

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1289.5.8.9—1998

Methods of testing soils for engineering purposes

**Method 5.8.9: Soil compaction and density tests—Nuclear surface moisture-density
gauges—Water content of a standard moisture block using comparison against
primary blocks**

RECONFIRMATION NOTICE

Technical Committee CE-009 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 15 February 2013.

The following are represented on Technical Committee CE-009:

Association of Geotechnical Testing Authorities, Qld
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NOTES

Australian Standard™

Methods of testing soils for engineering purposes

Method 5.8.9: Soil compaction and density tests — Nuclear surface moisture-density gauges — Water content of a standard moisture block using comparison against primary blocks

1 SCOPE This Standard sets out the method for the determination of the assigned water content, by comparison against a set of primary moisture blocks of a standard moisture block, to be used for the calibration of the moisture mode of nuclear surface moisture-density gauges in accordance with AS 1289.5.8.4. The block shall consist of an array of alternate vertical aluminium or magnesium and polyethylene plates. The assignment of water content is made using comparison against a set of primary moisture blocks. Guidance on the number of blocks required for a set of standard moisture blocks is given in AS 1289.5.8.4.

A separate assigned water content for a particular standard moisture block is required for each make of gauge and, in some cases, for different models of the same make. The determination of the assigned water content for a particular standard moisture block shall be completed within one year of commencement, and the value of the assigned water content for a particular gauge make, and model if necessary, cannot be calculated until all of the predicted water content values have been obtained.

For any gauge, the determination of a predicted water content value for a standard moisture block is usually made during the calibration, but not as part of the calibration, of the gauge.

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

AS	
1289	Methods of testing soils for engineering purposes
1289.5.8.4	Method 5.8.4: Soil compaction and density tests — Nuclear surface moisture-density gauges — Calibration using standard blocks
1289.5.8.7	Method 5.8.7: Soil compaction and density tests — Nuclear surface moisture-density gauges — Water content of a standard moisture block using hydrogen content of components
1289.5.8.8	Method 5.8.8: Soil compaction and density tests — Nuclear surface moisture-density gauges — Water content of a standard moisture block using proportion of water

3 SAFETY PRECAUTIONS The equipment used in this method utilizes radioactive materials which may be hazardous to health unless proper precautions are taken. Therefore, it is essential that operators receive instruction on potential hazards and precautions, together with routine safety procedures such as the use of personal radiation monitors, source leak testing and use of radiation survey meters. Statutory regulations cover the use and transport of radioactive substances and users shall ensure that these regulations are complied with, for the State or Territory in which the gauge is to be used.

4 APPARATUS The following apparatus shall be used:

- (a) At least six individual nuclear surface moisture-density gauges of the same make and model.
- (b) For each gauge used, the manufacturer's reference block that was used for standard counts during the calibration of the gauge, and the manufacturer's handbook.
- (c) Primary standard moisture blocks set. The set shall consist of at least three blocks, as defined in AS 1289.5.8.4, with water contents assigned in accordance with AS 1289.5.8.7 or AS 1289.5.8.8.
- (d) Standard moisture block, as defined in AS 1289.5.8.4.
- (e) Thermometer covering a range of 0–50°C, with an uncertainty not exceeding 0.5°C.

5 PROCEDURE

5.1 Preparation for calibration The blocks shall be stored under cover to protect them from the effects of weather.

Before a determination of a predicted water content value using an individual nuclear gauge is commenced, ensure that the blocks to be used are sufficiently clear of other nuclear gauges or other sources of radiation so that there is no detectable effect on the counts displayed by the gauge. In buildings that are restricted in the available area, it may be necessary to provide shielding to achieve this requirement.

The location for the standard count determinations and the gauge function checks shall be at least 1 m from any vertical projection or any known neutron absorber or moderator.

There shall be a minimum clearance of 1 m from any vertical projection that is above the level of the top of the blocks.

Moisture blocks shall be situated at least 1 m from any significant source of hydrogen or any neutron absorber or moderator.

Ensure that the gauges are in good working order. Check that the base of gauge, the manufacturer's reference blocks and the standard blocks are clean.

5.2 Determination of moisture data For each nuclear gauge proceed as follows:

- (a) Perform gauge function checks in accordance with procedures specified for the gauge and record the results. If the results of these checks fail to comply with the specified requirements, the function checks shall be repeated. If the results of the second function checks fail to comply with the specified requirements, the gauge shall be withdrawn from service until the reason for the fault is determined and the fault rectified.
- (b) Perform a standard count check in accordance with AS 1289.5.8.4.
- (c) Record an initial standard moisture count for the gauge on the manufacturer's reference block in accordance with the procedure specified by the manufacturer. Use a counting period of at least 4 min.