

Liquefied petroleum gases - Determination of dissolved residues - High temperature Gas chromatographic method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

**Liquefied petroleum gases - Determination of dissolved
residues - High temperature Gas chromatographic method**

Gaz de pétrole liquéfié - Détermination des résidus
dissous - Méthode par chromatographie en phase
gazeuse, à haute température

Flüssiggas - Bestimmung der gelösten Rückstände -
Hochtemperatur-Gaschromatographie-Verfahren

This European Standard was approved by CEN on 24 April 2017.

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European foreword

This document (EN 15470:2017) has been prepared by Technical Committee CEN/TC 19 “Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2018, and conflicting national standards shall be withdrawn at the latest by January 2018.

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

This document supersedes EN 15470:2007.

The main changes in this version being:

- a) numerous changes of both technical and editorial nature have been made to add clarity to the text;
- b) clarification that the use of a drying agent in the desiccator is not recommended;
- c) the description of the equipment used has been improved;
- d) Formula (1) has been corrected for an error;
- e) small changes in the vent line (6.6) and the flasks (6.7) in order to improve the technical safety of the method;
- f) information contained in Annex B that deemed to be obsolete has been removed.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies a method for determining the dissolved residual matter in liquefied petroleum gases (LPG), in the range of 40 mg/kg to 100 mg/kg. Higher concentrations can be determined by adjusting the sample size.

The dissolved residue is the amount of organic compounds which is detectable by gas chromatography after evaporation of the sample at ambient temperature and then in an oven at 105 °C.

This method is not suitable for detecting solid materials or for possibly high molar mass polymers (>1 000 g/mol).

From the analysis of a limited LPG sample size (50 g to 75 g) this method allows obtaining information on the potential origin of the residue (gasoil, lubricants, plasticizers, etc.).

The precision data of the method have been determined from 20 mg/kg to 100 mg/kg. For a higher content of residue, the precision has not been tested.

NOTE An alternative European Standard, EN 15471 [1], specifies a gravimetric method.

WARNING — The use of this standard can involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of users of this standard to take appropriate measures to ensure the safety and health of personnel prior to application of the standard, and fulfil statutory and regulatory requirements for this purpose.

2 Normative references

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

EN ISO 4257, *Liquefied petroleum gases - Method of sampling (ISO 4257:2001)*

3 Terms and definitions

For the purposes of this document, the following term and definition applies.

3.1

liquefied petroleum gas

LPG

petroleum gas that can be stored and/or handled in the liquid phase under moderate conditions of pressure and at ambient temperature, consisting predominantly of propane and butanes, with small proportions of propene, butenes and pentanes/pentenenes

4 Principle

A known mass of LPG, between 50 g and 75 g, is sampled and evaporated in a standard small flask. The residue is heated in an oven at 105 °C for 1 h. It is then diluted with a solvent and one internal standard is added. The mixture is then analysed by a capillary gas chromatography and quantified by the internal standard method.