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उत्पाद मैन्युअल
टेरिथेलिक एसिड –विशिष्टि
IS 15030: 2022 के अनुसार

PRODUCT MANUAL FOR
TEREPHTHALIC ACID SPECIFICATION
ACCORDING TO IS 15030: 2022

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 हैI

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 under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations,2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक सांख्या **IS No.**	:	IS 15030: 2022
	शीर्षक **Title**	:	TEREPHTHALIC ACID - SPECIFICATION
	सांशोधनों की सांख्या **No. of amendments**	:	1
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	No specific requirement.

b)	**समूहीकरण दिशानिर्देश** **Grouping Guidelines**	:	Not applicable
c)	**नमूने का परिमाण** **Sample Quantity**	:	2 kg
3.	**परीक्षण उपकरणों की सूची** **List of Test Equipment**	:	Please refer to Annex – A
4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	Please refer to Annex – B
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**		
	All the tests mentioned in the IS are possible to be carried out in a day**.**		
6.	**लाइसेंस का दायरा /Scope of the Licence:**		
	Licence is granted to use Standard Mark as per IS 15030: 2022 with the following scope:		
	उत्पाद का नाम Name of the product	TEREPHTHALIC ACID - SPECIFICATION	

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

ANNEX A

LIST TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sr. No.	Tests used inwith Clause Reference	Test equipment
1.	Moisture content Clause 3.2, Table-1(i)	**Apparatus:** Karl Fischer Titrator **Reagents:** Karl Fischer Reagent,Methanol, 2-Methoxyethanol,Iodine, Pyridine, Sample Solvent Sulphur dioxide, Sodium tartarate, Crystalline, Water-Methanol Standard Solution - 10 mg/ml Water-Methanol Solution – approximately 2 g/l, Aluminium Sodium Silicate/Activated Silica Gel,Silicone base grease,
2.	Colour Clause 3.2, Table-1(ii)	**Method A:** **Apparatus:** Beaker (250 ml capacity), magnetic stirrer bar **Reagents:** Potassium Hydroxide, terephthalic acid **OR** **Method B:** **Apparatus:** Automatic Tintometer **Reagents:** Potassium hydroxide solution (2 N aqueous) **OR** **Method C:** **Apparatus:** Nessler cylinders (Two, 100 ml capacity), One mark volumetric flasks (250 ml and 500 ml capacities),Erlenmeyer flasks (250 ml), glass or porcelain dish, water-bath, Analytical balance **Reagents:** Cobaltous chloride hexahydrate (solid),Conc. Hydrochloric acid, Chloroplatinicacid (Platinum, Aqua Regia, Hydrochloric Acid), N,N'-Dimethylformamide

3.	Ash content Clause 3.2, Table-1 (iii)	**Apparatus:** Muffle furnace/Microwave furnace, Bunsen Burner, Crucible made of Platinum or quartz or silica, Analytical balance, Crucible tongs (made of stainless steel with platinum tips), Glazed porcelain plates **Reagents:** Chromic Acid, terephthalic acid
4.	Acid value Clause 3.2, Table-1 (iv)	**Apparatus:** Beaker, Analytical balance,Burette **Reagents:** Pyridine or Dimethyl Sulfoxide or Dimethylformamide (AR grade), Phenolphthalein (1 percent solution in ethanol),Sodium hydroxide (0.5 M aqueous solution)
5.	Determination of iron, cobalt, manganese, titanium and chromium Clause 3.2, Table-1 (v)	**<u>Method as per Annex-E</u>** **Apparatus:** Atomic Absorption Spectrophotometer **Reagents:** Concentrated Hydrochloric Acid, Concentrated Sulphuric Acid, Potassium Hydrogen Sulphate (fine powder), Iron Solution, Cobalt Solution, Manganese Solution, Chromium Solution, Titanium Solution **OR** **<u>Method as per Annex G</u>** **Apparatus:** Analytical balance (Minimum capacity 200 g capable of weighing to the nearest 0.1 mg), Inductively-Coupled Plasma-Atomic Emission Spectrometer (ICP-AES) ,Nebulizer, Peristaltic pump, Crucible made of Platinum or quartz or silica, Hot plate, Muffle furnace or Microwave Muffle Furnace **Reagents:** Distilled Water/ Ultrapure water, Hydrochloric acid [Concentrated, 36 percent,(*m/m*)],Nitric acid , Sulphuric Acid [concentrated 98 percent purity], Internal standard [Yttrium or scandium (or any suitable metal)], Single or Multi Element Certified Reference Material (Standard), Di-lithium tetra borate, High purity Argon gas, Ammonia Solution, Terephthalic acid
6.	Determination of sodium, magnesium, potassium, calcium and Nickel Clause 3.2, Table-1 (vi)	**<u>Method as per Annex F</u> :** **Apparatus:** Atomic Absorption Spectrophotometer, Flasks (1000 ml), Volumetric Flasks (100 ml), Pipettes, Analytical Balance, Silica dishes, Temperature Controlled Heater, Muffle Furnace, Hot Plate, Volumetric Flasks (25 ml) **Reagents:** Hydrochloric Acid, Sulphuric Acid, Stock Sodium Solution, Stock Potassium Solution, Stock Calcium Solution, Stock Magnesium Solution, Stock Nickel Solution, Demineralized Water **OR**

		<u>Method as per Annex G</u> **Apparatus:** Analytical balance (Minimum capacity 200 g capable of weighing to the nearest 0.1 mg), Inductively-Coupled Plasma-Atomic Emission Spectrometer (ICP-AES) ,Nebulizer, Peristaltic pump, Crucible made of Platinum or quartz or silica, Hot plate, Muffle furnace or Microwave Muffle Furnace **Reagents:** Distilled Water/ Ultrapure water, Hydrochloric acid [Concentrated, 36 percent,(*m/m*)],Nitric acid , Sulphuric Acid [concentrated 98 percent purity], Internal standard [Yttrium or scandium (or any suitable metal)], Single or Multi Element Certified Reference Material (Standard), Di-lithium tetra borate, High purity Argon gas, Ammonia Solution, Terephthalic acid
7.	4-carboxybenzaldehyde Clause 3.2, Table-1 (vii) and 4-carboxybenzaldehyde + p-toluic acid Clause 3.2, Table-1 (viii)	**Method A (HPLC method):** **Apparatus :** HPLC system, *p*H meter, Solvent Delivery System, Absorbance Detector, Syringe loading injector, Data processor, Computing integrator,Syringe, 100 µl capacity, Beakers (100 ml, 1000 ml),Volumetric Flask (1000 ml), Vacuum filter with 0.22 m or 0.6 m millipore filter **Reagents:** Ammonium phosphate (0.25 M),Acetonitrile, Ammonium Hydroxide (3.7 Percent),Benzyl Alcohol, Phosphoric acid, Demineralized Water **OR** **Method B (Gas Chromatography)** Gas Chromatograph**,** Chromatographic Column, Instrument air,(pure with very low hydrocarbons), Hydrogen, Nitrogen, p-toluic acid (p-TA), Tetramethylammonium hydroxide, Terephthalic acid **OR** **Method C (Polarographic method):** **Apparatus:** A suitable polarographic analyzer fitted with droppingmercury electrode and XY flatbed recorder Beaker (50 ml),Pipette, Flasks **Reagents and Consumables:** Potassium hydroxide solution (1 M),Pure Terephthalic acid, Polyethylene Glycol , 4-carboxy benzaldehyde (AR grade) **OR** **Method D(Normal Voltage Mode Capillary Electrophoresis Method)** **Apparatus:** Capillary Electrophoresis System, High voltage power supply, Covered sample carousel, Capillary purge mechanism, UV detector, Fused Silica Capillary

		Column(With 50 to 100 µm (internal diameter) x 375 µm (outer diameter) x 60 cm (length), with polymer coating for flexibility, and with an uncoated part which act as a cell window for UV detection),Constant Temperature compartment, Sample Filter, pH Meter **Reagents and Consumables:** 1-Heptanesulfonic Acid Sodium Salt Monohydrate or Sodium 1-heptanesulfonate, Sodium Phosphate Tribasic Dodecahydrate or trisodium phosphate, Sodium Hydroxide, Ammonium Hydroxide Solution, PTA Standard for Calibration, Sodium Hydroxide Solution, Ammonium Hydroxide Solution, Electrolyte Solution

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 the Standard 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, whole production carried out in a day shall constitutea control unit.

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 testingfacility 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 valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different tests given 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 the provisions 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 commoncluster 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 laboratory or 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 incorporated legibly and indelibly on the container transporting Terephthalic Acid, 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 If material is supplied in bulk the Standard Mark as given in Schedule of the licence and Licence Number (i.e. CM/L.....) shall be incorporated on a test certificate to be provided along with each tank car/tank truck/container ship as per the format at Appendix-1 enclosed, provided always that the product thus marked conforms to all the requirement of the specification. Packing shall be done as per provisions of Indian Standard and the marking details as per IS 15030:2022 shall also be indicated on the test certificate.

3.3 **Additional Marking requirements**: The material shall also be marked with the following additional requirement on the container transporting Terephthalic Acid:

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

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 (Levels of Control)
(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**				
3.1	Description	3.1	IS 15030	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
3.2, Table 1 i)	Moisture content	Annex A	IS 15030	R	One	Each Control unit	
ii)	Colour	Annex B	IS 15030	R	One	Each Control unit	
iii)	Ash content	Annex C	IS 15030	R	One	Each Control unit	
iv)	Acid value	Annex D	IS 15030	R	One	Each Control unit	
v)	Total of iron, cobalt, manganese, titanium and chromium	Annex E / Annex G	IS 15030	R	One	Each Control unit	
vi)	Total of sodium, magnesium, potassium, calcium and Nickel	Annex F/ Annex G	IS 15030	R	One	Each Control unit	
vii)	4-carboxybenzaldehyde	Annex H	IS 15030	R	One	Each Control unit	
viii)	4-carboxybenzaldehyde + p-toluic acid	Annex H	IS 15030	R	One	Each Control unit	
3.3	b^* Value	b* value shall be determined as agreement between the purchase and the supplier.					

Appendix-1

TEST CERTIFICATE XYZ COMPANY
(REGISTERED OFFICE ADDRESS AND WORKS ADDRESS)
TEST CERTIFICATE FOR TEREPHTHALIC ACID AS PER IS 15030:2022

TEST CERTIFICATE NO._____ Dated:

SUPPLIED TO M/s _____(Name and Address of Consignee)

It is certified that the material described below fully conforms to IS 15030:2022. The properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks License No. CM/L _____are as indicated below against each order no. etc.

(PLEASE REFER TO IS 15030:2022, FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order no and date	Name and Grade of the material	Lot/Control Unit/ Batch Number	Month and Year of manufacture	Net mass of the material in the container	Requirements										Remarks
					Description	Solubility	Moisture content, percent by weight	Colour, Pt-Co	Ash content, ppm	Acid value, mg KOH/g	Total of iron, cobalt, manganese, chromium and titanium, ppm	Total of sodium, magnesium, potassium, calcium and nickel, ppm	4-carboxybenzaldehyde, ppm	4-carboxybenzaldehyde + p-toluic acid, ppm	

The material supplied conforms to specified requirements of IS 15030:2022

REMARKS: Tank Car / Tank Truck / Container ship no.

(Signature)
For XYZ Company