

Methods of test for petroleum and its products —

**Part 143: Determination of asphaltenes
(heptane insolubles) in crude petroleum
and petroleum products
(Identical with IP 143:2004)**

ICS 75.080

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National foreword

This British Standard reproduces verbatim IP 143:2004 and implements it as the UK national standard. It supersedes BS 2000-143:2001 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PT/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:

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Tel: 020 7467 7110. Fax: 020 7255 1472.**

Cross-references

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Summary of pages

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Determination of asphaltenes (heptane insolubles) in crude petroleum and petroleum products

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 procedure for the determination of the heptane insoluble asphaltene content of gas oil, diesel fuel, residual fuel oils, lubricating oil, bitumen and crude petroleum which has been topped to an oil temperature of 260 °C (see A.2.1).

The precision is applicable to values between 0,50 % (m/m) and 30,0 % (m/m). Values outside this range may still be valid, but may not give the same precision values.

Oils containing additives may give erroneous results.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated. For undated references, the latest edition of the normative document referenced applies.

IP 475, *Petroleum liquids — Manual sampling*.
(= ISO 3170)

IP 476, *Petroleum liquids — Automatic pipeline sampling*. (= ISO 3171)

IP 123, *Petroleum products — Determination of distillation characteristics at atmospheric pressure*.
(= ISO 3405)

IP 160, *Crude petroleum and liquid petroleum*

products — Laboratory determination of density or relative density — Hydrometer method.
(= ISO 3675)

IP 365, *Crude petroleum and liquid petroleum products — Determination of density - Oscillating U-tube method*. (= ISO 12185)

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1

asphaltenes

wax-free organic material insoluble in heptane, but soluble in hot toluene.

NOTE 1 - Hot benzene appeared in the original definition asphaltenes, but for health reasons, this material is no longer used. The precision of this method, when using toluene, has been found to be the same as when using benzene.

3.2

crude petroleum residue

residue from distillation to an oil temperature of 260 °C carried out under the conditions of the specific preparatory procedure described in annex A.

4 Principle

A test portion of the sample is mixed with heptane and the mixture heated under reflux, and the precipitated asphaltenes, waxy substances and inorganic material collected on a filter paper. The waxy substances are removed by washing with hot heptane in an extractor.

After removal of the waxy substances, the asphaltenes are separated from the inorganic material by dissolution in hot toluene, the extraction