



**PRODUCT MANUAL FOR  
PHTHALIC ANHYDRIDE, TECHNICAL  
ACCORDING TO IS 5158 – 1987**

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.

<b>1.0</b>	<b>Product</b>		IS: 5158 – 1987
	<b>i</b>	Title	<b>Phthalic Anhydride, Technical</b>
	<b>ii</b>	No. Of amendments	1
<b>2.0</b>	<b>Sampling guidelines</b>		
	<b>a)</b>	Raw Material	No specific requirement
	<b>b)</b>	Grouping Guidelines	NA
	<b>c)</b>	Sample Size	25 Kg
<b>3.0</b>	<b>List of Test Equipment</b>		As per attached sheet. Annexure -A
<b>4.0</b>	<b>Scheme of Inspection and Testing</b>		As per attached sheet. Annexure -B
<b>5.0</b>	<b>Possible Test in day</b>		As per attached sheet. Annexure -C
<b>6.0</b>	<b>Scope of the Licence</b>		
	<b>Licence is granted to use standard Mark as per IS: 5158 – 1987 with following scope :</b>		
	<b>Name of Product</b>		Phthalic Anhydride, Technical
	<b>Source</b>		O-xylene/ Napthalene

**ANNEXURE - A**  
**List of Test Equipment**

Major test equipment required to test as per requirements of Indian Standard.

Sr.No.	Test used in with clause Reference	Test Equipment
	Description, Cl 2.1.1	Heating device capable of heating up to 160 deg C, thermometer with range up to 160 deg C
1	Crystallisation point Table – 1 (i)	The crystalizing point apparatus as shown in fig.1, Thermometer having Range 98 to 150 °C / 0.2 °C
2	Colour of the Molten Material Table – 1 (ii & iii)	Identical flat based colorimetric Tubes – Two, heat resistant and approximately 20 mm external diameter, having a graduation mark 100 mm above the base. One –Mark Graduated Flasks of 250 and 500 ml capacity, Electrically-Heated Aluminum Block —capable of maintaining temperature at 140 ± 3°C and 250 ± 3°C with holes 22 mm in diameter and at least 120 mm depth. Weighing balance Reagents to prepare Hazen Colour Standard- Cobaltous Chloride Hexahydrate, Hydrochloric Acid, Chloroplatinic Acid, Potassium Chloroplatinate.
3	Free Acidity as [C <sub>6</sub> H <sub>4</sub> (COOH) <sub>2</sub> ] % by Mass Table – 1 (iv)	Phthalic Acid, Ethyl Methyl Ketone, Bromophenol Blue Indicator Standard Triethylamine Solution (in Ethyl Methyl Ketone ) Weighing Balance 0.1g LC Hotplate
4	Total Available Acidity ( as C <sub>8</sub> H <sub>4</sub> O <sub>3</sub> ) by mass Table – 1(v)	Potassium Hydrogen Phthalate — previously Dried for 2 hours at 120°C. Phenolphthalein Indicator, Sodium Hydroxide Solution 0.5 N free from carbonate, , Demineralized Water , Weighing Balance, Water bath,
5	Maleic Anhydride & Other Oxidisable Impurities (as C <sub>4</sub> H <sub>2</sub> O <sub>3</sub> ) Table – 1 (vi)	Sulphuric Acid — concentrated, Potassium Iodide — solid, Potassium Permanganate — approximately 0.1 N solution, Standard Sodium Thiosulphate Solution 0.1 N
6	Determination of Ash Table – 1 (vii)	Muffle Furnace (600 ± 25 °C) Platinum or Silica Basin, Desiccator Weighing Balance 0.1mg LC,
7	Determination of Iron Content Table – 1 (viii) Method A	Concentrated hydrochloric acid - Relative density 1.16, Dilute sulphuric acid, Dilute nitric acid, Urea solution, Hydroxyammonium chloride solution, Ammonium acetate solution, 2-2" -bipyridyl solution, Ammonium Ferrous Sulphate, One-mark graduated flasks, stirrer, Spectrophotometer Water bath

	Method B	Concentrated Hydrochloric Acid, Ammonium Hydroxide, Thioglycolic Acid, Citric Acid, Ammonium Ferrous Sulphate, Dilute Sulphuric Acid, One-mark graduated flasks, Nessler Cylinders Water bath
8	Naphthaquinone Table – 1 (ix)	Boiling tubes(2), Thermometers(2), Phthalic Anhydride, Stannous Chloride Dihydrate, 1,4 Naphthaquinone, Benzene, Weighing Balance, Heater
9	Naphthalene Table – 1 (x)	Round Bottom flask, separating funnel, one-mark volumetric flask, glass stoppered test tubes Sodium Hydroxide, Chloroform, Naphthalene, Concentrated Sulphuric Acid, Formaldehyde Solution, Balance Distillation assembly
10	General	Sampling Instrument as per Fig 2 of IS 5158 General laboratory vessels like conical flask, Burette, pipette, Volumetric Flask etc Hot plate, Bunsen Burners etc.

1. The above list is indicative only and may not be treated as exhaustive.
2. Specification, least count, range of apparatus, reagents etc, shall be as specified in the standard

**ANNEXURE - 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 Table 1) 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 equipments.

**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 marked on each container of phthalic anhydride, technical provided always that the product contained in each container on which this mark is applied conform to every requirement of the specification.

3.1 Packing and Marking shall be done as per the provisions of the Indian Standard. In addition, following details shall be marked on each container:

- i) Licence No. (CM/L.....)
- ii) BIS website details: [www.bis.gov.in](http://www.bis.gov.in)

**4. CONTROL UNIT:** For the purpose of this product, whole production carried out in a day shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 4 of Table 1, when tested according to the method prescribed in Appendix -A refer to the clause of Appendix A Given in table 1 .This 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. HANDLING AND STORAGE** –Precautions in Handling and storage of the material will be ensured by the manufacturer as per the provisions of the standard.

**7. REJECTIONS** – 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		
Clause No.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
2.1	Description	2.1	IS 5158	R	One	Each Control Unit	
2.2, Table 1 i)	crystallizing point	A-2	IS 5158	R.	one	Each Control unit	
ii)	Colour of the Molten Material	A-3	IS 5158	R.	one	Each Control unit	
iii)	Colour of the molten material after Heat Treatment	A-3	IS 5158	R.	one	Each Control unit	
iv)	Free Acidity as [C <sub>6</sub> H <sub>4</sub> (COOH) <sub>2</sub> ] % by Mass	A-4	IS 5158	R.	one	Each Control unit	
v)	Total Available Acidity ( as C <sub>8</sub> H <sub>4</sub> O <sub>3</sub> ) by mass	A-5	IS 5158	R.	one	Each Control unit	
vi)	Maleic Anhydride & Other Oxidisable Impurities (as C <sub>4</sub> H <sub>2</sub> O <sub>3</sub> )	A-6	IS 5158	R.	one	Each Control unit	
vii)	Ash	A-7	IS 5158	R.	one	Each Control unit	
viii)	Iron (as Fe)	A-8	IS 5158	R.	one	Each Control unit	
ix)	Naphthaqueino ne (applicable for material ex-naphthalene only)	A.9	IS 5158	R	one	Each Control unit	.
x)	Napthalene	A-10	IS	R	one	Each Control	

	(applicable for material ex-naphthalene only)		5158			unit	
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Note 1: - 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.

Annexure C

Possible Test in a day

Sr. No.	Test	Table – 1 (Clause 0.2 and 2.2) IS 5158-1987
i)	Description	2.1
ii)	Measurement of Colour of the Molten Material	A 3 (Sl.No.ii)
iii)	Colour of the molten material after Heat Treatment	A 3 (Sl.No.iii)
iv)	Free Acidity as $[C_6H_4(COOH)_2]$ % by Mass	A 4 (Sl.No.iv)
v)	Total Available Acidity ( as $C_8H_4O_3$ ) by mass	A 5 (Sl.No.v)
vi)	Maleic Anhydride & Other Oxidisable Impurities - ( as $C_8H_4O_3$ )	A 6 (Sl.No.vi)
viii)	Determination of Iron Content	A 8 (Sl.No.viii)