

Methods of test for petroleum and its products —

**Part 182: Determination of inorganic
acidity of petroleum products — Colour
indicator titration method**

(Identical with IP 182:2006)

ICS 75.080

Confirmed February 2012

National foreword

This British Standard reproduces verbatim IP 182:2006 and implements it as the UK national standard. It supersedes BS 2000-182:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PTI/13, Petroleum testing and terminology, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Energy Institute, under the brand of IP publishes and sells all parts of BS 2000, and all BS EN petroleum test methods that would be part of BS 2000, both in its annual publication “Standard methods for analysis and testing of petroleum and related products and British Standard 2000 parts” and individually.

**Further information is available from:
Energy Institute, 61 New Cavendish Street, London W1G 7AR.
Tel: 020 7467 7110. Fax: 020 7255 1472.**

Cross-references

The British Standards which implement international publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages 1 to 4, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 24 January 2006

© BSI 24 January 2006

ISBN 0 580 47592 1

Amendments issued since publication

Amd. No.	Date	Comments

Determination of inorganic acidity of petroleum products — Colour indicator titration method

This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This standard specifies a method for determining the water soluble inorganic (strong) acid content of used and unused lubricating oils, fuel oils, and petrolatum.

NOTE 1 - Oils containing additives that can be extracted with water may give erroneous results.

NOTE 2 - The results may not be numerically identical with those obtained when other colour indicators or techniques are used.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

3 Principle

The inorganic acids in the oil are extracted with boiling water in a specified apparatus. After separation of the aqueous and oil layers an extract of the aqueous layer is titrated with standardized alkali using bromophenyl blue indicator.

4 Reagents and materials

Use only chemicals and reagents of recognised analytical grade and water conforming to grade 3 of ISO 3696.

4.1 Potassium hydrogen phthalate

4.2 Potassium hydroxide solution 0,1 mol/l

Either prepare a solution in accordance with 4.2.1 or use a commercially available potassium hydroxide solution of equivalent concentration and purity.

4.2.1 Dissolve 6 g potassium hydroxide in 1 l in water and standardize using potassium hydrogen phthalate in accordance with 4.2.2. The reagent shall be protected against carbon dioxide absorption and restandardized frequently enough to detect concentration changes of 0,0005 mol/l.

4.2.2 Dry a quantity of potassium hydrogen phthalate (4.1) in an oven at approximately 120 °C for approximately 2 h. Place in a desiccator and allow to cool. Weigh between 0,1 g to 0,2 g to the nearest 0,1 mg into a 250 ml flask and record this mass. Add approximately 50 ml of carbon dioxide free water and swirl to dissolve. Add 2 drops of bromophenol blue solution (4.3) and titrate to neutral end point with the potassium hydroxide solution (4.2). Carry out a blank determination using the same volume of carbon dioxide free water. Calculate the concentration C , in moles per litre, of the potassium hydroxide solution from the equation:

$$C = \frac{1\,000\,m}{204,23 (V_1 - V_0)}$$

where

m is the mass of potassium hydrogen phthalate;

V_1 is the volume of potassium hydroxide solution for the titration;

V_0 is the volume of potassium hydroxide used for the blank.