



Technical Data Sheet

Chromate (hexavalent)

Diphenylcarbazide Method

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

References: APHA Standard Methods, 21st ed., Method 3500-Cr B (2005); ASTM D 1687-02, Chromium in Water, Test Method A.

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

Interference Information: The reaction with diphenylcarbazide is nearly specific for hexavalent chromium (chromate). This chemistry does not measure trivalent chromium. Hexavalent molybdenum and mercury salts may react to form color with the reagent, but with much less sensitivity that 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. 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. A sample pH range of 4 to 8 is recommended.

Safety Information: Material Safety Data Sheets (MSDSs) are included with the test kits and are available upon request and on our website. Read MSDS before using these kits. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear eye protection.

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: 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 kits have shelf lives of 2 years.

Accuracy: CHEMets: $\pm \frac{1}{2}$ color standard increment; VACUettes: ± 1 color standard increment; Vacu-vials: $\pm 10\%$ error at 75% of full range, $\pm 20\%$ error at 25% of full range, and $\pm 30\%$ error at CHEMetrics' Practical Detection Limit (PDL).