
Standard Practice for

Preparation of Asphalt Mixtures by Means of the Marshall Apparatus

AASHTO Designation: R 68-22¹

Technically Revised: 2022

**Technical Subcommittee: 2d, Proportioning
of Asphalt–Aggregate Mixtures**



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1. SCOPE

- 1.1. This standard practice describes procedures for the compaction of cylindrical specimens of asphalt mixtures using the Marshall compaction hammer. This practice is for use with mixtures containing asphalt binder or asphalt cutback and aggregate up to 25.4-mm (1-in.) maximum size.
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2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
- M 231, Weighing Devices Used in the Testing of Materials
 - M 339M/M 339, Thermometers Used in the Testing of Construction Materials
 - R 30, Laboratory Conditioning of Asphalt Mixtures
 - R 47, Reducing Samples of Asphalt Mixtures to Testing Size
 - R 97, Sampling Asphalt Mixtures
 - T 166, Bulk Specific Gravity (G_{mb}) of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens
 - T 275, Bulk Specific Gravity (G_{mb}) of Compacted Asphalt Mixtures Using Paraffin-Coated Specimens
 - T 331, Bulk Specific Gravity (G_{mb}) and Density of Compacted Asphalt Mixtures Using Automatic Vacuum Sealing Method
- 2.2. *ASTM Standards:*
- 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

- 3.1. *Specimen Mold Assembly*—Mold cylinders 101.6 mm (4 in.) in diameter by 76.2 mm (3 in.) in height, base plates, and extension collars shall conform to the details shown in Figure 1. Three mold cylinders are recommended.

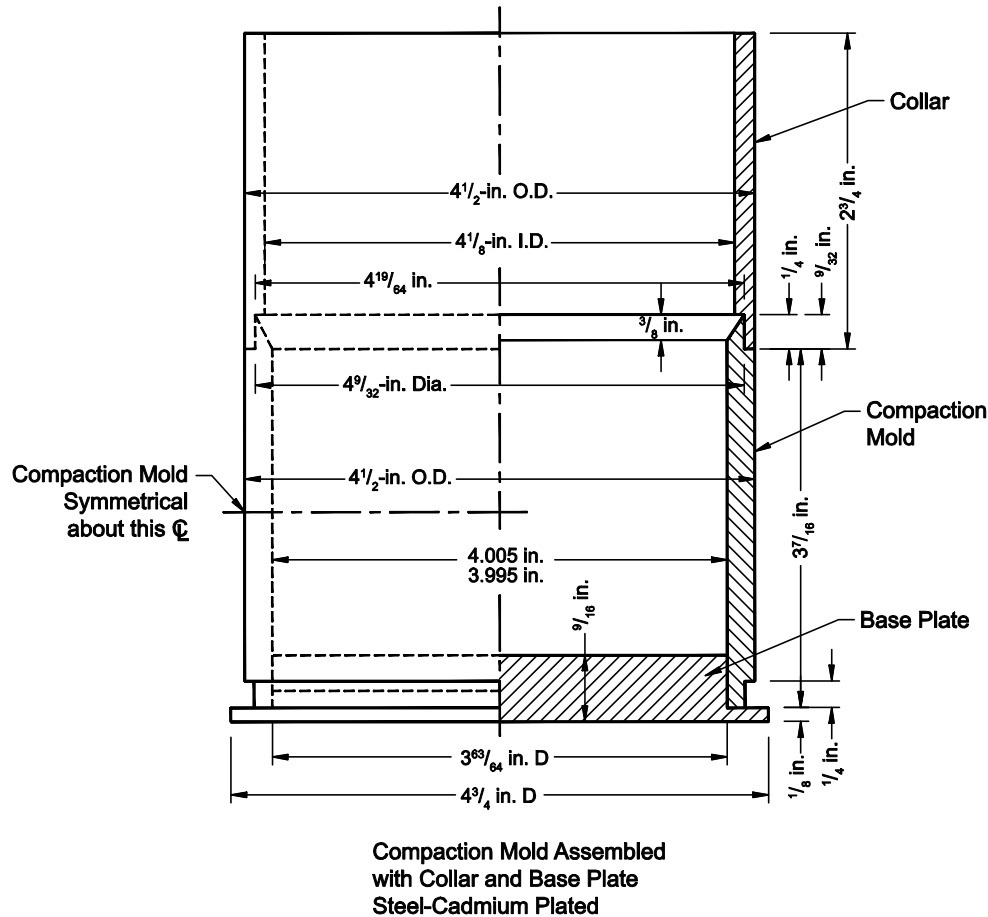


Figure 1—Specimen Mold Assembly

Table 1—Table of Equivalents for Figure 1

Metric Equiva- lents, mm	U.S. Customary Units, in.	Metric Equiva- lents, mm	U.S. Customary Units, in.	Metric Equiva- lents, mm	U.S. Customary Units, in.	Metric Equiva- lents, mm	U.S. Customary Units, in.
0.11	0.005	17.5	$11/16$	58.7	$2^{5/16}$	104.8	$4^{1/8}$
0.8	$1/32$	19.0	$3/4$	63.5	$2^{1/2}$	108.7	$4^{9/32}$
1.6	$1/16$	22.2	$7/8$	69.8	$2^{3/4}$	109.1	$4^{19/64}$
3.2	$1/8$	23.8	$15/16$	73.0	$2^{7/8}$	114.3	$4^{1/2}$
4.8	$3/16$	25.4	1	76.2	3	117.5	$4^{5/8}$
6.4	$1/4$	28.6	$1^{1/8}$	82.6	$3^{1/4}$	120.6	$4^{3/4}$
7.1	$9/32$	31.8	$1^{1/4}$	87.3	$3^{7/16}$	128.6	$5^{1/16}$
9.5	$3/8$	34.9	$1^{3/8}$	98.4	$3^{7/8}$	130.2	$5^{1/8}$
12.6	0.496	38.1	$1^{1/2}$	101.2	$3^{63/64}$	146.0	$5^{3/4}$
12.67	0.499	41.3	$1^{5/8}$	101.35	3.990	152.4	6
12.7	$1/2$	44.4	$1^{3/4}$	101.47	3.995	158.8	$6^{1/4}$
14.3	$9/16$	50.8	2	101.6	4	193.7	$7^{5/8}$
15.9	$5/8$	57.2	$2^{1/4}$	101.73	4.005	685.8	27