

# 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 (CaCO<sub>3</sub>) > 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

Nitritotriacetic 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 (PO<sub>4</sub>) > 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

**Instruction #5550****Interferences  
(cont'd)**Calcium (CaCO<sub>3</sub>) – 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 (CaCO<sub>3</sub>) – 450 ppm

Manganese – 5 ppm

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<sup>®</sup> 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)									
		-	0	0.25	0.50	0.75	1.0	1.25	1.50	1.75	2.0
Aluminum Concentration (ppb)	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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