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METHOD OF TEST FOR APPARENT SPECIFIC GRAVITY OF FINE AGGREGATES

A. SCOPE

This test method describes the procedure for determining the apparent specific gravity of fine aggregates proposed for use in bituminous mixes, cement treated bases and aggregate bases.

B. REFERENCES

AASHTO T 133 - Density of Hydraulic Cement

C. APPARATUS

1. **Flask:** the standard LeChatelier flask conforming to the dimensions shown in Figure 1.
2. **Weighted Collar:** a rubber or neoprene covered lead ring having an inside diameter of approximately 2½ in. and of sufficient weight to keep the flask upright in the water bath.
3. **Water Tank:** a constant temperature water bath of sufficient depth to maintain the water level at approximately the 24 mL line of the immersed flask.
4. **Balance:** a balance or scale having a minimum capacity of 100 g and sensitivity to 0.1 g or less.
5. **Brush:** a brush small enough to insert in cylindrical portion of LeChatelier flask.
6. **Solvent:** kerosene or stoddard solvent.

D. PROCEDURE

1. Split or quarter a fine aggregate sample weighing approximately 100 g.
2. Dry to constant weight in accordance with California Test 226 at 230°F ± 9°F and cool to room temperature.
3. Fill the LeChatelier flask with solvent to a level slightly above the zero line.
4. Dry the inside of the flask above the 24 mL line and insert the stopper.
5. Lower a weighted collar over the stem of the flask and let it rest on the bulb.
6. Immerse the flask in the constant temperature water bath until the solvent attains the same temperature as the bath.

7. Remove the flask and the collar from the bath and dry the outside of the flask.
8. Read and record the temperature of the water bath to the nearest degree F and the level of the solvent to the nearest 0.1 mL.
9. Weigh the flask and solvent to the nearest 0.1 g.
10. Slowly pour a portion of the sample into the flask until the level of the solvent is between 19 mL and 23 mL.
 - a. Gently roll and shake the flask as necessary to cause all the aggregate to fall into the bulb.
 - b. Brush any adhering dust down into the flask below the position of the stopper.
 - c. Insert the stopper in the flask.
11. Remove trapped air by rolling the flask in an inclined position and by gently whirling it in a horizontal circle.
12. If the level of the solvent falls below the graduated section of the stem, repeat Steps 2 and 3 until the solvent remains at a level within the graduated section.
13. Weigh the flask, solvent and sample to the nearest 0.1 g.
14. Place the weighted collar on the flask and immerse the flask in the water bath for a minimum of 4 hr.
15. At the end of the immersion period, remove the flask from the water bath and remove any remaining trapped air by rolling the flask in an inclined position, and by gently whirling it in a horizontal circle.
16. Read and record the temperature of the water bath to the nearest degree F and the level of the solvent to the nearest 0.1 mL.
17. Discard the sample and rinse the flask with solvent.

E. CALCULATIONS

Calculate the sample weight by subtracting the weight of the flask and solvent, determined in Section D.9, from the total weight of the flask, solvent, and sample, determined in Section D.13.

1. Calculate the volume of displaced solvent by subtracting the initial volume reading determined in Section D.8 from the final volume reading in Section D.16.
2. Determine the change in temperature between the initial and final volume readings and correct the volume of displacement as follows:
 - a. For each 1°F increase in temperature, subtract 0.1 mL from the calculated displacement.

- b. For each 1°F decrease in temperature, add 0.1 mL to the calculated displacement.
3. Record the volume after the temperature correction as the corrected displacement.
4. Calculate the apparent specific gravity to the nearest 0.01 using the following formula:

$$\text{Apparent Specific Gravity} = \frac{\text{Oven - Dry Sample Weight}}{\text{Corrected Displacement}}$$

Where: Oven-dry sample weight, in g
Corrected displacement, in mL

F. PRECAUTIONS

1. Be sure that the material is free of all air bubbles before the final reading is taken.
2. Because the sample tested is small, care must be taken to ensure that it is representative.
3. Handle the LeChatelier flasks gently. They are fragile.

G. HEALTH AND SAFETY

It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Prior to handling, testing or disposing of any materials, testers must be knowledgeable about safe laboratory practices, hazards and exposure, chemical procurement and storage, and personal protective apparel and equipment.

Caltrans Laboratory Safety Manual is available at:

http://www.dot.ca.gov/hq/esc/ctms/pdf/lab_safety_manual.pdf

End of Text
(California Test 208 contains 4 pages)

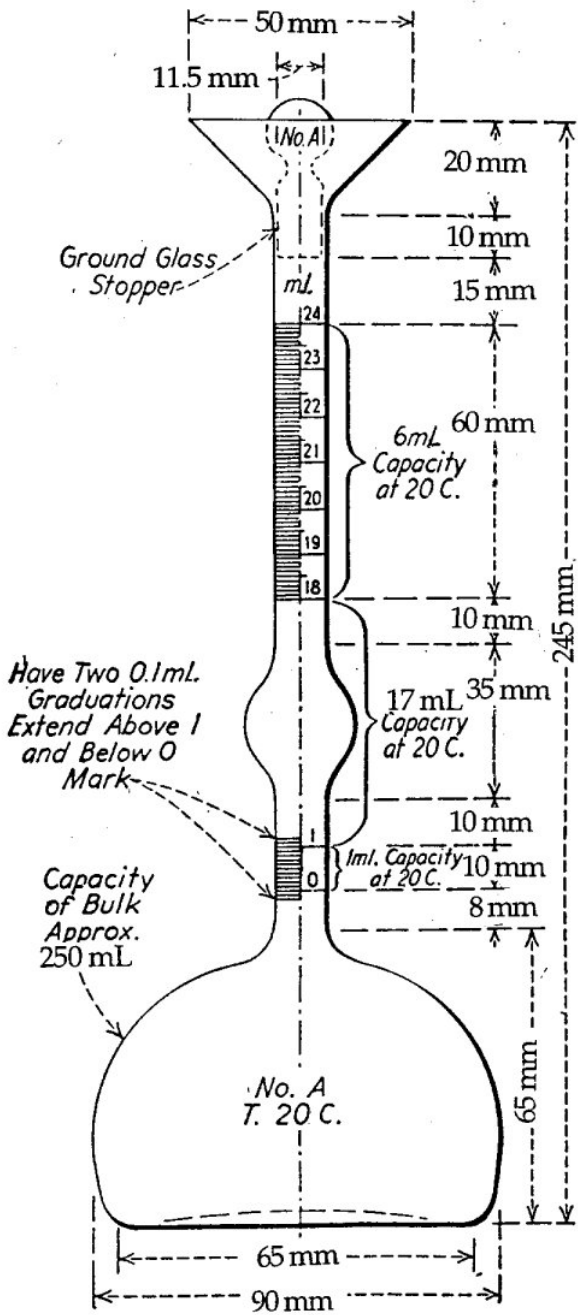


FIGURE 1. Flask for Specific Gravity Test

NOTE: Variations of a few mL in such dimensions as total height of flask, diameter of base, etc., are to be expected and will not be considered sufficient cause for rejection.