SLOVENSKI STANDARD
SIST EN 377:1996

01-oktober-1996

Maziva za uporabo v aparatih in pripadajoḷ i regulacijski opremi, ki uporabljajo gorljive pline, razen tistih, ki se uporabljajo v industrijskih procesih

Lubricants for applications in appliances and associated controls using combustible gases except those designed for use in industrial processes

Schmierstoffe für die Anwendung in Geräten und zugehörigen Stell-Geräten für Brenngase außer denjenigen, die für die Anwendung in industriellen Prozessen vorgesehen sind

Lubrifiants destinés aux appareils et équipement associés utilisant les combustibles gazeux a l'exception des appareils spécifiquement destinés a un usage industriel

Ta slovenski standard je istoveten z: **EN 377:1993**

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EUROPEAN STANDARD

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EN 377:1993

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Descriptors: Household appliances, gas appliances, lubricants, classifications, specifications, physicochemical properties, tests

English version

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This European Standard was approved by CEN on 1993-04-25. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Contents list

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 108 "Sealing materials and lubricants for gas appliances and gas equipment".

This European Standard has been prepared under a mandate given to CEN by the Commission of the European Communities and the European Free Trade Association, and supports essential requirements of EC Directive(s).

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of an identical text or by endorsement, at the latest by November 1993, and conflicting national standards shall be withdrawn at the latest by November 1993.

In accordance with the CEN/CENELEC Internal Regulations, following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This standard specifies the essential physical and chemical characteristics of lubricants to be used in gas and associated controls appliances using combustible gases except those designed for use in industrial processes.

Judgement on the suitability of the use of these lubricants for any given equipment is not the object of the present standard. This has to be verified by functional tests laid down in the appropriate appliance or control standards.

Notwithstanding the limits of operating temperature covered by this Standard, it may be necessary to check any specific operating temperature by functional testing and compatibility trials.

The lubricants covered by this standard are compatible with copper and copper alloys. Compatibility with other metals - e.q. aluminium and aluminium alloys (which might be corroded by alkaline soaps) - has to be confirmed by long term functional tests at the maximum working temperature.

This standard contains an informative annex A on the preparation of a standard reference elastomer used for testing the compatibility with elastomers.

1 Scope

This standard specifies requirements and methods of test for lubricants to be used in gas appliances of all categories including auxiliary equipment mounted or intended to be mounted on such appliances and which may be in contact with combustible gases, except those designed for use in industrial processes.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard. For undated references the latest edition of the publication referred to applies.

ISO 1817:1985	Rubber vulcanized - Determination of the effect of liquids
ISO 2160:1985	Petroleum products - Corrosiveness to copper - Copper strip test
ISO 3219:1977	Plastics - Polymers in the liquid, emulsified or dispersed state - Determination of viscosity with a rotational viscometer working at defined shear rate
ISO 6743-9:1987	Lubricants, industrial oils and related products (class L) - Classification - Part 9 Family X (Greases)

3 Classification of the Lubricants

The manufacturer shall declare the temperature class of the lubricant as given in table 1.

Table 1 : Temperature classes

Range of operating temperature (°C)	From	0	0	0	0	0
	to	60	90	120	140	160
Class		A	B	C	D	E

4 Requirements

4.1 Behaviour at low temperature

The flow pressure of the lubricant, determined according to 5.1 shall not exceed 1500 mbar.

4.2 Behaviour at high temperature

The loss in mass of the lubricant, tested according to 5.2, shall not exceed 8 % of the initial value.

In addition, the apparent dynamic viscosity of the lubricant shall not be increased by more than 100 % or decreased by more than 50 % compared with the initial value.

4.3 **Resistance to Gas**

The increase in mass of the lubricant in gaseous butane, tested according to 5.3, shall not exceed 10 % of the initial value.

4.4 **Compatibility with Copper**

The appearance of copper test strips tested in accordance with 5.4 shall give a classification 1 or less for classes A to D and 2 or less for class E in accordance with clause 5 of ISO 2160:1985 when compared with the reference strips.

4.5 **Compatibility with Elastomers**

The increase in volume of the standard reference Nitrile elastomer, tested in lubricant according to 5.5 shall not exceed 10 % of the initial value.

The maximum change in hardness is 10 IRHD.

5 Methods of test

5.1 Behaviour at low temperature

5.1.1 *Principle*

The method consists of determining the relative flow pressure of the lubricant at 0 °C, that is to say, the pressure required for complete expulsion of the lubricant contained in a nozzle.

5.1.2 *Apparatus (Figure 1)*

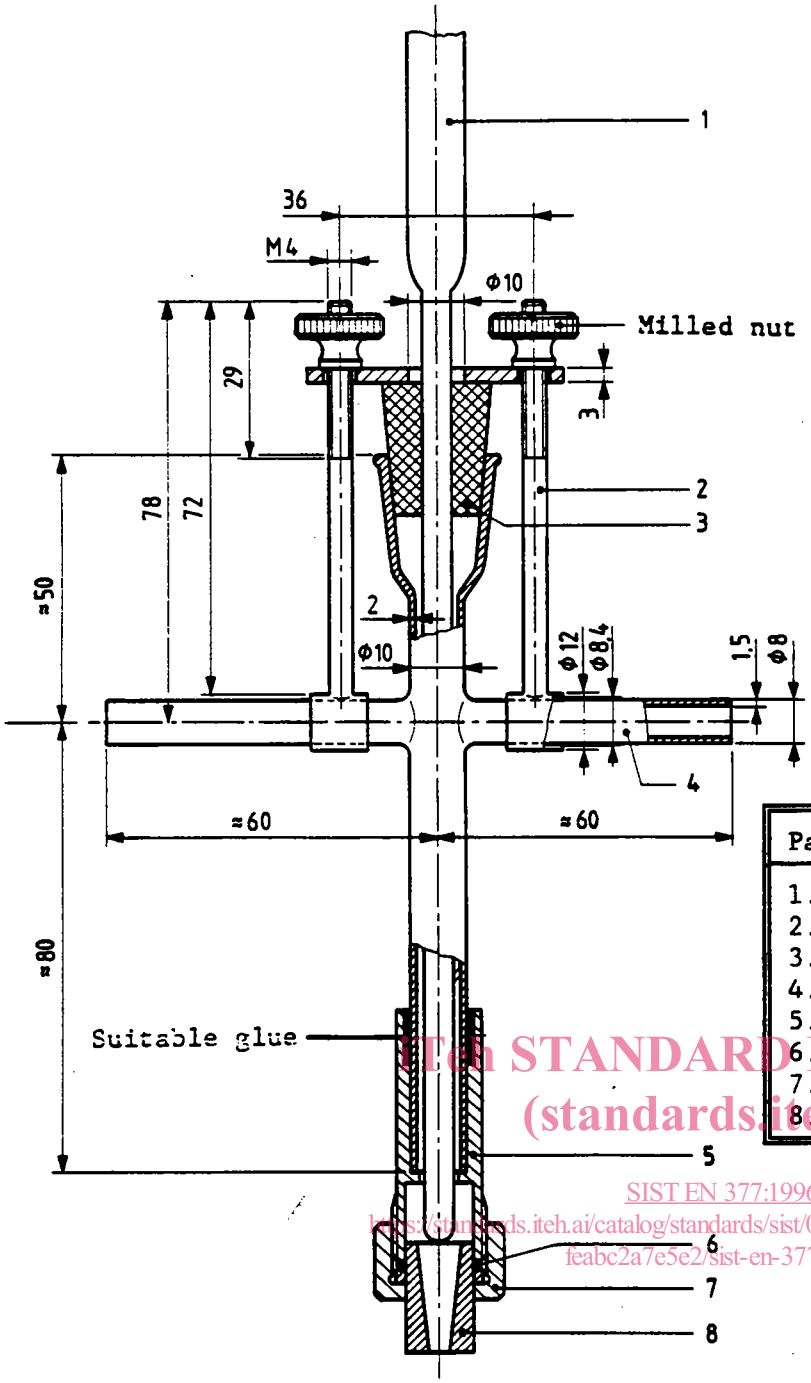
The apparatus comprises a tube in the shape of a cross made from glass or metal, with a nozzle and its holder at the end of the lower tube section and a stopper with a hole for the thermometer at the top end of the upper tube section complete with holder. One of the lateral tube sections is connected to an air supply under pressure, the other to a pressure gauge.

These different components are described below:

- Nozzle
  The nozzle (figure 3) is a steel cylinder having a collar and with an orifice in the form of a truncated cone. It is mounted in a nozzle holder (figure 4) which, in turn, screws onto a brass casing (figure 2) retained with a suitable glue.

- Thermometer
  The thermometer measures the test temperature with an accuracy ± 1 °C. It is inserted into the vertical section of the test apparatus where it is held in position by a rubber stopper through which it passes and which fits into the enlarged section of the tube thus locating the thermometer in the centre of the triangular orifice at the entry to the nozzle in conjunction with the casing.

Dimensions in mm



Parts list
1. Thermometer
2. Holder
3. Stopper
4. Glass or metal tube
5. Casing fixed with glue
6. O-ring
7. Nozzle holding unit
8. Nozzle

Figure 1 : Overall view of the Assembly