

**TITRIMETRIC DETERMINATION OF THE PEROXIDE NUMBER
OF OXIDIZED GASOLINE TEST FUELS**

Application

This method describes a titrimetric method for determining the Peroxide Number of oxidized ("sour") gasoline test solutions prepared using the procedure contained in the Appendix. The method can also be used (with certain precautions) to measure the depletion of the Peroxide Number during the course of immersion tests using the test solution so that the need to replenish the test solution can be determined.

Apparatus Required

Erlenmeyer Flasks* - 250 mL with ground glass joint.

Condenser*

Allihn or Leibig water cooled type with ground glass joint to fit the Erlenmeyer flasks.

Measuring Cylinders* - 100 mL glass, graduated.

Hot Plate, or other means of heating*

Suitable for heating the Erlenmeyer flasks with fitted condensers to reflux the reagents.

Burette* - 10 mL glass, graduated

* - Apparatus is available from any suitable laboratory equipment supplier.

Reagents Required

Ethanoic (Acetic) Acid - glacial, analytical reagent grade.

Potassium Iodide Solution

100 g/liter analytical reagent grade in distilled water. Store in a dark glass reagent bottle. Discard if the solution gives the equivalent of a Peroxide Number of 2 when carrying out a blank titration.

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2000 08 22	Revised	Editorial – no technical change A. Cockman
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Propan-2-ol (Iso-Propyl Alcohol) - analytical reagent grade.

Sodium Thiosulphate Solution - 0.1 N accurately standardized aqueous solution.

Ethanoic Acid/Propan-2-ol Mixture

Mix 100 mL glacial ethanoic acid with 1150 mL Propan-2-ol. Store in a dark glass bottle.

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

1. Add 25 mL ethanoic acid/Propan-2-ol mixture to a 250 mL Erlenmeyer flask.
2. Add 10 mL of the Potassium Iodide solution to the flask.
3. Accurately transfer by pipette 2 mL of the oxidized gasoline test solution under test to the flask.
4. Fit the condenser to the flask and reflux gently on the hot plate for 5 minutes to release free Iodine.
5. Cool the flask in a cold water bath and wash the condenser down with 5 mL of Distilled Water.
6. Remove the condenser and titrate the contents of the flask with the standardized 0.1 N Sodium Thiosulfate until the yellow coloration just disappears. Record the volume of Sodium Thiosulfate consumed as V1.
7. Carry out a blank determination by repeating steps 1 to 6 but omit the addition of the oxidized test solution (step 3). Record the volume of Sodium Thiosulfate consumed as V2. This volume should not exceed 0.1 mL.
8. Calculate the Peroxide Number according to the following equation:

$$\text{Peroxide Number} = \frac{(V1 - V2) \times N \times 1000}{\text{Sample Volume} \times 2}$$