



Technical Data Sheet

Chromate (hexavalent) Diphenylcarbazide Method

Applications and Industries: Drinking water, surface and groundwater, domestic and industrial wastewater effluents

References: APHA Standard Methods, 22nd ed., Method 3500-Cr B - 2009; ASTM D 1687-02, Chromium in Water, Test Method A

Chemistry: Hexavalent chromium reacts with diphenylcarbazide under acidic conditions to form a red-violet colored complex in direct proportion to the hexavalent chromium concentration. Results are expressed as ppm (mg/L) CrO₄.

Interference Information:

The reaction with diphenylcarbazide is nearly specific for hexavalent chromium (chromate).

This chemistry does not measure trivalent chromium.

Permanganate and other oxidizing agents may oxidize trivalent chromium in the sample to hexavalent, causing a false positive result.

Sulfide, sulfite, and other reducing agents may reduce hexavalent chromium in the sample to trivalent, causing false low results.

Samples should be analyzed immediately upon collection to minimize the reactions of oxidizing and reducing agents.

Samples with extreme pH or that are highly buffered (including samples preserved to pH 9.3 – 9.7 according to APHA Standard Methods Method 3500-Cr B – 2009) may require pH adjustment. After addition of A-2800 Acidifier Solution, the pH of the sample should be 1.8 – 2.0. Up to 8 drops of A-2800 Acidifier Solution may be added to 20 mL of sample to adjust the pH within this range.

Hexavalent molybdenum and mercury salts may react to form color with the reagent, but with much less sensitivity than does chromate.

Nitrite, as well as vanadium and titanium, may produce low test results.

Iron at greater than 1 ppm may produce a yellow color.

Safety Information: Safety Data Sheets (SDS) are available upon request and at www.chemetrics.com. Read SDS before using these products. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.

Available Analysis Systems: Visual colorimetric: CHEMets® and VACUettes®. Instrumental colorimetric: Vacu-Vials®.

Storage Requirements: Products should be stored in the dark and at room temperature.

Shelf Life: *When stored in the dark and at room temperature:* Visual colorimetric: The CHEMets and VACUettes refills have shelf lives of 4 years. The color comparators and accessory solution have 2-year shelf lives.

Instrumental colorimetric: The Vacu-vials kit has a shelf life of 2 years.

Accuracy: CHEMets and VACUettes kits: ± 1 color standard increment; Vacu-vials kit: ± 10% error at 2.63 ppm, ± 20% error at 0.88 ppm, and ± 30% error at 0.20 ppm.