Australian Standard®

Methods of testing soils for engineering purposes

Method 5.5.1: Soil compaction and density tests—Determination of the minimum and maximum dry density of a cohesionless material—Standard method

1 SCOPE This method covers the determination of the minimum and maximum dry density of a cohesionless material, using loose pouring to obtain the minimum dry density and vibratory compaction to obtain the maximum dry density (see Notes 1 and 2).

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1289 Methods of testing soils for engineering purposes
1289.0 Method 0: General requirements and list of methods
1289.1 Method 1: Preparation of disturbed soil samples for testing

3 APPARATUS The following apparatus shall be used:

(a) Vibratory table consisting of a steel table of adequate size to accommodate the required size of mould (see Item (b)), and actuated by a unidirectional vibrator with a nominal operating frequency of 50 Hz and a vertical double amplitude (peak to peak) setting of 0.5 ±0.05 mm when the table is loaded with the mould and material (see Note 3).

(b) Cylindrical metal moulds of known volume conforming to the nominal size requirements given in Table 1 and provided with handles and lugs for attachment to the vibratory table. The moulds shall be of sufficient rigidity to retain their form under rough usage.

(c) Collar guide sleeve, with clamp assembly to fit each mould and to accommodate a surcharge (see Figure 1).

(d) Surcharge as listed in Table 1.

(e) Funnels of 13 mm and 25 mm diameter, and 150 mm long, with cylindrical spouts. It is advantageous if each funnel can be fitted with a lip or flange at the upper end for its attachment to a pouring can of about 5 L capacity.

(f) Scoops with straight upright sides and flat base, of convenient size to suit the desired mould.

(g) Balance of suitable capacity with a limit of performance not greater than ±5 g.

(h) Drying oven complying with the requirements of AS 1289.0, and accommodating the entire contents of the mould used.

(i) Metal dishes or trays of suitable size to hold the samples during the drying or filling processes.

(j) Steel straightedge.