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भारतीय मानक मसौदा
हेक्सेन, औद्योगिक विलायक ग्रेड – विशिष्ट

Draft Indian Standard

HEXANE, INDUSTRIAL SOLVENT GRADE – SPECIFICATION

(ICS 75.080, 87.060.30)

Petroleum and their Related Products of Synthetic
or Biological or Natural Origin Sectional Committee,
PCD 03

Last date for receipt of
comment is **9 December**
2024

FOREWORD

(Formal clause to be added later)

Hexane is an organic solvent that is used commonly in paints, lacquers, glues, printing, polymer, and rubber industries. It is used for polyethylene manufacturing, where polymerization of ethylene takes place in hexane media. It is also used for halogenated Iso-Butylene-Isoprene rubber manufacturing process. Hexane is also used in food and pharmaceutical industry. However, this standard covers the requirements for hexane to be used for industrial applications other than food and pharmaceuticals. Specification for hexane intended for food industries is covered in IS 3470.

The following alternate test methods are available for the characteristics mentioned in Table 1, but in case of dispute, the methods mentioned in Table 1 shall be the referee method.

<i>Characteristic</i>	<i>Methods of Test</i>
Saybolt Colour	ASTM D156, ASTM D6045
Density at 15 °C	ASTM D4052, ASTM D1298
Water content	ASTM D6304, ASTM E1064
Benzene content	ASTM D6730 / ASTM D4367 / ASTM D6229
Sulphur content	ASTM D5453/ ASTM D7183 / ASTM D5623
Distillation	ASTM D1078

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 of the specified value in this standard.

1 SCOPE

This draft standard prescribes the requirements, methods of sampling and test for solvent grade hexane for

industrial applications, other than food and pharmaceuticals.

2 REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are advised to use the latest editions of the standards indicated below:

<i>IS No./International Standards</i>	<i>Title</i>
IS 1070 : 2023	Reagent Grade Water — Specification (<i>fourth revision</i>)
IS 1260 (Part 1): 1973	Pictorial marking for handling and labelling goods Part 1 Dangerous goods (<i>first revision</i>)
IS 1446: 2002	Classification of dangerous goods (<i>second revision</i>)
IS 1447 (Part 1): 2021	Methods of Sampling of Petroleum and its Products Part 1 Manual Sampling (<i>second revision</i>)
IS 1448	Methods of test for petroleum and its products
(Part 14): 2019	Colour By Saybolt Chromometer (<i>first revision</i>)
(Part 16): 2014/ISO 3675:1998	Crude Petroleum and Liquid Petroleum Products — Laboratory Determination of Density — Hydrometer Method (<i>fourth revision</i>)
(Part 18): 2020	Distillation of Petroleum Products (<i>third revision</i>)
(Part 119): 1985	Aromatic traces in light saturated Hydrocarbons by gas chromatography
(Part 160): 2017/ ISO 20846: 2011	Determination of Sulphur Content of Automotive Fuels — Ultraviolet Fluorescence Method
(Part 167): 2018/ ISO 12185: 1996	Determination of Density — Oscillating U-Tube Method
(Part 175): 2020/ ISO 4264: 2018	Petroleum Products — Determination of Water Potentiometric Karl Fischer Titration Method
(Part 182): 2020/ ISO 12937: 2000	Petroleum Products — Determination of Water — Coulometric Karl Fischer Titration Method
ASTM D2710	Standard Test Method for Bromine Index of Petroleum Hydrocarbons by Electrometric Titration
ASTM D5134	Standard Test Method for Detailed Analysis of Petroleum Naphthas through <i>n</i> -Nonane by Capillary Gas Chromatography
ASTM D6730	Standard Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 100-Metre Capillary (with Precolumn) High-Resolution Gas Chromatography

3 REQUIREMENTS

3.1 General

The material shall be a petroleum distillate fraction that contains a high proportion of n-hexane and shall be clear colourless liquid with characteristic petroleum like odour, free from sediment, suspended matter and moisture.

3.2 The material shall also comply with the requirements given in Table 1 when tested according to appropriate methods given in col 4 of Table 1.

4 PACKING AND MARKING

4.1 Packing

4.1.1 The material shall be packed in such containers and packages as agreed to between the purchaser and the vendor, subject to the provisions of law in force from time to time. All containers in which the material is packed shall be dry, clean, free from substances soluble in anhydrous ethanol, and leak-proof.

4.1.2 Necessary safeguards against the risk arising from the storage and handling of large volumes of flammable liquids (*see* IS 1446) shall be provided and all due precautions shall be taken [*see* IS 1260 (Part 1)] at all times to prevent accidents by fire or explosion.

4.2 Marking

4.2.1 Each container shall be marked with the following information appropriately:

- a) Name of the material;
- b) Manufacturer's name, initials or trade-mark, if any;
- c) Net mass of material;
- d) Date of manufacturing or packaging;
- e) Identification in code number or batch number to enable the lot of consignment or manufacture to be traced back from records; and
- f) Any other statutory requirements.

4.2.3 Each container shall have the caution label 'FLAMMABLE' together with the corresponding symbol for labelling of dangerous goods as given in IS 1260 (Part 1).

4.3.3 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.

5 SAMPLING

The sampling of the material shall be carried out in accordance with IS 1447 (Part 1).

6 TEST METHODS

6.1 Tests shall be conducted according to the methods prescribed in col 4 of Table 1.

6.2 Quality of Reagents

Unless otherwise specified, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities, which affect the results of analysis.

Table 1 Requirements for Hexane, Industrial Grade

(Clause 3.2)

Sl No.	Characteristics	Requirements	Methods of Test
(1)	(2)	(3)	(4)
(i)	Appearance	Clear colorless liquid, free from suspended particles	Visual
(ii)	Density at 15 °C, gm/cc	0.66 to 0.69	IS 1448 (Part 167) ¹ / IS 1448 (Part 16)
(iii)	Moisture, mg/ kg, <i>Max</i>	200	IS 1448 (Part 175) / IS 1448 (Part 182) ¹
(iv)	Saybolt Colour, <i>Min</i>	+ 25	IS 1448 (Part 14)
(v)	n-hexane, percent by mass, <i>Min</i>	37.0	ASTM D6730 / ASTM D5134
(vi)	Aromatics, percent by mass, <i>Max</i>	0.25	IS 1448 (Part 119)
(vii)	Benzene, percent by mass, <i>Max</i>	0.2	IS 1448 (Part 119)
(viii)	Bromine index, mg Br/100 gm, <i>Max</i>	50	ASTM D2710 ¹
(ix)	Sulphur, mg/kg, <i>Max</i>	2	IS 1448 (Part 160)
(x)	Distillation – Initial Boiling Point, °C, <i>Min</i>	63	IS 1448 (Part 18)
(xi)	Distillation, Dry Point, °C, <i>Max</i>	80	IS 1448 (Part 18)

¹ In case of disputes, this method shall be the referee method.