



Designation: D2982 – 24

Standard Test Methods for Detecting Glycol-Base Antifreeze in Used Lubricating Oils¹

This standard is issued under the fixed designation D2982; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 These test methods cover the qualitative determination of glycol-base antifreeze in used lubricating oils (mineral base) by two procedures, one using reagents in tablet form and the other using laboratory shelf reagents. Principally the test methods detect ethylene glycol but will also detect other 1,2-glycols that may be present.

1.1.1 When a positive result is obtained and a sample of the unused oil is available, the unused oil is also tested and used as a reference.

NOTE 1—Since the inception of this test method (1971), there have been many changes in base stock technology and additive technology. Therefore, when available, the new, unused oil, or a sample of the same used oil, known to not contain antifreeze, is tested as a reference.

1.2 The tablet procedure (Procedure A) is sensitive to about 100 mg/kg and the shelf reagent procedure (Procedure B) to about 300 mg/kg of ethylene glycol.

1.3 Glycol-based coolant leaks into crankcases may not be detected or may result in a low bias using these test methods if the glycol has degraded or been thermally or otherwise oxidized. The conditions in crankcases may be such that contaminant glycols are oxidized or degraded to a degree to which the color indicator reaction does not occur or is biased enough so as to not trigger the color change. Other test methods for the detection of coolants or coolant additives in lubricating oils should be used if the results from these test methods alone are inconclusive or questionable.

1.4 Carbohydrates such as sugars and sugar-containing substances are sometimes used for sabotage purposes. If the presence of these substances is suspected, Procedure A contains a modification to remove these interferences.

1.5 Both procedures are adaptable to field kit use, and brief descriptions for converting to field kit form are given in [Annex A1](#).

¹ These test methods are under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and are the direct responsibility of Subcommittee D02.06 on Analysis of Liquid Fuels and Lubricants.

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1.5.1 Commercial field testing kits are available.^{2,3}

1.6 The results obtained by this method are qualitative expressions. However, for the preparation of reagents and in the procedures, acceptable SI units are to be regarded as the standard.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.8 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*⁴

D95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

D1193 Specification for Reagent Water

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants

D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products

3. Terminology

3.1 *Definitions:*

3.1.1 *glycol-base antifreeze, n*—in engine coolants, ethylene or propylene glycol commonly used in admixture with water and additives to lower the coolant freezing point.

² The sole source of supply of the apparatus known to the committee at this time is the Gly-Tek Test Kit available from the Nelco Co., 1047 McKnight Rd., S., St. Paul, MN 55119. In Canada, it is available from Metro Tech Preventative Maintenance Ltd., 112-5621, 11th St., N.E., Calgary, AB, Canada T2E 6Z7.

³ If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

⁴ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

*A Summary of Changes section appears at the end of this standard