



Product Manual for Specification for Ethylene Glycol
According to IS 5295:1985

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.	Product	:	IS 5295:1985
	Title	:	Specification for Ethylene Glycol
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	No specific requirement
b)	Grouping guidelines	:	Samples of each grade (fibre grade/general grade) to be drawn
c)	Sample Size	:	500 ml
3.	List of Test Equipment	:	Please refer ANNEX –A
4.	Scheme of Inspection and Testing	:	Please refer ANNEX –B
5.	Possible tests in a day:		
	1 Color, Hazen units 2 Relative Density at 27 C 3 Distillation Range 4 Moisture Content 5 Acidity 6 Ash Percent 7 Diethylene Glycol 8 Chlorides Content 9 Iron Content		
6.	Scope of the Licence :		
	"Licence is granted to use Standard Mark as per IS 5295:1985 with the following scope:		
	Name of the product	Ethylene Glycol	
	Grade	Fibre grade/General Grade	

Annex - A

List of Test Equipment

Major test equipment required to test as per the Indian Standard.

Sr. No.	Tests used in with Clause Reference	Test Equipment/Chemicals
1	Color, Hazen units, ,Cl.3.2 Table 1	Nessler cylinder, One mark 250 ml & 500 ml volumetric Flask, Chemicals: Cobaltous Chloride Hexa hydrate, Hydrochloric acid, Chloroplatinic acid.
2	Color after Boiling for 4 hour under total reflux, Hazen units , Max,Cl.3.2 Table 1	100 ml distillation flask, reflux condenser, electric heater.
3	Relative density at 27 C,Cl.3.2 Table 1	Relative density bottle 25 ml capacity, water bath, thermometer, weighing balance.
4	Distillation Range,Cl.3.2 Table 1	Distillation flask, thermometer, Electric Heater rectangular draught screen, Liebig condenser, receiver Barometer
5	Moisture Content,Cl.3.2 Table 1	Karl Fischer Titrater, weighing balance. ,Micro burette, pipette Chemicals: AR Grade Di sodium tartrate, methanol & Karl Fischer reagent ,distill water Silica gel, Silicon Base grease
6	Acidity,Cl.3.2 Table 1	500 ml conical flask, 25 ml capacity Graduated burette & weighing balance Chemicals: Standard sodium hydroxide solution 0.01 N, Phenolphthalein indicator.
7	Ash Percent,Cl.3.2 Table 1	Muffle furnace, 100 ml silica or platinum crucible & Weighing balance. Desiccator Hot plate, oven Chemicals: Silica gel of calcium carbonate, silicon grease
10	UV Transmittance,Cl.3.2 Table 1	UV-Visible spectrophotometer, 10 mm path length cell. Chemical: Potassium dichromate, Toluene, Hexane, Potassium chloride & HPLC grade water.
11	Freezing point,Cl.3.2 Table 1	Jacketed Sample tube, collar, Stirrer, Vacuum flask, thermometer. Chemical: Propan-2-ol or Methanol or Acetone or Ethanol, Carbon dioxide(solid) or dry ice.
12	Iron Content,Cl.3.2 Table 1	Nessler cylinders 100 ml capacity Chemicals: Thioglycolic acid, Concentrated Ammonia(relative density 0.90), Ferrous ammonium sulphate
13	Chlorides Content,Cl.3.2 Table 1	Nessler cylinders 50 ml capacity. Whatman filter paper No. 40 or 42, Concentrated nitric acid, Silver nitrate, sodium chloride, Phenolphthalein indicator
14	Diethylene Glycol,Cl.3.2 Table 1	Gas chromatograph GC column (1100mm*2mm SS)with 10 % loading of Carbowax 20 M

Note-1 : The least count and range of test equipment should match value/parameters/ tolerances mentioned in the Indian Standard.

Note 2: The list is meant for guidance only and may not be taken as exhaustive.

Annex - B
SCHEME OF INSPECTION AND TESTING

- 1. LABORATORY**-A laboratory shall be maintained, which shall be suitably equipped (as per the requirement given in column 2 of Table1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.
 - 1.1 The manufacturer shall prepare a calibration plan for the test equipment.
- 2. TEST RECORDS** - 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 license shall be printed on each container and on the label applied to the container; provided always that the material in each container on which this Mark is thus applied conforms to every requirement of the specification.
 - 3.1 Packing and marking shall be done as per the provisions of the Indian Standard.
 - 3.2 In addition, details of BIS website shall be marked as follows: "For details of BIS certification please visit www.bis.gov.in"
- 4. CONTROL UNIT**– For the purpose of this scheme, the entire quantity of the material of the same grade produced in a continuous run of not more than 8 hours shall constitute a control unit.
- 5. LEVELS OF CONTROL**-The tests, as indicated in Table 1 and the levels of control in column 3 of Table1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.
 - 5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard mark.
- 6. REJECTION**-Disposal of non-conforming products shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016. A separate record providing the detailed information regarding the rejected control units and mode of their disposal shall be maintained. Such material shall in no case be stored together with that conforming to the specification. The Standard Mark (if already applied) on rejected material should be defaced.

TABLE 1: LEVEL OF CONTROL
(Para 5 of the Scheme of Inspection and Testing)

(1) Test Details				(2) Test equipment requirement R: required (or) S: Sub-contracting permitted	(3) Levels of Control		
Cl.	Requirement	Test Methods	Clause Reference		No. of Sample	Frequency	Remarks
3.1	Colour, Freedom for suspended matter and miscibility wit water at 20°C	3.1	IS 5295	R	1	Each Control unit	
3.2	Color, Hazen units	A2	IS 5295	R	1	Each Control unit	
3.2	Color after Boiling for 4 hour under total reflux, Hazen units , Max	A2	IS 5295	R	1	Once a Month	
3.2	Relative density at 27° C	A3	IS 5295	R	1	Once a Month	
3.2	Distillation Range at 760 mm Hg	A4	IS 5295	R	1	Once a Month	
3.2	Moisture Content	A5	IS 5295	R	1	Each Control unit	
3.2	Acidity (As Acetic Acid)	A6	IS 5295	R	1	Each Control unit	
3.2	Ash Percent	A7	IS 5295	R	1	Once a Month	
3.2	UV Transmittance in 1 cm cell	A8	IS 5295	R	1	Each Control unit	
3.2	Freezing point of equal volumes of material and water	A9	IS 5295	R	1	Once a Month	
3.2	Iron Content	A10	IS 5295	R	1	Each Control unit	

3.2	Chlorides Content	A11	IS 5295	R	1	Each Control unit	
3.2	Diethylene Glycol content	A12	IS 5295	R	1	Each Control unit	
5	Packing & Marking	5	IS 5295	R	Each container	-	Visual

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 empaneled 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 B.O.Head.