ANDalyze
Real-Time Water Testing Powered by DNA

Analytical Data Sheet for ANDalyze Mercury Sensor

Detection of mercury in drinking water ***1-50ppb***

ANDalyze's proprietary aptamer DNA sensor for mercury uses a DNA sensor that fluoresces in the presence of the target contaminant, mercury. The fluorescence of the reaction is measured using the ANDalyze fluorimeter to determine the concentration of free mercury (present as Hg^{2+}) in solution and is reported in parts per billion (ppb) of mercury.

Performance

Mercury dilutions containing between 0 – 150 ppb of mercury were prepared in DI water. The Mercury100 sensor kits and the AND1000 fluorimeter were used to perform the mercury test at each dilution (at least three replicates).

Materials Used

ANDalyze Fluorimeter

Mercury Sensor Kit (Part Number: AND014)

DMSA for false positive check

Standard mercury solution for false negative check

Detection Range

2-50 ppb mercury

Hg (ppb)	0	2-50	>50
Meter reading	Negative	Positive	Negative

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Interference

Interference tests were done with a 0 or 1 ppb mercury in MilliQ water plus the potential interfering ion. The interference tolerance levels represent the concentration above which will cause false positive at 0ppb mercury, or false negative at 1ppb mercury. Data represents an average of at least three replicates.

Interfering ion	Interference tolerance level	Above tolerance level will cause:
Calcium, Ca^{2+}	80 ppm	False negative
Manganese, Mn^{2+}	100 ppm	False negative
Ammonium, NH_4^+	100 ppm	False negative
Copper, Cu^{2+}	0.5 ppm	False negative
Iron, Fe^{3+}	15 ppb	False negative
Aluminum, Al^{3+}	20 ppb	False negative
Magnesium, Mg^{2+}	30 ppm	False negative
Chloride, Cl^-	200 ppm	False negative
Sulfate, SO_4^{2-}	1500 ppm	False negative
Dihydrogen phosphate, $H_2PO_4^-$	2000 ppm	False negative
Bicarbonate, HCO_3^-	800 ppm	False negative
Zinc, Zn^{2+}	200 ppm	False positive
Cobalt, Co^{2+}	140 ppm	False positive
Cadmium, Cd^{2+}	60 ppm	False positive
Nitrate, NO_3^-	>10000 ppm	No interference
Sodium, Na^+	>3700 ppm	No interference

Temperature Range

ANDalyze test kits work when the sample is in the 17 – 35 ˚C (63 – 95 ˚F) temperature range. However, the most accurate and precise results are obtained if the sample is n the range of 20 - 25 ˚C (68 – 77 ˚F). A change in temperature of several degrees will require an on-site calibration to be performed.

Storage and Shelf Life

The shelf life is 1 year (12 months) from manufacture date for the sensors if stored in cool, dry area away from direct sunlight at temperature less than 23°C (73°F); however the shelf life of the product is limited by the liquid buffer supplied with the sensor kit which is only 6 months from manufacture date. The life of the liquid buffer can be improved if refrigerated/frozen for up to one year from manufacture date.