IS 4832-2 (1969): Chemical Resistant Mortars, Part II: Resin type [CED 5: Flooring, Wall Finishing and Roofing]

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Indian Standard

SPECIFICATION FOR CHEMICAL RESISTANT MORTARS

PART II RESIN TYPE

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

SPECIFICATION FOR CHEMICAL RESISTANT MORTARS

PART II RESIN TYPE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 25 November 1969, after the draft finalized by the Flooring and Plastering Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 The resin type chemical resistant mortars have fairly good resistance to non-oxidizing mineral acids and poor resistance to oxidizing mineral acids. They are fairly resistant to inorganic alkalies. As the resin type of mortars are resistant to water, the joints between bricks or tiles are impermeable when bonded with these mortars. These types of mortars are used for jointing acid-proof bricks or tiles in pickling tanks, storage tanks and as jointing material in floors. For actual method of use of resin type mortars IS : 4443-1967* shall be referred.

0.3 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from C395-1963 'Specification for resin-type chemical resistant mortars' issued by the American Society for Testing and Materials.

0.4 Investigations carried out by the Central Building Research Institute, Roorkee, has also been of assistance.

0.5 This standard contains clause **6.1** which calls for agreement between the purchaser and the supplier with regard to the limits of chemical resistance.

0.6 This standard is one of a series of Indian Standards on the use of chemical resistant mortars. Other standards published so far in the series are:

IS : 4441-1967 Code of practice for use of silicate type chemical resistant mortars

*Code of practice for use of resin type chemical resistant mortars.

IS : 4442-1967 Code of practice for use of sulphur type chemical resistant mortars

IS : 4443-1967 Code of practice for use of resin type chemical resistant mortars

IS : 4456 (Part I)-1967 Methods of test for chemical resistant mortars: Part I Silicate type and resin type

IS : 4456 (Part II)-1967 Methods of test for chemical resistant mortars: Part II Sulphur type

IS : 4832 (Part III)-1968 Specification for chemical resistant mortars: Part III Sulphur type

0.7 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for resin-type chemical resistant mortars for bonding chemical-resistant masonry units.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definition shall apply.

2.1 Resin Type Chemical-Resistant Mortar — An intimate mixture of liquid resinous material and a powder composed of properly selected filler materials and usually containing the setting agent. These components are mixed at ordinary temperatures to form a trowelable mortar that subsequently hardens.

3. MATERIALS

3.1 Resins

3.1.1 The liquid resin may be either of any or a combination of the following types:

a) Phenolic resin,
b) Furane resin,
c) Epoxy resin, and
d) Polyester resin.

*Rules for rounding off numerical values (*revised*).

3.2 Fillers — Siliceous and other types of inert fillers may be used but carbonaceous fillers shall be used where resistance to hydro-fluoric acid is required. In general, the filler material shall be selected to have resistance to the particular chemicals to which they will be exposed.

3.3 Catalyst Material — The catalyst material may be incorporated in the fillers in such a manner that it becomes effective when mixed with the resin. However, it may also be supplied separately to be added to the resin or filler materials prior to use in accordance with the manufacturer's recommendation.

NOTE — The resin, filler, accelerator and catalyst may be supplied in separate packs. For phenolic and furane resin mortars the resin and filler may be sent in two packs. For epoxy resin mortar the components may be sent in 3 packs and for polyester resin mortar they may be sent in 3 or 4 packs.

4. PHYSICAL REQUIREMENTS

4.1 The resin mortars prepared from the materials given in 3 shall satisfy the requirements given in Table 1 when tested in accordance with IS : 4456 (Part I)-1967*.

TABLE 1 PHYSICAL REQUIREMENTS OF RESIN TYPE CHEMICAL RESISTANT MORTARS

(*Clauses* 4.1, A-3.1 *and* A-3.3)

SL NO.	PARTICULARS	REQUIREMENT FOR TYPE OF MORTAR				METHOD OF TEST, REF TO CL NO. OF IS : 4456 (PART I)-1967*
		Phenolic	Furane	Epoxy	Polyester	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Working time, *Min*, at 27° ± 2°C (*minutes*)	20	20	20	20	3
2.	Flexural strength, *Min*, kg/cm² (at 7 days)	75	75	150	150	6
3.	Compressive strength, *Min*, kg/cm² (at 7 days)	350	350	500	500	7
4.	Bond strength, *Min*, kg/cm² (*see* Note)	10	10	12	12	8
5.	Absorption, *Max*, percent by weight	1·0	1·0	1·0	1·0	9

NOTE — In the test for bond strength the joint shall not fail at or below the value specified.

*Methods of test for chemical resistant mortars: Part I Silicate type and resin type.

*Methods of test for chemical resistant mortars: Part I Silicate type and resin type.

5. GENERAL REQUIREMENTS

5.1 The resin shall have a viscosity that will permit it to be readily mixed with the powder by manual methods. The filler materials shall have properly graded particles that will permit the preparation of a minimum joint thickness of 1·5 mm.

6. CHEMICAL RESISTANCE REQUIREMENT

6.1 The limits of chemical resistance may be mutually agreed to between the purchaser and the supplier when tested in accordance with IS : 4456 (Part I)-1967*.

7. SHELF-LIFE

7.1 The shelf-life from date of manufacture of the resins is fairly limited, especially those of phenolic and polyester types. At the normal temperature of 27° ± 2°C the shelf-life for the phenolic and polyester resins is about 3 months and for furane and epoxy resins is about 12 months.

7.2 The shelf-life for the dry-mix depends on the stability of the setting agent incorporated in it. The manufacturer should indicate clearly the maximum shelf-life for both the dry-mix and resin.

8. SAMPLING

8.1 The method of drawing representative samples of the material and the criteria for conformity shall be as given in Appendix A.

9. PACKING AND MARKING

9.1 The resin shall be packed in suitable sealed airtight containers. The filler shall be properly packed to prevent deterioration in storage. The following information shall be marked legibly on each package:

a) Name of manufacturer,
b) Product name,
c) Date of manufacture/batch No.,
d) Net weight,
e) Storage requirements,
f) Storage life, and
g) Date of expiry.

*Methods of test for chemical resistant mortars: Part I Silicate type and resin type.

9.1.1 Each package may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

APPENDIX A

(*Clause* 8.1)

SAMPLING PROCEDURE FOR ACCEPTANCE TEST

A-1. LOT

A-1.1 The quantity of resin, filler and catalyst material from the same manufacturing unit offered for inspection in one lot shall be such as to give not less than 1 000 kg of the mortar when mixed well by suitable means.

A-1.2 Samples shall be selected and tested from each lot separately for ascertaining its conformity to the requirements of the specification.

A-2. SELECTION

A-2.1 Since the mortar is obtained by intimately mixing the resin, filler and catalyst material which are packed separately, as a first step suitable number of containers of resin, filler and catalyst material shall be selected from the lot. The number of containers shall not be less than 10 percent of the total number of containers in the lot. Equal quantities of material shall be taken from each container selected and the resin, filler and catalyst material shall be mixed well to give the sample of mortar for the lot.

A-3. CRITERIA FOR CONFORMITY

A-3.1 Specimens shall be taken from the mortar sample and tested for all the requirements given in Table 1 of this standard.

A-3.2 A lot shall be considered as having satisfied the requirements of this specification if the results for all the tests satisfy the relevant requirements of this specification.

A-3.3 Re-test — If the sample when tested, do not comply with the requirements specified in Table 1, another set of sample shall be prepared from the same lot and subjected to the tests. If the second sample also fails to comply with the requirements of Table 1, then the lot represented by the samples shall be rejected.

AMENDMENT NO. 1 APRIL 1981

TO

IS:4832(Part II)-1969 SPECIFICATION FOR CHEMICAL RESISTANT MORTARS

PART II RESIN TYPE

Alteration

(*Page 7, clause A-1.1, line 3*) - Substitute '500 kg' *for* '1 000 kg'.

Addenda

(*Page 6, clause 6.1*) - Add the following new matter at the end of the clause:

'A general guide for chemical resistance of resin type mortars to various substances is given in Table 1 of IS:4443-1980†.'

(*Page 6, foot-note with '*' mark*) - Add the following new foot-note after '*' mark:

'†Code of practice for use of resin type chemical resistant mortars (*first revision*).'

(BDC 5)

Reprography Unit, ISI, New Delhi, India