

GLYCOL - Purpald®-Periodate Method

Version 10 | Mar 2018

Applications and Industries

Airplane de-icing operations, industrial process waters, cooling water systems, stormwater, potable water; NOT applicable for seawater

References

Purpald® developed by Aldrich Chemical Company
Fritz, James S. and Schenk, George H., Quantitative Analytical Chemistry, 4th ed., p. 277 (1979)

Chemistry

Periodic acid oxidizes ethylene glycol and propylene glycol to formaldehyde. In a highly alkaline solution, and in conjunction with the oxidizing agent persulfate, formaldehyde reacts with Purpald to form a purple colored complex. Test results are expressed as ppm (mg/L) ethylene glycol. To convert results to ppm propylene glycol, multiply by 2.

Note: This chemistry does not differentiate between ethylene and propylene glycol.

Available Analysis Systems

Visual colorimetric: CHEMetrics®

Shelf Life

When stored in the dark and at room temperature:

CHEMetrics refill: 5 months

Color comparator & Activator Solutions A-4400 and A-4402: at least 1 year

Note: Persulfate (A-4401) is supplied as a dry chemical with no expiration date. After preparation as per kit instructions, the persulfate solution has a shelf life of 6 months when stored in the dark and at room temperature.

Accuracy Statement

CHEMetrics kit: +/- 1 color standard increment

Storage Requirements

Products should be stored in the dark and at room temperature. High temperatures can cause the ampoule reagent to expire prematurely. Glass-like crystals in an unused ampoule are an indication of reagent deterioration.

Interference Information

This test procedure is somewhat temperature dependent. Extremely high or low temperatures may affect the rate of the reaction, causing erroneous results. For best results, samples should be less than 40°C.

Strong oxidizers may cause false positive results, and strong reducing agents may cause low test results.

The chemical reaction occurs at a high pH, so sample pHs below 4 or samples buffered to a low pH may not develop the proper color.

Formaldehyde reads positively with this chemistry if present at any level. Other aldehydes may also cause high test results or may develop a different color with the reagent.

Ferrous and ferric iron may cause off-color test results, making a visual color match difficult or impossible.

Ethanol up to at least 1% does not interfere.

Methanol at percent levels causes a false positive result. Methanol-based solutions also may cause formation of a precipitate during analysis and may cause an off-color to develop in the test ampoule.

Diethylene and triethylene glycol are not measured with this chemistry.

Samples with high dissolved solids content may cause the reagent to precipitate.

This chemistry is not applicable for the analysis of seawater samples.

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.