

## STANDARDS ASSOCIATION OF AUSTRALIA

## Australian Standard

## METHODS FOR SAMPLING AND TESTING AGGREGATES

# AS 1141.7

## APPARENT PARTICLE DENSITY OF FILLER

**1 SCOPE.** This standard sets out the method for the determination of the apparent particle density of filler for asphalt.

**NOTE:** The apparent particle density is required to be ascertained in order to determine the voids in dry compacted filler by the method described in AS 1141.17.

**2 DEFINITION.** For the purpose of this standard, the apparent particle density of a filler is the ratio of the mass of solids in air to the volume of solids and impermeable voids, at 25°C, expressed in tonnes per cubic metre.

**3 APPARATUS.** The following apparatus, complying with the relevant provisions of AS 1141.2, is required.

- (a) *Balance*—of at least 200 g capacity, having a sensitivity to weigh to 0.001 g.
- (b) *Water bath*—constant temperature, set to 25 ± 0.1°C.
- (c) *Glassware*—
  - (i) Density bottle, of 50 mL or 100 mL capacity.
  - (ii) Small funnel.
- (d) *Oven*—a drying oven, operating temperature 105°C to 110°C.
- (e) *Vacuum desiccator*—200 mm to 250 mm diameter, containing anhydrous silica gel and a pump capable of reducing the pressure below 5 kPa.

**4 DILATOMETRIC LIQUID.** The dilatometric liquid shall be as follows, as appropriate:

- (a) redistilled kerosine, purified xylene or purified aviation fuel, kept over a dehydrating and de-acidifying agent, e.g. portland cement; or
- (b) distilled water, when the filler is known not to react with water.

**5 TEST PORTION.** The test portion shall consist of up to 200 g of the filler, which has been sampled as specified in AS 2357\*.

**6 CALIBRATION.** The density bottle shall be calibrated in accordance with the following procedure:

- (a) Remove any static charge from the clean, dry density bottle by wiping it with a clean, lint-free cloth which has been slightly dampened with water.
- (b) Weigh the density bottle and stopper to the nearest 0.001 g and record the mass ( $m_1$ ).
- (c) Fill the bottle completely with freshly boiled and cooled distilled water.
- (d) Immerse the bottle in the waterbath set to 25 ± 0.1°C to within approximately 5 mm from the top.
- (e) After 30 min, insert the stopper carefully so that no bubbles are trapped in the neck of the bottle and the excess water is expelled through the capillary in the stopper.
- (f) After a further 10 min, brush the top of the stopper with a slip of filter paper holding the paper at an angle to ensure a flat surface is passed over the capillary opening. Do not hold the bottle by hand during this process.
- (g) Without touching by hand, remove the bottle from the waterbath, dry carefully, remove any static charge and weigh immediately. Alternatively, provided that the room temperature is below 25°C, the bottle may be allowed to reach equilibrium with room temperature before weighing. Record the mass of bottle plus contents ( $m_2$ ).
- (h) Calculate the mass of water in the bottle ( $m_{WB}$ ) by subtracting  $m_1$  from  $m_2$ .
- (j) Calculate the volume, in millilitres, of the bottle at 25°C ( $V_w$ ) as follows:

$$V_w = \frac{m_{WB}}{0.997}$$

\*AS 2357, Mineral Fillers for Asphalt.

