



# Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course<sup>1</sup>

This standard is issued under the fixed designation C 836; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

*This standard has been approved for use by agencies of the Department of Defense.*

## 1. Scope

1.1 This specification describes the required properties and test methods for a cold liquid-applied elastomeric-type membrane, one or two component, for waterproofing building decks and walls subject to hydrostatic pressure in building areas to be occupied by personnel, vehicles, or equipment. This specification applies only to a membrane system above which a separate wearing or traffic course will be applied.

NOTE 1—See Guide C 898 and Guide C 1471 for proper application of membrane.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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.*

1.4 There are no ISO standards similar or equivalent to this ASTM standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:

C 717 Terminology of Building Seals and Sealants<sup>2</sup>

C 794 Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants<sup>2</sup>

C 898 Guide for Use of High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Separate Wearing Course<sup>2</sup>

C 1250 Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes<sup>2</sup>

C 1305 Test Method for Crack Bridging Ability of Liquid-

Applied Waterproofing Membrane<sup>2</sup>

C 1375 Guide for Substrates Used in Building Seals and Sealants<sup>2</sup>

C 1471 Guide for the Use of High Solids Content Cold Liquid-Applied Elastomeric Waterproofing Membrane on Vertical Surfaces<sup>2</sup>

C 1522 Test Method for Extensibility After Heat Aging of Cold Liquid-Applied Waterproofing Membranes<sup>2</sup>

D 2240 Test Method for Rubber Property—Durometer Hardness<sup>3</sup>

### 2.2 Other Standards:

CAM/CGSB-37.58 Membrane, Elastomeric, Cold-Applied Liquid, for Non-Exposed Use in Roofing and Waterproofing<sup>4</sup>

## 3. Terminology

3.1 *Definitions*—Refer to Terminology C 717 for definitions of the terms used in this standard.

## 4. Comparison to Other Standards

4.1 The committee with jurisdiction over this standard is aware of one comparable standard published by another organization. CAM/CGSB-37.58 has differences including a test method for Dimensional Stability and Water Absorption.

## 5. Physical Requirements

5.1 *Material*—Membrane materials shall cure, after application by spreading or spraying, to form an elastomeric film capable of maintaining a seal against liquid water.

5.2 The physical, mechanical, and performance properties of the membrane shall conform to the requirements described in Table 1.

## 6. Test Methods

6.1 *Standard Conditions*—Standard conditions for all tests shall be  $23 \pm 2^\circ\text{C}$  ( $73.4 \pm 3.6^\circ\text{F}$ ) and  $50 \pm 5\%$  relative humidity.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.80 on Building Deck Waterproofing Systems.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.07.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 09.01.

<sup>4</sup> Canadian General Standards Board, Ottawa, Canada, K1A 1G6.

**TABLE 1 High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane Physical Requirements**

Property	Requirement	Test Method
Hardness, Type 00, min	50	D 2240 as modified in section 6.5 of this specification
Weight loss, max, %	20	C 1250
Nonvolatile, min, %	80	
Low temperature crack bridging	no cracking	C 1305
Film thickness (vertical surface), min, mm (mils)	$1.5 \pm 0.1$ ( $60 \pm 5$ )	See section 6.8 of this specification <sup>A</sup>
Adhesion-in-Peel after water immersion, N/m (lbf/in.)	175 (1)	C 794 as modified in section 6.9 of this specification
Optional test for adhesion-in-peel	No separation at interface	See section 6.10 of this specification
Extensibility after heat aging, min, mm (in.)	6.4 (¼), no cracking	C 1522
Stability, min, months	6	See section 6.12 of this specification.

<sup>A</sup>Numbers refer to portions of the Test Methods section, Section 6, of this specification.

## 6.2 Conditioning/Mixing:

6.2.1 Store all membrane materials to be tested in an unopened container at standard conditions for at least 24 h before any test specimens are prepared.

6.2.2 Follow the manufacturer's instructions for mixing and preparing membrane materials for testing. Thoroughly mix one-component samples before using. Mix two-component compounds in the ratio recommended by the manufacturer.

6.3 *Test Surfaces*—In addition to the mortar test surfaces specified, use other test surfaces when required by the specifier.

6.4 *Primer*—When required by the manufacturer, use a primer as directed by the manufacturer on all substrate materials in test assemblies.

## 6.5 Hardness:

6.5.1 Following the manufacturer's instructions, apply a film of membrane,  $1.5 \pm 0.1$  mm ( $60 \pm 5$  mils) thick, on a 100 by 150-mm (4 by 6-in.) piece of polyethylene film-coated paper and allow the membrane to cure for 14 days at standard conditions. If more than one application is required, the total time for film application shall not exceed 48 h.

6.5.2 After curing, strip the film from the coated paper, cut into pieces, and lay the pieces one upon another to provide a test specimen meeting the requirements of Test Method D 2240.

6.5.3 Using a Type 00 hardness gage, obtain an instantaneous reading of the film hardness as specified in Test Method D 2240.

## 6.6 Weight Loss:

6.6.1 Test in compliance with the requirements of Test Method C 1250.

## 6.7 Low-Temperature Crack Bridging:

6.7.1 Test in compliance with the requirements of Test Method C 1305.

## 6.8 Film Thickness on Vertical Surface:

6.8.1 Prepare mortar test blocks 152 by 76 by 25-mm (6 by 3 by 1-in.) as described in Guide C 1375.

6.8.2 Prepare the test assembly by covering one cut face of a mortar slab with a film of membrane material  $1.5 \pm 0.1$  mm ( $60 \pm 5$  mils) in thickness, mixed and applied in accordance with the manufacturer's directions. Install the film in one application unless manufacturer's application instructions require application in several coats. If applied in several coats, the test substrate shall be set in a vertical position between

applications, and the complete film thickness shall be accomplished in 48 h in accordance with the manufacturer's instructions.

6.8.3 Immediately after applying the film, place the coated slab on its end, in a vertical position, and let remain in this position for 24 h at standard conditions.

6.8.4 Using a vernier caliper, measure the thickness of the total assembly at five points within 25 mm (1 in.) of the top end of the slab. Cover the film at each point of measurement with a 25-mm (1 in.) square piece of aluminum, 0.5 mm (0.002 in.) thick, to prevent point indentation on the film.

6.8.5 Cut a 25-mm (1-in.) wide band of film from across the top of the mortar strip. Measure the thickness of the test mortar in approximately the same five locations that measurements were made in 6.8.4. Determine the average.

6.8.6 Determine the film thickness by subtracting the average test mortar thickness from the average total assembly thickness (test mortar and film).

## 6.9 Adhesion-in-Peel After Water Immersion:

6.9.1 Perform the test as specified in Test Method C 794 with the following qualifications:

6.9.1.1 Mortar shall be the test substrate. Other substrates may be tested when specified.

6.9.1.2 The cure conditions shall be 14 days at standard conditions, followed by 7 days at  $70 \pm 2^\circ\text{C}$  ( $158 \pm 3.6^\circ\text{F}$ ).

6.9.1.3 After the specimen has cured for about 7 days, coat the cloth with a layer of the compound about 2.5 mm (0.1 in.) thick to help minimize cloth failure.

6.10 *Optional Test for Adhesion in Peel*—An optional method for running the adhesion test after the assemblies have been completely cured is to attach a 0.45-kg (1-lb) weight to the end of the strip of cloth, and let hang for a period of 2 min. If no separation occurs at the interface during this period, the film has met the minimum adhesion requirements.

## 6.11 Extensibility After Heat Aging:

6.11.1 Test in compliance with the requirements of Test Method C 1522.

6.12 *Stability*—When stored at a temperature not exceeding  $27^\circ\text{C}$  ( $80^\circ\text{F}$ ) in a dry environment, or kept protected from moisture, or both, the membrane material shall be capable of meeting the requirements of this specification for at least 6 months from the time of delivery.

## **7. Precision and Bias**

7.1 *Precision*—The precision of the procedure in 6.8 for measuring film thickness on a vertical surface is being determined. No information is presented about either the precision or bias of the optional test for adhesion in peel, since the result is non-quantitative.

## **8. Keywords**

8.1 crack bridging; membrane; waterproofing

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