

INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR Department of Civil Engineering Soil Mechanics Laboratory

<u>DRY SIEVE ANALYSIS</u> IS: 2720 (Part 4) – 1985 (Reaffirmed-2006)

THEORY:

Soil gradation is the distribution of different particle size expressed as a percent of the total dry weight. The results of grain size analysis are shown graphically in the form of a grain size distribution curve, in which the cumulative percentages finer are plotted against the particle size in the semilogarithmic scale. The grain size distribution (GSD) of soil is determined by conducting three tests: Wet sieving, **Dry sieving** and Hydrometer analysis.

NEED AND SCOPE:

The results of grain size analysis are used for the soil classification. GSD curves are also used in the design of earth dam filter to determine its suitability.

APPARATUS REQUIRED:

- 1. A series of sieve sets ranging from 4.75mm to 75μ m
 - (4.75mm, 2.00mm, 1.00mm, 425µm, 212µm, 150µm, 75µm)
- 2. Balance sensitive to ± 0.01 g
- 3. Mechanical sieve shaker
- 4. Wire brush

PROCEDURE:

Soil passing 4.75mm I.S. Sieve and retained on 75micron I.S. Sieve contains no fines. Those soils can be directly dry sieved rather than wet sieving.

Dry Sieving:

- 1. Take 500gm of the soil sample from disturbed representative sample.
- 2. Conduct sieve analysis using a set of standard sieves as given in the data sheet.
- 3. The sieving may be done either by hand or by mechanical sieve shaker for 10 minutes.
- 4. Weigh the material retained on each sieve.
- 5. The percentage retained on each sieve is calculated on the basis of the total weight of the soil sample taken.
- 6. From these results the percentage passing through each of the sieves is calculated.
- 7. Draw the grain size curve for the soil in the semi-logarithmic graph provided.

PRESENTATION OF DATA:

Weight of Sample taken for Sieve Analysis = _____ gms.

Weight of Sample taken for Dry Sieve Analysis = _____ gms.



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| S. No. | I.S. Sieve No. | Weight retained in gms | Cumulative weight retained in gms | Percent (%) weight retained | Percent (%) weight passing |
|--------|----------------|---------------------------|---|--------------------------------|-------------------------------|
| 1. | 4.75mm | | | | |
| 2. | 2.00mm | | | | |
| 3. | 1.00mm | | | | |
| 4. | 425 microns | | | | |
| 5. | 212 microns | | | | |
| 6. | 150 microns | | | | |
| 7. | 75 microns | | | | |
| 8. | Pan | | | | |