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उत्पाद मैनुअल
टॉल्युईन – विशिष्टि
IS 537: 2025 के अनुसार
PRODUCT MANUAL FOR
TOLUENE – SPECIFICATION
ACCORDING TO IS 537: 2025

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification underScheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations,2018 for variousproducts. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या **IS No.**	:	IS 537 : 2025
	शीर्षक **Title**	:	**टॉल्युईन – विशिष्टि** Toluene – Specification
	संशोधनों की संख्या **No. of amendments**	:	0
2.	नमूना दिशानिर्देश **Sampling Guidelines**		
a)	**कच्चा माल** Raw material	:	No specific requirements
b)	समूहीकरण दिशानिर्देश **Grouping Guidelines**	:	NA
c)	नमूने का परिमाण **Sample Quantity**	:	1 Litre
d)	**परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर** **Parameters to be Declared in Test Request**	:	i) Name of the product Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची **List of Test Equipment**	:	कृपया Annex-A देखें Please see Annex –A

4.	निरीक्षण और परीक्षण की स्कीम **Scheme of Inspection and Testing**	:	कृपया Annex-Bदेखें Please see Annex – B
5.	एक दिन में संभावित परीक्षण **Possible tests in a day**	:	All tests are possible in a day.
6.	**लाइसेंस का दायरा /Scope of the Licence:**		
	Licence is granted to use Standard Mark as per IS 537 : 2025 with the following scope:		
	उत्पाद का नाम Name of the product		TOLUENE

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9, Bahadur Shah Zafar Marg,
New Delhi – 110002

ANNEX – A

LIST OF TEST EQUIPMENT

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Toluene percent by mass (Table 1, Sl. No. i)	**As per ASTM D 7504** Gas chromatograph (As per ASTM D 7504) equipped with GC Columns Data system, FID, Splitter Injector, Injection device, Syringe, Utility Gas Cylinders - Carrier, makeup and detector gas. Check Samples - High Purity P - Xylene, M-Xylene, Toluene, Ethylbenzene, cumene, o-xylene, styrene, alpha methyl styrene, Phenyl acetylene, benzene, 1,4- dioxane. Volumetric Flask CRMs of known purity for calibration
2.	Appearance (Table 1, Sl. No. ii)	AC Room Heater Thermometer for recording test temperature
3.	Colour Pt- Co Scale (Table 1, Sl. No. iii)	**As per IS 1448 (Part 178)** Spectrophotometer capable of measuring transmitted colour, Absorption cells, 50mm Potassium hexachloroplatinate(IV),K2PtCl6 Cobalt(II) chloride hexahydrate,CoCl.6H2O Hydrochloric acid,
4.	Relative Density at 15.56/ 15.56°C, Density at 20 °C (Table 1, Sl. No. iv)	**As per Annex B of IS 537** Calibrated Bicapillary Pyknometer as per A-2.1 Water Bath as per A 2.2 Bath Thermometer having a range from -8 to 32˚C Weighing Balance (L. C - 0.1 mg) Hot air oven Toluene, Chromic acid,Anhydrous Acetone **As per IS 1448 (Part 178)** Density meter, Circulating constant-temperature bath, Calibrated temperature Sensor, Calibration fluids, Water, conforming to ISO 3696 grade 2

5.	Total Sulphur, (Table 1, Sl. No. v)	**As per IS 1448 (Part 160)** Sulphur Analyser equipped with Furnace, Quartz Combustion Tube, flow control, Drier Tube, UV Fluorescence Detector, Microliter syringe, Sample inlet system, Refrigerated circulator, Digital recorder. Analytical Balance Carrier Gas- Inert gas- Argon, Air, Oxygen,Toluene, Xylene, Isooctane – reagent grade for standard sample preparation Dibenzothiophene, Butyl Sulfide, Thionapthene, Quartzwool Sulphur stock solution, QC samples of minimum 2 petroleum materials- Octane, Benzene, toluene Oxidation Reagent- WO_3 **As per Annex C of IS 537** Reduction apparatus, Burette, Pipette Acetone, prapne-2-ol, Nitrogen, Rainey Nickel, NaOH, HCl Dithozone indicator As per IS 1448 (Part 161) Energy-dispersive X-ray fluorescence instrument Diluent Oil Dibenzothiophene (DBT), or Dibutylsulfide (DBS), with a nominal sulfur content of 21,915 % (m/m), or Thionaphthene (Benzothiophene) (TNA), with a nominal sulfur content of 23,890 % (m/m), or Dibutyldisulfide (DBDS), with a nominal sulfur content of 35,950 % (m/m). Reference materials (CRMs)
6.	Distillation range including the temperature 110.6°C at 101.3 kPa (760 mm of Hg pressure) (Table 1, Sl. No. vi)	**As per Annex D of IS 537** Distillation Unit as per C 3 of IS 537 consisting of Distillation Flask 200 ml, Thermometer as per table 5, Draught screen, Ceramic boards, Heater, Condenser, Receiver, Barometer Base Plate
7.	Non-Aromatic Hydrocarbons, (Table 1, Sl. No. vii)	**As per ASTM D 7504** Gas chromatograph (As per ASTM D 7504) equipped with GC Columns Data system, FID, Splitter Injector, Injection device, Syringe, Utility Gas Cylinders - Carrier, makeup and detector gas. Check Samples - High Purity P - Xylene, M-Xylene, Toluene, Ethylbenzene, cumene, o-xylene, styrene, alpha methylstyrene, Phenylacetylene, benzene, 1,4- dioxane. Volumetric Flask CRMs of known purity for calibration

8.	Benzene Content (Table 1, Sl. No. viii)	**As per ASTM D 7504** Gas chromatograph (As per ASTM D 7504) equipped with GC Columns Data system, FID, Splitter Injector, Injection device, Syringe, Utility Gas Cylinders - Carrier, makeup and detector gas. Check Samples - High Purity P - Xylene, M-Xylene, Toluene, Ethylbenzene, cumene, o-xylene, styrene, alpha methylstyrene, Phenylacetylene, benzene, 1,4- dioxane. Volumetric Flask CRMs of known purity for calibration
9.	Water content , (Table 1, Sl. No. ix)	**A per IS 1448 (Part 182)/ IS 1448 (Part 175)** Molecular Sieve Pellets - type 4A, Xylene- reagent grade, Karl Fischer reagents as per IS 1448 part 182, Sodium Dioctlysulfosuccinate – reagent grade, Dry xylene, Water conforming to grade 3 of ISO 3696, Methanol, Automatic coulometric Karl Fischer titrator as per IS 1448 part 182, Non-aerating mixer capable of meeting the homogenization requirements as per IS 1448 part 182. Syringes as per IS 1448 part 182 Weighing Balance,Hot air oven, Sealable bottles or desiccators Volumetric Flask, Cooling bath Hygrometer, Thermometer
10.	Acid wash Colour (Table 1, Sl. No. x)	Containers for Colour Standards, Test Container Hydrochloric Acid, Cobalt Chloride ($CoCl_2.6H_2O$) Ferric Chloride ($FeCl_3.6H_2O$) Potassium Chromate (K_2CrO_4) Potassium Dichromate ($K_2Cr_2O_7$) Sulphuric Acid

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing theStandard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the differenttests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 **RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT**:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : For the purpose of this scheme, a control-unit is defined as the entire quantity of Toluene processed under similar conditions in a single day.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommendedlevels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively,the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirementsof the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In housetesting facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is givenbelow. Column 2 of Table 1 indicates routine tests where test equipment is required in house as "R" or other tests which can be subcontracted as "S". Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as perIS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as "R" in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilitiesor get testing done from BIS recognized/empaneled laboratory or any other laboratory having validNABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least withtest facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different testsgiven in the specification shall be carried out in accordance with the method given in the specification**.** They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize theprovisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 **TEST RECORDS**- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratoryor any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be marked on each container provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 Additional Marking requirements:

a) "For BIS certification details please visit www.bis.gov.in"

b) Any other requirement not specified in the Indian Standard

4. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016.

TABLE 1
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				**Test equipment requirement R: required (or) S: Sub-contracting permitted**	**Levels of Control**		
Cl.	**Requirement**	**Test Method**			**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**				
Table 1, Sl. no. i	Toluene, percent by mass	**ASTM D 7504**	**ASTM D 7504**	**R**	1	Each control unit	-
Table 1, Sl. no. ii	Appearance	**3**	**IS 537**	**R**	1	Each Control Unit	Visual
Table 1, Sl. no. iii	Colour, Pt-Co Scale	**IS 1448:P178**	**IS 1448:P178**	**R**	1	Each control unit	-
Table 1, Sl. no. iv	Relative Density at 15.56/15.56℃ or Density, 20℃	**IS 1448:P167 Annex-B**	**IS 1448:P167 Annex-B**	**R**	1	Each Control Unit	-
Table 1, Sl. no. v	Total Sulphur	**IS 1448:P160 IS 1448:P161 Annex-C**	**IS 1448:P160 IS 1448:P161 Annex-C**	**R**	1	Each Control Unit	-
Table 1, Sl. no. vi	Distillation Range including the temperature 110.6℃ at 101.3 kPa	**Annex D**	**IS 537**	**R**	1	Each Control Unit	-
Table 1, Sl. no. vii	Non Aromatic Hydrocarbons, percent by mass	**ASTM D 7504**	**ASTM D 7504**	**R**	1	Each control unit	-
Table 1, Sl. no. viii	Benzene Content	**ASTM D 7504**	**ASTM D 7504**	**R**	1	Each Control Unit	-
Table 1, Sl. no. ix	Water Content	**IS 1448 (part 182)/Part 175**	**IS 1448 (part 182)/ Part 175**	**R**	1	Each Control Unit	-
Table 1, Sl. no. x	Acid wash Colour	**IS 534**	**Annex-J**	**R**	1	Each Control Unit	

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