

ICS 75.120

English Version

**Fire-resistant hydraulic fluids - Classification and specification -
Guidelines on selection for the protection of safety, health and
the environment**

Fluides difficilement inflammables - Classification et
spécification - Principes directeurs de sélection de fluides
et de considération des risques de sécurité et
d'environnement

Schwerentflammbare Druckflüssigkeiten - Klassifikation
und Spezifikation - Auswahlrichtlinien zur Gewährleistung
von Sicherheit, Gesundheit und Umweltschutz

This Technical Report was approved by CEN on 24 September 2005. It has been drawn up by the Technical Committee CEN/TC 19.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 General requirements	6
5 Classification of fire-resistant fluids	7
6 Compliance with essential health and safety requirements (EHSR)	8
7 Hazard identification	10
8 Risk estimation	13
9 Hazard control measures	14
10 Continuity of properties	16
Annex A (informative) Examples for local regulations applying to the approval and use of hydraulic fluids	17
Annex B (informative) Fire-resistance tests and guidance on performance	18
Annex C (informative) Examples of fire risk assessment procedures for hydraulic fluids	22
Annex D (informative) Tests suitable for monitoring the condition of hydraulic fluids in service	35
Bibliography	37

Foreword

This CEN Technical Report (CEN/TR 14489:2005) has been prepared by Technical Committee CEN/TC 19 “Petroleum products, lubricants and related products”, the secretariat of which is held by NEN.

This document has been prepared under mandate M/238 given to CEN by the European Commission and the European Free Trade Association along with other standards on fire-resistant hydraulic fluids to be complementary to the regulatory measures contained in various EU Directives.

The mandated work of CEN/TC 19 is to develop European Standards for specifications and testing conditions applicable to fire-resistant hydraulic fluids.

Introduction

The function of this Technical Report is to provide suppliers and users of equipment guidance on how compliance with the essential health and safety requirements (EHSR's) incorporated in both Product (Article 95) and User (Article 137/138) Directives issued by the European Union may be achieved in respect of the use of fire-resistant hydraulic fluids. It builds upon the guidance provided in EN 1050 on the principles of risk assessment. EN 1050 in turn supports Directive 92/104/EEC [1].

The document was considered necessary because the specialised nature of fire-resistant fluids and the tests used to quantify their properties may not in general be familiar to prospective machinery manufacturers and users. Because several Directives deal with the prevention of fire it is necessary to consider other aspects in addition to the tests used to quantify fire properties.

The use of fire-resistant hydraulic fluids is a fire protection measure. A fire occurs if combustible materials or explosive gases, oxygen and an ignition source are all present at the same time. If there is a danger of an ignition source being present when hydraulic installations are in use, one method of improving safety may be to replace more combustible mineral oil by a fire-resistant hydraulic fluid. Fire-resistant fluids provide fire protection. Their use, however, shall not jeopardise other safety measures as, in addition to requirements for fire resistance, there are additionally requirements for assessing effects on the health of workers and, increasingly, on potential effects on the environment. Guidance on the information needed is contained in this Technical Report.

IMPORTANT — This document does not purport to address all of the safety problems associated with the use of hydraulic systems. It is concerned with the use of fire-resistant fluids as a means of reducing the risk of fire. It is the responsibility of the user of this document to establish appropriate safety and health practices to reduce other safety risks and to determine the applicability of regulatory regimes.

1 Scope

This Technical Report gives guidance on the achievement of compliance with Essential Health and Safety Requirements (EHSR) by the selection of fire-resistant fluids or by other means. It includes consideration of the selection of fluids with lower levels of fire resistance and of mineral oil, with appropriate additional safety measures, where this option may be considered to be most satisfactory during operation.

This Technical Report is concerned with assessing the fire resistance, health properties and effects on the environment, but does not cover requirements for their general physical and chemical properties, which are detailed in EN ISO 12922.

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.

EN 1050:1996, *Safety of machinery - Principles for risk assessment*.

EN ISO 2592, *Determination of flash and fire points – Cleveland open cup method (ISO 2592:2000)*.

EN ISO 6743-4, *Lubricants, industrial oils and related products (class L) – Classification – Part 4: Family H (Hydraulic systems) (ISO 6743-4:1999)*.

EN ISO 12922, *Lubricants, industrial oils and related products (class L) - Family H (Hydraulic systems) - Specifications for categories HFAE, HFAS, HFB, HFC, HFDR and HFDU (ISO 12922:1999, including Technical Corrigendum 1:2001))*.

EN ISO 14935, *Petroleum and related products – Determination of wick flame persistence of fire-resistant fluids (ISO 14935:1998)*.

ISO 3448, *Industrial liquid lubricants - ISO viscosity classification*.

ISO 7745, *Hydraulic fluid power – Fire-resistant (FR) fluids – Guidelines for use*.

3 Terms and definitions

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

3.1

safety

freedom from unacceptable risk

[ISO/IEC Guide 51:1999]

3.2

risk

combination of the probability of occurrence of harm and the severity of that harm

[ISO/IEC Guide 51:1999]

3.3

harm

physical injury or damage to the health of people, or damage to property or the environment