Australian Standard™

Methods of testing soils for engineering purposes

Method 5.7.1: Soil compaction and density tests—Compaction control test—Hilf density ratio and Hilf moisture variation (rapid method)

1 SCOPE

This Standard sets out a rapid method for determining compaction control parameters for soils. The method involves relating converted wet density (*CWD*) of the laboratory-compacted soil to added moisture (*Z*) without the need to determine moisture content.

The test is based on standard compactive effort in accordance with AS 1289.5.1.1. If modified compactive effort in accordance with AS 1289.5.2.1 is used, experimental data must initially be accumulated for that particular soil in order for the moisture variation to be reliably assessed (see Note to Clause 4.2(h)).

Because this is a rapid method, there may be minor differences between results obtained by this procedure and results obtained by the method of compaction control given in AS 1289.5.4.1.

This procedure is applicable to the portion of soil that passes a 37.5 mm sieve. Corrections can be made to values determined by this method for soil with up to 20% oversize material. Soil that passes a 19.0 mm sieve is compacted in a 105 mm diameter mould. Soil that contains more than 20% of material retained on a 19.0 mm sieve is compacted in a 152 mm diameter mould.

Because of the omission of proper curing, this method might not be reliable for soils that are much wetter or drier than the optimum moisture content.

Further, because of the empirical basis for the calculation of moisture variation, the method is limited to added moisture values (*Z*) between –4% and +6% (see Figure 1).

This method may be used for checking material before placement to ensure that the moisture content is within specified limits (see Note to Clause 4.2(h)).

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1152	Specification for test sieves
1289	Methods of testing soils for engineering purposes
1289.1.1	Method 1.1: Sampling and preparation of soils—Preparation of disturbed soil samples for testing
1289.5.1.1	Method 5.1.1: Soil compaction and density tests—Determination of the dry density/moisture content relation of a soil using standard compactive effort