

**BUREAU OF INDIAN STANDARDS****DRAFT FOR COMMENTS ONLY**

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*भारतीय मानक मसौदा*

स्नेहक, औद्योगिक तेल और संबंधित उत्पाद (कक्षा एल) - परिवार एच (हाइड्रोलिक प्रणाली) - हाइड्रोलिक तरल की श्रेणियाँ एचएफएई, एचएफएएस, एचएफबी, एचएफसी एचएफडीआर, एवं एचएफडीयू के विशिष्ट

*Draft Indian Standard*

**LUBRICANTS, INDUSTRIAL OILS AND RELATED PRODUCTS (CLASS L) — FAMILY H (HYDRAULIC SYSTEMS) — SPECIFICATIONS FOR HYDRAULIC FLUIDS IN CATEGORIES HFAE, HFAS, HFB, HFC, HFDR, AND HFDU**

(ICS No. 75.120)

Lubricants And their Related Products Sectional Committee,  
PCD 25

Last date for receipt of comment is  
**22 December 2023**

**NATIONAL FOREWORD***(Formal clauses will be added later)*

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’.
- Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 2160 Petroleum products — Corrosiveness to copper — Copper strip test	IS 1448 (Part 15) : 2004 / ISO 2160 : 1998 Methods of Test for Petroleum and Its Products - Part 15: Petroleum Products - Corrosiveness to Copper - Copper Strip Test	Identical
ISO 3104 Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity	IS 1448 (Part 25/Sec 1) : 2018 / ISO 3104 : 1994 Methods of test for petroleum and its products Part 25 Transparent and opaque liquids — Section 1 Determination of kinematic viscosity and calculation of dynamic viscosity ( <i>second revision</i> )	Identical

ISO 3170 Petroleum liquids — Manual sampling	IS 1447 (Part 1) : 2021 Methods of Sampling of Petroleum and its Products Part 1 Manual Sampling ( <i>second revision</i> )	Not Equivalent
ISO 3448 Industrial liquid lubricants — ISO viscosity classification	IS 9466 : 2020 Viscosity classification for industrial liquid lubricants ( <i>first revision</i> )	Not Equivalent
ISO 3675 Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method	IS 1448 (Part 16) : 2014 / ISO 3675 : 1998 Methods of test for petroleum and its products Part 16 Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method ( <i>fourth revision</i> )	Identical
ISO 4259-2 Petroleum and related products — Precision of measurement methods and results — Part 2 : Interpretation and application of precision data in relation to methods of test	IS 17315 (Part 2) : 2019 / ISO 4259-2 : 2017 Petroleum and related products — Precision of measurement methods and results interpretation and application of precision data in relation to methods of test	Identical
ISO 5598 Fluid power systems and components — Vocabulary	IS 10416 : 2019 / ISO 5598 : 2008 Fluid Power Systems and Components - Vocabulary ( <i>second revision</i> )	Identical
ISO 6072 Rubber — Compatibility between hydraulic fluids and standard elastomeric materials	IS 15179 : 2022 / ISO 6072 : 1986 Hydraulic fluid power - Compatibility between elastomeric materials and fluids	Identical
ISO 6247 Petroleum products — Determination of foaming characteristics of lubricating oils	IS 1448 (Part 67) : 2020 Methods of test for petroleum and its products determination of foaming characteristics of lubricating oils ( <i>second revision</i> )	Modified with ISO 6247 : 1998
ISO 6296 Petroleum products — Determination of water — Potentiometric Karl Fischer titration method	IS 1448 (Part 175) : 2020 / ISO 6296 : 2000 Methods of test for petroleum and its products Part 175 Petroleum products — Determination of water — Potentiometric Karl Fischer titration method	Identical
ISO 6618 Petroleum products and lubricants — Determination of acid or base number — Colour-indicator titration method	IS 1448 (Part 188) : 2021 / ISO 6618 : 1997 Methods of Test for petroleum and its products Part 188 Petroleum products and lubricants — Determination of acid or base number — Colour-indicator titration method	Identical
ISO 6619 Petroleum products and lubricants — Neutralization number — Potentiometric titration method	IS 1448 (Part 2) : 2007 / ISO 6619 : 1988 Methods of test for petroleum and its products Part 2 Petroleum products and lubricants — Neutralization number — Potentiometric titration method ( <i>second revision</i> )	Identical
ISO 6743-4 Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (Hydraulic systems)	IS 11159 (Part 5) : 2019 / ISO 6743-4 : 1999 Lubricants, industrial oils and related products (Class L) - Classification: Part 5 Family H (Hydraulic Systems) ( <i>first revision</i> )	Identical
ISO 7120 Petroleum products and lubricants — Petroleum oils and other fluids — Determination of rust-preventing	IS 1448 (Part 96) : 2019 / ISO 7120 : 1987 Methods of test for petroleum and its products Part 96 petroleum products and lubricants — Petroleum oils and other fluids — Determination of rust —	Identical

characteristics in the presence of water	Preventing characteristics in the presence of water ( <i>first revision</i> )	
ISO 7745 Hydraulic fluid power — Fire-resistant (FR) fluids — Requirements and guidelines for use	15178 : 2021 / ISO 7745 : 2010 Hydraulic Fluid Power - Fire-Resistant ( FR ) Fluids - Requirements and Guidelines for Use ( <i>first revision</i> )	Identical
ISO 9120 Petroleum and related products — Determination of air-release properties of steam turbine and other oils — Impinger method	IS 1448 (Part 102) : 2023 Methods of test for petroleum and its products Part 102 Determination of air release value ( <i>first revision</i> )	Not equivalent
ISO 12185 Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method	IS 1448 (Part 167) : 2018 / ISO 12185 : 1996 Methods of test for petroleum and its products Part 167 Determination of density - Oscillating U - Tube method	Identical
ISO 14935 Petroleum and related products — Determination of wick flame persistence of fire-resistant fluids	IS 1448 (Part 183) : 2021 / 14935 : 2020 Methods of test for petroleum and its products - Part 183 Petroleum and related Products -Determination of wick flame persistence of fire-resistant fluids	Identical
ISO 15029-2 Petroleum and related products — Determination of spray ignition characteristics of fire resistant fluids — Part 2: Spray test — Stabilised flame heat release method	IS 1448 (Part 184) : 2021 / ISO 15029-2:2018 Methods of Test for Petroleum and its Products Part 184 petroleum and related products - Determination of spray ignition characteristics of fire-resistant fluids spray test - Stabilised flame heat release method	Identical
ISO 20623 Petroleum and related products — Determination of the extreme-pressure and anti-wear properties of lubricants — Four-ball method (European conditions)	IS 1448 (Part 170) : 2021 / ISO 20623 : 2017 Methods of test for petroleum and its products Part 170 Petroleum and related products Determination of the extreme pressure and anti-wear properties of lubricants Four-ball method European conditions	Identical
ISO 20823 Petroleum and related products — Determination of the flammability characteristics of fluids in contact with hot surfaces — Manifold ignition test	IS 1448 (Part 185) : 2021 / ISO 20823 : 2003 Methods of Test for Petroleum and its products - Part 185 Petroleum and Related Products- Determination of the flammability characteristics of fluids in Contact with hot surfaces - Manifold Ignition Test	Identical

The technical committee has reviewed the provisions of the following International Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ISO 760	Determination of water Karl Fischer method (General method)

ISO 4263-3	Petroleum and related products — Determination of the ageing behaviour of inhibited oils and fluids using the TOST test — Part 3: Anhydrous procedure for synthetic hydraulic fluids
ISO 4404-1	Petroleum and related products — Determination of the corrosion resistance of fire-resistant hydraulic fluids — Part 1: Water-containing fluids
ISO 4404-2	Petroleum and related products — Determination of the corrosion resistance of fire-resistant hydraulic fluids — Part 2: Non-aqueous fluids
ISO 14635-1	Gears — FZG test procedures — Part 1: FZG test method A/8,3/90 for relative scuffing loadcarrying capacity of oils
ISO 15029-1	Petroleum and related products — Determination of spray ignition characteristics of fire resistant fluids — Part 1: Spray flame persistence — Hollow-cone nozzle method
ISO 20763	Petroleum and related products – Determination of anti-wear properties of hydraulic fluids – Vane pump method
ISO 20764	Petroleum and related products – Preparation of a test portion of high-boiling liquids for the determination of water content – Nitrogen purge method
ISO 20783-1	Petroleum and related products - Determination of emulsion stability of fire-resistant fluids — Part 1: Fluids in category HFAE
ISO 20783-2	Petroleum and related products — Determination of emulsion stability of fire-resistant fluids — Part 2: Fluids in category HFB
ISO 20843	Petroleum and related products — Determination of pH of fire-resistant fluids within categories HFAE, HFAS and HFC
ISO 20844	Petroleum and related products — Determination of the shear stability of polymer-containing oils using a diesel injector nozzle
EN 14832	Petroleum and related products — Determination of the oxidation stability and corrosivity of fire-resistant phosphate ester fluids
EN 14833	Petroleum and related products — Determination of the hydrolytic stability of fire-resistant phosphate ester fluids

The standard also makes a reference to the BIS Certification Marking of the product. Details of which are given in National Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that off specified value in this standard.

NOTE — For getting a copy ISO 12922 : 2020 kindly contact:

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## **NATIONAL ANNEX A**

*(National Foreword)*

### **A-1 BIS CERTIFICATION MARKING**

The product may also be marked with the Standard Mark.

**A-1.1** The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations made thereunder. The details of conditions under which the license for use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.