

FLUORIDE

SPADNS METHOD • CODE 3647-01-SC

QUANTITY	CONTENTS	CODE
4 x 30 mL	*Reagent	*3875-G
60 mL	*Sodium Solution	*4128-H
1	Pipet, 0.5 mL, plastic	0353
1	Pipet, 1.0 mL, plastic	0354

*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.

Fluoride may occur naturally in some ground waters or it may be added to public drinking water supplies to maintain a 1.0 mg/L concentration to prevent dental cavities. At higher concentrations, fluoride may produce an objectionable discoloration of tooth enamel called fluorosis, though levels up to 8 mg/L have not been found to be physiologically harmful.

NOTE: This procedure uses the EPA approved Reagent System for fluoride found in method 4500-F-D, 18th Edition of *Standard Methods*, pp. 1-27.

APPLICATION	Drinking and surface waters; domestic and industrial waters.	
RANGE:	0.00–2.00 Fluoride	
METHOD:	Colorimetric test based upon the reaction between fluoride and zirconium dye lake. The fluoride reacts with the dye lake, dissociating a portion of it into a colorless complex ion and dye. As the fluoride concentration increases, the color produced becomes progressively lighter.	
SAMPLE HANDLING & PRESERVATION:	Samples may be stored and refrigerated in plastic containers.	
INTERFERENCES:	The following substances produce a positive interference at the concentration given:	
	Chloride (Cl ⁻)	7000 mg/L
	Phosphate (PO ₄ ⁻³)	16 mg/L
	(NaPO ₃) ₆	1 mg/L

The following substances produce a negative interference at the concentration given:

Alkalinity (CaCO ₃)	5000 mg/L
Aluminum (Al ³⁺)	0.1 mg/L
Iron (Fe ³⁺)	10 mg/L
Sulfate (SO ₄ ⁻²)	200 mg/L

Color and turbidity must be removed or compensated for in the procedure. Temperature should be maintained within 5°C of room temperature.

PROCEDURE

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 41 Fluoride) from TESTING MENU.
5. Scroll to and select 41 Fluoride from menu.
6. This test requires a reagent blank. Rinse a clean tube (0290) with clear, colorless, fluoride free water. Fill to the 10 mL line with clear, colorless, fluoride free water.
7. Use the 0.5 mL pipet (0353) to add 0.5 mL of *Sodium Arsenite Solution (4128). Cap and mix.
8. Use the 1.0 mL pipet (0354) to add 2 measures of *Acid-Zirconyl SPADNS Reagent (3875). Cap and mix thoroughly. (This is the reagent blank.)
9. Insert tube into chamber, close lid and select SCAN BLANK.
10. Rinse a clean tube (0290) with sample water. Fill to the 10 mL line with sample water. Repeat steps 7 and 8.
11. Insert tube into chamber, close lid and select SCAN SAMPLE. Record result.
12. Press **OFF** button to turn colorimeter off or press **EXIT** button to exit to a previous menu or make another menu selection.

