Shanghai Normal University
Tutorial (T03) - Classification and description

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1. The following results were obtained during a liquid limit test on a soil. Determine the liquid limit.

Mass of wet soil (g)	Mass of dry soil (g)	Cone penetration (mm)
31.2	25.0	16.1
37.8	28.2	18.3
36.0	24.6	21.3
40.8	26.3	23.5

2. From the following falling cone test results:

Mass of tin	18.2	19.1	17.7	18.6
Mass of tin + wet sample [g]	51.5	45.5	50.7	43.4
Mass of tin + dry sample [g]	37.8	35.6	39.7	36.3
Cone penetration [mm]	25.0	14.2	8.5	5.1

   Determine moisture content of each sample. Plot graph of w against penetration and estimate liquid limit. If soil has a plastic limit of 22%, calculate plasticity index and classify the soil using the A-line chart.

3. The following results were obtained for a fine-grained soil. $LL = 48\%$, $PL = 26\%$, natural moisture content = 29%, Clay = 25%, Silt = 36%, Sand = 39%. Classify the soil.

4. The Atterberg limits of a soil are $LL = 70\%$ and $PL = 35\%$ and it contains 80% by weight of clay. The water content of the sample is 45%. Classify the soil.