



Designation: C 722 – 94

Standard Specification for Chemical-Resistant Resin Monolithic Surfacing¹

This standard is issued under the fixed designation C 722; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the requirements for filled resin-based systems suitable for use as trowel- or spray-applied monolithic surfacings in areas where chemical resistance is required. Two types are covered:

1.1.1 *Type A*—Surfacings where chemical resistance and resistance to moderate to heavy traffic are required.

1.1.2 *Type B*—Surfacings where mild chemical resistance and severe thermal shock stability (or resistance) are required.

1.2 Seamless decorative flooring materials and monolithic surfacings utilized as vessel linings are excluded from this specification.

1.3 The following precautionary caveat pertains only to the test methods portion, Section 7, of this standard. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

C 267 Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacing²

C 307 Test Method for Tensile Strength of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing²

C 308 Test Methods for Working, Setting, and Service Strength Setting Times of Chemical-Resistant Resin Mortars²

C 413 Test Method for Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing²

C 531 Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes²

C 579 Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes²

C 580 Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Mono-

lithic Surfacing, and Polymer Concretes²

3. Terminology

3.1 Definitions:

3.1.1 *chemical-resistant resin monolithic surfacing*—an intimate mixture of a liquid resin-based material, setting agent, and filler system composed of properly selected and graded materials. These components are normally mixed at temperatures of 70 to 85°F (21 to 29°C) to form a trowelable or, in some cases, a sprayable mixture that hardens after placement of a minimum thickness of 60 mils (1.5 mm).

3.1.2 *monolithic*—as applied to surfacing in this usage, a continuous surfacing 60 mils (1.5 mm) in thickness or greater, which cures in place and is applied over an existing or newly placed substrate and continuously bonded to the surface.

4. Type of Resins and Fillers

4.1 The liquid resin base may be (1) epoxy resin, (2) polyester or vinyl ester resin, or (3) any other resinous material capable of forming chemical-resistant surfacing material when mixed with a suitable setting agent and filler.

4.2 The fillers are usually of a siliceous or carbonaceous nature. The filler materials shall be selected to have adequate resistance to the particular chemicals to which they will be exposed when properly combined with the resin system.

4.3 The setting agent may be of the reactive or catalyst type. It is usually supplied separately to be added to the resin prior to use in accordance with the manufacturer's recommendation. However, in some cases it may be incorporated in the powder in such a manner that it becomes effective when mixed with the resin. The service limitations of the cured system shall be defined by the manufacturer.

5. Physical Requirements

5.1 Resin-based monolithic surfacings prepared from these materials shall conform to the respective physical requirements prescribed in Table 1.

5.2 In systems where a separate sealing coat is specified over the monolithic surfacing, the tests shall cover the properties of the resin, filler and setting agent only.

6. General Requirements

6.1 The resin shall have a viscosity that will permit it to be mixed with the setting agent or filler components, or both, by manual or mechanical methods. The filler materials shall have

¹ This specification is under the jurisdiction of ASTM Committee C-3 on Chemical-Resistant Nonmetallic Materials and is the direct responsibility of Subcommittee C03.02 on Mortar and Monolithics.

Current edition approved July 15, 1994. Published September 1994. Originally published as C 722-72T. Last previous edition C 722-89.

² *Annual Book of ASTM Standards*, Vol 04.05.



TABLE 1 Physical and Chemical Requirements

	Epoxy		Polyester or Vinyl Ester		ASTM Method
	Type A	Type B	Type A	Type B	
Working life, minimum, 73 F (22.8 C), minutes	30	30	30	30	C 308
Initial use time, 73 F (22.8 C) minimum, h	A	A	A	A	
Chemical exposure					
Traffic, foot	24	24	16	16	
Traffic, moderate	48	48	36	36	
Service strength setting time, max days	7	7	3	3	
Tensile strength, min, 7 days, psi (MPa)	1500 (10 ^B)	600 (4)	1500 (10)	400 (4)	C 307
Compressive strength, min, 7 days, psi (MPa)	6000 (41)	4000 (26)	10 000 (69)	8000 (55)	C 579
Flexural modulus of elasticity, min, 7 days, psi (MPa)	0.5 × 10 ⁶ (3400)	0.25 × 10 ⁶ (1700)	1.0 × 10 ⁶ (6900)	0.5 × 10 ⁶ (3400)	C 580
Shrinkage, max percent ^C	0.5	0.5	1.0	0.6	C 531
Coefficient of thermal expansion, /F deg (/C deg), max	40 × 10 ⁻⁶ (72 × 10 ⁻⁶)	40 × 10 ⁻⁶ (72 × 10 ⁻⁶)	40 × 10 ⁻⁶ (72 × 10 ⁻⁶)	40 × 10 ⁻⁶ (72 × 10 ⁻⁶)	C 531
Absorption, max, percent	1.0	2.0	1.0	2.0	C 413
Chemical resistance ^D					C 267

^A Generally a minimum of 72 h is required. Consult manufacturer for specific chemicals and cure conditions.

^B 1000 psi (6.9 MPa) for carbon-filled surfacings.

^C Values shown are for shrinkage after gelation.

^D It should be noted that Method C 267 is an immersion test and will in many cases show more severe corrosion than will actually be attained by a monolithic system exposed only intermittently to corrosive environment on one exposed surface face. The manufacturer of the surfacings should be consulted as to chemical resistance.

properly graded particles that will permit application and finishing of the mixture to an acceptable surface at the minimum thickness prescribed by the manufacturer.

7. Test Methods

7.1 Determine the properties enumerated in this specification in accordance with the following test methods:

7.1.1 *Working Life and Setting Time*—Test Methods C 308.

7.1.2 *Tensile Strength*—Test Method C 307.

7.1.3 *Compressive Strength*—Test Method C 579.

7.1.4 *Flexural Strength and Modulus of Elasticity*—Test Method C 580.

7.1.5 *Shrinkage and Coefficient of Thermal Expansion*—Test Method C 531.

7.1.6 *Absorption*—Test Method C 413.

7.1.7 *Chemical Resistance*—Test Method C 267.

8. Rejection

8.1 The resins, setting agents, fillers, or the surfacing mixture, may be rejected if they fail to meet any of the requirements of this specification.

9. Packaging and Marking

9.1 The components shall be properly packaged to prevent deterioration in storage and shall be marked to indicate the required storage conditions.

9.2 In addition, packages may be marked at the discretion of the supplier and on his responsibility indicating that the product satisfies this specification.

10. Keywords

10.1 chemical-resistant; monolithic flooring; surfacing; top-ping

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).