

Table 1: Guide to Testing Sample Quantities

Please contact Trilab if there is any doubt as to what sample quantity is required.

TEST DESCRIPTION	MINIMUM SAMPLE REQUIREMENT ¹
Triaxial Strength (Soils)	
Qu - Unconfined Compressive Strength (soil)	Undisturbed samples: Minimum length 2.2 times greater than the diameter for undisturbed samples Remoulded samples: 5kg; or 20kg to 30kg if compaction required (and specify required Remoulding Density Ratio on Test Request)
Uu - Confined, Unconsolidated, Undrained (single, or three stage)	
Cu - Saturated, Consol. with pwp measurement (single, or three stage)	
CD - Consolidated Drained with pwp measurement (single, or three stage)	
Critical State Locus -CU/CD - Consolidated, Undrained/Drained with pwp measurement on individual Sample - (single stage)	
Repeat Load Triaxial excluding Standard/Modified Compaction	10kg
Qu, Uu, Cu, CD Remoulded ²	5kg; or 20kg to 30kg if compaction required
Direct Shear	
Direct Shear: rock core (three, or four, or extra stage)	100mm
Direct Shear: rock core (defect)	100mm
Direct Shear: up too 100mm on cohesive and cohesionless material (single, or three stage)	5kg; or 20kg to 30kg if compaction or max/min required
Direct Shear: 300mm box (three stage) – AS1289.6.2.2 and ASTM D3080	120kg: -30mm already pre-treated
Direct Shear: 300mm box (three stage) – Q181C	120kg: -19mm already pre-treated
Torsional Ring Shear - on cohesive materials (single, or three stage)	1kg
Oedometer	
Oedometer - Up to eight stages with Particle Density	80mm to 100mm of undisturbed or 1kg if remoulded
Collapse Potential	
Rock	
UCS, or with Young's Modulus and Poisson's Ratio / Sonic Velocity	Minimum length 2.7 times to 3 times greater than diameter
Sonic Velocity - (P and S Wave)	
Direct Tensile Strength	
Rock Triaxial (single stage)	Length 2 times greater than diameter
Rock Triaxial (three stage)	
Rock Porosity and Density	
Slake Durability (two cycles / four cycles)	10 pieces, each 40g to 60g
Slaking and Dispersion Potentials	100mm core, or 5g x 50g
Indirect Tensile Strength (Brazilian) - Moisture Content, Density, Tensile	Length greater than the diameter
Point Load (one, or both directions) / Cerchar Abrasivity	

Classification	
Laboratory / Moisture Content / Both	Fine grained soils: 1kg Medium grained soils: 5kg Coarse grained soils: 10kg
Atterberg Limits - Standard oven preparation / Single Point Casagrande / Multi Point Casagrande / Cone Penetrometer / Preparation at natural Moisture Content	
Liquid Limit and Linear Shrinkage	
Grading Fines Percentage (>0.075mm)	Clay: 500g Sands (up to 2.36mm): 1kg Gravels: 30kg
Grading (5mm to 0.075mm; 75mm to 0.075mm)	
Grading with Hydrometer (includes Particle Density) Fine / Coarse	
Particle Density	
Shrink / Swell Index (+ remoulding, if required)	150mm to 200mm of undisturbed ³ or 1kg
Shrink / Swell Index with Swell Pressure (+ remoulding, if required)	
Unit Weight	50mm undisturbed
Tailings	
Monotonic or Cyclic Direct Simple Shear	100mm of Undisturbed or 1kg
Constant Rate of Strain Consolidation	100mm of Undisturbed or 1kg
Rowe Cell Consolidation	4kg
Column Settling Tests – Drained or Undrained	4kg
Air Drying Test	4kg
Permeability	
Permeability – Falling or Constant Head	6kg ²
Constant Head – Flexible Wall Triaxial	100mm undisturbed, or 3kg disturbed (can be remoulded)
CBR and Compaction	
Maximum Dry Density – Standard	12kg
Maximum Dry Density - Modified	12kg
Soaked CBR - includes Maximum Dry Density Standard / Modified	25kg
Soaked CBR (10-day soak) - includes Maximum Dry Density	
Soaked CBR - excl. compaction Standard / Modified	10kg
4 Point CBR Main Roads Standard / Modified	50kg / 60kg
Modified Texas Triaxial	70kg
Dispersion and Chemical	
Percentage Dispersion (Double Hydrometer)	Same as Grading samples
Emerson Class No.	200g
Pinhole Dispersion	1kg - 2.36mm
pH Lime Demand eight points	2kg

General Sample Requirements

- Sample diameters that Trilab can test: 50mm, 63mm, 75mm, 85mm, 100mm.
- Core diameters associated with each of the different core types: NQ - 47.6mm; NX - 54.0mm; HQ - 63.5mm; PQ - 85.0mm.

Specific Information Required on Test Requests (Where Applicable)

Soil Triaxial:

- Number of stages required.
- Confining pressures for each stage
- Remoulding density and moisture ratio (where required)
- Maximum dry density and optimum moisture content (where required if not to be performed by Trilab)
- Failure Criteria (Peak Principle Stress ratio or Peak Deviator Stress)

Rock Triaxial:- Number of stages and confining pressure for each stage

Oedometer: - Pressure increments for each individual load and unload stage if not standard increments

Direct Shear:

- Number of stages and Normal Stresses for each stage
- Whether the shear is to be Sawcut, Existing Defect or Intact
- Remoulding density and moisture ratio (where required)
- Maximum dry density and optimum moisture content (where required if not to be performed by Trilab)

Monotonic/Cyclic Direct Simple Shear: - Normal Stress required

- Test condition required (Constant Volume, Constant Normal Stress/Constant Normal Force)
- Remoulding density and moisture ratio (where required)
- Maximum dry density and optimum moisture content (where required if not to be performed by Trilab)
- (CDSS only) Cyclic Frequency (Hz), Cyclic Stress Ratio, Target number of cycles, Double Amplitude Strain limit (%)

Rowe Cell Consolidation: - Sample Placement Requirement (target % solids/placed as received/remoulded)

- Number of stages required
- Pressures for each stage
- Number of permeability stages, and at which pressure increments (where required)

Rock UCS: - Whether straight UCS, or whether Young's Modulus and Poisson's Ratio is required.
- Whether Sonic Velocity is required prior to UCS.

Permeability:- Remoulding density and moisture ratio (where required)

- Maximum dry density and optimum moisture content (where required if not to be performed by Trilab)
- Head and confining pressures if not standard pressures (for Triaxial Permeabilities)

1. If minimum quantity cannot be obtained, please contact the laboratory to discuss alternative options.
2. An additional 15kg if a compaction is required to obtain a Maximum Dry Density for remoulding. Please specify required Remoulding Density Ratio on Test Request to allow remoulding test to commence.
3. Triaxial sample can be reused for classification index testing if there is a shortage of sample material.