
**Petroleum products — Determination
of base number — Perchloric acid
potentiometric titration method**

*Produits pétroliers — Détermination de l'indice de base — Méthode par
titrage potentiométrique à l'acide perchlorique*



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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3771 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

This third edition cancels and replaces the second edition (ISO 3771:1994), which has been technically revised.

Petroleum products — Determination of base number — Perchloric acid potentiometric titration method

WARNING — The use of this International Standard may involve hazardous materials, operations and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies a method for the determination of basic constituents in petroleum products by potentiometric titration with perchloric acid in glacial acetic acid.

The constituents that can be considered to have basic characteristics include organic and inorganic bases, amino compounds, salts of weak acids (e.g. soaps), basic salts of polyacid bases, and salts of heavy metals.

The ranges of base number values for which precision values for the method have been established are:

- unused oils: base numbers from 3 to 45;
- additive concentrates: base numbers from 5 to 45;
- used oils: base numbers from 3 to 30.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

base number

w_{BN}

quantity of perchloric acid, expressed in terms of the equivalent number of milligrams of potassium hydroxide, required to titrate 1 g of sample dissolved in the specified solvent to a well-defined inflection point, as specified in this International Standard

4 Principle

The test sample is dissolved in an essentially anhydrous mixture of toluene, acetone and glacial acetic acid, and titrated with a standard volumetric solution of perchloric acid in glacial acetic acid using a potentiometric titrimeter. A combination pH-Ag/AgCl glass electrode (6.2) is used. The meter readings are plotted against the corresponding volumes of titrating solution, and the endpoint is taken as the last inflection in the resulting curve.

5 Reagents

During the analysis, use only reagents of recognized analytical grade, and water equivalent to Grade 3 of ISO 3696.