



**PRODUCT MANUAL FOR
READY MIXED PAINT, AIR DRYING, RED OXIDE — ZINC PHOSPHATE, PRIMING —
SPECIFICATION ACCORDING TO IS 12744 : 2013**

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 12744 : 2013
	Title	:	Ready Mixed Paint, Air Drying, Red Oxide — Zinc Phosphate, Priming
	No. of Amendments	:	One
2.	Sampling Guidelines:		
	a) Raw material	:	As per Cl. 5.1.1 (IS 12744 : 2013) a) Zinc Phosphate as per IS 10897 : 1984. b) Red oxide of iron (natural and/or manufactured) as per grade 2 or 3 of IS 44 : 1991. c) Oil or turpentine d) Petroleum hydrocarbon solvent as per IS 1745 : 2018. e) Liquid drier as per IS 8766 : 1978.
	b) Grouping guidelines	:	Varieties not mentioned in the Indian Standard, therefore grouping guidelines not required.
	c) Sample Size	:	4 x500ml (market sample can be drawn for sizes 500 ml up to 2 litres)
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 :		
	Consistency, mass, Flash point, Finish, Colour		
6.	Scope of the Licence : (Use separate annexure if required)		
	"Licence is granted to use Standard Mark as per IS 12744 : 2013 with the following scope:		
	Name of the product	:	Ready Mixed Paint, Air Drying, Red Oxide — Zinc Phosphate, Priming

ANNEX A

List of Test Equipment

Major test equipment required to test as per the Indian Standard

SI. No.	Tests used in with Clause Reference	Chemicals/Reagents	Test Equipment
1	Cl. 5.1.1, Raw Materials		
	a) Zinc Phosphate (as per IS 10897)	Citromolybdate reagent EDTA solution, 0.01 M Xylenol Orange Mixture Hexamethylenetetramine Dil. Hydrochloric acid Strong cation exchange resin in hydrogen form Mixed indicator solution Standard Sodium chloride solution Conductivity water Methanol Potassium chloride Silver nitrate Barium chloride Potassium chromate Ethanol Chloroform Standard Potassium dichromate solution Stannous chloride solution Mercuric chloride solution Potassium ferricyanide Indicator Ammonium hydroxide Hydrogen peroxide Ammonium oxalate solution Dil. Sulphuric acid solution Standard Potassium permanganate solution Nitric acid solution Sodium bismuthate Sodium sulphite Standard Ferrous ammonium sulphate solution Phosphoric acid	Silica Crucible, Desiccators Weighing Balance With Least Count 0.001 G Or Better Mechanical Flask Shaker Stoppered Flask Pipette 400 MI Beaker Hot Plate Watch Glass Centrifuge Filter Paper Conductivity Bridge Sintered Silica Crucible Weighing Bottle Oven Capable Of Maintaining The Temperature At $105 \pm 2^{\circ}\text{C}$ Sieve Brush Sintered Glass Crucible Wash Bottle Water Bath One Mark Volumetric Flask Colloid Filter Evaporating Dish Pumice impregnated with copper sulphate Porcelain crucible
	b) Red oxide of iron	Hydrochloric acid,	pH measuring device, Potentiometer

	(natural and/or manufactured) (as per IS 44)	Sodium hydroxide/Potassium Hydroxide solution, Methyl red indicator, Barium Chloride solution, Silver nitrate solution, Potassium chromate solution	(Optional for Ph measurement), Volumetric flask, Sintered crucible, Acidity burette
	c) Petroleum hydrocarbon solvent(as per IS 1745)	Verification liquid for Flash Point Coolant	Saybolt chromometer Flash point Apparatus Distillation unit Cooling bath
	d) Liquid Drier	Glacial acetic acid	
2	Cl. 5.2, Lead Restriction	Dil Nitric acid Ammonium acetate solution Conc. And dil. Sulphuric acid Hydrogen sulphide	Analytical balance Filter paper (Whatman No. 40 &42) Oven Centrifuge Silica basin
3	Cl. 5.3, Table 1, SI No. (i), Drying Time		Mild steel panel Brush [soft haired (made of camel hair)] Conditioning chamber Paint power cable paper Stop watch Ballotinedged Panel stand
4	Cl. 5.3, Table 1, SI No. (ii), Consistency		Palette Knife or Metal Rod Glass Panels
5	Cl. 5.3, Table 1, SI No. (iii), Finish		Mild steel panel Brush Panel stand
6	Cl. 5.3, Table 1, SI No. (iv), Colour in natural daylight	Reference colour standard	Test panels Brush Panel stand Thickness gauge Color matching booth
7	Cl. 5.3, Table 1, SI No. (v), Wet opacity	Method 1	Substrate chart Film applicators Reflectometer Die stamp or template Humidity chamber
		Method 2 (using polyester film)	Substrate Polyester film Film applicators Reflectometer Die stamp or template

			Humidity chamber Test plates
8	Cl. 5.3, Table 1, SI No. (vi), Pigment content	Benzene Methanol Acetone Petroleum hydrogen solvent	Centrifugal machine Water bath Oven capable of maintaining temperature at $105 \pm 2^{\circ}\text{C}$ Analytical balance
9	Cl. 5.3, Table 1, SI No. (vii), Zinc phosphate content	Quinoline solution Molybdic anhydride Sodium hydroxide Citric acid Dil. Hydrochloric acid Sodium molybdatedihydrate	Weighing balance Pipette Filter paper Burette Hot plate Gooch crucible
10	Cl. 5.3, Table 1, SI No. (viii), Red oxide (as Fe_2O_3)	Standard Potassium Dichromate Solution Stannous Chloride Solution Hydrochloric Acid-R Dilute Sulphuric Acid Phosphoric Acid Saturated Aqueous Solution of Mercuric Chloride Diphenylamine Indicator	Water-bath Hot Plate Filter paper (Whatman No. 30) Hot Plate Wire gauze Conical Flask Beaker with clock glass
11	Cl. 5.3, Table 1, SI No. (ix), Flexibility and adhesion		
	a) Scratch hardness		Scratch hardness apparatus with needle Mild steel panel Brush Panel stand Oven Humidity Chamber
	b) Bend test		Bending Mandrel 6.25mmdia Humidity chamber Tin panel Brush Panel stand
12	Cl. 5.3, Table 1, SI No. (x), Resistance to humidity under conditions of condensation		
	a) Resistance to humidity (for 7 days)	Distilled water	Metal Panels Hot Plate Corrosion Cabinet Humidity chamber Rotating panerrack Oven
	b) Resistance to salt	Distilled water	Spray cabinet

	spray (for 96 h)	Sodium chloride Hydrochloric acid solution	Mild steel panel Cotton wool Collecting device Electrometric pH meter Burnished steel test bands Humidity chamber
13	Cl. 5.3, Table 1, SI No. (xi), Flash point		Abels flash point apparatus Thermometer
14	Cl. 5.3, Table 1, SI No. (xii), Mass, in Kg/10 litres		Thermometer Weight per 10 Litre Cup (Pyknometer) Constant Temperature room capable of being maintained within 2°C/ water bath Analytical balance with accuracy of 0.2 mg
15	Cl. 5.3, Table 1, SI No. (xiii), Keeping properties		Spatula with square ended blade Weighing balance Nylon Paint Brush Test Surface
16	Film thickness (requirement of many tests as mentioned above)		Film spreading device Dial Gauge Glass plates Metal template Analytical balance with accuracy of 1 mg or better Foil Oven

The above list is indicative only and may not be treated 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 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 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.

5.1 Packing and Marking shall be done as per the requirements of the standard. In addition, the following details shall be marked on labels affixed to each container:

i) Licence No. (CM/L.....)

ii) BIS website details: 'For BIS certification details please visit www.bis.gov.in' .

6. CONTROL UNIT – For the purpose of this scheme, the entire quantity of the product produced in a batch mixer at a time shall constitute a control unit.

7. 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.

7.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

8. 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	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	a) Brushing consistency of the material	-	IS 12744 : 2013	R	One	Each Control Unit	See Note 3
	b) Suitability for application by spraying after thinning with petroleum hydrocarbon solvent, 145/205, low aromatic grade	-	IS 12744 : 2013	R	One	Each Control Unit	-do-
	c) Smell of the material	-	IS 12744 : 2013	R	One	Each Control Unit	-do-
5.1.1	Raw materials						
	Zinc Phosphate		IS 10897	S	One	Each consignment	See Note-5
	Red Oxide of Iron (natural and/or manufactured)	2 or 3	IS 44	S	One	Each consignment	-do-
	Oil or Turpentine			S	One	Each consignment	-do-
	Petroleum Hydrocarbon Solvent		IS 1745	S	One	Each consignment	-do-
	Liquid Drier		IS 8766	S	One	Each consignment	-do-
5.2	Lead Restriction	-	IS 101 (Part 8/Sec 5) :	R	One	Each Control Unit	See Note 3

			1993				
5.1.2, 5.3, Table 1							
SI No. (i)	Drying Time, hard dry	-	IS 101 (Part 3/Sec 1) : 1986	R	One	Each Control Unit	-do-
SI No. (ii)	Consistency	Annex B	IS 12744 : 2013	R	One	Each Control Unit	-do-
SI No. (iii)	Finish	-	IS 101 (Part 3/Sec 4) : 1987	R	One	Each Control Unit	-do-
SI No. (iv)	Colour in natural daylight	Cl. 2	IS 101 (Part 4/Sec 2) : 1989	R	One	Each Control Unit	-do-
SI No. (v)	Wet opacity	-	IS 101 (Part 4/Sec 1) : 1988	R	One	Each Control Unit	-do-
SI No. (vi)	Pigment content	-	IS 101 (Part 8/Sec 2) : 1990	R	One	Each Control Unit	-do-
SI No. (vii)	Zinc phosphate content	Annex C		R	One	Each Control Unit	-do-
SI No. (viii)	Red oxide (as Fe ₂ O ₃)	Cl 6	IS 6947 (Part 2) : 1975	R	One	Each Control Unit	-do-
SI No. (ix)	Flexibility and adhesion						
	a) Scratch hardness (Load 800 g)	Cl 3	IS 101 (Part 5/Sec 2) :1988	R	One	Each Control Unit	-do-
	b) Bend test (with 6.25 mm dia mandrel in type 1 apparatus)	Cl 2	IS 101 (Part 5/Sec 2) : 1988	R	One	Each Control Unit	-do-
SI No. (xi)	Flash point	-	IS 101 (Part 1/Sec 6) : 1987	R	One	Each Control Unit	-do-

SI No. (xii)	Mass, in Kg/10 litres	-	IS 101 (Part 1/Sec 7) : 1987	R	One	Each Control Unit	-do-
SI No. (x)	Resistance to humidity under conditions of condensation						
	a) Resistance to humidity (for 7 days)	CI 2	IS 101 (Part 6/Sec 1) : 1988	S	One	Every 10 th Control Unit	See Note 4
	b) Resistance to salt spray (for 96 h)	CI 3	IS 101 (Part 6/Sec 1) : 1988	S	One	Every 10 th Control Unit	-do-
SI No. (xiii)	Keeping properties	-	IS 101 (Part 6/Sec 2) : 1989	R	One	Every 10 th Control Unit	-do-
6.1	Conformity of Metal Containers	-	IS 1407 or IS 2552	S	One	Each consignment	See Note 5

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 to BO head.

Note-3: If any sample fails in these requirements (each control unit test), that control unit shall be considered unfit for the purpose of marking. After taking needful corrective actions, sample from every subsequent control unit shall be tested and regular frequency shall be resumed only when samples from 2 consecutive control units pass.

Note-4: If any sample fails in these requirements (every 10th Control unit test), that control unit shall be considered unfit for the purpose of marking. After taking needful corrective actions, sample from every subsequent control unit shall be tested and regular frequency shall be resumed only when samples from 5 consecutive control units pass.

Note-5: Conformity of raw materials and metal containers to the requirement of the specification may be established through either of the following or a combination of the same (No testing is required if the material is ISI marked):

- i. Test report from a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau
- ii. Material manufacturer's test certificate
- iii. In house factory test report