rh, Sc, Na, Tl, U, Y	ICP multi-element calibration standard with 15 elements.	**89800-612**
ICP Tuning Solution	500 mL	HNO_3	50µg/mL: Al, As, Ba, Cd, Cr, Co, Cu, Pb, Mn, Mo, Ni, Se, Sr, Zn 500µg/mL: K	ICP multi-element tuning solution standard with 15 elements.	**89800-614**
ICP Calibration Standard	500 mL	HNO_3	3µg/mL: Cr 10µg/mL: Ni	ICP Common Multi-Element Standard with 2 elements	**89800-616**
ICP Calibration Standard	125 mL	HNO_3	10µg/mL: Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sm, Sc, Tb, Th, Tm, Yb, Y	ICP multi-element calibration standard with 17 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-618**
ICP Calibration Standard	125 mL	HNO_3	10µg/mL: Al, As, Ba, Be, Cd, Ca, Cs, Cr, Co, Cu, Ga, Fe, Pb, Li, Mg, Mn, Ni, K, Rb, Se, Ag, Na, Sr, Tl, U, V, Zn	ICP multi-element calibration standard with 27 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-620**
ICP Calibration Standard	125 mL	HCl / HNO_3	10µg/mL: Sb, Au, Hf, Ir, Pd, Pt, Rh, Ru, Te, Sn	ICP multi-element calibration standard with 10 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-622**
ICP Calibration Standard	125 mL	HNO_3 / HF	10µg/mL: B, Ge, Mo, Nb, P, Re, Si, S, Ta, Ti, W, Zr	ICP multi-element calibration standard with 12 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-624**

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Description	Size	Matrix	Elements and Concentration	Additional Information	Cat. No.
ICP Calibration Standard	125 mL	HNO_3	10µg/mL: Mg, Be, Bi, Ce, Co, In, Pb, Ni, U	ICP multi-element calibration standard with 9 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-626**
ICP Calibration Standard	125 mL	HNO_3	0.2µg/mL: Ca, Mg, Ba, Zn 1µg/mL: Al, Cu, Mn 5µg/mL: Ni, K 10µg/mL: P	ICP common multi-element calibration standard with 10 elements	**89800-628**
ICP Calibration Standard	125 mL	HNO_3	500µg/mL: Ca, Fe, Mg, K, Na	ICP multi-element calibration standard with 5 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-630**
ICP Calibration Standard	500 mL	HNO_3	5000µg/mL: Ca, Mg, K, Na	ICP multi-element calibration standard with 5 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-632**
ICP Calibration Standard	125 mL	HNO_3	1000µg/mL: Ca, Mg, K, Na, Fe	ICP multi-element calibration standard with 5 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-634**
ICP Calibration Standard	500 mL	HCl	100µg/mL: Au, Pd, Pt	ICP common multi-element precious metals calibration standard with 3 elements	**89800-636**
ICP Envirnomental Calibration Standard	125 mL	HNO_3	10µg/mL: Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Th, Tl, U, V, Zn 1000µg/mL: Ca, Fe, K, Mg, Na	ICP multi-element environmental calibration standard with 25 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-638**
ICP Tuning Solution 1	125 mL	HNO_3	2.5µg/mL: Y, Yb 5µg/mL: Al, Ba, Bi, Co, Cr, Cu, In, 6Li, Lu, Mn, Na, Sc, Sr, Th, Tl, U, V 10µg/mL: Mg, Ni, Pb 20µg/mL: As, Be, Cd, Zn	ICP multi-element tuning solution standard with 26 elements, designed as an alternative to solutions offered by instrument manufactures. Can be paired with ICP tuning solution 2.	**89800-640**
ICP Tuning Solution 2	125 mL	HCl	5µg/mL: Ir, Ti 10µg/mL: Ge, Mo, Pd, Ru, Sb, Sn	ICP multi-element tuning solution standard with 8 elements, designed as an alternative to solutions offered by instrument manufactures. Can be paired with ICP tuning solution 1.	**89800-642**
ICP Internal Standard	125 mL	HNO_3 / HF	10µg/mL: Bi, Ge, In, 6Li, Sc, Tb, Y	ICP multi-element internal standard with 7 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-644**
ICP Interference Check Standard	125 mL	HNO_3	1000µg/mL: Na 1200µg/mL: Al 3000µg/mL: Mg 5000µg/mL: Fe 6000µg/mL: Ca	ICP multi-element interference check standard with 5 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-646**
ICP Wavecal Standard	125 mL	HNO_3	1µg/mL: Ba, Ca 10µg/mL: La, Li, Mn, Na, Sr 50µg/mL: K	ICP multi-element wavecal standard with 8 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-648**
ICP Calibration Standard	125 mL	HNO_3 / HF	100µg/mL: Mo, Sb, Si, Sn, Ti	ICP common multi-element calibration standard with 5 elements	**89800-650**
ICP Calibration Standard	500 mL	HNO_3 / HF	10µg/mL: Mo, Sb, Sn, Ti	ICP common multi-element calibration standard with 4 elements	**89800-652**
ICP Calibration Standard	500 mL	HCl	100µg/mL: Au, Ir, Os, Pd, Pt, Re, Rh, Ru	ICP common multi-element calibration standard with 8 precious metal elements	**89800-654**
ICP Calibration Standard - Trace Metals In Water	125 mL	HNO_3	1µg/L: Ag, Te 7µg/L: Cd, Tl 12µg/L: Se 14µg/L: Be, Bi, Rb 17µg/L: Li 20µg/L: Cr, Pb 23µg/L: Cu 27µg/L: Co 38µg/L: V 39µg/L: Mn 58µg/L: Sb 60µg/L: As 62µg/L: Ni 79µg/L: Zn 98µg/L: Fe 113µg/L: Re 121µg/L: Mo 142µg/L: Al 158µg/L: B 323µg/L: Sr 544µg/L: Ba 2000µg/L: K 8000µg/L: Mg 21000µg/L: Na 32000µg/L: Ca	ICP multi-element calibration standard, designed as an alternative to NIST SRM 1643 trace metals in water with 30 elements.	**89800-656**
ICP Instrument Check Standard	125 mL	HNO_3 / HF	10µg/mL: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn	ICP multi-element instrument check standard with 17 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-658**
ICP Tuning Solution Standard	125 mL	HNO_3	10µg/mL: Ba, Be, Co, Pb, Tl, Ce, In, Li, Mg, Rh, U, Y	ICP multi-element tuning solution standard with 12 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-660**
ICP Tuning Solution Standard	125 mL	HNO_3	10µg/mL: Ba, Co, In, Li, Rh, U, Y, B, Ga, Fe, Lu, K, Sc, Na, Th	ICP multi-element tuning solution standard with 15 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-662**

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Description	Size	Matrix	Elements and Concentration	Additional Information	Cat. No.
ICP Calibration Standard	125 mL	HNO_3 / HF	100µg/mL: Ti, Sb, Mo, Sn	ICP multi-element calibration standard with 4 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-664**
ICP Calibration Standard	125 mL	HNO_3	100µg/mL: Al, As, Cd, Cr, Cu, Mn, Ni, Se, Ag, U, V, Zn, Ba, Be, Co, Pb, Tl, Th	ICP multi-element calibration standard with 18 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-666**
ICP Calibration Standard	125 mL	HNO_3 / HF	5µg/mL: Al, As, Ba, Cd, Cr, Co, Cu, Pb, Mn, Mo, Ni, Se, Sr, Zn 50µg/mL: K	ICP multi-element internal standard with 6 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-668**
ICP Internal Standard	125 mL	HNO_3	100µg/mL: In, Bi, 6Li, Sc, Tb, Y	ICP multi-element calibration standard with 15 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-670**
ICP Tuning Solution Standard	125 mL	HNO_3	10µg/mL: Ba, Co, In, Be, Ce, Pb, Mg, Tl, Th	ICP multi-element tuning solution standard with 9 elements, designed as an alternative to solutions offered by instrument manufactures.	**89800-672**
ICP Alkaline, Alkali Earth, Non-Transition Group Calibration Standard	125 mL	HNO_3	100µg/mL: Al, As, Ba, Be, Bi, Ca, Cs, Ga, In, Li, Mg, K, Rb, Se, Na, Sr	ICP multi-element alkaline, alkali earth, non-transition group calibration standard with 16 elements. Part of the 69 Element Group.	**82025-930**
ICP Flouride Soluble Group Calibration Standard	125 mL	HNO_3 / HF	10µg/mL: Ge, Hf, Mo, Nb, Ta, Sn, Ti, W, Zr	ICP multi-element flouride soluble group calibration standard with 9 elements. Part of the 65-Element Group.	**82026-102**
ICP Flouride Soluble Group Calibration Standard	125 mL	HNO_3 / HF	100µg/mL: Sb, B, Ge, Hf, Mo, Nb, P, Re, Si, S, Ta, Sn, Ti, W, Zr	ICP multi-element flouride soluble group calibration standard with 15 elements. Part of the 69-Element Group.	**82025-932**
ICP Complete Group Calibration Standard	125 mL	HNO_3	10µg/mL: Al, As, Ba, Be, Cd, Ca, Ce, Cr, Co, Cu, Dy, Er, Eu, Gd, Ga, Ho, Fe, La, Pb, Lu, Mg, Mn, Nd, Ni, P, K, Pr, Rb, Sm, Se, Ag, Na, Sr, S, Tl, Th, Tm, U, V, Yb, Zn, Cs, B	ICP multi-element complete group calibration standard with 43 elements. Part of the 71-Element Group.	**82026-108**
ICP Internal Element Group Calibration Standard	125 mL	HNO_3	10µg/mL: Bi, In, Sc, Tb, Y, 6Li	ICP multi-element internal element group calibration standard with 6 elements. Part of the 71-Element Group.	**82026-114**
ICP Cool Plasma Complete Group Calibration Standard	125 mL	HNO_3	10µg/mL: Al, Ca, Cs, Cr, Co, Cu, Fe, Li, Mg, Mn, Ni, K, Rb, Ag, Na, Sr, Zn	ICP multi-element cool plasma complete group calibration standard with 17 elements. Part of the 65-Element Group.	**82026-106**
ICP Hot Plasma Complete Group Calibration Standard	125 mL	HNO_3	10µg/mL: Sb, As, Ba, Be, Bi, Cd, Ga, In, Pb, Se, Tl, V, B	ICP multi-element hot plasma complete group calibration standard with 13 elements. Part of the 65-Element Group.	**82026-104**
ICP Precious Metals Group Calibration Standard	125 mL	HCl	10µg/mL: Au, Ir, Os, Pd, Pt, Re, Rh, Ru	ICP multi-element precious metals group calibration standard with 8 elements including Osmium. Part of the 71-Element Group.	**82026-112**
ICP Precious Metals Group Calibration Standard	125 mL	HCl	10µg/mL: Au, Ir, Pd, Pt, Re, Rh, Ru, Te	ICP multi-element precious metals group calibration standard with 8 elements. Part of the 65-Element Group.	**82026-100**
ICP Precious Metals Group Calibration Standard	125 mL	HCl	100µg/mL: Au, Ir, Pd, Pt, Rh, Ru	ICP multi-element precious metals group calibration standard with 6 elements. Part of the 69-Element Group.	**82025-928**
ICP Rare Earth Metals Group Calibration Standard	125 mL	HNO_3	10µg/mL: Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sm, Sc, Tb, Th, Tm, U, Yb, Y	ICP multi-element rare earth metals group calibration standard with 18 elements. Part of the 65-Element Group.	**82026-098**
ICP Rare Earth Metals Group Calibration Standard	125 mL	HNO_3	100µg/mL: Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sc, Tb, Th, Tm, U, Yb, Y, Sm	ICP multi-element rare earth metals group calibration standard with 18 elements. Part of the 69-Element Group.	**82025-926**
ICP Refractory Element Group Calibration Standard	125 mL	HNO_3 / HF	10µg/mL: Sb, Ge, Hf, Mo, Nb, Si, Ta, Te, Sn, Ti, W, Zr	ICP multi-element refractory element group calibration standard with 12 elements. Part of the 71-Element Group.	**82026-110**
ICP Transtion Metals Group Calibration Standard	125 mL	HNO_3	100µg/mL: Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Ni, Ag, Tl, V, Zn	ICP multi-element transition metals group calibration standard with 13 elements. Part of the 69-Element Group.	**82025-934**

Accredited Pipette Calibration

VWRCATALYST offers calibration and repair services for all makes, models, and configurations of pipettes, as well as bottle-top dispensers, pipet aids, repeaters, diluters, and syringes. You can select from six levels of service, which are performed on-site or through our mail-in program. Our levels of service range from basic preventive maintenance and accuracy checks, to ISO 17025-accredited calibrations, to customized solutions.

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VWR® CATALYST
We Enable Science Through Services

VWR® Traceable® Conductivity Calibration Standards (CRM)

- Traceable
- Available in Single-Use (100 mL) or 473 mL (16oz.) Sizes

These Certified Reference Materials (CRM) calibrate conductivity meters and probes for maximum accuracy. They are compatible with all makes of equipment, and can be used in lab or field. Accuracy at 25°C is ±0.25µmhos for 1, 5, and 10µmhos solutions, and 0.25% for all other solutions; or the uncertainty shown on the certificate, whichever is greater. Each container is labeled for calibrating conductivity in micromhos (microsiemens), resistivity in megohms, and dissolved solids in ppm. Available in 100mL (3.4oz.) single-use polyethylene bottles or 473mL (16oz.) bottles.

Single-use standards make it easy to calibrate with no external contamination. An extra large opening of 4.4cm (1 3/4") diameter and depth of 8.9cm (3 1/2") allow probe calibration to take place in the standard's polyethylene container. Ideal for lab/field conditions.

All solutions include a serial numbered Traceable certificate to indicate traceability to standards provided by the National Institute of Standards and Technology (NIST). Double A2LA accreditation accredited certification provides the highest achievable level of quality assurance, documentation, and accuracy. CRMs are produced by A2LA accredited ISO Guide 34 certified reference material producer and by an A2LA accredited ISO 17025 calibration laboratory. Additional accreditations include ISO 31 (certificate content), and ISO 35 (statistical analysis), plus ISO 9001 DNV (certified quality manufacturer).

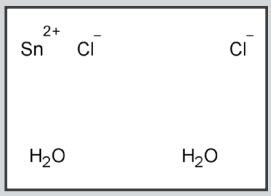
Meet test requirements for Federal, State, and local agencies, CAP, CLSI, ACS, CLIA and complies with AOAC 973.40, EPA 120.1, Standard Method 2510 (APHA, AWWA, WEF), ISO 7888, DIN 38404, ASTM D1125, USGS I-1780, USP 645, OIML R56, IUPAC, and for A2LA/NVLAP accreditations/ISO 9000 certifications.

Ordering Information: Assortment **61161-356** includes one bottle each of the single-use standards, except the 5µmhos solution (**12777-832**). All containers supplied with individual temperature compensation chart, calibration instructions, traceability information and Traceable® certificate.

Bottle Size	Conductivity	Dissolved Solids	Resistivity	Cat. No.
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate)	10 µmhos (µS)	6.6 ppm	0.1 megohms	**23226-567**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate)	100 µmhos (µS)	66 ppm	0.01 megohms	**23226-589**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate)	10000 µmhos (µS)	6666 ppm	0.0001 megohms	**23226-625**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate and Individually Tested)	10 µmhos (µS)	6.6 ppm	0.1 megohms	**46610-030**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate and Individually Tested)	100 µmhos (µS)	66 ppm	0.01 megohms	**46610-032**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate and Individually Tested)	1000 µmhos (µS)	666 ppm	0.001 megohms	**46610-034**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate and Individually Tested)	10000 µmhos (µS)	6666 ppm	0.0001 megohms	**46610-036**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate and Individually Tested)	100000 µmhos (µS)	66666 ppm	0.00001 megohms	**46610-038**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate and Individually Tested)	5 µmhos (µS)	3.3 ppm	0.2 megohms	**46610-040**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate and Individually Tested)	1413 µmhos (µS)	933 ppm	0.00071 megohms	**46610-042**
473 mL (16 oz.) Bottles (NIST/ISO 34, ISO 17025/A2LA Certificate)	1413 µmhos (µS)	933 ppm	0.00071 megohms	**62344-936**

STANNOUS CHLORIDE DIHYDRATE

Tin (II) chloride dihydrate



Formula: $SnCl_2 \cdot 2H_2O$
M.W. 225.65 g/mol
Boiling Pt: 623 °C (1013 hPa)
Melting Pt: 246 °C
Density: 2.71 g/cm^3 (25 °C)
CAS: 10025-69-1
UN: 3260

Stannous Chloride Dihydrate, ACS

White to off-white solid

VWR ANALYTICAL

Assay ..... 98.0 - 103.0 %
Calcium ..... <= 0.005 %
Iron ..... <= 0.003 %
Lead ..... <= 0.01 %
Potassium ..... <= 0.005 %
Sodium ..... <= 0.01 %
Solubility in hydrochloric acid ..... PASS
Sulfate (P/F) ..... PASS

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9304-500G**

STARCH 2% AQUEOUS SOLUTION

M.W. 162.14 g/mol
CAS: 9005-25-8

Starch Indicator (Modified), 2%

Starch (modified) indicator, 2% contains 20g/L of soluble (acid hydrolyzed) starch (iodometric indicator), plus salicylic acid and zinc chloride in deionized water. Stabilized with a small amount of benzoic acid.

VWR ANALYTICAL

Appearance/color ..... Clear to turbid liquid
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7638-2**

Starch Indicator, 2 % (w/v)

Appearance ..... Translucent white liquid
Suitability for use ..... Colorless (Iodine absent) - Blue (Iodine present)
Storage condition ..... 5-30 °C

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH5106-500ML**

STARCH 1% AQUEOUS SOLUTION

Formula: $(C_6H_{10}O_5)_n$
M.W. 162.14 g/mol
CAS: 9005-25-8

Starch Indicator, 1% (w/v)

This indicator is prepared using soluble starch and high purity water. Salicylic acid is added as a preservative. Store at 5°C to 30°C tightly closed in the original containers.

Appearance ..... Translucent white liquid
Suitability for use ..... Colorless (Iodine absent) - Blue (Iodine present)

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH5104-1L**
4 L	Poly Bottle	**BDH5104-4L**

Starch Indicator (Modified), 1%

Starch (Modified) Indicator, 1% contains 10g/L of soluble (acid hydrolyzed) starch (iodometric indicator) plus salicylic acid and zinc chloride in deionized water.

Appearance/color ..... Clear to slightly turbid liquid
Preservative (Salicylic acid) ..... Passes test
Preservative (Zinc chloride) ..... Passes test

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7262-1**
4 L	Poly Bottle	**BDH7262-4**

VWR® Syringe Filters

Polypropylene, nylon, and PTFE membranes are ideal for sample preparation and small volume chemical filtration. Each filter has a female Luer-lock inlet and a male slip Luer outlet.

- Manufacturing process certified to ISO 9001
- Biosafe according to Class VI plastics tests
- Not intended for use with aqueous solutions

Diameter	Membrane Material	Pore Size	Cat. No.
Syringe Filters with Polypropylene Housing			
13 mm	PTFE	0.2 µm	**28145-491**
13 mm	PTFE	0.45 µm	**28145-493**
25 mm	Nylon	0.2 µm	**28145-487**
25 mm	Nylon	0.45 µm	**28145-489**
25 mm	Nylon	0.45 µm	**89041-306**
25 mm	Polypropylene	0.2 µm	**28145-483**
25 mm	Polypropylene	0.45 µm	**28145-485**
25 mm	PTFE	0.2 µm	**28145-495**
25 mm	PTFE	0.45 µm	**28145-497**

For more information and additional sizes, please visit **vwr.com**

STARCH 0.5% AQUEOUS SOLUTION

Formula: $(C_6H_{10}O_5)n$
M.W. 162.14 g/mol
CAS: 9005-25-8

Starch Indicator (Modified), 0.5%

Starch (modified) indicator, 0.5% contains 5g/L of soluble (acid hydrolyzed) starch (iodometric indicator) plus salicylic acid and zinc chloride in deionized water.

Appearance/color ..... Clear to slightly turbid liquid

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7576-2**
1 L	Poly Bottle	**BDH7576-1**

Starch Indicator, 0.5 % (w/v)

Appearance ..... Translucent white liquid
Suitability for use ..... Colorless (Iodine absent) - Blue (Iodine present)
Storage condition ..... 5-30 °C

Size	Cat. No.
500 mL	**BDH5102-500ML**
1 L	**BDH5102-1L**

Strips and Papers, pH

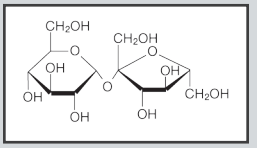
see pH Papers and Strips

Strontium

see Standards, ICP and ICP-MS

D(+)-SUCROSE

alpha-D-Glucopyranoside, beta-D-Fructofuranosyl alpha-D-glucopyranoside, D-(+)-Saccharose, Sucrose, Sugar



Formula: $C_{12}H_{22}O_{11}$
M.W. 342.3 g/mol
Melting Pt: 169 to 170 °C
Density: 1.29 g/cm^3 (20 °C)
CAS: 57-50-1

Sucrose, ACS

White solid

VWR ANALYTICAL

Chloride	<= 0.005 %
Heavy Metals (as Pb)	<= 0.0005 %
Insolubles	<= 0.005 %
Invert Sugar	<= 0.05 %
Iron	<= 0.0005 %
Loss on Drying	<= 0.03 %
Residue after Ignition	<= 0.01 %
Specific Rotation	+66.3 - +66.8 degrees
Sulfate & Sulfite	<= 0.005 %
Titrable Free Acid	<= 0.0008 meq/g

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9308-500G**
2.5 kg	Poly Bottle	**BDH9308-2.5KG**

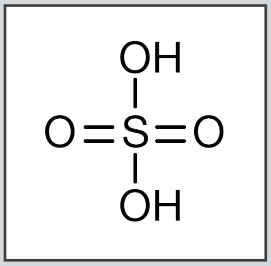
Sulfur

see Standards, ICP and ICP-MS

SULFURIC ACID (≥ 95%)

Hydrogen sulfate, Oil of vitriol, Vitriol brown oil

Formula: H_2SO_4
M.W. 98.08 g/mol
Boiling Pt: ~ 335 °C (1013 hPa)
Melting Pt: 3 °C
Density: 1.84 g/cm^3 (20 °C)
CAS: 7664-93-9
UN: 1830

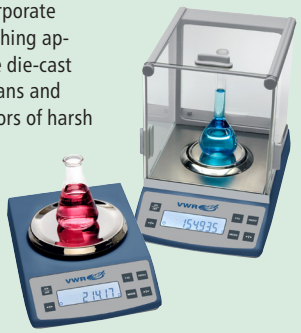


VWR® B-Series Balances

VWR COLLECTION

VWR® B-Series Balances combine advanced weighing with intuitive operation and incorporate state-of-the-art features for advanced weighing applications. These economical balances have die-cast aluminum housing, stainless steel weigh pans and draft chamber floors that withstand the rigors of harsh environments.

- Reliable results
- Multiple weigh modes
- Worry-free five-year warranty
- Forced compensation weighing technology



Capacity	Length & Linearity	Readability & Repeatability	Cat. No.
60 g	0.2 mg	0.1 mg	**10204-972**
120 g	0.2 mg	0.1 mg	**10204-974**
210 g	0.2 mg	0.1 mg	**10204-976**
200 g	0.2 mg	0.001 g	**10204-978**
400 g	0.2 mg	0.001 g	**10205-028**
500 g	0.002 g	0.001 g	**10205-030**
4000 g	0.02 g	0.01 g	**10205-032**
5000 g	0.02 g	0.01 g	**10205-034**

For more information, visit **vwr.com**

Sulfuric Acid, ARISTAR® ULTRA

Ultra high purity acid for quantitative trace metal analysis at the parts-per-trillion (ppt) level.

VWR ANALYTICAL

Assay	93 - 98 %
Aluminum (Al)	max. 50 ppt
Antimony (Sb)	max. 50 ppt
Arsenic (As)	max. 500 ppt
Barium (Ba)	max. 10 ppt
Beryllium (Be)	max. 10 ppt
Bismuth (Bi)	max. 10 ppt
Cadmium (Cd)	max. 10 ppt
Calcium (Ca)	max. 50 ppt
Cerium (Ce)	max. 10 ppt
Cesium (Cs)	max. 10 ppt
Chromium (Cr)	max. 10 ppt
Cobalt (Co)	max. 10 ppt
Copper (Cu)	max. 10 ppt
Dysprosium (Dy)	max. 10 ppt
Erbium (Er)	max. 10 ppt
Europium (Eu)	max. 10 ppt
Gadolinium (Gd)	max. 10 ppt
Gallium (Ga)	max. 10 ppt
Germanium (Ge)	max. 100 ppt
Hafnium (Hf)	max. 10 ppt
Holmium (Ho)	max. 10 ppt
Indium (In)	max. 10 ppt
Iron (Fe)	max. 50 ppt
Lanthanum (La)	max. 10 ppt
Lead (Pb)	max. 10 ppt
Lithium (Li)	max. 10 ppt
Lutetium (Lu)	max. 10 ppt
Magnesium (Mg)	max. 50 ppt
Manganese (Mn)	max. 10 ppt
Mercury (Hg)	max. 100 ppt
Molybdenum (Mo)	max. 10 ppt
Neodymium (Nd)	max. 10 ppt
Nickel (Ni)	max. 50 ppt
Niobium (Nb)	max. 10 ppt
Palladium (Pd)	Information Only
Platinum (Pt)	Information Only
Potassium (K)	max. 50 ppt
Praseodymium (Pr)	max. 10 ppt
Rhodium (Rh)	max. 50 ppt
Rubidium (Rb)	max. 10 ppt
Samarium (Sm)	max. 10 ppt
Scandium (Sc)	max. 10 ppt
Selenium (Se)	max. 500 ppt
Silver (Ag)	max. 50 ppt
Sodium (Na)	max. 50 ppt
Strontium (Sr)	max. 10 ppt
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 50 ppt
Terbium (Tb)	max. 10 ppt
Thallium (Tl)	max. 10 ppt
Thorium (Th)	max. 10 ppt
Thulium (Tm)	max. 10 ppt
Tin (Sn)	max. 50 ppt
Titanium (Ti)	max. 50 ppt
Tungsten (W)	max. 10 ppt
Uranium (U)	max. 10 ppt
Vanadium (V)	max. 10 ppt
Ytterbium (Yb)	max. 10 ppt
Yttrium (Y)	max. 10 ppt
Zinc (Zn)	max. 50 ppt
Zirconium (Zr)	max. 10 ppt

Size	Packaging	Cat. No.
500 mL	FEP Bottle	**87003-232**
1 L	FEP Bottle	**87003-234**

Sulfuric Acid, ARISTAR® PLUS

High purity acid for quantitative trace metal analysis at the parts-per-billion (ppb) level.

BDH® VWR ANALYTICAL

Assay	93 - 98 %
Color	max. 10 APHA
Aluminum (Al)	max. 1 ppb
Antimony (Sb)	max. 1 ppb
Arsenic (As)	max. 0.5 ppb
Barium (Ba)	max. 0.1 ppb
Beryllium (Be)	max. 0.1 ppb
Bismuth (Bi)	max. 0.1 ppb
Cadmium (Cd)	max. 0.5 ppb
Calcium (Ca)	max. 1 ppb
Cerium (Ce)	max. 0.1 ppb
Cesium (Cs)	max. 0.1 ppb
Chromium (Cr)	max. 0.5 ppb
Cobalt (Co)	max. 0.5 ppb
Copper (Cu)	max. 0.5 ppb
Dysprosium (Dy)	max. 0.1 ppb
Erbium (Er)	max. 0.1 ppb
Europium (Eu)	max. 0.1 ppb
Gadolinium (Gd)	max. 0.1 ppb
Gallium (Ga)	max. 0.1 ppb
Germanium (Ge)	max. 1 ppb
Gold (Au)	max. 0.5 ppb
Hafnium (Hf)	max. 0.1 ppb
Holmium (Ho)	max. 0.1 ppb
Indium (In)	max. 0.1 ppb
Iron (Fe)	max. 1 ppb
Lanthanum (La)	max. 0.1 ppb
Lead (Pb)	max. 0.1 ppb
Lithium (Li)	max. 0.5 ppb
Lutetium (Lu)	max. 0.1 ppb
Magnesium (Mg)	max. 1 ppb
Manganese (Mn)	max. 0.5 ppb
Mercury (Hg)	max. 0.1 ppb
Molybdenum (Mo)	max. 0.5 ppb
Neodymium (Nd)	max. 0.1 ppb
Nickel (Ni)	max. 0.5 ppb
Niobium (Nb)	max. 0.1 ppb
Palladium (Pd)	Information Only
Platinum (Pt)	Information Only
Potassium (K)	max. 1 ppb
Praseodymium (Pr)	max. 0.1 ppb
Rhodium (Rh)	max. 0.5 ppb
Rubidium (Rb)	max. 0.5 ppb
Samarium (Sm)	max. 0.1 ppb
Scandium (Sc)	max. 0.1 ppb
Selenium (Se)	max. 10 ppb
Silver (Ag)	max. 1 ppb
Sodium (Na)	max. 1 ppb
Strontium (Sr)	max. 0.5 ppb
Tantalum (Ta)	Information Only
Tellurium (Te)	max. 0.1 ppb
Terbium (Tb)	max. 0.1 ppb
Thallium (Tl)	max. 0.1 ppb
Thorium (Th)	max. 0.1 ppb
Thulium (Tm)	max. 0.1 ppb
Tin (Sn)	max. 1 ppb
Titanium (Ti)	max. 1 ppb
Tungsten (W)	max. 0.5 ppb
Uranium (U)	max. 0.1 ppb
Vanadium (V)	max. 0.5 ppb
Ytterbium (Yb)	max. 0.1 ppb
Yttrium (Y)	max. 0.1 ppb
Zinc (Zn)	max. 1 ppb
Zirconium (Zr)	max. 0.5 ppb
Chloride (Cl-)	max. 0.7 ppm
Nitrate (NO_3-)	max. 0.2 ppm
Substances Reducing Permanganate ($KMnO_4$)	max. 20 ppm
Total Phosphorus (P)	max. 0.05 ppm

Size	Packaging	Cat. No.
500 mL	HDPE Bottle	**87003-271**
2.5 L	HDPE Bottle	**87003-273**

Sulfuric Acid, ACS 95-98%

Meets reagent specifications for testing in FCC monographs. Free from particulates.

BDH® VWR ANALYTICAL

Ammonium (NH_4)	2 ppm max.
Appearance	Clear, colorless solution
Arsenic (As)	0.01 ppm max.
Assay (H_2SO_4)	95.0 - 98.0%
Chloride (as Cl)	0.2 ppm max.
Color (APHA)	10 max.
Free from suspended matter	To pass test
Heavy metals (as Pb)	1 ppm max.
Identification: sulfate per FCC	To pass test
Iron (Fe)	0.2 ppm max.
Mercury (Hg)	5 ppb max.
Nitrate (NO_3)	0.5 ppm max.
Residue after ignition	5 ppm max.
Selenium (Se)	0.002% max.
Substances reducing permanganate (ACS Method)	To pass test

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH3068-500MLP**
2.5 L	Poly-Coated Glass Bottle	**BDH3070-2.5LPC**
2.5 L	Glass Bottle	**BDH3072-2.5LG**
3.8 L	Poly Bottle	**BDH3074-3.8LP**
19 L	Poly Carboy	**BDH3076-19L**
185 L	Poly Drum	**BDH3090-185L**
6 x 2.2 L	PPQ Bottle	**BDH3132-2.2LP**

Sulfuric Acid, Solution 50%, v/v (1+1)

APHA.

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7371-2**
4 L	Poly Bottle	**BDH7371-4**

Sulfuric Acid, Solution 25% (v/v)

Made with deionized water.

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Density ..... 1.240 - 1.270 at 25 °C

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7339-1**

Sulfuric Acid, Solution 20%, v/v (1+4)

Made with deionized water

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Density ..... 1.2031 - 1.2353 at 20 °C
Assay (v/v) ..... 19.5 - 20.5 %

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7370-1**
4 L	Poly Bottle	**BDH7370-4**

Sulfuric Acid, Solution 10% (v/v)

Made with deionized water

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Specific gravity ..... 1.104 - 1.115

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7358-4**

Sulfuric Acid, Solution 10N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 9.950 - 10.050 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7259-1**

Sulfuric Acid, Solution 6.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 5.988 - 6.012 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
2.4 L	Poly Bottle	**BDH7486-3**

Sulfuric Acid, Solution 5.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Color (APHA) ..... 10 max.
Normality ..... 4.980 - 5.020 N
Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7648-1**

VWR® Labmax™ Bottle-Top Dispensers

VWR® COLLECTION

- Unique, chemical-resistant direct displacement piston system provides safe, smooth dispensing. Air purging system prevents loss of reagents and eliminates dripping or splashing. An exclusive reagent guard valve prohibits accidental recharge and eliminates the need for capping when not in use.
- Basic dispensers have a PTFE system for broad general use. Choose a PTFE-lined dispenser for applications using hydrofluoric acid or a glass-lined dispenser for use with organic solvents.

Description	Volume	Cat. No.
Basic Dispenser	0.3–2.5 mL	**40000-060**
Basic Dispenser	1–5 mL	**40000-062**
Basic Dispenser	2–10 mL	**40000-064**
Basic Dispenser	5–25 mL	**40000-066**
Basic Dispenser	10–50 mL	**40000-068**
Basic Dispenser	20–100 mL	**40000-070**
Dispenser for Hydrofluoric Acids	2–10 mL	**40000-065**
Dispenser for Hydrofluoric Acids	5–25 mL	**40000-067**
Dispenser for Solvents	2–10 mL	**82017-766**
Dispenser for Solvents	5–25 mL	**82017-768**
Dispenser for Solvents	10–50 mL	**82017-770**

For more information or adapters, visit **vwr.com**

Sulfuric Acid, Solution 4.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 3.992 - 4.008 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7484-4**

Sulfuric Acid Solution 2.5N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 2.495 - 2.505 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7922-1**

Sulfuric Acid, Solution 2.0N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 1.996 - 2.004 N
Shelf-life ..... 18 months

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7500-1**

Sulfuric Acid, Solution 1.0N

APHA. Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.998 - 1.002 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7232-1**
4 L	Poly Bottle	**BDH7232-4**

Sulfuric Acid, Solution 0.5N

APHA and ASTM. Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.499 - 0.501 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7233-1**

Sulfuric Acid, Solution 0.25N

APHA. Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.2495 - 0.2505 N

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7678-4**

Sulfuric Acid, Solution 0.1N

Meets ASTM E200-91 and AOAC 890-01 standards. Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.0995 - 0.1005 N
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7230-1**
4 L	Poly Bottle	**BDH7230-4**
20 L	Cubitainer	**BDH7230-7**

Sulfuric Acid, Solution 0.02N

Made with high purity acid and deionized water. Suitable as a titrant.

Appearance/color ..... Clear liquid
N.I.S.T. Traceable to SRM 723 ..... Yes
Normality ..... 0.0195 - 0.0205 N
Shelf-life ..... 1 year

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7229-1**
4 L	Poly Bottle	**BDH7229-4**
20 L	Cubitainer	**BDH7229-7**

Tantalum

see Standards, ICP and ICP-MS

L-(+)-Tartaric Acid, Solution 10% (w/v)

Assay (w/v) ..... 9.70 - 10.30 %
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7923-2**

(R,R)-(+)-Tartaric Acid Disodium Salt Dihydrate

see di-Sodium L(+)-Tartrate Dihydrate

TCA

see Trichloroacetic Acid (Glacial)

Tellurium

see Standards, ICP and ICP-MS

Terbium

see Standards, ICP and ICP-MS

tert-Butyl Methyl Ether
see Methyl t-Butyl Ether

Tetrafluoroboric Acid
see Fluoroboric Acid in Aqueous Solution

TETRAHYDROFURAN
1,4-epoxy-Butane, Butane alpha,delta-oxide, Cyclotetramethylene oxide, Oxacyclopentane, Oxolane, Tetramethylene oxide, THF

Formula: C_4H_8O
M.W. 72.11 g/mol
Boiling Pt: 66 °C (1013 hPa)
Melting Pt: -108.5 °C
Density: 0.888 g/cm³ (20 °C)
Flash Pt: -21.5 °C
CAS: 109-99-9
UN: 2056

Tetrahydrofuran, HiPerSolv CHROMANORM® for HPLC

Not stabilized.

Assay (by GC-FID) (Corrected for Water) ..... Min. 99.70%
Water (by KF coulometry) ..... Max. 0.1000%
Residue after evaporation ..... Max. 0.0005%
Acidity ..... Max. 0.0005 meq/g
Transmittance at 230 nm ..... Min. 40%
Transmittance at 240 nm ..... Min. 60%
Transmittance at 250 nm ..... Min. 70%
Transmittance at 260 nm ..... Min. 80%
Transmittance at 280 nm ..... Min. 96%
Transmittance at 300 nm ..... Min. 98%

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH28559.100**
4 L	Amber Glass Bottle	**BDH28559.400**

Tetrahydrofuran, ACS Grade. Stabilized with BHT

Meets ACS specifications for general use. Contains 250 to 400 ppm BHT as a preservative.

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.050%
Residue ..... Less than 0.030% (0.0060/ 22.5mL)
GC Purity ..... Greater than 99.0%
Peroxides ..... Less than 0.015% as H_2O_2 (No more than 3.9 mL of 0.1N sodium thiosulfate solution)
Color (APHA) ..... Less than 20
Preservative (BHT) one cm cell wavelength, nm ..... 278 Absorbance between 1.95 and 3.12 (250 - 400 ppm)

Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1149-4LG**
19 L	Steel Can	**BDH1149-19L**

Tetrahydrofuran Propylene Glycol, Solution 80:20

Made with stabilized tetrahydrofuran.

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH7361-4**

Test Strips, pH
see pH Papers and Strips

TFA
see Trifluoroacetic Acid

Thallium
see Standards, ICP and ICP-MS

THF
see Tetrahydrofuran

Thorium
see Standards, ICP and ICP-MS

Three Step Fixative
see Histology Stains and Reagents

Three Step Solution
see Histology Stains and Reagents

Thulium
see Standards, ICP and ICP-MS

Tin
see Standards, ICP and ICP-MS

Tin (II) Chloride Dihydrate
see Stannous Chloride Dihydrate

TISAB, Total Ionic Strength Adjustment Buffer Solution

ASTM formulation D 1179 with deionized water, acetic acid, sodium chloride and sodium citrate.

Blank fluoride value ..... 0.00 - 0.50
pH at 25°C ..... 5.0 - 5.5
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
4 L	Poly Bottle	**BDH7492-4**

Titanium
see Standards, ICP and ICP-MS

o-Tolidine, Solution 0.01% (w/v)

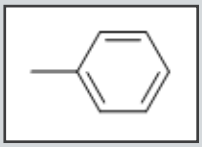
Made with deionized water, hydrochloric acid and o-tolidine.

Prepared to formulation on file ..... Yes
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH7241-1**

TOLUENE

Benzene, methyl, Methacide, Methane, phenyl-, Methylbenzene, Methylbenzol, Phenylmethane, Toluol



Formula: $C_6H_5CH_3$
M.W. 92.14 g/mol
Boiling Pt: 110.6 °C (1013 hPa)
Melting Pt: –95 °C
Density: 0.867 g/cm³ (20 °C)
Flash Pt: 4 °C
CAS: 108-88-3
UN: 1294

Toluene, HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

Assay (GC)	Min. 99.8 %
Acidity	Max. 0.0005 meq/g
Alkalinity	Max. 0.0002 meq/g
Evaporation residue	Max. 5 ppm
Water	Max. 0.05 %
Transmittance (300 nm)	Min. 70 %
Transmittance (310 nm)	Min. 80 %
Transmittance (330 nm)	Min. 95 %
Transmittance (350 nm)	Min. 98 %
Conforms to BDH 15295	Passes test

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH83625.100**
4 L	Amber Glass Bottle	**BDH83625.400**

Toluene, ACS

Suitable for histology and cytology applications.

VWR ANALYTICAL

Appearance	Clear, colorless liquid
Water (K.F.)	Less than 0.030%
Residue	Less than 0.001% (0.0010 g/115 mL)
GC Purity	Greater than 99.5%
Color (APHA)	Less than 10
Substances darkened by sulfuric acid	
Passes test (Toluene layer should be colorless. The acid should be no darker than the standard)	
Sulfur compounds (as S)	Less than 0.003%

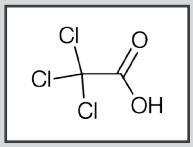
Size	Packaging	Cat. No.
4 L	Glass Bottle	**BDH1151-4LG**
19 L	Steel Can	**BDH1151-19L**
204 L	Steel Drum	**BDH1151-204L**

Toluol

see Toluene

TRICHLOROACETIC ACID

Aceto-Caustin, TCA, Trichloroethanoic acid



Formula: Cl_3CCOOH
M.W. 163.39 g/mol
Boiling Pt: 196 °C (1013 hPa)
Melting Pt: 54 to 56 °C
Density: 1.63 g/cm³ (20 °C)
Flash Pt: 110 °C (closed cup)
CAS: 76-03-9

Trichloroacetic Acid, ACS

White or nearly colorless moist crystal plates. Soluble in water.

VWR ANALYTICAL

Chloride	<= 0.002 %
Clarity of Solution	PASS
Heavy Metals	<= 0.002 %
Insoluble Matter	<= 0.01 %
Iron	<= 0.001 %
Nitrate	<= 0.002 %
Phosphate	<= 5 ppm
Purity	>= 99.0 %
Residue after Ignition	<= 0.03 %
Substances Darkened by H_2SO_4	PASS
Sulfate	<= 0.02 %

Size	Packaging	Cat. No.
500 g	Glass Bottle	**BDH9310-500G**

Trichloroacetic Acid 20% Aqueous Solution

Made with purified water.

VWR ANALYTICAL

Assay (w/v)	19.5 - 20.5 %
Appearance/color	Clear liquid

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7930-2**

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Trichloroacetic Acid, 10% Aqueous Solution

Made with purified water.

VWR ANALYTICAL

Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
500 mL	Poly Bottle	**BDH7926-2**

Trichloroacetic Acid, 95.0 to 105.0% (w/v, 6.12M)

Made with deionized water.

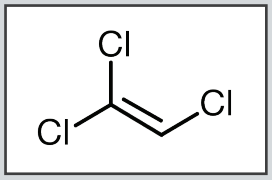
VWR ANALYTICAL

Appearance/color ..... Clear liquid
Shelf-life ..... 2 years
Trichloroacetic acid (w/v) ..... 98 - 102 %
Molarity ..... 5.998 - 6.242 M

Size	Packaging	Cat. No.
500 mL	Amber Glass Bottle	**BDH7372-2**

TRICHLOROETHYLENE

Trichloroethene , 1,1,2-Trichloroethene , 1,1,2-Trichloroethylene



Formula: $ClCH{=}CCl_2$
M.W. 131.39 g/mol
Boiling Pt: 86.7 °C (1013 hPa)
Melting Pt: -73 °C
Density: 1.46 g/cm^3 (20 °C)
CAS: 79-01-6
UN: 1710

Trichloroethylene, ACS

VWR ANALYTICAL

Assay ..... Min. 99.5 %
Free halogens ..... Passes test
Color (Pt-Co) ..... Max. 10 APHA
Titrable acid ..... Max. 0.0001 meq/g
Titrable base ..... Max. 0.0003 meq/g
Heavy metals (as Pb) ..... Max. 1 ppm
Residue after evaporation ..... Max. 0.001 %
Water ..... Max. 0.02 %

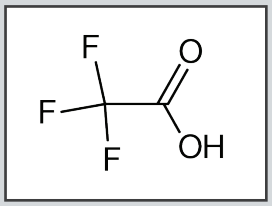
Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH4564-4L**

Trichloromethane

see Chloroform

TRIFLUOROACETIC ACID

TFA



Formula: CF_3COOH
M.W. 114.02 g/mol
Boiling Pt: 71.8 °C (1013 hPa)
Melting Pt: -15 °C
Density: 1.5351 g/cm^3 (20 °C)
CAS: 76-05-1
UN: 2699

Trifluoroacetic Acid, HiPerSolv CHROMANORM® for HPLC

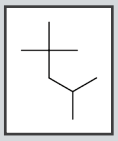
VWR ANALYTICAL

Assay ..... Min. 99.8 %
Color ..... Max. 10 APHA
Nonvolatile Matter ..... Mas. 0.005 %
Transmittance (210 nm) ..... Min. 30 %
Transmittance (220 nm) ..... Min. 60 %
Transmittance (230 nm) ..... Min. 85 %
Transmittance (240 nm) ..... Min. 95 %
Transmittance (250 nm) ..... Min. 99 %

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH15311.100**

2,2,4-TRIMETHYLPENTANE

2,2,4-trimethylpentane, Isobutyltrimethylethane, Isobutyltrimethylmethane



Formula: $(CH_3)_2CHCH_2C(CH_3)_3$
M.W. 114.23 g/mol
Boiling Pt: 99.2 °C (1013 hPa)
Melting Pt: –107 °C
Density: 0.692 g/cm^3 (20 °C)
Flash Pt: –12 °C
CAS: 540-84-1
UN: 1262

2,2,4-Trimethylpentane, HiPerSolv CHROMANORM® for HPLC

VWR ANALYTICAL

Assay (by GC-FID) ..... Min 99.5 %
Water (by KF coulometry) ..... Max. 0.0100 %
Nonvolatile Residue ..... Max. 0.0005 %
Acidity ..... Max. 0.0005 meq/g
Alkalinity ..... Max. 0.0002 meq/g
Transmittance (220 nm) ..... Min. 70 %
Transmittance (235 nm) ..... Min. 80 %
Transmittance (255 nm) ..... Min. 98 %

Size	Packaging	Cat. No.
4 L	Amber Glass Bottle	**BDH83630.400**

2,2,4-Trimethylpentane, ACS

Clear, colorless liquid. Meets ACS specifications for general use.

VWR ANALYTICAL

Appearance ..... Clear, colorless liquid
Water (K.F.) ..... Less than 0.010%
Residue ..... Less than 0.001% (0.0010 g/145 mL)
GC Purity ..... Greater than 99.0%
Color (APHA) ..... Less than 10
Titrable acid ..... Less than 0.3µeq/g (No more than 1.0mL of 0.01N sodium hydroxide)
Sulfur compounds ..... Less than 0.005% as S

Size	Packaging	Cat. No.
19 L	Steel Can	**BDH1155-19L**

TRIS, Solution 1M, pH 8.0

Made with deionized water ultra pure.

VWR ANALYTICAL

Appearance/color ..... Clear liquid
Shelf-life ..... 18 months
pH ..... 7.90 - 8.05

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7729-1**

TRIS, Solution 1M, 12.1% (w/v)

Made with deionized water ultra pure.

VWR ANALYTICAL

Appearance/color ..... Clear
Shelf-life ..... 18 months
pH ..... 7.45 - 7.55

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7731-1**

Tris-EDTA Solution (TE Solution)

Liquid. Contains ultra pure deionized water, 0.5M EDTA with pH 7.5, and 1M TRIS with pH 8.

VWR ANALYTICAL

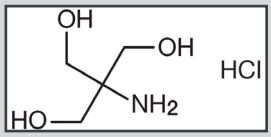
Appearance/color ..... Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7732-1**

TRIS HCL (TRIS-(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE)

HCl, THAM HCl , Tris(hydroxymethyl)methylamine hydrochloride , Trometamol hydrochloride , Tris(hydroxymethyl)aminomethane hydrochloride , 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride , Tris(hydroxymethyl) methylammonium chloride

Formula: $NH_2C(CH_2OH)_3 \cdot HCl$
M.W. 157.6 g/mol
Melting Pt: 150 to 152 °C
CAS: 1185-53-1



Tris Hydrochloride

VWR BIOPROCESSING

Suitable for bioprocessing. BSE/TSE Free. Manufactured in USA. Custom Packaging and Testing Available. Change Management. Sample availability.

Appearance ..... white crystalline powder
Assay (By titration) ..... NLT 99.5%
Absorbance (1M solution in H_2O) 260nm ..... NMT 0.10
Absorbance (1M solution in H_2O) 280nm ..... NMT 0.10
Identification (by IR) ..... consistent with the structure
pKa (@ 20ºC) ..... 7.45 to 7.65
Residue On Ignition ..... NMT 0.3%
Solubility (1M solution in H_2O) ..... clear, colorless, complete
Water (KFT) ..... NMT 0.5%
Heavy Metals (as Pb) ..... NMT 5 ppm
Calcium (Ca) ..... NMT 5 ppm
Iron (Fe) ..... NMT 5 ppm
Magnesium (Mg) ..... NMT 5 ppm
Manganese (Mn) ..... NMT 5 ppm
Bioburden ..... NMT 100 CFU/g
Cell Culture Toxicity (at 12g/L) ..... Passes test
Endotoxin (1.0% solution in H_2O) ..... NMT 0.1 EU/mg
DNase ..... none detected
RNase ..... none detected
Protease ..... none detected
Additional Information ..... Retest Date (3 Yrs form Manufacture)
Additional Information ..... **Country of Origin:** USA
Additional Information ..... Material is of non-animal, non-human origin
Additional Information ..... **Storage Conditions:** 15°C to 30°C

Size	Packaging	Cat. No.
1 kg	HDPE Bottle	**VWRB85827-1KG**
25 kg	HDPE Pail	**VWRB85827-25KG**
5 kg	HDPE Pail	**VWRB85827-5KG**

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TriSodium Phosphate Dodecahydrate
see Sodium Phosphate Tribasic Dodecahydrate

Tungsten
see Standards, ICP and ICP-MS

L-TYROSINE DISODIUM SALT DIHYDRATE

M.W. 261.9 g/mol
CAS: 122666-87-9

L-Tyrosine Disodium Dihydrate, VWR Bioprocessing

VWR BIOPROCESSING

Suitable for bioprocessing. BSE/TSE Free. Manufactured in USA. Custom Packaging and Testing Available. Change Management. Sample availability.

Appearance	off-white to light tan powder
Assay (on dried basis, by titration)	NLT 98.0%
Identification (by IR)	conforms to structure
pH (1% solution in H_2O @ 25ºC)	10.5 to 11.5
Specific Rotation (C=4g/100 mL H_2O, calculated as free acid)	-12.6º to -14.4º
Water (by Karl Fischer)	NMT 16.0%
Heavy Metals (as Pb)	NMT 15 ppm
Cytotoxicity	passes test
Bioburden	NMT 100 CFU/g
Endotoxin (1% solution in H_2O)	NMT 0.04 EU/mg
DNase	none detected
RNase	none detected
Protease	none detected

Size	Packaging	Cat. No.
100 g	HDPE Bottle	**VWRB87058-100G**
1 kg	HDPE Bottle	**VWRB87058-1KG**
25 kg	HDPE Pail	**VWRB87058-25KG**
5 kg	HDPE Pail	**VWRB87058-5KG**

Uranium
see Standards, ICP and ICP-MS

VWR® Acid and Solvent Bottle Carriers

VWR COLLECTION

Polyethylene carriers with epoxy coated, heavy-gauge steel wire bails have wide ribs in both the sides and on the bottom to support and cushion bottles.

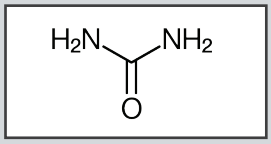
- Cone style lid has a 16mm (5/8") opening in the top for insertion of tubing; simplifies the transfer of liquids without pouring
- Truncated style lid permits pouring without the removal of the lid
- Designed to hold standard US reagent bottles

Capacity	Diameter	Height	Cat. No.
Acid Bottle Carriers			
2.5 L (5 pt.)	18 cm (7⅛")	32 cm (12½")	**56608-886**
Solvent Bottle Carriers			
4 L (1 gal.)	20 cm (8")	37 cm (14⅜")	**56608-864**

For more information and additional sizes, please visit **vwr.com**

UREA
Carbamide , Carbonyldiamide

Formula: NH_2CONH_2
M.W. 60.06 g/mol
Boiling Pt: 197 °C (1013 hPa)
Melting Pt: 132.7 °C
Density: 1.34 g/cm^3 (20 °C)
CAS: 57-13-6



Urea, Crystallized, ACS

BDH VWR ANALYTICAL

Assay	99.0 - 100.5 %
Melting point (132-135°C)	Passes test
Heavy metals (as Pb)	Max. 0.001 %
Insoluble matter	Max. 0.01 %
Residue after ignition	Max. 0.01 %
Cl (Chloride)	Max. 5 ppm
SO_4 (Sulphate)	Max. 0.001 %
Fe (Iron)	Max. 0.001 %

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH4602-500G**

USP ICP Standards
see Standards, ICP and ICP-MS

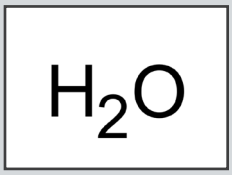
Vanadium
see Standards, ICP and ICP-MS

Vinegar Acid
see Acetic Acid

Vitamin C
see L(+)-Ascorbic Acid

WATER
Dihydrogen oxide, Ice

Formula: H_2O
M.W. 18.02 g/mol
Boiling Pt: 100 °C (1013 hPa)
Melting Pt: 0 °C
Density: 1 g/cm^3 (4 °C)
CAS: 7732-18-5



Water, ARISTAR® ULTRA

Ultra high purity water for quantitative trace metal analysis in the parts-per-trillion (ppt) level.

BDH® VWR ANALYTICAL

Color	max. 10 APHA
Aluminum (Al)	max. 20 ppt
Antimony (Sb)	max. 10 ppt
Arsenic (As)	max. 10 ppt
Barium (Ba)	max. 10 ppt
Beryllium (Be)	max. 10 ppt
Bismuth (Bi)	max. 10 ppt
Boron (B)	max. 20 ppt
Cadmium (Cd)	max. 10 ppt
Calcium (Ca)	max. 10 ppt
Cerium (Ce)	max. 10 ppt
Cesium (Cs)	max. 10 ppt
Chromium (Cr)	max. 10 ppt
Cobalt (Co)	max. 10 ppt
Copper (Cu)	max. 10 ppt
Dysprosium (Dy)	max. 1 ppt
Erbium (Er)	max. 1 ppt
Europium (Eu)	max. 1 ppt
Gadolinium (Gd)	max. 1 ppt
Gallium (Ga)	max. 10 ppt
Germanium (Ge)	max. 10 ppt
Gold (Au)	max. 10 ppt
Hafnium (Hf)	max. 1 ppt
Holmium (Ho)	max. 1 ppt
Indium (In)	max. 1 ppt
Iron (Fe)	max. 10 ppt
Lanthanum (La)	max. 1 ppt
Lead (Pb)	max. 10 ppt
Lithium (Li)	max. 10 ppt
Lutetium (Lu)	max. 1 ppt
Magnesium (Mg)	max. 10 ppt
Manganese (Mn)	max. 10 ppt
Mercury (Hg)	max. 20 ppt
Molybdenum (Mo)	max. 10 ppt
Neodymium (Nd)	max. 1 ppt
Nickel (Ni)	max. 10 ppt
Niobium (Nb)	max. 10 ppt
Palladium (Pd)	max. 10 ppt
Platinum (Pt)	max. 10 ppt
Potassium (K)	max. 10 ppt
Praseodymium (Pr)	max. 10 ppt
Rhenium (Re)	max. 10 ppt
Rhodium (Rh)	max. 10 ppt
Rubidium (Rb)	max. 10 ppt
Ruthenium (Ru)	max. 10 ppt
Samarium (Sm)	max. 10 ppt
Scandium (Sc)	max. 10 ppt
Selenium (Se)	max. 50 ppt
Silver (Ag)	max. 10 ppt
Sodium (Na)	max. 10 ppt
Strontium (Sr)	max. 10 ppt
Tantalum (Ta)	max. 10 ppt
Tellurium (Te)	max. 1 ppt
Terbium (Tb)	max. 10 ppt
Thallium (Tl)	max. 10 ppt
Thorium (Th)	max. 1 ppt
Thulium (Tm)	max. 10 ppt
Tin (Sn)	max. 10 ppt
Titanium (Ti)	max. 10 ppt
Tungsten (W)	max. 10 ppt
Uranium (U)	max. 1 ppt
Vanadium (V)	max. 10 ppt
Ytterbium (Yb)	max. 10 ppt
Yttrium (Y)	max. 1 ppt
Zinc (Zn)	max. 10 ppt
Zirconium (Zr)	max. 10 ppt
Chloride (Cl-)	max. 1 ppb
Phosphate (PO_{43}-)	max. 1 ppb
Sulfate (SO_{42}-)	max. 1 ppb

Size	Packaging	Cat. No.
1 L	Poly Bottle	**87003-236**

Water, HiPerSolv CHROMANORM® for LC-MS

BDH® VWR ANALYTICAL

Colouration	Max. 5 APHA
Conductivity (25°C) (at filling)	Max. 1 µS/cm
Evaporation residue	Max. 1 ppm
Al (Aluminium)	Max. 50 ppb
Ca (Calcium)	Max. 50 ppb
Fe (Iron)	Max. 50 ppb
K (Potassium)	Max. 50 ppb
Mg (Magnesium)	Max. 50 ppb
Na (Sodium)	Max. 100 ppb
Fluorescence (as quinine) (254/450 nm)	Max. 1 ppb
Fluorescence (as quinine) (365/450 nm)	Max. 0,5 ppb
Gradient grade (210 nm)	Max. 5 mAU
Gradient grade (220 nm)	Max. 2 mAU
Gradient grade (254 nm)	Max. 1 mAU
Max. 2 ppb	Max. 2 ppb
Mode: ESI 200 µl neg | APCI 200 µl	Max. 20 ppb
Colony count (Ph.Eur.)	Max. 100 CFU/ml
TOC (at filling)	Max. 30 ppb

Size	Packaging	Cat. No.
4 L	Treated Glass Bottle	**BDH83645.400**

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N95 Respirators	**89201-508**
MICROGRIP® PURPLE NITRILE® Exam Gloves	**40101-346**
Hazmat Spill Response Kit	**89168-998**
First Aid Kit	**56613-213**

Water, HiPerSolv CHROMANORM® for HPLC

From the exclusive family of high-quality, competitively-priced BDH Chemicals — high purity solvents for HPLC applications. These solvents are manufactured at a state of the art European ISO 9001/ISO 14001 solvent production facilities and feature an unparalleled combination of performance and price for even the most demanding liquid chromatography applications.

Filtered at 0.2 µm	Passes Test
Coloration	Max. 10 APHA
Evaporation Residue	Max. 1 ppm
Spec. Conductivity (25°C) (at filling)	Max. 1 µS/cm
Total Organic Carbon (TOC)	Max. 10 ppb
Absorbance (200 nm)	Max. 0.01
Absorbance (210 nm)	Max. 0.01
Absorbance (220 nm)	Max. 0.01
Absorbance (240 nm)	Max. 0.01
Absorbance (254 nm)	Max. 0.005
Absorbance (280 nm)	Max. 0.005
Absorbance (300 nm)	Max. 0.005
Fluorescence (as quinine) (254 nm)	Max. 1 ppb
Fluorescence (as quinine) (365 nm)	Max. 0.5 ppb
Gradient Grade (210 nm)	Max. 5 mAU
Gradient Grade (254 nm)	Max. 1 mAU

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**BDH23595.100**
1 L	Amber Glass Bottle with 45 mm Neck	**BDH23595.100E**
4 L	Amber Glass Bottle	**BDH23595.400**

Water, BDH ARISTAR® PLUS, HPLC, Low TOC

For LC, HPLC, and trace organic analysis.

LC Gradient Suitability Tested:

Column: 25 cm C18

Flow rate: 2 mL/min

Conditions:40 mL of water are passed through the column and eluted with a water acetonitrile gradient at 5% per min.

Maximum Absorbance: 0.002 at 254 nm

Color	max. 5 APHA
Residue after Evaporation	max. 1 ppm
Fluorescence (as Quinine)	max. 100 ppt
Resistivity (at time of bottling)	min. 18 MΩ
Total Organic Carbon	max. 20 ppb
LC Gradient Suitability Test:	to pass test
Optical Absorbance at 200 nm	max. 0.01
Optical Absorbance at 254 nm	max. 0.005
Optical Absorbance at 300 nm	max. 0.005
Optical Absorbance at 400 nm	max. 0.005
Optical Absorbance at 400 nm	max. 0.005

Size	Packaging	Cat. No.
1 L	Amber Glass Bottle	**87003-650**
4 L	Amber Glass Bottle	**87003-652**

Water, ASTM Type II, Deionized

Deionized.

Meets ASTM Type II specifications.

Meets ACS specifications for use.

Electrical Conductivity at 25°C	Less than 1.0µS/cm
Electrical Resistivity at 25°C	Greater than or equal to 1.0 megohm-cm
Total Organic Carbon	Less than 50 µg/L
Sodium (Na)	Less than 5 µg/L
Chlorides (Cl)	Less than 5 µg/L
Total Silica	Less than 3 µg/L

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH1168-1LP**
4 L	Poly Bottle	**BDH1168-4LP**
5 gal.	Cubitainer®	**BDH1168-5GL**
204 L	Poly Drum	**BDH1168-204L**

Water Hardness Buffer

Made with deionized water, ammonium chloride, ammonium hydroxide and EDTA magnesium salt.

Appearance/color	Clear liquid

Size	Packaging	Cat. No.
1 L	Poly Bottle	**BDH7491-1**

Wavelength Calibration Standard

see Standards, ICP and ICP-MS

Wood Alcohol

see Methanol

Wright Stain

see Histology Stains and Reagents

Protect your Samples with Compact VWR® symphony™ Flammable Storage Refrigerators and Freezers

To facilitate the storage of flammable materials, sources of sparks and ignition – such as lights, thermostats, switches and fans – have been removed from the interior of these units. All units have exterior adjustable mechanical thermostats.

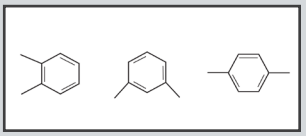
- Exterior adjustable mechanical thermostats
- White baked-on powder coat exterior
- Single solid door, with keyed locks

Description	Volume	Exterior Dimensions	Cat. No.
Refrigerator	566 L (20 cu. ft.)	86.4W x 90.8D x 186H cm (34 x 35¾ x 73¼")	**89498-662**
Refrigerator	849.5 L (30 cu. ft.)	89W x 89D x 183H cm (35 x 35 x 72")	**89498-658**
Freezer	566 L (20 cu. ft.)	86.4W x 90.8D x 186H cm (34 x 35¾ x 73¼")	**89498-664**
Freezer	849.5 L (30 cu. ft.)	89W x 89D x 183H cm (35 x 35 x 72")	**89498-660**

For more information, additional sizes, and accessories, please visit **vwr.com**

XYLENE (MIXTURE OF ISOMERS)

Dimethylbenzene



Formula: $C_6H_4(CH_3)_2$
M.W. 106.17 g/mol
Boiling Pt: 140 °C (1013 hPa)
Melting Pt: –34 to 34 °C
Density: 0.86 to 0.88 g/cm^3 (20 °C)
Flash Pt: 25 °C
CAS: 1330-20-7
UN: 1307

ZINC CHLORIDE

Butter of zinc, Zinc (II) chloride

Formula: $ZnCl_2$
M.W. 136.3 g/mol
Boiling Pt: 732 °C (1013 hPa)
Melting Pt: 283 °C
Density: 2.91 g/cm^3 (20 °C)
CAS: 7646-85-7
UN: 2331

Xylenes, ACS for production

Contains a maximum of 25% ethylbenzene. Meets ACS specifications.

BDH® VWR ANALYTICAL

Assay by GC (Ethylbenzene)	25.0% Max.
GC Purity (Xylenes + Ethylbenzene)	98.5% Min.
Color (APHA)	10 APHA Max.
Residue upon Evaporation	0.002% Max.
Substances Darkened by Sulfuric Acid	Passes Test
Sulfur Compounds (as S)	0.003% Max.
Water	0.05% Max.

Size	Packaging	Cat. No.
5 gal.	Metal Pail	**BDH2000-5GLMS**
55 gal.	Metal Drum	**BDH2000-55GLM**

Ytterbium

see Standards, ICP and ICP-MS

Zinc

see Standards, ICP and ICP-MS

Zinc Chloride, ACS

White free-flowing granules.

BDH® VWR ANALYTICAL

Ammonium	<= 0.005 %
Calcium	<= 0.06 %
Insolubles	<= 0.005 %
Iron	<= 0.001 %
Lead	<= 0.005 %
Magnesium	<= 0.01 %
Nitrate	<= 0.003 %
Oxychloride	PASS
Potassium	<= 0.02 %
Purity	>= 97.0 %
Sodium	<= 0.05 %
Sulfate (SO_4)	

Size	Packaging	Cat. No.
500 g	Poly Bottle	**BDH9314-500G**

Zirconium

see Standards, ICP and ICP-MS

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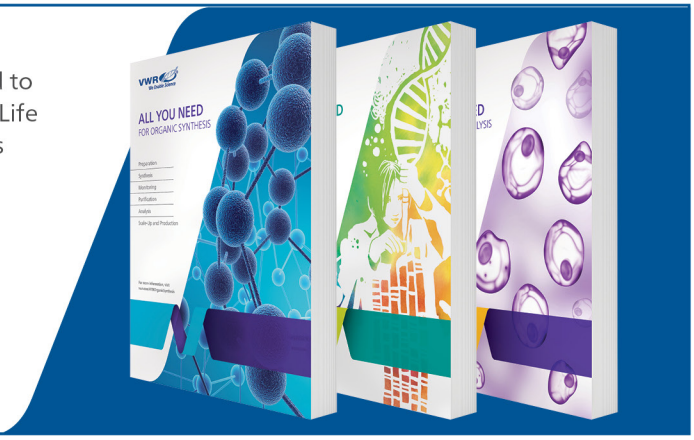

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BDH4572-500ML....45
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BDH4576-500ML....27
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BDH4596-500G....74
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BDH7621-4 35
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BDH7678-4 104
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BDH7690-3 52
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BDH7730-1 76
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BDH7917-1 81
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BDH7921-2 30
BDH7922-1 104
BDH7923-2 104
BDH7926-2 107
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BDH7938-1 24
BDH7941-1 60
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BDH83639.100E 21
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BDH83639.500 21
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BDH83930.601 70
BDH83931.601 70
BDH83932.601 70
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BDH9206-2.5KG 22
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BDH9208-500G 22
BDH9210-500G 24
BDH9214-500G 25
BDH9216-2.5KG 25
BDH9216-500G 25
BDH9220-500G 26
BDH9222-2.5KG 27
BDH9222-500G 27
BDH9224-12KG 28
BDH9224-1KG 28
BDH9226-2.5KG 29
BDH9226-500G 29
BDH9228-2.5KG 30
BDH9228-500G 30
BDH9230-2.5KG 32
BDH9230-500G 32
BDH9232-500G 34
BDH9234-500G 54
BDH9236-1KG 53
BDH9236-500G 53
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BDH9244-2.5KG 57
BDH9244-500G 57
BDH9246-500G 57
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BDH9256-12KG 73
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BDH9258-2.5KG 73
BDH9258-500G 73
BDH9260-125G 74
BDH9260-500G 74
BDH9262-12KG 75
BDH9262-2.5KG 75
BDH9262-500G 75
BDH9264-125G 76
BDH9264-2.5KG 76
BDH9264-500G 76
BDH9266-2.5KG 78
BDH9266-500G 78
BDH9268-12KG 78
BDH9268-2.5KG 78
BDH9268-500G 78
BDH9272-500G 78
BDH9274-2.5KG 80
BDH9274-500G 80
BDH9276-125G 81
BDH9276-500G 81
BDH9278-2.5KG 82
BDH9278-500G 82
BDH9280-12KG 82
BDH9280-2.5KG 82
BDH9280-500G 82
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BDH9286-2.5KG 83
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BDH9288-500G 84
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BDH9292-12KG 84
BDH9292-2.5KG 84
BDH9292-500G 84
BDH9294-500G 88
BDH9296-2.5KG 89
BDH9296-500G 89
BDH9298-2.5KG 89
BDH9298-500G 89
BDH9300-500G 89
BDH9302-12KG 90
BDH9302-2.5KG 90
BDH9302-500G 90
BDH9304-500G 99
BDH9308-2.5KG 101
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BDH9310-500G 106
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VWRB15005-25KG 26
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VWRB30487-1KG 40
VWRB30487-25KG 40
VWRB30487-5KG 40
VWRB30567-1KG 40
VWRB30567-25KG 40
VWRB30567-5KG 40
VWRB73007-1KG 72
VWRB73007-25KG 72
VWRB73007-5KG 72
VWRB85827-1KG 108
VWRB85827-25KG 108
VWRB85827-5KG 108
VWRB87058-100G 109
VWRB87058-1KG 109
VWRB87058-25KG 109
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Terms and Conditions

1. Acceptance – ALL SALES ARE SUBJECT TO AND EXPRESSLY CONDITIONED UPON THE TERMS AND CONDITIONS CONTAINED HEREIN, AND UPON CUSTOMER'S ASSENT THERETO. THE TERMS AND CONDITIONS CONTAINED HEREIN WILL BE CONTROLLING, AND ANY ADDITIONAL AND/OR INCONSISTENT TERMS AND CONDITIONS SET FORTH IN ANY ACKNOWLEDGMENT, PURCHASE ORDER, OR ACCEPTANCE DOCUMENTS REQUESTED FROM AND/OR PROVIDED BY CUSTOMER ARE EXPRESSLY REJECTED. NO VARIATION OF THESE TERMS AND CONDITIONS WILL BE BINDING UPON VWR UNLESS AGREED TO IN WRITING AND SIGNED BY AN OFFICER OR OTHER AUTHORIZED REPRESENTATIVE OF VWR.

2. Specifications – Product specifications are subject to change without prior notice.

3. Delivery – Delivery of all orders will be FCA (INCOTERMS 2000). Shipping and handling fees, special packaging materials (e.g., blue ice), carrier surcharges (including fuel surcharges) and hazardous material fees imposed by government regulation will be added separately to the invoice.

4. Damaged Shipments – Please inspect your VWR shipment upon receipt. If any external damage is noticed, accept the shipment only after the driver has noted the damage on both his and your copies of the delivery receipt and you have requested an inspection by the carrier. Keep all containers and packing material for inspection. If, upon opening a shipment, you find a shortage or damage, you must request inspection by the carrier within 15 days of delivery or you will relinquish your right to make a claim. VWR International reserves the right to repair a damaged product, where applicable, before replacement or credit is determined.

5. Payment Terms - Individual invoices, net thirty (30) days from date of invoice; summary invoices, if any, will be due as agreed. Payments are to be made in freely available United States dollars, including applicable taxes, and other charges such as government imposed surcharges which VWR may be required to pay or collect with respect to the sale or transportation of the Products, or the provision of Services. Payment is considered late when it is received into VWR's lockbox after the due date, which may result in an additional service charges as described further in this section. Any payments received no later than 2.00 PM Eastern Standard Time at VWR's lockbox will be credited to Customer's account as of the date received, while payments received after 2.00 PM Eastern Standard Time will be credited to Customer's account the following business day. Delinquent accounts will be subject to a service charge on past due amounts of one and one-half percent (1 1/2%) per month (or, if less, the maximum amount permitted by law). VWR recommends payments be made by ACH method to ensure timely receipt by VWR. Payment by credit card may only be used as a prepayment method when placing orders or for past due collections. When a credit card is used to pay monies to satisfy a past due account, Customer will be charged an additional processing fee of 2.5% on the amount charged to the credit card at time of processing. Customer will provide VWR, concurrent with each payment, with remittance information in sufficient detail (to the invoice level or line level as the case may be) to allow VWR to properly apply payments or credit memos to outstanding receivable(s) on VWR's accounts receivable sub-ledger for Customer. Customer shall also include its account number with any remittance. Failure to supply VWR with such remittance detail will result in additional processing delays and may affect the credit status of pending or future Customer purchase orders. When Customer wishes to apply one or more credit memos towards a payment amount owed VWR, Customer agrees to provide VWR, on a timely basis, the specific credit memo number(s) and amount(s) to be applied, in addition to the remittance information requirements above. If Customer does not provide such information on a timely basis, VWR shall apply any such credit memos to outstanding receivables, beginning with the most-aged receivables first. Customer agrees to complete, sign and submit a standard VWR credit application to VWR's Risk Management Department located at 1230 Kennestone Circle, Marietta, Georgia 30066. Customer will provide, or make available to VWR upon request, its latest audited financial statements (or unaudited financial statements, if audits are not performed). VWR agrees to keep such information confidential and to use it exclusively to evaluate and apply a credit score or rating to Customer for extension of credit purposes or pending transactions. Furthermore, Customer agrees to inform VWR of any material adverse change in its business that would reasonably be expected (by an independent 3rd party) to negatively impact its outstanding or future payment obligations and the terms or conditions contained herein. A change shall include, but not be limited to, any change in Customer's credit rating as determined by any single major rating agency, including Standard & Poor's, Moody's, Fitch or Dominion Bond Rating Service.

6. Sales Tax – Sales taxes where applicable (local, state or federal) will be added to the invoice price.

7. Product Return Policy

(a) All returns must be authorized by VWR in order to insure proper credit. NOTE: All returns are subject to 15% restocking charge. Where credits will be issued to the Customer for authorized returns under $100, the Customer is not required to return the Product to VWR except for Product(s) delivered but not ordered (picking errors). To ensure proper credit, each Product return must include the following information:

- Customer Name and Address
- Purchase Order Number
- VWR Shipping Order Number
- Date of Invoice
- Catalog Number of Returned Item(s)
- VWR Return Authorization Number
- Reason for Return

(b) Products not authorized for return include:

- Products not in completely resaleable condition (including Products with damaged, missing or defaced labeling or packaging)
- Chemicals, reagents, diagnostics, sterile or any controlled products (unless products do not meet specification)
- Laboratory apparatus or instruments that have been used or are without the original packaging, labeling
- and operating manuals.
- Refrigerated products or other perishables
- Products purchased on a Special Order Basis
- Products not purchased from VWR
- Products with an expired shelf life or an expiration date too short for resale
- Discontinued products

(c) Each return shipment of hazardous materials must be packed and labeled in accordance with DOT regulations applying to transportation of hazardous materials. Shipping documents must also meet DOT regulations. When necessary, Customer shall include with each return shipment of equipment, a certification from an authorized representative of the company that the equipment was properly decontaminated in accordance with current regulations and other recommended guidelines. The product should be shipped to the indicated service center and the transportation charges prepaid. To ensure prompt handling, the return authorization number should be placed on the outside of the package.

8. Product and Service Warranties and Limitation of Liability

(a) VWR warrants to the original Customer only that:

i. VWR VistaVision™ microscopes are guaranteed to be free of defects in material or workmanship for three (3 years from delivery, with the exception of the electrical system, which is guaranteed to be free of defects in material or workmanship for one (1) year from delivery; VWR® sympHony® meters are guaranteed to be free of defects in material or workmanship for three (3) years from delivery; and all VWR Private Label equipment is guaranteed to be free of defects in material or workmanship for two (2) years from delivery;

ii. all VWR Private Label laboratory casework will, under normal use, be free from defects in material or workmanship for one (1) year and corrosion for three (3) years from installation date and, if VWR installs the laboratory casework, the installation labor will be guaranteed for one (1) year;

iii. All software programs are warranted in accordance with the software vendor's license agreement; iv. all other Products, branded and private label, will meet the manufacturer's specifications for a term equal to the warranty period stated in the Product manufacturer's literature or sixty (60) days, whichever is longer; and v. Services provided, if any, will be of the kind and quality designated and will be performed by qualified personnel.

vi. VWR makes no claims or warranties concerning sustainable/green products. Any claims concerning sustainable/green products, including but not limited to, any of the following: green, recycled, recyclable, reusable, refillable, renewable, biodegradable, degradable, photodegradable, compostable, carbon footprint, renewable sources, source reduced, ozone safe, ozone friendly, environmentally friendly, no CFC's, CRC-Free, are the sole claims of the manufacturer and not those of VWR.

(b) VWR HEREBY DISCLAIMS ALL OTHER WARRANTIES OR GUARANTEES WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT, WHETHER STATUTORY, WRITTEN, ORAL, EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, SUITABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

(c) The liability of VWR under this limited warranty does not extend to any Products which are abused, altered or misused by the Customer or any other persons or entities or which become defective or non-conforming through the actions or inaction of the Customer or any other persons or entities. A defective or non-conforming Product is defined only as a Product which is outside of the manufacturer's defined Prod-

uct specifications, and shall not include Products that fail to meet any fitness of use by Customer or any unique Customer operating conditions or applications.

(d) If any Product or Service warranted hereunder proves defective or non-conforming, VWR's sole liability and Customer's sole remedy hereunder shall be for VWR, to repair or, at VWR's option, (i) replace (or reperform the Service), at no cost to Customer, any such defective or non-conforming Product with a non-defective or conforming Product (as applicable) or (ii) credit Customer's account for all amounts paid with respect to the defective or non-conforming Product or Service upon VWR's receipt of the defective or non-conforming Product. In the event of replacement, the replacement Product will be warranted for the remainder of the original warranty period or ninety (90) days, whichever is longer.

(e) If a Product should require service, contact the VWR office nearest your location for instruction (for a complete list of offices, see your VWR catalog). When the return of the Product is necessary, a return authorization number will be assigned and the Product shipped, transportation charges prepaid, to the indicated service center. To insure prompt handling, the return authorization number should be placed on the outside of the package and a detailed explanation of the defect enclosed with the Product.

(f) IN NO EVENT SHALL VWR HAVE ANY OBLIGATION OR LIABILITY FOR ANY EXEMPLARY, PUNITIVE, INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS, USE OR GOODWILL), WHETHER BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY THEREOF. THE TOTAL LIABILITY OF VWR (INCLUDING ITS SUBCONTRACTORS AND AGENTS), IF ANY, FOR DAMAGES RELATING TO ANY PRODUCTS SOLD UNDER THIS AGREEMENT SHALL BE LIMITED TO THE PRICE PAID FOR SUCH PRODUCT(S) AND THE TOTAL LIABILITY OF VWR (INCLUDING ITS SUBCONTRACTORS AND AGENTS), IF ANY, FOR DAMAGES RELATING TO ANY SERVICES PROVIDED UNDER THIS AGREEMENT SHALL BE LIMITED TO THE FEES PAID FOR THE SERVICE GIVING RISE TO SUCH CLAIM.

9. Export Controls – Products purchased or received under this Agreement are subject to export control laws, restrictions, regulations and orders of the United States. Customer agrees to comply with all applicable export laws, restrictions and regulations of the United States or foreign agencies or authorities, and shall not export, or transfer for the purpose of re-export, any Product to any prohibited or embargoed country or to any denied, blocked, or designated person or entity as mentioned in any such United States or foreign law or regulation. Customer represents and warrants that it is not on the Denied Persons, Specially Designated Nationals or Debarred Persons List and is not otherwise prohibited by law from purchasing the Products or services hereunder. Customer shall be responsible to obtain any license to export, re-export or import as may be required.

10. Proprietary Information – Each party (a "Recipient") shall maintain in confidence, not disclose to any third party, and not use, except for the specific purpose of performing under this Agreement, all proprietary information furnished to it by the other party (a "Discloser") or any Discloser Affiliate in connection with this Agreement, or derived from the Discloser or any Discloser Affiliate in performance of this Agreement, and shall return to the Discloser or a Discloser Affiliate, upon request, all copies (then in Recipient's possession) of documents and other tangible media furnished by or derived from Discloser or such Discloser Affiliate, respectively, in connection with the performance of this Agreement. The Recipient shall inform its employees, agents, and representatives of these obligations and shall require them to assume equivalent obligations.

11. Miscellaneous

(a) Termination - This Agreement may be terminated by either party for convenience at any time upon reasonable written notice delivered to the other party. In the event of any termination or expiration of this Agreement, Customer shall be billed immediately for Products shipped through the effective date of such termination or expiration and all custom Products purchased for Customer in VWR's inventories at such date, and Customer shall pay the invoiced amount immediately upon receipt of such invoice.

(b) Force Majeure - In the event either party is prevented in whole or in material part from performing its obligations under this Agreement solely as a result of force majeure, upon the prompt giving of notice to the other party detailing such force majeure event and its anticipated duration, the obligations of the party so prevented shall be excused during such period of delay, and such party shall take whatever reasonable steps are necessary to relieve the effect of such cause as rapidly as possible.

(c) Merger, Modification, Waiver - No amendment, modification or waiver of these terms shall be binding on either party unless reduced to writing and signed by an authorized officer of the party to be bound, and in the case of a waiver, shall be effective only in the specific instance and for the specific purpose for which given, and shall not be construed as a waiver of any subsequent breach. The failure of either party to enforce at any time or for any period of time any of the provisions of this Agreement shall not be construed as a waiver of such provisions or of the right of such party thereafter to enforce each and every such provision. No course of dealing, usage of trade or course of performance shall supplement, explain or amend any term, condition or instruction of this Agreement, or any shipment of Products hereunder.

(d) Applicable Law - This Agreement is made pursuant to, and shall be construed and enforced exclusively in accordance with, the internal laws of the Commonwealth of Pennsylvania (and United States federal law, to the extent applicable), without giving effect to otherwise applicable principles of conflicts of law.

(e) Authority to Enter Into Agreement – Each party represents and warrants that it is authorized to enter into this Agreement and that in so doing it is not in violation of the terms or conditions of any contract or other agreement to which it may be a party.

f) Assignment - This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns and designees; provided, however, neither party shall have the right to transfer, assign or delegate its rights or obligations under this Agreement or any portion thereof without the prior written consent of the other party (except that either party may assign this Agreement to a parent, subsidiary or successor corporation without such consent).

(g) Nature of Relationship - Neither party, its employees or permitted subcontractors or agents shall, under any circumstances, be considered to be an agent, partner, joint venturer or representative of the other party.

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Complex Problems Require Sophisticated Solutions

For over 160 years, our customers have been challenged with finding the answers that help improve lives. Our mission is to enable this by eliminating the process complexities and identifying product and service solutions that help labs and production facilities work better, faster, and smarter.

Through our global reach and knowledgeable associates, we proudly excel in delivering solutions that improve productivity, accelerate discovery, and encourage innovation.

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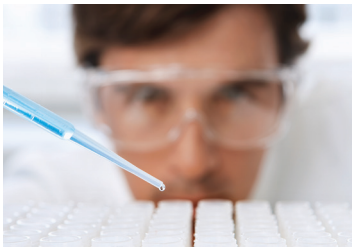

VWR enables the advancement of science by providing high-quality chemicals and services, customized to unique product or manufacturing needs. We use operational excellence to deliver solutions that enable research, testing, production and commercialization across the globe.

OUR CORE CAPABILITIES INCLUDE:

- Custom Liquid Manufacturing
- Custom Liquid Dosing and Packaging
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- Powder Dosing and Packaging
- Assembly and Finishing

We are committed to providing the highest value in manufacturing services. As we align with your needs, we remain dedicated to:

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- Supply Chain Security
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- Operational Excellence
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