



उत्पाद मैनुअल

Polyester Polyol — Specification
IS 17659:2021 के अनुसार

PRODUCT MANUAL for
Polyester Polyol -Specification
ACCORDING TO IS 17659:2021

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में अभ्यास और पारदर्शिता के संचालन में पारदर्शिता सुनिश्चित करने 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 लाइसेंस/प्रमाणपत्र 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 coherence 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 licence/certificate.

1.	उत्पाद Product	:	IS 17659:2021
	शीर्षक Title	:	Polyester Polyol - Specification
	संशोधनों की संख्या No. of amendments	:	NIL
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirements
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Separate samples for each grade (Grade 1, 2 and 3) and each form (for Grade 3) shall be tested to cover each grade and form in the scope of license.
c)	नमूने का आकार Sample Size	:	2 litre liquid / 2 kg solid
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer Annex-A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer Annex-B
5.	एक दिन में संभावित परीक्षण Possible tests in a day		

	All tests	
6.	लाइसेंस का दायरा /Scope of the Licence:	
	"Licence is granted to use Standard Mark as per IS 17659:2021 with the following scope:	
	Name of the product	Polyester Polyol - Specification
	Grade and form	Grade 1, form Liquid / Grade 2, form Liquid/ Grade 3 form Solid and/or Liquid

**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN,9, BAHADUR SHAH ZAFAR MARG,
NEW DELHI-110002**

ANNEX-A
LIST OF TEST EQUIPMENTS

Major test equipment required to test as per the Indian Standard

Clause No.	Test Used	Test Method	Test Equipment/Chemicals
4, Table 1, Sr. No. ii	Hydroxyl Value	ASTMD4274,Method A, (Acetic Anhydried Pressure Bottle , Recommended for Polyester)	Weighing Balance Acetic Anhydride Dry Pyridine Imidazole Magnetic Stirrer Dark Bottle Pressure Bottle with Stopper Stainless Steel Mesh Jacket fitted to Cover the Bottle, Bag, heavy fabric with draw string to hold bottle Burette Heat Resistance Conical Flask Water Bath Hydrochloric Acid Sodium Hydroxide Phenolphthalein Indicator Pipette 400 ml Erlenmeyer flask
4, Table 1, Sr. No. ii	Hydroxyl Value	ASTMD4274,Method B, (Pressure- Bottle Phthalation)	Burette Weighing Balance Bulb Normax Pressure Bottle with Stopper Pressure Bottle Bags Pyridine Phthalic Anhydride Potassium Acid Phthalate Phenolphthalein Indicator Sodium Hydroxide Oven Desiccator Conical Flask with Stopper Carbon Di-Oxide Free Water Hydrochloric Acid Potassium Hydroxide Pipette

			Water Bath 400 ml Erlenmeyer flask
4, Table 1, Sr. No. ii	Hydroxyl Value	ASTMD4274,Method C, (Reflux Phthalation)	Burette Hypodermic syringe / Weighing Balance Bulb Normax Soil Digestion Flask with standard taper, 24/40 joints and 24-in air Condensers. Pyridine Phthalic Anhydride (Pyridine Reagent) Potassium Acid Phthalate Phenolphthalein Indicator Sodium Hydroxide Oil Bath Measuring Cylinder Carbon Di-Oxide Free Water Pipette
4, Table 1, Sr. No. ii	Hydroxyl Value	ASTMD4274,Method D, Imidazole Catalyzed Phthalic Anhydride Pressure Bottle.	Pressure Bottle Weighing Balance Pressure Bottle Bags heavy Fabric. Burette Water Bath Pyridine Phthalic Anhydride Imidazole 1- Litre Brown Bottle Sodium Hydroxide Phenolphthalein Indicator Potassium Acid Phthalate Desiccator Oven Conical Flask with Stopper Carbon Di-Oxide Free Water Esterification reagent
4, Table 1, Sr. No. ii	Hydroxyl Value	ASTMD4274,Method E, Imidazole Catalyzed Pyromellictic Di-Anhydride Method	Conical Flask Iodine Flask Measuring Cylinder Volumetric Flask

			Pipette, 50ml Pipette, 10 ml Burette Magnetic Stirrer Water bath Dimethylformamide (Technical Grade) Pyromellitic Dianhydride Imidazole reagent Nitrogen atmosphere -Chamber Thymolphthalein Indicator Potassium Acid Phthalate Sodium Hydroxide Carbon Di-Oxide Free Water Iso Propanol Oven Desiccator
4, Table 1, Sr. No. ii	Hydroxyl Value	ISO 14900,Method A, Acetylation (Titration Through Potentiometric titrator or pH -Meter)	Electrode Syringes Magnetic Stirrer Weighing Balance Volumetric Pipette Measuring Pipette Graduated Cylinder Beaker Beaker Conical Flask Condenser (west Type , 400 mm, standard taper 24/40 joint with cooling extending to the joint Oil Bath Weighing Balance Pthlaic Anhydride 1 Litre Brown Bittle Pyridine Imidazole NaoH Pipette Hydrochloric acid Potassium Acid Pthalate
4, Table 1, Sr. No. ii	Hydroxyl Value	ISO 14900,Method B, Titrated Through Coloumetric Titration	Weighing Balance

			Pthlaic Anhydride 1 Litre Brown Bittle Pyridine Imidazole NaoH Pipette Hydrochloric acid Potassium Acid Pthalate Thermometer Volumetric Flask Phenolphthalein Indicator Water Measuring Cylinder Magnetic Stirrer Stop Watch Burette Sulphamic Acid Conical Flask
4, Table 1 Sr. No. iii	Acid Value	ASTM D4662-20, Method A	Burette Potassium Hydroxide Ethyl Alcohol Sodium Hydroxide Pipette Potassium Acid Phthalate Measuring Cylinder Water (Carbon Di-Oxide Free) Weighing Balance Conical Flask (Ernelmyer Flask) HCl Sulphamic Acid Phenolphthalein Indicator Toluene
4, Table 1 Sr. No. iv	Water Content	Annex A of IS 15030 moisture content by-Karl Fischer method as described in IS 2362	Karl Fischer volumetric Titrator, Methanol Ethylene Glycol Monomethyl Ether Iodine Pyridine Sample Solvent Sulphur Dioxide Karl Fischer Reagent Sodium Tartrate Crystalline

			Carbon Di-Oxide Free Water Water-Methanol Standard Solution- 10 mg/ml Water-Methanol Solution – Approximately 2 g/l, Aluminium Sodium Silicate / Activated Silica Gel Silicon Base Grease Automatic Burette Titration Vessel Reagent Bottle for Karl Fischer Reagent Double Platinum Electrode Magnetic Stirrer With PTFE Coated stirring bar Electrometric End Point Detection Device utilizing a micrometre Glass Syringe A small Glass Tube
4, Table 1, Sr. No. v) to vii)	Viscosity at 35°C	IS13360 (Part 11/Sec 11) (Coaxial Cylinder setup)	Rotational Viscometer as per Clause 4.1 with Measuring System and basic instrument Thermometer Beaker Water Bath For(Temperature Controller) Air Conditioner for Lab (Maintain Lab Temperature)
4, Table 1, Sr. No. v) to vii)	Viscosity at 35°C	IS13360 (Part 11/Sec 11) (Cone-and-plate system)	Thermometer Beaker Water Bath For(Temperature Controller) Air Conditioner for Lab (Maintain Lab Temperature) Rotating Cone Shaft Stationary plate

The list above is indicative only and may not be considered as exhaustive

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. **LABORATORY-** A laboratory shall be maintained, which shall be suitably equipped (as given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the method given in the specification.

1.1 The manufacturer shall prepare and implement a calibration plan for the test equipment.

2. **TEST RECORD-** The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. **PACKING AND MARKING** - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on drums provided always that material so marked conform to requirements of the specification.

3.1 Labeling and Marking shall be done as per the provision of the Indian Standard. The container shall also be marked with the following:

- a) BIS licence number and
- b) "For BIS certification details please visit www.bis.gov.in"

3.2 For transportation purposes, in tank cars and tank trucks, 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 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 details as per CI 5.2 of IS 17659 : 2021 shall also be indicated on the test certificate.

4.**CONTROL UNIT-** For the purpose of this scheme, the quantity of the material of the same grade and same form produced in a single batch shall constitute a control unit.

5. **LEVELS OF CONTROL:** - The tests as indicated in Table 1 and the levels of controls in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standard and covered under the licence shall be marked with the Standard Mark.

6. **REJECTION** - 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

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or)S: Sub- contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods Clause Reference			No of Sample	Frequency	Remarks
4 (i)	Visual appearance	-	IS 17659	R	one	Each Control unit	
(ii)	Hydroxyl value,	4.1	ISO 14900/ ASTM D4274	R	-do-	-do-	
(iii)	Acid value	4.2	ASTM D4662	R	-do-	-do-	
(iv)	Water content/Moisture	Annex A	IS 15030/ASTM E203	R	-do-	-do-	
(v)	Viscosity at 25 °C	-	13360 (Part 11/Sec 11)/ ISO 3219	R	-do-	-do-	Test to be carried out as applicable for the grade and form
(vi)	Viscosity at 35 °C	-		R	-do-	-do-	
(vii)	Viscosity at 70 °C	-		R	-do-	-do-	

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

Appendix-1

TEST CERTIFICATE

XYZ COMPANY (REGISTERED OFFICE ADDRESS AND WORKS ADDRESS)

TEST CERTIFICATE FOR POLYESTER POLYOL

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 17659:2021 .

The properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No. CM/L _____ are as indicated below against each order no. etc.

(PLEASE REFER TO IS 17659:2021 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order no and date	Name of the material	Requirement	Observed Value	Control Unit/Batch Number	Month and Year of Packaging	Quantity	Remarks
		Visual appearance					
		Hydroxyl value,					
		Acid value					
		Water content/Moisture					
		Viscosity at 25 °C					
		Viscosity at 35 °C					
		Viscosity at 70 °C					

The material supplied conforms to specified requirements of IS 17659:2021 .

REMARKS:

Tank Car / Tank Truck / Container ship no.

(Signature)
For XYZ Company**MATERIAL SUPPLIED BY**

Name and Address of manufacturer:

Recognized Trade Mark if any:

Symbol given in Fig. 5 of IS 1260 (Part 5) and the words "HARMFUL VAPOUR, DO NOT INHALE, FLAMMABLE, KEEP IN COOL PLACE".

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