## Standard Method of Test for

# Particle Size Analysis of Soils

**AASHTO Designation: T 88-20**

**Technical Subcommittee: 1a, Soil and Unbound Recycled Materials**

**Release: Group 3 (July)**

AASHTO

**American Association of State Highway and Transportation Officials**
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## 1. SCOPE

1.1. This method describes a procedure for the quantitative determination of the distribution of particle sizes in soils.

1.2. The following applies to all specified limits in this standard: For the purposes of determining conformance with these specifications, an observed value or a calculated value shall be rounded off "to the nearest unit" in the last right-hand place of figures used in expressing the limiting value, in accordance with ASTM E29.

1.3. The values stated in SI units are to be regarded as the standard.

1.4. Refer to 29 CFR 1910.1200 for regulatory information for chemicals.

## 2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- M 145, Classification of Soils and Soil–Aggregate Mixtures for Highway Construction Purposes
- M 147, Materials for Aggregate and Soil–Aggregate Subbase, Base, and Surface Courses
- M 231, Weighing Devices Used in the Testing of Materials
- R 58, Dry Preparation of Disturbed Soil and Soil–Aggregate Samples for Test
- R 74, Wet Preparation of Disturbed Soil Samples for Test
- T 100, Specific Gravity of Soils
- T 265, Laboratory Determination of Moisture Content of Soils

2.2. *ASTM Standards*:

- C670, Standard Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials
- E11, Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
- E29, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E100, Standard Specification for ASTM Hydrometers

2.3. *Federal Standard*:



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- Fed. Std. No. 29, CFR 1910.1200 OSHA Hazard Communication Standard; see also Permissible Exposure Limits—Annotated Tables, available at https://www.osha.gov/dsg/annotated-pels/

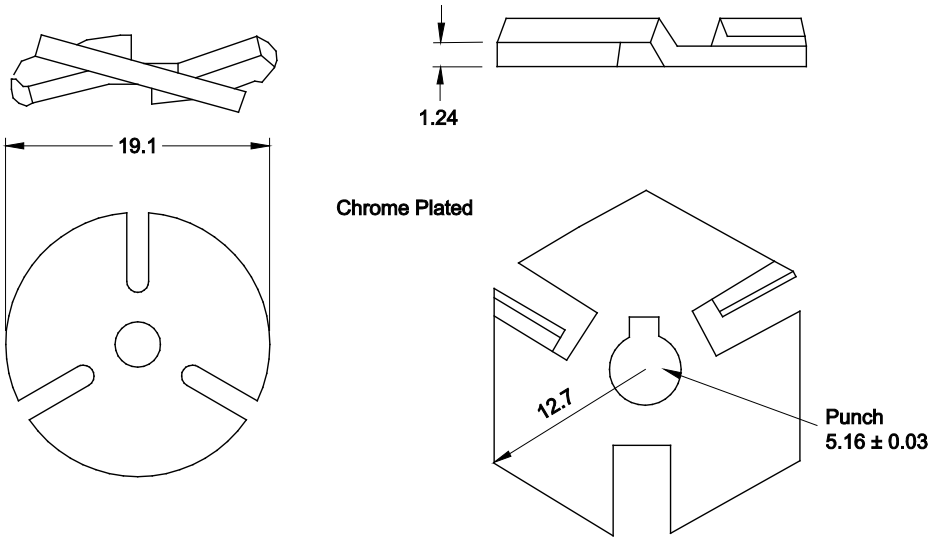
## 3. APPARATUS

3.1. *The apparatus shall consist of the following*:

3.1.1. *Oven*—A thermostatically controlled drying oven capable of maintaining temperatures of 110 ± 5°C (230 ± 9°F) for drying the sieve analysis samples.

3.1.2. *Balance*—The balance shall have sufficient capacity, be readable to 0.1 percent of the sample mass, or better, and conform to the requirements of M 231.

3.1.3. *Stirring Apparatus*—A mechanically operated stirring apparatus consisting of an electric motor suitably mounted to turn a vertical shaft at a speed not less than 10 000 rpm without load, a replaceable stirring paddle made of metal, plastic, or hard rubber similar to one of the designs shown in Figure 1. The shaft shall be of such length that the stirring paddle will operate not less than 19.0 mm ($^3/_4$ in.) nor more than 38 mm (1.5 in.) above the bottom of the dispersion cup. A dispersion cup conforming to either of the designs is shown in Figure 2.




Dimensional Equivalents

| mm | in. |
|---|---|
| 19.1 | $^3/_4$ |
| 12.7 | $^1/_2$ |
| 5.16 ± 0.025 | 0.203 ± 0.001 |
| 1.24 | 0.049 (No. 18 BW Ga.) |

Note: All dimensions are shown in millimeters unless otherwise noted.

**Figure 1**—Details of Stirring Paddles



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