उत्पाद मैन्युअल
रंग रोगन के लिए आयरन ऑक्साइड
IS 44: 2025 के अनुसार

PRODUCT MANUAL FOR
IRON OXIDE PIGMENTS FOR PAINTS — SPECIFICATION
ACCORDING TO IS 44: 2025

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 44: 2025
	शीर्षक **Title**	:	IRON OXIDE PIGMENTS FOR PAINTS
	संशोधनों की संख्या **No. of amendments**	:	NIL
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	*No specific requirement* 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**	:	Separate samples of each Group, Category, Type, Grade and Class shall be tested to cover that Group, Category, Type, Grade and Class in the scope of the licence.
c)	**नमूने का परिमाण** **Sample Quantity**	:	2 x 500 gm Iron oxide pigments + 2 x 500 gm Approved Sample 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)

d)	**परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर** **Parameters to be Declared in Test Request**	**:**	a) Group b) Category c) Type d) Grade e) Classes Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	**परीक्षण उपकरणों की सूची** **List of Test Equipment**	:	Please refer to Annex – B
4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	Please refer to Annex - C
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**		
	All tests except Sum of water soluble chloride and sulphate expressed as Cl and SO4test (Clause 5.3, Table 1) are possible to be done in a day. 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 ready reference 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 44: 2025 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 44: 2025 with the following scope:		
	उत्पाद का नाम **Name of the product**	IRON OXIDE PIGMENTS FOR PAINTS	
		Please refer to Annex – A	

ANNEX– A
Scope of the Licence

IS 44: 2025 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 44: 2025 with the following scope:

उत्पाद का नाम/Name of the product - IRON OXIDE PIGMENTS FOR PAINTS

Group, Category, Type, Grade and Class: As given in the table given below:

Sl No.	**Group** (Depending on colour)	**Category** (depending on min iron content)	**Type** (Depending on content of water-soluble matter and total water-soluble chlorides and sulfates)	**Grade** (depending on residue on sieve)	**Classes** (Depending on their origin)
1.	Red	A	Type I/Type II	Grade1/ Grade 2/ Grade 3	Class A/ Class B/ Class C
		B			
		C			
2.	Yellow	A	Type II	Grade1/ Grade 2/ Grade 3	Class A/ Class B/ Class C
		B			
		C			
3.	Brown	A	Type I/Type II	Grade1/ Grade 2/ Grade 3	Class A/ Class B/ Class C
		B			
		C			
4.	Black	A	Type II	Grade1/ Grade 2/ Grade 3	Class A/ Class B/ Class C
		B			

ANNEX– B
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Major test equipment required to test as per the Indian Standard

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Form and Condition , Cl 5.3	Palette knife
2	Lead Restriction, Cl 5.4	ICP-OES or AAS (IS 101 (Part 8/Sec 5), Certified reference material,
3	Heavy Metal Restriction, Cl 5.5	Apparatus as per relevant atomic absorption spectroscopic methods.
4	Total iron, Cl 5.6 & Table 4 i)	**A. EXTERNAL INDICATOR METHOD** Hydrochloric Acid Standard Potassium Dichromate Solution Stannous Chloride, Concentrated hydrochloric acid Balance Mercuric Chloride Solution Potassium Ferricyanide Indicator Water bath Hot plate Long necked flask Watch-glass Potassium permanganate Burette with stand Pipette **B. INTERNAL INDICATOR METHOD** Standard Potassium Dichromate Stannous Chloride Solution Mercuric Chloride Solution Sulphuric Acid – Phosphoric Acid Mixture Volumetric Flasks Sodium Diphenylamine Sulphonate Indicator Solution Weighing balance Water bath Hot plate Long necked flask Watch-glass Potassium permanganate Beakers Burette with stand Pipette **B. METHOD 3 ALUMINIUM REDUCTION METHOD** Potassium Dichromate Hot Oven Weigh balance volumetric flask distilled water Strength of K2Cr2O7 solution Concentrated HCl Al-foil (*A. R. Grade*) NH4HF2/Syrupy H3PO4

		Barium Diphenylamine sulphonate Indicator solution
5	Volatile matter , IS 33	Standard Atmospheric Conditions for testing, Wide Mouthed Weighing Bottle with ground glass stopper, Oven Balance Desiccator
6	Matter soluble in water, IS 33	Volumetric Flasks Colloid Filter Evaporating Dish –(Glass, platinum, glazed porcelain or silica). Oven BALANCE Desiccator Distilled Water Beaker Hot plate Coagulating agent Water Bath Wetting agent(Ethanol/Ethylene oxide)
7	Sum of water-soluble chloride and sulphate expressed as Cl– and SO4, Cl 5.6 & Table 4 iv)	**A. DETERMINATION OF SULPHATE** Balance Water bath Hot plate Volumetric flasks Filter paper Hydrochloric Acid Barium chloride Tared sintered crucible (P 10 or P 16) Desiccator Muffle furnace Barium Chloride Solution **B. DETERMINATION OF CHLORIDE** Silver Nitrate Solution, Potassium Chromate Solution, Beakers, Burette with stand, Pipette, Potentiometric titrator (alternatively)
8	Residue on sieve , IS 33	Sieves (IS sieves of 45 micron) Brush Sintered Glass Crucible - of porosity Grade P 40. Oven Balance – accurate to 1 mg Desiccator Wash Bottle Beaker Volumetric Flasks Suitable dispersing agent Stirrer Distilled Water Weighing bottle
9	Oil absorption , IS 33	Plate Palette Knife Burette-10 ml Balance Refined linseed oil,

10	pH of aqueous extract, IS 33	Glass Container with stopper pH Measuring Device Balance Distilled water Thermometer Suitable wetting agent
11	Loss on ignition,, Cl 5.6 & Table 4 viii)	Balance Oven Porcelain crucible Muffle furnace
12	Colour , Cl 5.6 & Table 4 ix)	Plate Palette Knife Balance Vibro Shaker Mechanical Stirrer Spectrophotometer capable of measuring colour difference (ΔE) [for colour] Black and White Paper drawdown paper Bar Coater K-7 80 Mesh Nylon Filter Cloth Long Oil Alkyd Mineral Spirit Zinc Octoate Dipentine Cobalt Octoate Strontium Octoate Reference Pigment (Approved sample) Pigment Under Test SS metal container white tintable enamel base paint rutile titanium dioxide content of at least 15 percent by mass. Spatula Oven
13	Strength percentage, Cl 5.6 & Table 4 x)	
14	Total calcium, Cl 5.6 & Table 4 xi)	**METHOD 1 TITRIMETRIC METHOD** Dilute Hydrochloric Acid Ammonium Hydroxide Hydrogen Peroxide Ammonium Oxalate Solution Dilute Sulphuric Acid Standard Potassium Permanganate Solution Balance Beakers Volumetric flasks Pipette Filter paper Hot plate, Burette with stand **METHOD 2 — DETERMINATION OF TOTAL CALCIUM BY FLAME ATOMIC ABSORPTION SPECTROMETRIC (AAS) METHOD**

		hydrochloric acid hydrofluoric acid. Sulfuric Acid Caesium Chloride Calcium Standard Stock solution Calcium Standard Solution Acetylene Dinitrogen oxide Flame Atomic Absorption Spectrometer Oven Hot plate/water bath platinum crucible.

ANNEX C

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: Total quantity of IRON OXIDE PIGMENTS FOR PAINTS of one variety (Group, Category, Type, Grade and Classes) produced 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.

2.3 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/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.4 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.

2.4.2 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 facilitiesor get testing done from BIS recognized/empaneled laboratory or any other laboratory having validNABL accreditation as per IS/ISO/IEC 17025.

2.5 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least withtest facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different testsgiven 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.

2.5.2 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.

2.6 **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 laboratoryor 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 incorporated legibly and indelibly on each container of iron oxide pigment or on a label applied to the container, provided always that the material so marked conforms to each requirement of the specification.

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

3.4 **Additional Marking requirements**: The container of iron oxide pigment/label applied on the container shall also be marked with the following additional requirement.

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: Subcontracting permitted**	**Levels of Control**		
Cl.	**Requirement**	**Test Method**			**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**				
5.1	Composition	-	IS 44	R	Manufacturer shall maintain adequate inspection and in process control, to ensure product meets specified requirements and maintain test records		
5.3	Form and Condition	-	IS 44	R			
5.4	Lead Restriction	-	IS 44	S	One	Once in a month	
5.5	Heavy Metal Restriction	-	IS 44	R	One	Each control unit	
5.6 & Table 4 i)	Total iron,	Annex B	IS 44	R	One	Each control unit	
ii)	Volatile matter	-	IS 33	R	One	Each control unit	
iii)	Matter soluble in water,	-	IS 33	R	One	Each control unit	
iv)	Sum of water-soluble chloride and sulphate expressed as Cl^- and SO^{-2}_4,	Annex C	IS 44	R	One	Alternate days	
v)	Residue on sieve	-	IS 33	R	One	Each control unit	
vi)	Oil absorption	-	IS 33	R	One	Each control unit	
vii)	*p*H of aqueous extract	-	IS 33	R	One	Each control unit	
viii)	Loss on ignition,	Annex D	IS 44	R	One	Each control unit	
ix)	Colour	Annex E	IS 44	R	One	Each control unit	
x)	Strength percentage	Annex E	IS 44	R	One	Each control unit	
xi)	Total calcium,	Annex F	IS 44	R	One	Each control unit	