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मानक

IS 14209 (1994): Epoxy enamel, two component, glassy [CHD 20: Paints, Varnishes and Related Products]



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Indian Standard

EPOXY ENAMEL, TWO COMPONENT, GLOSSY — SPECIFICATION

(First Reprint JULY 1996)

UDC 667 : 663-263.3 [678.586] : 667.629.82

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

Price Group 3

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Industrial Paints Sectional Committee had been approved by the Chemical Division Council.

This standard is one of the series dealing with the standards for Epoxy/Polyurethane/Chlorinated rubber and other special paints required for the painting of steel structures and equipment.

While formulating this standard, assistance has been obtained from Swedish Standards SIS 18 5201, SIS 18 5202, SIS 18 5203 which is thankfully acknowledged.

The composition of technical committee responsible for formulation of this standard is given in Annex D.

For the purpose of deciding whether a particular requirement of this standard it 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.

AMENDMENT NO. 1 APRIL 2006 TO

IS 14209 : 1994 EPOXY ENAMEL, TWO COMPONENT, GLOSSY — SPECIFICATION

(*Page* 1, *clause* **4.1**) — Substitute the following for the existing clause:

'4.1 Composition

Paints complying with this standard shall comprise of epoxy resin as the principal binder. The manufacturer shall specify that the principal type of binder used in the paint has epoxy equivalent in the range of 350 to 600. The composition shall be such that it satisfies the requirements of this standard.'

(*Page* 1, *clause* **4.1.1**) — Substitute the following for the existing clause:

'4.1.1 The paint shall consist essentially of two components base and hardener or catalyst solution to be mixed in the appropriate ratio by volume as specified by paint supplier to satisfy all the requirements of this standard.'

(*Page* 4, *clause* C-1, *line* 3) — Substitute the words 'as given in Table 1, SI No. (vii), col 2' for 'at the temperature of $27 \pm 2^{\circ}$ C for a period of 4 weeks'.

(CHD 20)

Reprography Unit, BIS, New Delhi, India

Indian Standard

EPOXY ENAMEL, TWO COMPONENT, GLOSSY — SPECIFICATION

1 SCOPE

1.1 This standard prescribes requirements and method of sampling and test for two component epoxy enamel.

1.2 This material is expected to have adhesion on inorganic zinc coating and epoxy-primers, high toughness and abrasion resistance. This material is used as a finish coat for the painting of steel plant equipment where protection to salt water, chemicals, mineral oils, solvents and resistance to moisture protection under marine conditions are required.

2 REFERENCES

The Indian Standards listed in Annex A, are necessary adjuncts to this standard.

3 TERMINOLOGY

For the purpose of this standard the terms and definitions used in IS 1303 : 1983 shall apply.

4 REQUIREMENTS

4.1 Composition

Paints complying with this standard shall be epoxy based, with epoxy equivalent of 350-500. The manufacturer shall specify the principal type of binder used in the paint. The principal pigment and the type of solvent shall be specified by the manufacturer. The composition shall be such that it satisfies the requirements of this specification.

4.1.1 The paint shall consist essentially of two components base and hardener or catalyst solution to be mixed in a simple ratio of 3 : 1 by volume to satisfy all the requirements of this standard.

4.2 Keeping Properties

The material shall conform all the requirements as mentioned in Table 1 for a minimum period of one year from the date of manufacture when stored in original sealed containers under normal atmospheric condition.

4.3 The material shall conform to the requirements given in Table 1.

5 TESTS

5.1 Unless specified otherwise, tests shall be conducted as prescribed in IS 101, preferably

on the blasted panels. Reference to the relevant sections of that standard are given in col 4 of Table 1.

5.2 The preparation of metal panels shall be according to IS 101 (Part 1/Sec 3): 1986.

5.3 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1992) shall be employed.

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

6 PACKING AND MARKING

6.1 Packing

The material shall be packed in dual container. It shall ensure that the quality does not deteriorate during storage and shall be as agreed to between purchaser and supplier.

6.2 Marking

Each container shall be marked with the following information:

- i) Indication of the source of manufacture,
- ii) Batch No. or lot No. and month and year of manufacture,
- iii) Date of expiry, and
- iv) Mass of the material.

6.3 BIS Certification Marking

The product may also be marked with Standard Mark.

6.3.1 The use of the Standard Mark is governed by the provisions of 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.

7 SAMPLING

7.1 Representative samples of the material shall be drawn according to 6 of IS 101 (Part 1/Sec 1): 1986.

IS 14209 : 1994

Table 1 Requirements of Epoxy Enamel, Glossy

(Clauses	4.3	and	5.1)
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Sl No.	Characteristic	Requirement	Method of Test, Ref to IS 101	Annex
(1) A) WE	(2) T PAINT	(3)	(4)	(5)
i	Mass in kg per 10 litre, Min	9	Part 1/Sec7 : 1987	_
ii)	Consistency	Smooth and uniform	Part 1/Sec 5 : 1989	_
iii)	Flash point	Above 20°C	Part 1/Sec 6 : 1986	
iv)	Drying time, Max		Part 3/Sec 1 :1986	-
	a) Surface dry b) Hard dry	3 h 24 h		
v)	Percent volume, solids, Min	40	Part 8/Sec 6 : 1993	_
vi)	Pot life, Min	6 h		В
NOT	E - Tests from Sl No. (i) to (vi)	are for mixed paint.		
B) DRY	COAT			
i)	Pry film thickness per coat, <i>Min</i>	30 microns	Part 3/Sec 2 : 1989	_
ii)	Colour	Close match to the specified IS colour or to an agreed colour	Part 4/Sec 2 : 1989	_
iii)	Finish	Smooth and glossy	Part 3/Sec 4 :1987	_
iv)	Gloss, 60° Min	61	Part 4/Sec 4 : 1988	
v)	Scratch hardness test (1 500 g)	To pass the test	Part 5/Sec 1 : 1988	_
vi)	Flexibility and adhesion	To pass the test	Part 5/Sec 2 : 1988	
vii)	Acid/alkali resistance (10 percent Nitric acid at $27 \pm 2^{\circ}C - 24$ h, 20 percent sulphuric acid at $27\pm 2^{\circ}C - 16$ h, 25 percent, caustic soda at $27\pm 2^{\circ}C - 24$ h, 10 percent hydrochloric acid at $27\pm 2^{\circ}C - 48$ h)	The film shall not show signs of disintegration or change of colour to a greater extent. The loss of gloss shall not be more than 50 percent of the original gloss	_	С
	at $27\pm2^{\circ}C-48h$)	C		

NOTE — Tests mentioned at Sl No. (B) vi) and (vii) shall be carried out for the full system that is 1 coat of primer, 1 coat of intermediate and 1 coat of finishing paint or 1 coat of primer and 1 coat of finishing paint supplied by the same firm after 168 hours curing at 30° C

ANNEX A

(*Clause* 2.1)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
101 (Part 1/ Sec 1): 1986	Methods of sampling and test for paints, varnishes and related products: Part 1 Test on liquid paints (general		Drying time (<i>third revision</i>) (reaffirmed in February 1991)
	and physical), Sec 1 Sampling (<i>third revision</i>) (reaffirmed in February 1991)	101 (Part 3/ Sec 2): 1989	Methods of sampling and test for paints, varnishes and related products: Part 3 Tests on paint film formation
101 (Part 1/ Sec 3) : 1986	Methods of sampling and test for paints, varnishes and related products: Part 1 Test on liquid paints (general		Sec 2 Film thickness (<i>third</i> <i>revision</i>) (reaffirmed in June 1993)
	and physical), Sec 3 Pre- paration of panels (<i>third</i> <i>revision</i>) (reaffirmed in February 1991)	101 (Part 3/ Sec 4): 1987	Methods of sampling and test for paints, varnishes and related products: Part 3 Tests on paint film formation, Sec 4 Finish (<i>third revision</i>)
101 (Part 1/ Sec 5) : 1989	Methods of sampling and test for paints, varnishes and related products: Part 1 Test on liquid paints (general and physical), Sec 5 Consistency (<i>third revision</i>) (reaffirmed in June 1993)	101 (Part 4/ Sec 2) : 1989	(reaffirmed in June 1993) Methods of sampling and test for paints, varnishes and related products: Part 4 Optical tests on paint films, Sec 2 Colour (<i>third revision</i>) (reaffirmed in June 1993)
101 (Part 1/ Sec 6): 1987	Methods of sampling and test for paints, varnishes and related products: Part 1 Test on liquid paints (general and physical), Sec 6 Flash point (<i>third revision</i>) (reaffirmed in June 1993)	101 (Part 5/ Sec 1) : 198	Methods of sampling and test 8 for paints, varnishes and related products: Part 5 Mechanical tests on paint films, Sec 1 Hardness test (<i>third revision</i>) (reaffirmed in June 1993)
101 (Part 1/ Sec 7): 1987	Methods of sampling and test for paints, varnishes and related products: Part 1 Test on liquid paints (general and physical), Sec 7 Mass per 10 litre (<i>third revision</i>) (reaffir- med in June 1993)	101 (Part 5/ Sec 2) : 1988	Methods of sampling and test for paints, varnishes and related products: Part 5 Mechanical tests on paint films, Sec 2 Flexibility and adhesion tests (<i>third revision</i>)
101 (Part 3/	Methods of sampling and test	1070 : 1992	Reagent grade water (<i>third revision</i>)
500 1) : 1980	related products: Part 3 Tests on paint film formation, Sec 1	1303 : 1983	Glossary of terms relating to paint (second revision)

ANNEX B

[*Table* 1, *Sl No*. (vi)] **DETERMINATION OF POT LIFE**

B-1 GENERAL

B-1.1 The time taken to double the viscosity from the original value shall be considered as the pot life of the material.

B-2 PROCEDURE

B-2.1 Thoroughly mix component parts in the

ratio specified by the paint manufacturer to give a sample of 200 ml by volume.

B-2.2 Within 10 minutes of mixing (**B-2.1**) determine the viscosity as prescribed in IS 101 (Part 1/Sec 5): 1989.

B-2.3 Allow the mixed sample of paint to stand in a suitable air-tight container and determine the viscosity at the end of the specified time.

ANNEX C

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

ACID/ALKALI RESISTANCE TEST

C-1 PROCEDURE

Mild steel rods be prepared as described in the foot-note of the table, are immersed in the

liquids at the temperature of $27 \pm 2^{\circ}C$ for a period of 4 weeks, and checked for loss of gloss and colour. It shall not be less than mentioned in col 3 of Table 1.

ANNEX D

(*Foreword*) COMMITTEE COMPOSITION

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Berger Paints India Ltd, Calcutta

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