**IS XXXX : 2024**

***भारतीय मानक***

***Indian Standard***

 **ISO 12922 : 2020**

 (*Superseding IS 10532 (Part 1) : 1983, 10532 (Part 2) : 1983, 10532 (Part 3) : 1983, 10532 (Part 4) : 2019 & 10532 (Part 5) : 2016*

 ***स्नेहक, औद्योगिक तेल और संबंधित***

 ***उत्पाद (कक्षा एल) — परिवार एच***

 ***(हाइड्रोलिक प्रणाली)***

 ***हाइड्रोलिक तरल की श्रेणियाँ एचएफएई,***

 ***एचएफएएस, एचएफबी, एचएफसी,***

 ***एचएफडीआर, एवं एचएफडीयू के* विशिष्टि**

 **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 75.120

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भारतीय मानक ब्यूरो

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मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002

 MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI - 110002

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**October 2024 Price Group X**

Lubricants and their Related Products Sectional Committee, PCD 25

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 12922: 2020 ‘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’ issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Lubricants and their Related Products Sectional Committee and approval of the Petroleum, Coal and Related Products Division Council.

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:

a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’.

b) 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:

|  |  |  |
| --- | --- | --- |
| *International Standard* | *Corresponding Indian Standard* | *Degree of Equivalence* |
| 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 (*third revision*) | 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 (*second revision*) | Identical |
| [ISO 3675](https://www.iso.org/obp/ui/#iso:std:iso:3675:en) 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 (*fourth revision*)  | 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 Part 2 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 (*second revision*) | 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 6296](https://www.iso.org/obp/ui/#iso:std:iso:6296:en) 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](https://www.iso.org/obp/ui/#iso:std:iso:6618:en) 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](https://www.iso.org/obp/ui/#iso:std:iso:6619:en) 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 (*second revision*) | 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 : 2015 Lubricants, industrial oils and related products (Class L) — Classification: Part 5 Family H (Hydraulic Systems) (*first revision*) | Identical |
| [ISO 7120](https://www.iso.org/obp/ui/#iso:std:iso:7120:en) Petroleum products and lubricants — Petroleum oils and other fluids — Determination of rust-preventing characteristics in the presence of water | 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 — Preventing characteristics in the presence of water (*first revision*) | Identical  |
| ISO 7745 Hydraulic fluid power — Fire-resistant (FR) fluids — Requirements and guidelines for use | IS 15178 : 2021 / ISO 7745 : 2010 Hydraulic Fluid Power — Fire-Resistant ( FR ) Fluids — requirements and guidelines for use (*first revision*) | Identical  |
| [ISO 12185](https://www.iso.org/obp/ui/#iso:std:iso:12185:en) 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 / ISO 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) (*first revision*) | 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:

|  |  |
| --- | --- |
| *International Standard* | *Title* |
| ISO 760 | Determination of water Karl Fischer method (General method) |
| ISO 3170  | Petroleum liquids — Manual sampling |
| [ISO 3448](https://www.iso.org/obp/ui/#iso:std:iso:3448:en)  | Industrial liquid lubricants — ISO viscosity classification |
| ISO 4263-2 | Petroleum and related products — Determination of the ageing behaviour of inhibited oils and fluids — TOST test — Part 2: Procedure for category HFC hydraulic fluids |
| 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 6247](https://www.iso.org/obp/ui/#iso:std:iso:6247:en)  | Petroleum products — Determination of foaming characteristics of lubricating oils |
| ISO 9120  | Petroleum and related products — Determination of air-release properties of steam turbine and other oils — Impinger method |
| ISO 14635-1 | Gears — FZG test procedures — Part 1: FZG test method A/8,3/90 for relative scuffing load carrying 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.

**NATIONAL ANNEX A**

(*National Foreword*)

**A-1 BIS CERTIFICATION MARKING**

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.