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उत्पाद मैनुअल
वायु शुष्क लाल ऑक्साइड- जस्ता क्रोम
प्राइमिंग के लिए तैयार मिश्रित रंग रोगन विशिष्टि
IS 2074: 2023 के अनुसार

PRODUCT MANUAL
FOR Ready Mixed Paint, Air Drying
, Red Oxide – Zinc Chrome, Priming— Specification
ACCORDING TO IS 2074: 2023

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता 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 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 uniformity 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.

1.	मानक संख्या IS No.	:	IS 2074 : 2023
	शीर्षक Title	:	वायु शुष्क लाल ऑक्साइड- जस्ता क्रोम प्राइमिंग के लिए तैयार मिश्रित रंग रोगन- विशिष्टि Ready Mixed Paint, Air Drying , Red Oxide – Zinc Chrome, Priming — Specification
	संशोधनों की संख्या No. of amendments	:	01
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Pigments and driers shall be as per cl. 5 of IS 2074 : 2023, Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	There are no different varieties mentioned in the Indian Standard, so no grouping guidelines required.

c)	नमूने का परिमाण Sample Quantity	: 4 x 500 ml Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer to Annex-A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer to Annex-B
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	Consistency, mass, Flash point, Finish, Drying Time, Viscosity, Colour, Volume solids, Scratch Hardness, Bend Test- on conditioned samples as applicable Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide readyreference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.	
6.	लाइसेंस का दायरा /Scope of the Licence:	
	IS 2074 : 2023 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है "Licence is granted to use Standard Mark as per IS 2074 : 2023 with the following scope:	
	उत्पाद का नाम Name of the product	READY MIXED PAINT, AIR DRYING, RED OXIDE – ZINC CHROME PRIMING

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

ANNEX – A

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sr. No.	Tests used in with Clause Reference	Chemicals	Test equipment
1.	Zinc oxide content Chromic anhydride content (5.1.1)	Dilute Sulphuric Acid, Potassium Iodide Solution, Standard Sodium Thiosulphate, Starch Solution, Potassium Ferricyanide Solution, Ammonium Bifluoride, Sodium Hydroxide Solution, Alcohol , Glacialacetic acid, Petroleum Hydrocarbonsolvent, Phenol, Bromine, Ammonia solution	Stirrer glass rod water-bath, Ice water, separating funnel, Filter paper (Whatman No.42) conical flask, Titration stand with pipette, petri Dish,conical flask , weighing balance, distillation unit oven , test tube, Porcelain Tile, Evaporating Dish
2.	Total Non volatile content, 5.1	toluene , Methyl alcohol, PetroleumHydrocarbon Solvent, Acetone	Centrifugal machine, centrifuge tube, water-bath, Analytical balance, oven ,petri dish
3.	Red Oxide (5.1.1)	Standard Potassium Dichromate Solution, Stannous Chloride Solution, Hydrochloric Acid, Dilute Sulphuric Acid, Phosphoric Acid, Saturated Aqueous Solution of Mercuric Chloride, Diphenylamine Indicator	water-bath, Hot Plate Filter paper (Whatman No. 30)
4.	Lead restriction (clause 5.5)	<u>Electrolysis method:</u> Concentrated nitric acid Ammonium nitrate Copper sulphate Alcohol <u>Molybdate method:</u> Concentrated Nitric acid Concentrated sulphuric acid Distilled water Ethyl alcohol Dilute sulphuric acid Ammonium acetate Glacial acetic acid Ammonium para molybdate Ammonical ammonium nitrate <u>Sulphide method:</u> Hydrochloric acid Hydrogen sulphide <u>Atomic Absorption Spectroscopy</u> Ammonium acetate	Analytical balance <u>Electrolysis method:</u> Oven Muffle furnace Desiccator Evaporating dish Texture paper Electrolytic cell with platinum gauze electrode <u>Molybdate method:</u> Oven Muffle furnance Paper pulp pad Hot plate porcelain filtering crucible <u>Sulphide method:</u> Hotplate Oven Filter

		Nitric acid Lead standard stock solution Ammonium acetate Distilled water CRM <u>Inductively Coupled Plasma-Optical emission Spectrometry</u> Concentrated nitric acid Concentrated hydrochloric acid Nitric acid Hydrogen peroxide Water CRM	<u>Atomic Absorption Spectroscopy</u> Atomic Absorption spectrophotometer Muffle furnace Hot plate Glass beaker Porcelain crucible, Dropping bottle Filter paper <u>Inductively Coupled Plasma-Optical emission Spectrometry</u> Electric hot plate capable of reaching at least 140 °C surface temperature Microwave extraction apparatus consisting of a microwave digestion system with power output regulation and fitted with a temperature control system Oven hotplate Sample vessels (closed) Glass beakers Volumetric flasks Volumetric pipets
5.	Consistency (5.6 & table 1)		Palette Knife or Metal Rod, glass panel of size 150 mm x 50 mm
6.	Viscosity (5.6 & table 1) Flow Cup method		Glass Panels, Flow cup , thermometer (accuracy 0.2 degree, LC 0.1 degree), stand , stop watch, Glass plate 150 micron Sieve, Temperature controlled room, Spirit level
7.	Mass in Kg / 10 litre (5.6 & table 1)		Thermometer Pycnometer, Analytical balance Temperature controlled chamber/water bath
8.	Drying Time (5.6 & table 1)		Mild steel panel, Brush, Conditioning chamber, Stop watch, Silver sand, Panel stand
9.	Finish (5.6 & table 1)		Mild steel panel, Brush & panel stand,
10.	Gloss 60 degree (5.6 & table 1)		Gloss meter Coat thickness meter Conditioning chamber Certified reference material
11.	Fineness of grind (5.6 & table 1)		gauze ,scraper

12.	Colour (5.6 & table 1)		Mild steel panel, Brush & panel stand Oven , Humidity Chamber, Thickness gauge Color matching table, Reference Table artificial light source
13.	Flexibility and adhesion Bend Test (5.6 & table 1)		Bending Mandrel, Humidity chamber, coat meter, Test panel , Brush, panel Stand, arrangement for testing at $27 \pm 2^{\circ}\text{C}$ and 65 ± 5 percent relative humidity,
	Flexibility and adhesion Scratch Hardness (5.6 & table 1)		Automatic hardness Tester with needle, Mild steel panel, Brush & panel stand, Humidity Chamber
14.	Flash Point (5.6 & table 1)		Flash point apparatus, Thermometer, bath
15.	Volume Solids (5.6 & table 1)		Volume solid disk , Analytical Balance, Beaker Mass per liter cup, Oven
16.	Resistance to Humidity under condition of condensation - Resistance to humidity (5.6 & table 1)	Distill water	Metal Panels, Hot Plate Corrosion Cabinet with arrangement for temperature cycle, Humidity chamber Rotating panel rack , Oven
17.	Resistance to Humidity under condition of condensation - Resistance to sea water (5.6 & table 1)	molten wax	Salt Spray apparatus, Mild steel panel, Coat meter
18.	Resistance to Humidity under condition of condensation Resistance To Salt Spray (5.6 & table 1)	spray solution	Spray cabinet, Mild steel panel, Cotton wool, Collecting device Ph meter Sodium chloride (as per the specification given in IS 101:part 6:Sec 1), Ventilated chamber for drying of panel at room temperature and at 60-65 degree centigrade
19.	Accelerated storage (5.6 & table 1)		Oven Metal container, 500 MIFord cup Gloss meter
20.	Keeping Properties (5.6 & table 1)		Spatula Weighing balance Nylon Brush Test surface
21.	Wet opacity (5.7 & table 2)		Chart Film applicators Reflect meter Conditioning chamber Template/die stamp Adhesive tape

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: the entire quantity of the product produced in a batch mixer at a time.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be printed on each container and/or on the label (if applied to the container), provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 Additional Marking requirements: The material shall also be marked with the following additional requirement on the label applied to the container

a) “For BIS certification details please visit www.bis.gov.in”

4. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub contracting permitted	Levels of Control		
Cl.	Requirement	Test Method Clause Reference			No. of Sample	Frequency	Remarks
5.1	Composition a) Pigment b) Driers	5.1	IS 2074 : 2023	R	Firm to have adequate in-process controls to check compliance of this parameter. Appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.1.1	(a)Zinc chrome	Annex B	IS 2074 : 2023	R	One	-do-	
	(b) red oxide (as Fe2O3), % by mass	6	IS 6947(pt2)	R	One	-do-	
	(c) Suitable Extenders	-	IS 2074 : 2023	R	One	-do-	
5.1.2	Volatile vehicle	5.1.2	IS 2074 : 2023	R	Firm to have adequate in-process controls to check compliance of this parameter. Appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.2	Suitability for use with oleoresins synthetic and nitrocellulose based undercoats, surfacers, fillers and Putty	5.2	IS 2074 : 2023	R			
5.3	Compatibility with Thinner	5.3	IS 2074 : 2023	R			
5.4	Freedom from Objectionable Impurities	5.4	-do-	R			
5.5	Lead Restriction		IS 101(Pt 8/Sec 5)	R	One	Every Control Unit	
5.6 & Table 1							
i)	(a) Consistency	Annex C	IS 2074 : 2023	R	One	-do-	
	(b) Viscosity by ford cup no. 4 at 27 ± 2°C		IS 101 (Pt 1/Sec 5)	R	One	-do-	
ii)	Mass in kg /10 litre		IS 101(Pt 1/Sec 7)	R	one	Every Control Unit	

iii	Drying time, h, a) Surface dry b) Hard dry		IS 101 (Pt 3/Sec 1)	R	One	-do-	
iv)	a) Finish	-	IS 101 (Pt 3/Sec 4)	R	one	-do-	
	b) Gloss 60°	-	IS 101(Pt 4/Sec 4)	R	one	-do-	
v)	Fineness of grind, microns		IS 101(Pt 3/Sec 5)	R	One	-do-	
vi)	Colour		IS 101(Pt 4/ Sec 2)	R	One	-do-	
vii)	Flexibility and Adhesion: a) Bend test (with 6.25 mm dia mandrel and in type 1 apparatus) b) Scratch hardness (load 1000 g)	CI 2 CI 3	IS 101 (Pt 5/Sec 2) IS 101 (Pt 5/Sec 2)	R	One	-do-	
viii)	Flash point		IS 101 (Pt 1/Sec 6)	R	One	-do-	
ix)	Volume solids,		IS 101 (Pt 8/Sec 6)	R	One	-do-	
x)	Resistance to humidity under condition of condensation						
	a) Resistance to humidity	CI 2	IS 101 (Pt 6/Sec 1)	S	One	Every 10th Control unit	
	b) Resistance to sea water	Annex D	IS 2074 : 2023	R	One	-do-	(applicable for marine paints only)
	c) Resistance to salt spray	Annex E	IS 2074 : 2023	S	One	-do-	
xi)	Accelerated storage stability test	Annex F	IS 2074 : 2023	R	One	-do-	
xii)	Keeping properties.		IS 101(Pt 6/Sec 2)	R	One	-do-	
5.7 and table 2	Optional Requirements						
i)	Consistency	Annex C		R	One	Each control unit	
ii)	Hard dry		IS 101 (Part 3/Sec 1)	R	One	-do-	
iii)	Non- volatile vehicle, percent		IS 101(Part 8/Sec 2)	R	One	-do-	This requirement is also applicable for defense supply

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							as additional requirement (Note under Cl 5.1)
iv)	Wet opacity		IS 101(Part 4/ Sec 1)	R	One	Alternate control unit	