
Test Procedure for**TENSILE STRAIN TO FAILURE**TxDOT Designation: **Tex-548-C**Effective Date: **February 2022**

1. SCOPE

- 1.1 Use this test to measure the flexibility of elastomeric sealants and repair materials, as represented by the ability to elongate at a controlled strain rate.
- 1.2 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

2. APPARATUS

- 2.1 *Load frame*, capable of applying loads of at least 5,000 lb., measuring loads within 5% accuracy, and maintaining a crosshead speed of 2 ± 0.1 in. per minute (50 ± 2.5 mm per minute) under maximum load, for a travel distance of at least 1 in.
- 2.2 *Tensile Grips*, steel, with attachment points compatible with load frame specified in Section 2.1. See Figure 4.
- 2.3 *Blocks*, concrete, measuring 3 ± 0.1 in. (76 ± 2.5 mm) \times 1 ± 0.1 in. (25 ± 2.5 mm) \times 2 ± 0.1 in. (51 ± 2.5 mm), prepared in accordance with ASTM C 719. See Figure 1.
- 2.4 *Spacers*, steel, aluminum, or brass; measuring 0.75 ± 0.04 in. (19 ± 1 mm) \times 0.75 ± 0.04 in. (19 ± 1 mm) \times 2.5 ± 0.04 in. (6.4 ± 1 mm). See Figure 2.
- 2.5 *Plate*, steel, aluminum, or brass; minimum height 4 in. (100 mm), minimum width 4 in. (100 mm), minimum thickness 0.125 in. (3 mm).
- 2.6 *Mold release*, high temperature room-temperature-vulcanizing (RTV) silicone gasket maker.
Note 1—A silicone baking sheet, cut to fit the height and width dimensions of the metal plate specified in Section 2.5, may be used in place of release agent on the metal plate.
- 2.7 *Laboratory gas burner*, Fisher style.
- 2.8 *Spatula*, steel, 0.75 in. (20 mm) approximate blade width.
- 2.9 *Spatula*, steel, 4 in. (100 mm) approximate blade width.
- 2.10 *Rubber bands*, of enough size and strength to hold the mold securely together.

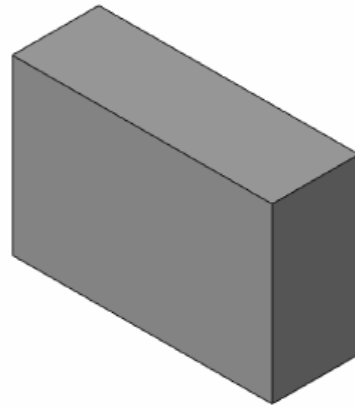
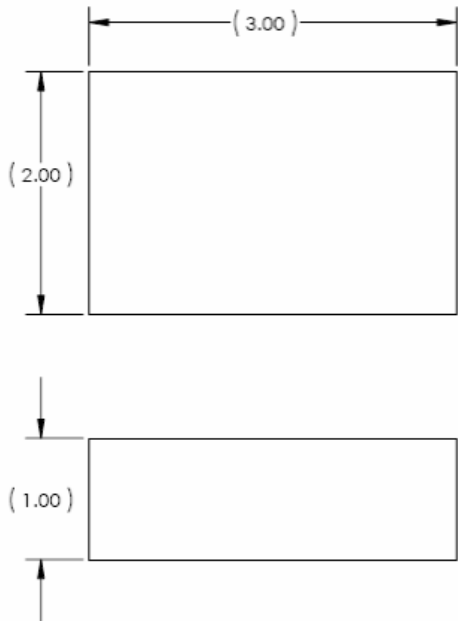


Figure 1—Concrete Block

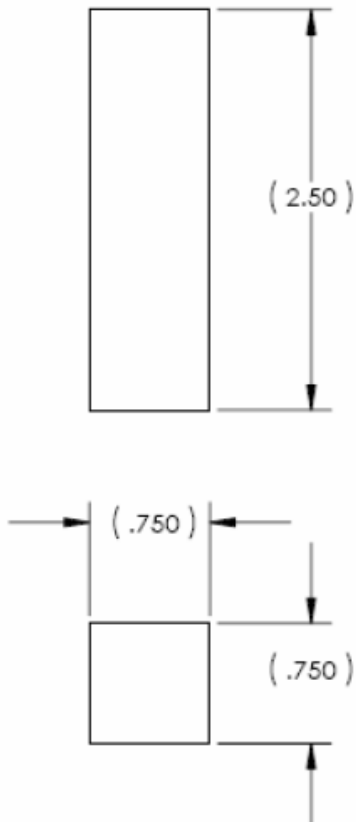


Figure 2—Metal Spacer

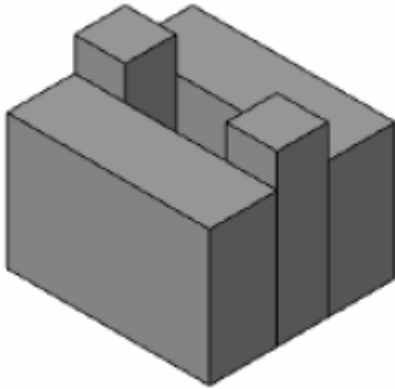


Figure 3—Assembled Mold

3. MOLD PREPARATION

- 3.1 Coat two metal spacers with a thin layer of high-temperature RTV silicone gasket maker. Cure at room temperature, 70–78°F (21–25°C), for a minimum of 12 hr.
- 3.2 Coat the metal plate with a thin layer of high-temperature RTV silicone gasket maker. Cure at room temperature, 70–78°F (21–25°C), for a minimum of 12 hr.
- Note 2**—The RTV gasket maker is not needed if using the silicone baking sheet. In this case, lay a dry clean silicone baking sheet on the clean plate.
- 3.3 Assemble the molds with prepared concrete blocks and spacers using rubber bands. (See Figure 3.)
- 3.4 Place the assembled molds on the prepared metal plate.

4. PROCEDURE

- 4.1 Obtain and prepare a representative sample of material for testing in accordance with [Tex-546-C](#).
- 4.2 Pour the material into the mold. Push the material into the mold until it is filled completely, using the 0.75 in. spatula, heated on the burner.
- 4.3 Trim the material flush with the top of the mold using the 4-in. spatula, heated on the burner.
- 4.4 Allow samples to cure at room temperature, 70–78°F (21–26°C), for a minimum of 24 hr.
- 4.5 Remove the metal spacers from the mold, using care not to distort the material. Fit the mold into the tensile grips installed in the load frame. Stretch the molded sample in the load frame at a rate of 2 ± 0.1 in. per minute (50 ± 2.5 mm per minute), using a 5,000-lb. load cell, until failure.
- 4.6 Record the maximum load achieved, and the percent elongation at the rupture. Report the maximum tensile stress in psi, and the rupture strain as tensile strain to failure.