

# ZINC-LOW RANGE

## ZINCON METHOD • CODE 3667-SC

QUANTITY	CONTENTS	CODE
30 mL	*Zinc Indicator Solution	*6314-G
120 mL	*Methyl Alcohol	*6319-J
10 g	Sodium Ascorbate Powder	6316-D
25 g	*Zinc Buffer Powder	*6315-G
15 mL	*Sodium Cyanide, 10%	*6565-E
30 mL	*Formaldehyde Solution, 37%	*5128-G
1	“Dilute Zinc Indicator Solution” Bottle, w/1 pipet assembly	0128-MT
1	Graduated Cylinder, 10 mL, glass	0416
1	Spoon, 0.5 g, plastic	0698
2	Pipets, plain, plastic	0352
1	Spoon, 0.1 g, plastic	0699

\*WARNING: Reagents marked with an \* are considered hazardous substances. To view or print a Material Safety Data Sheet (MSDS) for these reagents see MSDS CD or our web site. To obtain a printed copy, contact us by e-mail, phone or fax.

Zinc enters the domestic water supply from the deterioration of galvanized iron and brass pipes, and from industrial wastes. Zinc is an essential element for body growth and development and is an important plant nutrient.

Concentrations of zinc above 5.0 mg/L in drinking water can cause a bitter astringent taste. In the U.S., zinc concentrations may vary between 0.06 to 7.0 mg/L, with an average value of 1.33 mg/L.

**APPLICATION:** Drinking and surface waters, domestic and industrial waste water.

**RANGE:** 0.00–3.00 ppm Zinc

**METHOD:** Zinc forms a blue colored complex with Zincon in a solution buffered at pH 9.0. Other heavy metals are complexed by cyanide and the zinc cyanide complex is released by the addition of formaldehyde before the other metal cyanide complexes are destroyed. Sodium ascorbate is added to reduce the interference of manganese.

**SAMPLE HANDLING & PRESERVATION:** Sample should be analyzed within 6 hours after collection. The addition of hydrochloric acid will help preserve the metal ion content, however the acid should be neutralized before analysis.

**INTERFERENCES:** The following ions interfere in concentrations greater than those listed.

Ion	mg/L	Ion	mg/L
Cd(II)	1	Cr(III)	10
Al (III)	5	Ni(II)	20
Mn (II)	5	Co (II)	30
Fe (III)	7	CrO4(II)	50
Fe (II)	9		

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## PROCEDURE

### A. PREPARATION OF DILUTE ZINC INDICATOR SOLUTION

1. Use a pipet (0352) to measure exactly 5.0 mL of \*Zinc Indicator Solution (6314) into 10 mL graduated cylinder (0416). The bottom of the curved surface (the meniscus) of liquid should be at 5.0 mL mark. Pour this into the bottle labeled "Dilute Zinc Indicator Solution".
2. Use unrinsed graduated cylinder to add 10.0 mL and then 7.8 mL (total of 17.8 mL) of \*Methyl Alcohol (6319) to bottle labeled "Dilute Zinc Indicator Solution". Cap and mix ingredients in this bottle. Do not leave this bottle uncapped.

### B. DETERMINATION OF ZINC

1. Press and hold **ON** button until colorimeter turns on.
2. Press **ENTER** to start.
3. Press **ENTER** to select TESTING MENU.
4. Select ALL TESTS (or another sequence containing 99 Zinc-LR) from TESTING MENU.
5. Scroll to and select 99 Zinc-LR from menu.
6. Rinse a clean tube (0290) with sample water. Fill to the 10 mL line with sample.
7. Insert tube into chamber, close lid and select SCAN BLANK. (See Note)
8. Remove tube from colorimeter. Use 0.1 g spoon (0699) to add one measure of Sodium Ascorbate Powder (6316). Use 0.5 g spoon (0698) to add one measure of \*Zinc Buffer Powder (6315). Cap and shake vigorously for 1 minute. Some undissolved buffer may remain in the bottom of the tube.
9. Add 3 drops of \*Sodium Cyanide, 10% (6565). Cap and mix.
10. Use the 1 mL pipet assembly to add 1 mL of "Dilute Zinc Indicator Solution". Cap and mix.
11. Use a second plain pipet (0352) to add 4 drops of \*Formaldehyde Solution, 37% (5128). Cap and mix by inverting 15 times.
12. Insert tube into chamber, close lid and select SCAN SAMPLE. Record result.
13. Press **OFF** button to turn colorimeter off or press **EXIT** button to exit to a previous menu or make another menu selection.

- NOTE: For best possible results, a reagent blank should be determined to account for any contribution to the test result by the reagent system. To determine the reagent blank, follow the above test procedure to scan a distilled or deionized water blank. Then follow the above procedure to perform the test on a distilled or deionized water sample. This test result is the reagent blank. Subtract the reagent blank from all subsequent test results of unknown samples. It is necessary to determine the reagent blank only when a new lot number of reagents are obtained.