

Aluminum (0-700 ppb)

Range(s): 0 – 700 ppb Al



Procedure

Note: Glassware that has not been properly cleaned may contaminate the sample and affect test results. Clean glassware thoroughly before use with Hydrochloric Acid 3N (R-0737). Rinse thoroughly with deionized water (R-0833) or sample water.

Note: The recommended sample pH is 2.2 to 4.5.

1. Turn on the colorimeter.
2. Select a test menu (ALL TESTS, RECENT TESTS, or FAVORITES) containing Aluminum 700 using ◀▶.
3. Select Aluminum 700 using ▲▼; then press ENTER Ⓢ.
4. Rinse and fill 25 mm sample cell to **20 mL** mark with sample.
5. Using the 0.15g dipper spoon, add 1 level dipper

Aluminum 700 - Reagent A; then cap and invert to mix thoroughly; then remove cap.

6. Add 1 mL Aluminum 700 - Reagent B; then cap and invert to mix.
7. Select TIMER using ◀▶; then press ENTER Ⓢ.
8. Select START using ◀▶; then press ENTER Ⓢ. (A 30-second [00:30] countdown will begin.)
9. Invert sample for 30 seconds.
10. When the timer beeps, add 1 mL Aluminum 700 - Reagent C; then cap and invert to mix.
11. Transfer 10 mL of the prepared sample to a second, clean 25 mm sample cell.
12. Add two drops of Aluminum 700 - Reagent D to the

second cell; then cap and invert to mix. (This will be the blank sample cell)

13. Select START using ◀▶; then press ENTER Ⓢ. (A 5-minute [05:00] countdown will begin.)
14. When the timer beeps, insert the blank sample cell into the sample cell compartment.
15. Select ZERO using ◀▶; then press ENTER Ⓢ. Zero will be displayed.
16. Remove blank sample cell from sample cell compartment.
17. Insert the other sample cell into sample cell compartment.
18. Select READ using ◀▶; then press ENTER Ⓢ. The instrument will read the sample and the result will be displayed.

Interferences

Alkalinity, Total (CaCO₃) > 640 ppm – negative interference
 Copper > 5 ppm – positive interference
 EDTA, all levels – negative interference
 Ethylene Glycol > 5 % v/v – negative interference
 Propylene Glycol > 5 % v/v – negative interference
 Fluoride, all levels – negative interference
See correction table
 Molybdate > 10 ppm – negative interference
 Nitrite > 500 ppm – negative interference

Nitrilotriacetic acid (NTA), all levels – negative interference
 pH, 4.6-9.2 – negative Interference

To remove interference: Adjust the sample to pH 2.2-4.5.

Phosphate (PO₄) > 2.5 ppm – negative interference
 Phosphonate (HEDP), all levels – negative interference
 Phosphonate (PBTC), all levels – negative interference
 Polyphosphate (STP), all levels – negative interference
 Meta Phosphate, all levels - negative interference
 Polymer (PAA), all levels – negative interference

Quats > 2.5 ppm – negative Interference
 Silica > 50 ppm – positive interference

The following analytes were tested to the levels listed and found not to cause any interference up to the specified values:

Benzotriazole – 20 ppm
 Bromine – 5 ppm

Interferences (cont'd)

Calcium (CaCO₃) – 1000 ppm
Chloride – 1000 ppm
Chlorine – 5 ppm
2,2-dibromo-2-cyano-acetamide (DBNPA) – 25 ppm
Glutaraldehyde – 550 ppm

Iron (II) – 8 ppm
Iron (III) – 10 ppm
Isothiazolin – 23 ppm
Magnesium (CaCO₃) – 450 ppm
Manganese – 5 ppm

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Nitrate – 2000 ppm
Sulfate – 1000 ppm
Sulfite – 100 ppm
Tolytriazole – 20 ppm
Zinc – 5 ppm

Test Method

Eriochrome Cyanine R Method

(Adapted from *Standard Methods for the Examination of Water and Wastewater*) Eriochrome cyanine R reacts with Aluminum at a pH of 6 to form a pink-purple color that increases in intensity with the concentration of Aluminum in the sample.

Estimated Detection Limit

40 ppb Al

Precision

Using a single lot of each reagent and a standard solution of 400 ppb Al, an individual analyst obtained a standard deviation with the instrument of 10 ppb Al.

Application

Industrial Water

Ordering Info

Reagent Pack

K-8049 Aluminum 700

Formulated for exclusive use with Taylor's TTi® Colorimeter.

Reagent Pack Components

R-8049A Aluminum 700 - Reagent A
R-8049B Aluminum 700 - Reagent B
R-8049C Aluminum 700 - Reagent C
R-8049D Aluminum 700 - Reagent D

Optional Reagents & Accessories

R-0737 Hydrochloric Acid 3N
R-0833 DI Water

		Fluoride Concentration (ppm)								
Aluminum Concentration (ppb)	-	0	0.25	0.50	0.75	1.0	1.25	1.50	1.75	2.0
	0	0	0	0	0	0	0	0	0	0
	50	50	47	46	43	-	-	-	-	-
	100	100	100	97	87	83	74	65	59	50
	200	200	200	193	183	168	160	144	137	122
	300	300	296	288	271	259	248	234	215	197
	400	400	391	380	364	351	330	318	304	280
	500	500	500	479	463	443	426	404	373	343
	600	600	593	573	541	523	486	475	445	434
	700	700	691	686	651	621	596	563	531	518

Fluoride Correction Table



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