



उत्पाद मानुयल
एनैमल, बाहरी (क)अधलेपन (ख)परिसज्जा विशिष्टि
2933:2013 के अनुसार

**PRODUCT MANUAL FOR
ENAMEL, EXTERIOR: (a) UNDERCOATING (b) FINISHING — Specification**

According to IS 2933: 2013

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम 2018 की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरणके प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग 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 2933:2013
	शीर्षक Title	:	एनैमल, बाहरी (क) अधलेपन (ख) परिसज्जा -विशिष्टि Enamel, Exterior: (A)Undercoating (B) Finishing Specification
	संशोधन संख्या No. of Amendments	:	एक 01
2.	नमुनाकरण दिशा निर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	लागू नहीं Not applicable.
b)	समूहिकरण दिशा निर्देश Grouping guidelines	:	कृपया Annex-ए देखें Please see Annex – A
c)	नमूनेका परिमाण Sample Size	:	4X500ml
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	कृपया Annex-B देखें Please see Annex – B
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	कृपया Annex- C देखें Please see Annex – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day :		
	a) Finish b) Consistency c) Mass d) Flash point		

6.	लाइसेन्स का कार्यक्षेत्र/Scope of the Licence:
	IS 2933:2013 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है “Licence is granted to use Standard Mark as per 2933:2013 with the following scope:
उत्पाद का नाम Name of the product	एनैमल, बाहरी (क) अधलेपन (ख) परिसज्जा- विशिष्टि Enamel, Exterior:(A)Undercoating(B) Finishing Specification
Any other aspect required as per the Standard	Application- Undercoating and/or Finishing Colour Category/Colour Shade- As applicable

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ANNEX – A

GROUPING GUIDELINES

1. IS 2933 covers following classification of Enamel, Exterior-
 - (a) Based on application i.e. Undercoating or Finishing
 - (b) Based on Color Categories as specified in Table 1 of ISS
2. Each variety i.e. for application as Undercoating or for application as Finishing may be considered as one group.
3. Each Color Category per Table 1 of ISS may be considered as another group.
4. For the purpose of GoL/CSoL, following guidelines for drawl of samples may be followed-
 - For covering both varieties under the scope of licence, each variety based on application i.e. Undercoating and Finishing shall be independently tested.
 - For covering all Color Shades in a Color Category, sample of shade recommended for registration of sample in Table 1 of IS 2933 shall be independently tested for covering all Color Shades in that Color Category.
 - Sample of all Color Shades covered under the scope of licence may be drawn on rotational basis during operation of licence

ANNEX-B

LIST OF TEST EQUIPMENTS,

Major test equipment required to test as per the Indian Standard

Sr. No.	Tests used in with Clause Reference	Test equipment
1.	Composition, Cl 6.1 & Cl. 6.1	Necessary equipment's as per Cl6.1 of IS 2933.
2.	Durability Clause Cl6.2	Panel of Size 300mmX300mmX1.6mm
3.	Consistency, Cl.6.5 & Table 2	Palette knife or metal rod, Mild steel panels of 150 mm x 50 mm x 1.25 mm. Arrangement for maintaining humidity below 70percent
4.	Viscosity by ford cup No4 at 27±2°C Cl6.5 Table 2	Flow Cup Number4 Thermometer with accuracy 0.2°C and Graduation 1°C Stand, Spirit Level , Flat Glass plat ,Stop Watch ,Temperature controlled room or enclosure
5.	Mass, Clause 6.5 & Table 2	Pyknometer of capacity 20 to 100 ml, graduated glass thermometer with 0.1°C L.C., water bath or constant temperature room, analytical balance.
6.	Drying time Clause 6.5 & Table 2	Glass ballotini, IS sieves- 125 & 250 microns, soft haired brush, stop watch, paint brush, power cable paper, mild steel test panels of 150 mm x 100 mm x 1.25 mm (Refer to IS 101 (Part 1/Sec 3). Humidity chamber ,Weighing balance, 50x75 mm Piece of Special test paper ,Cyliner with mass 2.85 kg
7.	Wet opacity, Cl.6.5 & Table 2	Impervious substrate chart, film applicators, wet film thickness checker (wheel/comb), Reflectometer, template or die stamp of min 60 mm x 60 mm, humidity cabinet, flat glass plate, approved sample. Alternative methods: (a) Polyester film method. (b) Pfundcryptomer method.
8.	Finish, Cl.5.3 & Table 1	Steel, concrete or wooden panel, paint brush or sprayer, approved sample.
9.	Fineness of Grind Clause 6.5 Table 2	Gauge consisting of Block of Hardned Steel Scraper
10.	Colour Clause 6.5 Table 2	Arrangement for illumination for colour matching Reference colour standards of 150mmX100mm Thickness measuring gauge Oven
11.	Water Content test Clause 6.5 Table 2	(a) Oven (b) Desiccator with aluminum sodium silicate as Desiccant (c) Dry Toluene (d) Ethyl Acetate For Dean and Stork Method Carrier Liquid reagent For Karl-Fischer Method Karl Fisher Reagent
12.	Flexibility and adhesion , bend test using Type 1 apparatus and 6.25 mm dia Mandrel, Cl.5.3 & Table 1	Type 1 apparatus as per IS 101(Part 5/Sec 2) with 6.25 mm dia mandrel, automatic temperature controlled chamber with remotely controlled bending facility , test panels of 100 mm x 50 mm x 0.3 mm, equipment for checking film thickness as per IS 101 (Part 3/Sec 2),

		humidity cabinet, magnifying glass of 10X.
13.	Flexibility and adhesion Scratch Hardness Clause 6.5 Table 2	Apparatus as per clause 3.2.1 or 3.2.2 Needle Test Panel 125X50mm Humidity Chamber
14.	Stripping Test Clause 6.5 Table 2	Apparatus as per Clause 3.2.2 of IS 1010 (Part 5 section 3) Sample as per Clause 8.1.5 of IS 2933
15.	Flash point, Cl. 6.5 & Table 2	Test cup with fitted stirrer, thermometer, water bath, ignition device, and stopwatch.
16.	Keeping properties, Cl. 6.5 & Table 2	Square ended spatula (120 mm x 20 mm blade and 45 gm weight), nylon paint brush, paper chart with impervious test surface

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

ANNEX C

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 printed on each container or 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 In addition, the following information should be given on each container or on the label applied to it:

- a) Name of material and indication whether undercoating or finishing
- b) Indication of source of manufacturer;
- c) Lead Content (Max);
- d) A statement 'synthetic', if the material contains phthalic anhydride.
- e) Volume of the material;
- f) Batch No. or Lot No in code or otherwise;
- g) Month and year of manufacture;
- h) Colour/shade of the material;
- i) A cautionary note as given below:
 - 1) Keep out of reach of children
 - 2) Dried film of this paint may be harmful if eaten or chewed.
 - 3) This product may be harmful swallowed or inhaled.
- j) Licence No. CM/L..... and "For details of BIS certification please visit www.bis.gov.in"

4. CONTROL UNIT - For the purpose of sampling, enamel of same colour and same, class produced during a shift at one uniroll and thoroughly homogenized 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 3 of Table 1, 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. 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		
Cl.	Requirement	Clause	Test Method Reference		No. of Sample	Frequency	Remarks
6.1	Composition	6.1	IS 2933	R	One	Each consignment of raw material received	
6.2	Durability (by accelerated weather apparatus)	6.2.1	IS 2933	S	One	Once in a 6 months/subject to the change in composition	
6.5	Mass	3	IS 101 (Part1/sec5)	R	One	Each control unit	
6.4	Lead Restriction		IS101 (part8/sec5)	R	One	Each Control Unit	
6.5 Table2	(i) a)Consistency	---	Annexure C of IS 2933	R	One	Each Control Unit	
	b) Viscosity		IS 101(Part1 of sec5)	R	One	Each Control Unit	
6.5 Table2	Drying time i) Surface ii) Hard iii) Tack	---	IS101(Part3/Sec1	R	One	Each Control Unit	
6.5 Table2	Wet opacity	---	IS101(Part4/Sec1)	R	One	Each Control Unit	
6.5 Table2	Finish	---	IS 101(Part 3/Sec 4)	R	One	Each Control Unit	
6.5 Table2	Fineness of Grind microns	----	IS101(Part 3/Sec 5)	R	One	Each Control Unit	
6.5 Table	Colour	----	IS 101(Part4/Sec 2)	R	One	Each Control Unit	

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6.5 Table2	Water content*	----	IS 101(Part 2/Sec 1)	R	One	Each Control Unit	Optional Tests
6.5 Table2	Flexibility & adhesion a) Scratch Hardness b) Bend Test	----	IS 101(Part5/Sec 2) IS 101(Part5/Sec 2)	R R	Two	Each Control Unit	
6.5 Table2	Stripping test	6.5Table2	IS 2933(Part 1): 2013	R	One	Each Control Unit	
6.5 Table2	Flash Point	6.5Table2	IS 101(Part1/Sec 6)	R	One	Each consignment of thinner received	
6.5 Table 2	Keeping properties	----	IS 101(Part 6/Sec 2)	S	One	Once in six month	
6.6	Spreading capacity*		Annex E of IS 2933(Part1):2013	R	One	Each Control Unit	Optional Tests
6.6	Spreading time*		Annex E of IS 2933 (Part1):2013	R	One	Each Control Unit	Optional Tests

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.

*OPTIONAL TEST