

## Methods of testing soils for engineering purposes

### Method 3.5.2: Soil classification tests— Determination of the soil particle density of combined soil fractions—Vacuum pycnometer method

#### 1 SCOPE

This Standard sets out a method for determining the soil particle density of combined coarse, medium and fine or medium and fine fractions of a soil, using a vacuum pycnometer.

#### 2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

##### AS

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|------------|--|
| 1289       | Methods of testing soils for engineering purposes  |
| 1289.0     | Part 0: General requirements and list of methods   |
| 1289.1.1   | Method 1.1: Sampling and preparation of soils—Preparation of disturbed soil samples for testing                                |
| 1289.2.1.1 | Method 2.1.1: Soil moisture content tests—Determination of the moisture content of a soil—Oven drying method (standard method) |

#### 3 APPARATUS

The following apparatus is required:

- Pycnometer, a vacuum-type glass flask or stainless steel vessel equipped with a stopper or ground flat at the top with the top opening sufficiently wide to place the largest particles inside. The pycnometer volume required for material of a particular maximum particle size is given in Table 1.
- Pycnometer lid, slightly larger than the top of the pycnometer and ground flat on at least one side (a stopper may be used with a suitable pycnometer).
- Vacuum pump, capable of producing a vacuum of about 700 mm of mercury, including connections and water vapour traps, etc.  
NOTE: A vacuum of about 700 mm of mercury necessitates care being taken, particularly in the initial stages, if material is not to be lost.
- Safety surround, to retain flying glass if an implosion should occur owing to the reduced pressure.
- Thermometer or other suitable temperature-measuring device covering a range of 0°C to 50°C, graduated to 1°C or less, with an uncertainty not greater than  $\pm 0.5^\circ\text{C}$ .
- Balances with limits of performance as shown in Table 1.
- Drying oven as specified in AS 1289.0.
- Container for storing water at room temperature.