
Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)

AASHTO Designation: M 33M/M 33-22

Technically Revised: 2022

Technical Subcommittee: 4e, Joints and Bearings

ASTM Designation: D994/D994M-11(2016)



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1. SCOPE

- 1.1. This specification covers bituminous preformed expansion joint filler for use in concrete construction.
Note 1—Attention is called to M 153 and M 213.
- 1.2. This specification is applicable for orders in either SI units (M 33M) or in inch-pound units (M 33). SI units and inch-pound units are not necessarily equivalent; therefore, each system must be used independently of the other. Combining values from the two systems may result in non-conformance with the specification. Inch-pound units are shown in brackets in the text for clarity, but they are the applicable values when the material is ordered to M 33.

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
- M 153, Preformed Sponge Rubber, Cork, and Recycled Rubber Expansion Joint Fillers for Concrete Paving and Structural Construction
 - M 213, Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
 - M 339M/M 339, Thermometers Used in the Testing of Construction Materials
- 2.2. *ASTM Standards:*
- C670, Standard Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials
 - D545, Standard Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Nonextruding and Resilient Types)
 - E1, Standard Specification for ASTM Liquid-in-Glass Thermometers
 - E230/E230M, Standard Specification for Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples
 - E879, Standard Specification for Thermistor Sensors for General Purpose and Laboratory Temperature Measurements
 - E1137/E1137M, Standard Specification for Industrial Platinum Resistance Thermometers
 - E2877, Standard Guide for Digital Contact Thermometers

- 2.3. *International Electrotechnical Commission Standards:*
- IEC 60584-1: 2013, Thermocouples - Part 1: EMF Specifications and Tolerances
 - IEC 60751: 2008, Industrial Platinum Resistance Thermometers and Platinum Temperature Sensors

3. MANUFACTURE

- 3.1. This product shall consist of a bituminous (asphalt or tar) mastic composition, formed and encased between two layers of bituminous impregnated felt or two layers of glass-fiber felt. The mastic shall comprise mineral fillers and reinforcing fibers, and may contain thin strips of reinforcing sheet material.

4. GENERAL REQUIREMENTS

- 4.1. Preformed strips of expansion joint filler shall be of such character as not to be deformed or broken by ordinary handling when exposed to atmospheric conditions and shall not become brittle in cold weather. Pieces of the joint filler that have been damaged shall be rejected.

5. PROPERTIES

- 5.1. *Distortion at 52°C [125°F]*—The joint filler shall not show a deflection of more than 25 mm [1 in.] when tested in accordance with Section 8.1.
- 5.2. *Brittleness*—The joint filler shall not crack or shatter when tested in accordance with Section 8.2.
Note 2—Expansion joint filler having a nominal thickness of 5 mm [$\frac{1}{4}$ in.] or less shall not be subject to a requirement for brittleness.
- 5.3. *Water Absorption*—The water absorption of the joint filler, when tested in accordance with Section 8.3, shall not exceed the following values:

Nominal Thickness of Joint, mm [in.]	Absorption, max %
25 [1]	2.5
20 [$\frac{3}{4}$]	3
15 [$\frac{9}{16}$]	4
10 [$\frac{3}{8}$]	5

Note 3—Expansion joint filler having a nominal thickness of less than 10 mm [$\frac{3}{8}$ in.] shall not be subject to a requirement for water absorption.

- 5.4. *Compression*—The load required to compress the test specimen to 50 percent of its original thickness shall comply with the following values when tested in accordance with Section 8.4:

Nominal Thickness of Joint, mm [in.]	Load Requirements, min–max, kPa [psi]
25 [1]	700–5200 [100–754]
20 [$\frac{3}{4}$]	700–5800 [100–841]
15 [$\frac{9}{16}$]	700–6400 [100–928]

Note 4—Expansion joint filler having a nominal thickness of less than 15 mm [$\frac{9}{16}$ in.] shall not be subject to a requirement for compression.