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Office des normes générales du Canada

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WITHDRAWAL

RETRAIT

February 2003

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CANADIAN GENERAL
STANDARDS BOARD

METHODS OF TESTING PETROLEUM
AND ASSOCIATED PRODUCTS

1,2-GLYCOLS IN GLYCOL MIXTURES

This CGSB test method is hereby withdrawn because the specification 3.856, Fluid, Deicing-Defrosting Concentrate for Aircraft Surfaces, that referenced this test method has been withdrawn.

OFFICE DES NORMES
GÉNÉRALES DU CANADA

MÉTHODES D'ESSAI DES PRODUITS
PÉTROLIERS ET PRODUITS CONNEXES

TENEUR EN 1,2-GLYCOLS DES
MÉLANGES GLYCOLIQUES

Cette méthode d'essai de l'ONGC est retirée par le présent avis parce que la spécification 3.856, Liquide dégivrant-dégelant concentré pour surfaces d'aéronefs, qui y réfère a été retirée.

Canada

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Board

CAN/CGSB-3.0
No. 121.1-95

Methods of Testing Petroleum and Associated Products

1,2-Glycols in Glycol Mixtures

Withdrawn/Retirée



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NATIONAL STANDARD OF CANADA

CAN/CGSB-3.0
No. 121.1-95

METHODS OF TESTING PETROLEUM AND ASSOCIATED PRODUCTS

1,2-GLYCOLS IN GLYCOL MIXTURES

This method supersedes issue of November 1987.

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National Standard of Canada

CGSB Ottawa Canada K1A 1G6	METHODS OF TESTING PETROLEUM AND ASSOCIATED PRODUCTS	CAN/CGSB-3.0
	1,2-Glycols in Glycol Mixtures	No. 121.1-95

Supersedes Issue of
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1. SCOPE

1.1 This method is used to determine the total concentration of 1,2-glycols in deicing-defrosting fluid concentrates.

1.2 The testing and evaluation of a product against this method may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this method has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any existing applicable regulatory requirements prior to its use.

2. APPLICABLE PUBLICATIONS

2.1 The following publications are applicable to this method:

2.1.1 Canadian General Standards Board (CGSB)

CAN/CGSB-3.0 — Methods of Testing Petroleum and Associated Products:

No. 0 — Prologue to the Petroleum Test Methods and Table of Contents

3.856 — Fluid, Deicing-Defrosting Concentrate for Aircraft Surfaces.

2.2 Reference to the above publications is to the latest issues unless otherwise specified by the authority applying this method. The source of these publications is shown in the Notes section.

3. SUMMARY OF METHOD

3.1 A known amount of sodium periodate is added to the sample and to a blank, and allowed to react. The unconsumed periodate is converted to iodine, which is then back-titrated with a standard sodium thiosulfate solution. The percentage by mass of 1,2-glycols in the sample is calculated from the volume of thiosulfate solution used in the sample and the blank titrations.

4. SIGNIFICANCE AND USE

4.1 The result of this test estimates the total percentage by mass of 1,2-glycols present in deicing-defrosting fluid concentrates.

5. REAGENTS AND MATERIALS

5.1 **Potassium iodide solution:** 30% by mass.

5.2 **Sodium periodate:** a 0.05 mol/L solution, prepared by dissolving 10.7 g of sodium metaperiodate, $NaIO_4$, in distilled water to make up 1 L and mixing thoroughly.

5.3 **Standard sodium thiosulfate solution:** 0.2 mol/L. Prepared by dissolving 31.6 g of $Na_2S_2O_3$ (anhydrous), together with 0.11 g of sodium carbonate stabilizer, in distilled water, making up to 1 L and mixing thoroughly.

5.4 **Starch solution:** 1% aqueous solution or a prepared dry powder indicator such as thyodene.

5.5 **Sulfuric acid solution:** 20% by mass. Note: (DANGER — Poison. Corrosive. Strong oxidizer. Contact with organic material may cause fire. May be fatal if swallowed. Liquid and vapour cause severe burns. Harmful if inhaled. Contact with water liberates large amounts of heat. Spillage may cause fire. See CAN/CGSB-3.0 No. 0.)

5.6 **Iodine flask:** 500 mL.

6. PROCEDURE

6.1 Weigh 3.5 to 4.0 g of the sample to the nearest milligram in a 250 mL tared volumetric flask. Make up to volume with distilled water and mix well. Pipe 10 mL of the solution into a 500 mL iodine flask. Pipe 50.0 mL of sodium periodate solution into the flask and stopper the flask. Prepare two blanks using the same volumes, but omit the sample. Allow both the test sample and the blanks to react for 1 h.

6.2 At the end of 1 h, add 150 mL of distilled water, 20 mL of sulphric acid solution and 40 mL of potassium iodide solution to each flask. Add the potassium iodide by pouring it around the stopper to form a liquid seal between the stopper and the neck of the flask. The liquid seal is intended to absorb liberated iodine vapour. Allow the mixture to react for 10 min, shaking continuously.

6.3 Wash the neck, stopper and inside of each flask with distilled water. Titrate the sample mixture and the blanks to a pale yellow iodine colour using standardized 0.2 mol/L sodium thiosulfate, then add 2 mL of starch solution to each flask and continue titration until the blue colour just disappears.

7. CALCULATION

7.1 Calculate the percentage concentration (% by mass) of total 1,2-glycols as follows:

$$\text{1,2-glycols, \% by mass} = \frac{F \times 25 \times (B - S) \times C}{M} \times 100$$

where:

F = a factor dependent on the glycol mixture. It is 0.0330 for anti-icing and deicing-defrosting fluid (CGSB specification 3.856 type)

B = volume of thiosulfate solution required by the blank (average of blanks), mL

S = volume of thiosulfate solution required by the sample aliquot, mL

C = concentration of the thiosulfate solution, mol/L

M = mass of the sample, g

8. REPORT

8.1 Report the percentage by mass concentration of 1,2-glycols.

9. NOTES

9.1 **Source of Referenced Publications** — The publications referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, Canada K1A 1G6. Telephone (613) 941-8703 or 1-800-665-CGSB (Canada only). Fax (613) 941-8705.

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