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मानक

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Jawaharlal Nehru

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IS 427 (2005): Distemper, dry, color as required [CHD 20: Paints, Varnishes and Related Products]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
अपेक्षित रंग के शुष्क डिसटेम्पर — विशिष्टि
(दूसरा पुनरीक्षण)

Indian Standard
DISTEMPER, DRY, COLOUR
AS REQUIRED — SPECIFICATION
(*Second Revision*)

UDC 667.633.22

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1953 and then revised in 1965.

In this revision, requirement for application is given. Storage criteria for the requirement of keeping properties is also specified. Requirement for behaviour towards lime is replaced by resistance to alkali. Also, changes made in this standard through various amendments have been amalgamated in this revised edition.

A scheme for labelling environment friendly products to be known as ECO-Mark is being introduced at the instance of the Ministry of Environment and Forests (MEF). The ECO-Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 20 February 1991 published in the Gazette of the Government of India. For a product to be eligible for ECO-Mark it shall also carry Standard Mark of BIS for quality besides meeting additional optional environment friendly (EF) requirements.

This standard is one of the two standard on distempers. The other standard is IS 428 : 2000 'Washable distemper — Specification (*second revision*)'.

The composition of the Committee responsible for the formulation of this standard is given in Annex G.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DISTEMPER, DRY, COLOUR AS REQUIRED — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for dry distemper, colour as required. The material is used as a flat finish for protection and interior decoration on building surfaces.

2 REFERENCES

The standards given in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 1303 and the following shall apply.

3.1.1 Ambient Temperature — It is the temperature between 21°C and 38°C.

3.1.2 Volatile Organic Compounds (VOC) — The

volatile matter content minus the water content in dry distemper.

4 REQUIREMENTS

4.1 Form and Condition

The material shall be in the form of a fine dry, homogeneous powder free from odour of putrefaction as such and when mixed with water.

4.2 Composition

4.2.1 The material shall consist of suitable pigments, extenders lime-proof tinters, water-soluble binders and preservatives mixed in suitable proportions to comply with the requirements of this standard.

4.2.2 The material, when mixed with an adequate quantity of water, shall also comply with the requirements given in Table 1.

4.3 Preparation of Sample for Testing

4.3.1 The sample of the material for testing shall be prepared by mixing with suitable quantity of water/hot water, according to the direction given by

**Table 1 Requirements for Distemper, Dry, when Mixed with
Adequate Quantity of Water, Colour as Required**

(Clauses 4.2.2 and 7)

Sl No.	Characteristic	Requirement	Methods of Test, Ref to	
			Annex	IS 101
(1)	(2)	(3)	(4)	(5)
i)	Drying time, hard dry	Not more than 3 h on a 150 mm × 100 mm asbestos cement panel/concrete panel	B	-
ii)	Consistency	Smooth and uniform mixture suitable for application by brushing	-	(Part 1/Sec 5)
iii)	Finish	Smooth and matt	-	(Part 3/Sec 4)
iv)	Colour	Close match to the specified IS colour where specified	-	(Part 4/Sec 2)
v)	Fastness to light	Shall pass the test	-	(Part 4/Sec 3)
vi)	Residue on sieve, percent by weight, Max	5.0	C	-
vii)	Recoating properties	Shall pass the test	D	-
viii)	Resistance to alkali	Shall pass the test	E	-
ix)	Resistance to dry rubbing	Shall pass the test	F	-

the manufacturer for application by brushing, and it shall be kept for 4 h to allow complete dissolution of glue.

4.3.2 Panels used for all tests, unless otherwise mentioned, shall be prepared as specified in **4.3.2.1** and **4.3.2.2**.

4.3.2.1 Concrete panels of size 150 mm × 150 mm × 12.5 mm, shall be prepared as follows:

Cement (<i>see</i> IS 269)	450 g
Sand (<i>see</i> IS 650)	900 g
Aggregates (<i>see</i> IS 383)	450 g
Water	180g

Cast the mix into a mould 30 cm × 30 cm × 1.25 cm in size, suitably partitioned to give four panels. Trowel cut the top surface of the block after compacting and levelling with a wooden float, taking care that all the material remains in the mould. The blocks are allowed to harden in air for 24 h and then cured in water for 14 days. They are ready for use after this, and shall be stored in a place free from chemical fumes.

4.3.2.2 Preparation of Substratum

This consists of a 150 mm × 150 mm block of neat cement with a neeru finish of 2 to 3 mm thickness. This is prepared as follows:

The run lime from slaked quick lime is allowed to mellow for 10 days. The supernatant liquid is then allowed to run off and the top layer of lime putty skimmed and well mixed with fine sand (passing 2 mm sieve) in the proportion of 4 : 1 (4 parts lime putty to 1 part sand). The mixture is then ground thoroughly between two stones to yield a paste, which is applied to the neat cement block with a steel trowel to a thickness of 2 to 3 mm. This is allowed to dry for 24 h and then rubbed and polished with felt block. The surface is allowed to cure for one month and then used for carrying out the test.

4.4 Application

The material after thinning shall be suitable for application by brush. The resulting film shall be smooth and uniform.

4.5 Keeping Properties

The material shall conform all the requirements as mentioned in **4.1**, **4.2**, **4.4**, **4.5** and Table 1 for a minimum period of one year from the date of manufacture when stored in original sealed container at ambient temperature.

4.6 Optional Requirements for ECO-Mark

4.6.1 General Requirements

4.6.1.1 The product shall conform the requirements

for quality, safety and performance prescribed under **4.1** to **4.6**.

4.6.1.2 The manufacturer shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the provisions of *Water (Prevention and Control of Pollution) Act, 1974* and *Air (Prevention and Control of Pollution) Act, 1981* along with the authorization, if required under the *Environment (Protection) Act, 1986* and Rules made thereunder, while applying for ECO-Mark.

4.6.2 Specific Requirements

4.6.2.1 The product shall contain not more than 5 percent, by mass, volatile organic compounds, when tested according to the method prescribed in IS 101 (Part 2/Sec 1) and IS 101 (Part 2/Sec 2).

4.6.2.2 The product shall not contain more than 0.1 percent by mass (as metal), of any toxic metals such as lead, cadmium, chromium (VI) and their compounds when tested by the relevant atomic absorption spectrophotometric methods.

4.6.2.3 The product shall not be manufactured from any carcinogenic ingredients.

NOTE — The Central Drugs Research Institute and Industrial Toxicological Research Centre would furnish a list of carcinogenic ingredients to BIS and would also keep BIS informed about the changes therein.

5 PACKING AND MARKING

5.1 Packing

Unless otherwise agreed to between the purchaser and the supplier, the material shall be packed in suitable metal or plastic containers.

5.1.1 The ECO-Marked product shall be packed in such packages which shall be recyclable/reusable or biodegradable. It shall be accompanied with instructions for proper use so as to maximize product performance and minimize wastage.

NOTE — Subsequently the parameters evolved for packaging material/packages for ECO-Mark, which are being separately notified/ circulated, shall also apply.

5.2 Marking

5.2.1 Each container shall be marked with the following:

- Name of the material;
- Indication of the source of manufacture;
- Weight of the material;
- Batch No. or Lot No. in code or otherwise; and
- Month and year of manufacture.

5.2.2 BIS Certification Marking

The container may also be marked with the Standard Mark.

5.2.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5.2.3 In case of products certified for ECO-Mark, three major ingredients and hazardous chemicals shall be marked on the container.

5.2.3.1 The criteria for which the product has been labelled as ECO-Mark may also be marked on the container.

5.2.4 Other details of packing and marking shall be in accordance with the instructions given by the purchaser.

6 SAMPLING

6.1 Representative samples of the material shall be

drawn as prescribed in IS 101 (Part 1/Sec 1).

6.2 Number of Tests

Test for all characteristics specified shall be conducted on the composite sample.

6.3 Criteria for Conformity

The lot shall be considered as conforming to the requirements of this standard, if the test results of the composite sample satisfy all the requirements specified in the standard.

7 TEST METHODS

7.1 Tests shall be conducted as prescribed in **4.1, 4.2, 4.4, 4.5** and in col 4 and 5 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

IS No	Title	IS No.	Title
101	Methods of sampling and test for paints, varnishes and related products:	(Part 6/Sec 1): 1988	Durability tests, Section 1 Resistance to humidity under conditions of condensation (<i>third revision</i>)
(Part 1/Sec 1): 1986	Test on liquid paints (general and physical), Section 1 Sampling (<i>third revision</i>)	269 : 1989	Specification for 33 grade ordinary portland cement (<i>fourth revision</i>)
(Part 1/Sec 5): 1989	Test on liquid paints (general and physical), Section 5 Consistency (<i>third revision</i>)	383 : 1970	Specification for coarse and fine aggregates from natural sources for concrete (<i>second revision</i>)
(Part 2/Sec 1): 1988	Test on liquid paints (chemical examination), Section 1 Water content (<i>third revision</i>)	650: 1991	Specification for standard sand for testing of cement (<i>second revision</i>)
(Part 2/Sec 2) : 1986	Test on liquid paints (chemical examination), Section 2 Volatile matter (<i>third revision</i>)	1070 : 1992	Reagent grade water (<i>third revision</i>)
(Part 3/Sec 4): 1987	Tests on paint film formation, Section 4 Finish (<i>third revision</i>)	1303 : 1983	Glossary of terms relating to paints (<i>second revision</i>)
(Part 4/Sec 2): 1989	Optical tests, Section 2 Colour (<i>third revision</i>)	2096 : 1992	Specification for asbestos cement flat sheets (<i>first revision</i>)
(Part 4/Sec 3): 1988	Optical tests, Section 3 Light fastness test (<i>third revision</i>)		

ANNEX B

[Table 1, Sl No. (i)]

DETERMINATION OF DRYING TIME

B-0 GENERAL

B-0.1 Outline of the Method

An asbestos cement panel (*see* IS 2096) or concrete panel described under **4.3.2.1** is evenly coated with the material by appropriate method and air-dried for a specified time. Another coat is applied at the end of the specified time.

B-1 PROCEDURE

B-1.1 Apply by appropriate method one coat of the

material to give a wet film thickness of 50 microns on a 150 mm × 100 mm asbestos cement panel/concrete panel and air dry for 3 h in a well-ventilated room in a horizontal position. During drying, protect the film from direct sunlight.

B-1.2 The requirement of this standard shall be taken as having been satisfied, if after application of second coat, lifting or working up of the first coat is not observed.

ANNEX C

[Table 1, Sl. No. (vi)]

DETERMINATION OF RESIDUE ON SIEVE

C-0 GENERAL

C-0.1 Outline of the Method

The material is made into a thin paste with water and passed through a 63 micron IS Sieve.

C-1 PROCEDURE

C-1.1 Weigh accurately not less than 50 g of the sample and transfer to a 250 ml beaker. Mix the material to a thin paste with water and keep for 24 h. After this period, thoroughly mix the contents of the beaker and break up all lumps with the flattened end of a stirring

rod without grinding action. Then transfer the contents of the beaker to a 63 micron IS sieve, using a wash bottle containing water. Remove with a camel-hair brush any small particles of the material that may be retained on the stirring rod or the sides of the beaker. Wash the residue left on the sieve with water and gently brush with a camel-hair brush until the water passing over the residue and through the sieve is clear and free from solid particles. When washing is complete, dry the sieve for 1 h at $100 \pm 2^\circ\text{C}$, cool and then weigh the residue.

C-1.2 Calculate and express the result as percentage by weight of the material taken for the test.

ANNEX D

[Table 1, Sl No. (vii)]

DETERMINATION OF RECOATING PROPERTIES

D-0 GENERAL

D-0.1 Outline of the Method

The material is converted into brushing consistency and a coat applied on neat cement block. After allowing to dry for a specified time, a second coat is applied to test the ability of the material to take the second coat.

D-1 PROCEDURE

D-1.1 Mix the material with water to produce material

of a suitable consistency for application by brushing. Apply one coat of the mixed material on a clean 150 mm × 100 mm neat cement block of thickness 6 ± 1 mm and allow to air dry for 3 h. Apply a second coat at the end of this period.

D-1.2 The requirement of the standard shall be taken as having been satisfied, if it is possible to apply the second coat without lifting or working up of the first coat.

ANNEX E

[Table 1, *Sl No.* (viii)]

TEST FOR RESISTANCE TO ALKALI

E-0 GENERAL

E-0.1 Outline of the Method

The material is converted into brushing consistency and applied on a 1:1:6 portland cement, lime and sand plaster of specified thickness. The coat of the material thus prepared is subjected to a corrosion test for a specified period after which it is tested for any change in colour.

E-1 PREPARATION OF SUBSTRATUM

E-1.1 This consists of a 150 mm × 150 mm × 0.8 mm block of 1:1:6 cement, lime and sand prepared as described in **E-1.1.1.1**.

E-1.1.1 The run lime from slaked quick time is allowed to mellow for 10 days. The supernatant liquid is then allowed to run off and the top layer of lime putty skimmed and well mixed with a mixture of fine sand (passing 2 mm sieve) and portland cement in the proportion of 1:1:6 (1 part portland cement, 1 part lime putty and 6 part sand). This mixture is gauged

with water (15 percent by mass of the mixture) and block is cast. This is allowed to cure first at 100 percent relative humidity for 24 h and then for 6 days under water. The block is air-dried and used within one month. Before application of the material, the block should be soaked in water for 24 h and brought to surface dry condition by exposure to air.

E-2 PROCEDURE

E-2.1 The material is mixed with water to produce a suitable consistency for application by brushing. The prepared cement block is coated with a uniform normal coat commensurate with satisfactory coverage and appearance of the mixed material. Allow this to air-dry in a vertical position for 24 h. Then suspend this block vertically in a closed corrosion chest of the type described in **2.1.2** of IS 101 (Part 6/Sec 1). Examine the block daily for a period of 7 days.

E-2.2 The requirement of the standard shall be taken as having been satisfied, if the film of the material shows no change in colour.

ANNEX F

[Table 1, *Sl No.*(ix)]

TEST FOR RESISTANCE TO DRY RUBBING

F-0 GENERAL

F-0.1 Outline of the Method

The dry material is converted into consistency suitable for application and then spread on a neat cement block. A second coat is applied and allowed to dry for a specified time. By rubbing the coated material with a piece of cloth, the extent to which the test cloth is soiled as compared to an approved sample of the material similarly tested at the same time, the material is assessed for resistance to dry rubbing.

F-1 PROCEDURE

F-1.1 Mix the material with water to produce material of a suitable consistency for application by brushing.

Apply one coat of the mixed material on a clean 150 mm × 150 mm block of neat cement and allow to air dry for 3 h. Apply a second coat at the end of this period and allow to dry in a vertical position for 24 h.

F-1.2 The film shall then be rubbed firmly with a piece of white or black cloth according to the colour of the material.

F-1.3 The requirement of the standard shall be taken as having been satisfied, if the test cloth is not soiled by the film prepared from the material to a greater extent than by that prepared from the approved sample, when both are tested by the same person, in the manner and at the same time.

ANNEX G

(Foreword)

COMMITTEE COMPOSITION

Paints, Varnishes and Related Products Sectional Committee, CHD 20

<i>Organization</i>	<i>Representative(s)</i>
In personal capacity (14, Orion, OmerPark, Bhulabhai Desai Road, Mumbai 400026)	SHRI RAVI MARPHATIA (<i>Chairman</i>)
Addisons Paint and Chemicals Ltd, Chennai	SHRI R. SRINTVASAN
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Asian Paints (India) Ltd, Mumbai	SHRI A. B. MENON
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Bharat Heavy Elcctricals Ltd, Tiruchirapalli	SHRI M. SOMU
Central Building Research Institute, Roorkee	DR L. K. AGARWAL
	DR K. K. ASTHANA (<i>Alternate</i>)
Central Public Works Deptt, New Delhi	SHRI VIJAY MOTWANI
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Indian Institute of Technology, Mumbai	DR A. S. KHANNA
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	SHRI N. C. TIWARI (<i>Alternate</i>)
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	Director (Chem), BIS

Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

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