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DEFINITIONS OF TERMS RELATING TO SPECIFIC GRAVITY

A. SCOPE

This test method defines the term specific gravity and explains how to calculate it given a variety of different materials and conditions. The information in this test method will be useful in other California Test Methods requiring specific gravity calculations (California Test Methods 206, 207, 208 and 209).

B. SPECIFIC GRAVITY TERMS

1. In simplest terms, specific gravity is the ratio of the mass of a given volume of material to that of the equal volume of water at the same temperature.

2. Specific gravity may be expressed in a number of ways. The term "absolute specific gravity" refers to a value that is obtained by highly exacting methods. It is rarely used in engineering work and will not be discussed further. Reference may be made to ASTM Designation: E12 or AASHTO Designation: M132 for a complete definition of absolute specific gravity.

3. Strictly speaking, specific gravity is not completely defined unless the temperatures of both the material and water are stated. However, for simplification, the statement of temperatures will be omitted in the following definitions but it will be understood that the temperatures of the material and the water are the same and approximately at room temperature.

4. The terms "permeable voids" and "impermeable voids" used in the definitions of the different types of specific gravities shall be defined as follows:

   a. Permeable Voids. Those voids in the individual particles of a material which become filled with water when the material is soaked or otherwise processed in accordance with the procedure specified.

   b. Impermeable Voids. Those voids in the individual particles of a material which do not become filled with water when the material is soaked or otherwise processed in accordance with the procedure specified.

C. SPECIFIED GRAVITY TYPES

1. Specific Gravity (Liquids and Solids).

   The ratio of the mass of a given volume of material to the mass of an equal volume of water. (See Fig. 1)

Specific Gravity
Note: See California Test 206

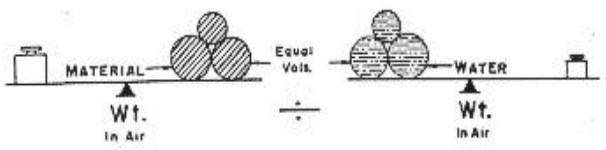

Figure 1

2. Apparent Specific Gravity (Solids).

   The ratio of the mass of a given volume of material to the mass of a volume of water equal to the volume of the solid matter and impermeable voids of the material. (See Fig. 2)

Apparent Specific Gravity
Note: See California Test 206, 208, 209

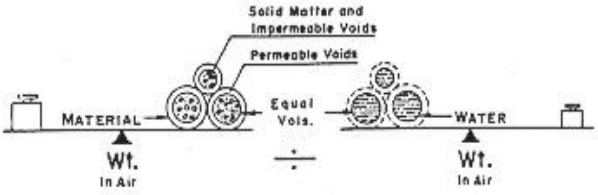

Figure 2

3. Bulk Specific Gravity (Solids).

   The ratio of the mass of a given volume of material to the mass of a volume of water equal to the total volume of the material. The total volume includes the combined volume of solid matter, permeable voids and impermeable voids (See Fig. 3).

Bulk Specific Gravity
Note: See California Test 206

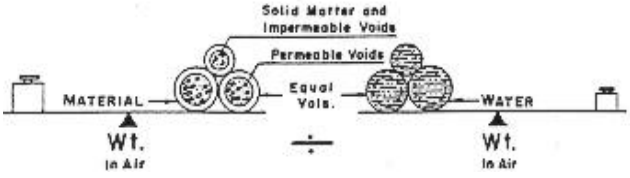

Figure 3

4. Bulk Specific Gravity (Saturated Surface Dry)

   The ratio of the mass of a given volume of material with its permeable voids filled with water to the mass of a volume of waterequal to the total volume of the material. The total volume includes the combined volume of solid matter, permeable voids and impermeable voids. See Figure 4.

Bulk Specific Gravity S.S.D.
Note: See California Test 206 and 207

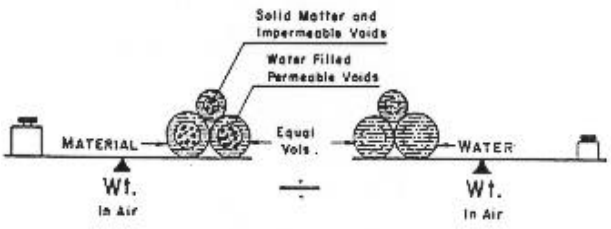

Figure 4

REFERENCES:

ASTM Designation E12
AASHIO Designation: M132
California Test 206, 207, 208, 209

End of Text (California Test 106 contains 2 pages)