State of Nevada
Department of Transportation
Materials Division

METHOD OF TEST FOR MOISTURE CONTENT IN SOILS AND AGGREGATES

SCOPE

This test method is used to determine the percent of moisture in soil or aggregate samples where rapid determinations of moisture contents are necessary. The moisture content is expressed as the percentage by weight of the dry material.

Alternative methods identified as Method A and B are provided. Method A, "Thermostatically Controlled Oven", is used for standard moisture content or in the event of a dispute (referee method). Method B, "Hot Plate or Gas Stove", is used for rapid determination of moisture content.

APPARATUS

1. Balance, having a capacity of 12000 g and sensitive to 0.1 g.

2. Oven, capable of maintaining a temperature of 110 ± 5ºC (230 ± 9ºF).

3. Electric hot plate or gas stove.

4. Sample containers, any suitable container with a lid that will prevent loss of moisture during transport.

5. Drying pans, trowels, spoons, spatulas, gloves, safety glasses, etc.

SAMPLING

Sample in accordance with Test Method Nev. T200.

PREPARATION OF SAMPLE

1. Samples shall be transported in covered and sealed containers to prevent moisture loss. Do not remove sample until material is ready to be tested. All samples should be tested within 1 hour of sampling.

2. Obtain a representative sample in accordance with Test Method Nev. T203, with as little handling of the material as possible to avoid moisture loss due to evaporation.

3. The size of sample for Method A or B shall be a 1000 g minimum for material up to 25 mm (1 in.) maximum size. For all larger sizes, the size of the moisture sample shall be 2000 g minimum.

PROCEDURE

METHOD A (Thermostatically Controlled Oven), referee method

1. Weigh wet sample and record to the nearest 0.1 g.

2. Spread sample uniformly in drying pan and dry for a minimum of 12 hours and until a constant weight has been achieved, using a thermostatically controlled oven at 110 ± 5ºC (230 ± 9ºF). Drying time is influenced by soil type, size of the sample and number of samples in the drying oven.

3. Remove dry sample from the oven and allow it to cool to room temperature.

4. Weigh dry sample and record to the nearest 0.1 g.

METHOD B (Hot Plate or Gas Stove Method)

1. Weigh wet sample and record to the nearest 0.1 g.

2. Spread material uniformly in a drying pan and dry to a constant weight on a hot plate or gas stove, taking care not to burn the material. Stir the sample frequently to ensure complete and uniform drying. Avoid temperatures at which free water boils violently, causing material to spatter out of the pan, or the rock particles containing entrapped moisture to fracture.

3. Remove dry sample from the hot plate or gas stove and allow it to cool to room temperature.

4. Weigh dry sample and record to the nearest 0.1 g.

CALCULATIONS

1. Calculate the moisture content using the following formula:

$$\% \text{ Moisture} = \left(\frac{\text{wet weight - dry weight}}{\text{dry weight}} \right) \times 100$$

REPORT

Report moisture content to the nearest 0.1 percent.

PRECAUTIONS

When obtaining a moisture content for gypsum or recycled asphalt pavement material (rap material), dry in accordance with Method A, under "PROCEDURE", using a temperature of 60°C (140°F), to avoid changing the nature of the sample.