Trilab
Soil Rock Calibration

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GUIDE TO TESTING SAMPLE QUANTITIES

TEST DESCRIPTION	MINIMUM SAMPLE REQUIREMENT [1]
Triaxial Strength (Soils)	
Qu - Unconfined Quick Undrained Compression Test	**Undisturbed** samples: Minimum length 2.2 times greater than the diameter for undisturbed samples **Remoulded** samples: 20kg (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)	
Qu, Uu, Cu, CD Remoulded [2]	3kg to 5kg; or 20kg to 30kg if compaction required
Direct Shear	
Direct Shear: rock core (three, or four, or extra stage)	Specimen length greater than 50mm
Direct Shear: cohesive and cohesionless material (single, or three stage)	3kg to 5kg; or 20kg to 30kg if compaction or max/min required
Direct Shear: 300mm box (single, or three stage)	100kg: -30mm already pre-treated
Oedometer	
Oedometer - Up to eight stages with Particle Density	80mm to 100mm of undisturbed
Collapse Potential	
Extended Height Consolidation (up to 400mm)	500mm Vibracore or 2kg Tailings & Site Water
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	
Hoek Triaxial (single stage)	Length 2 times greater than diameter
Hoek Triaxial (three stage)	
Rock Porosity and Density	
Slake Durability (two cycles / four cycles)	10 pieces, each 40g to 60g (size of two thumbs)
Slaking and Dispersion Potentials	100mm core, or 5g x 50g (size of two thumbs)
Indirect Tensile Strength (Brazilian) - Moisture Content, Density, Tensile	Length greater than the diameter
Point Load (one, or both directions) / Cerchar Abrasivity	
Classification	
Visual / Moisture Content / Both	Fine grained soils: 1kg Medium grained soils: 5kg Coarse grained soils: 10kg
Atterberg Limits - Standard oven preparation / Cone Penetrometer / Preparation at natural Moisture Content	
Liquid Limit and Linear Shrinkage	
Grading Fines Percentage (>0.075mm)	Clay: 500g Sands (up to 2mm):1 kg 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]
Shrink / Swell Index with Swell Pressure (+ remoulding, if required)	
Unit Weight	50mm undisturbed

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Permeability	
Permeability - Falling Head	5kg [2]
Constant Head - Sand	3kg [2]
Constant Head - Clay in the Triaxial cell (V/H)	100mm [2] undisturbed (can be remoulded)
CBR and Compaction	
Maximum Dry Density - Standard	15kg for 20mm 25kg for 40mm
Maximum Dry Density - Modified	
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 Compression Test	70[2]

TEST DESCRIPTION	MINIMUM SAMPLE REQUIREMENT [1]
Dispersion and Chemical	
Percentage Dispersion (Double Hydrometer)	Same as Grading samples
Emerson Class No.	200g (or “hand full”)
Pinhole Dispersion	1kg - 2.36mm
pH / Conductivity / Salinity	1kg
pH Lime Demand eight points	2kg
Pretreatment: RTA T102 / T103	Minimum 10kg, then refer to other tests required
Playing Field Material Assessment	
Water Holding Capacity	1kg
Saturated Hydraulic Conductivity	3kg
Porosity Computations	1kg

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)

Triaxial - Soils: Single or multi-stage test / Confining Pressure(s) / Remoulding Density Ratio / Maximum Dry Density
Direct Shear: Stage Normal Loads / Existing defect or saw cut / Remoulding Density Ratio / Maximum Dry Density
Rock UCS: If Young's Modulus and Poisson's Ratio required
Hoek Triaxial - Rock: Single or multi-stage test / Confining Pressure(s) / Young's Modulus
Permeability: Remoulding Density Ratio / Maximum Dry Density

If in any doubt as to what sample quantity is required:

Phone Brisbane laboratory on 07 3265 5656; or
Phone Perth laboratory on 08 9258 8323; or
Email test@trilab.com.au

1 If minimum quantity cannot be obtained please call the relevant 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.

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GUIDE TO TESTING SAMPLE QUANTITIES - AGGREGATE

Nominal Size - designation of an Aggregate which gives an indication of the largest size particle present.
NOTE: The concept of nominal size aggregate is for convenience of reference and ordering. The nominal size is expressed as a whole number above the sieve size through which nearly all of the Aggregate passes.

TEST DESCRIPTION	MINIMUM SAMPLE REQUIREMENT								
Particle Size Distribution *AS1141.11 / Q103B*	**Nominal Size mm**	75	40	28	20	14	10	7	5
Material finer than 75 microns in Aggregates *AS1141.12*	**Graded Aggregate**	30kg	15 kg	5 kg	5 kg	2 kg	2 kg	1 kg	1 kg
Wet/Dry Strength Variation *AS1141.22 / Q205A / B / C*	80 kg or sufficient material to yield the amount of Aggregate of required fraction: i.e ... - 13.2 + 9.5 mm = 18 kg								
Los Angeles Value *AS1141.23 / Q206*	40 kg of sufficient material to yield the amount of Aggregate of required fraction: i.e... B grading 2.5 kg of - 19.0 + 13.2 mm and 2.5 kg of - 13.2 + 9.5 mm								

Flakiness Index *AS1141.15 / Q201*	**Maximum Particle Size (mm)**	**Mass of Sample (kg)**
	63.0	25 to 30
	53.0	20 to 25
	37.5	10 to 15
	31.5	8 to 10
	26.5	4 to 6
	19.0	3 to 5
	16.0	2 to 4
	13.2	2 to 4
	9.50	2 to 4
	6.70	1 to 2

Degredation Factor ***** *AS1141.25 / Q208* **** Can be called Washington Degredation***	5 to 10 kg of sufficient material to produce the following fractions masses:	
	Size of particles (mm)	**Mass of Fraction (g)**
	13.2 to 9.50	250 ± 2.5
	9.50 to 6.70	250 ± 2.5
	6.70 to 4.75	250 ± 2.5
	4.75 to 2.00 / 2.36	250 ± 2.5

Crushed Particles *AS1141.18 / Q215*	**Nominal Size (mm)**	**Graded Aggregate (kg)**
	75	40
	60	30
	50	25
	40	16
	28	10
	20	5
	14	2
	10	2

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Average Least Dimension *AS1141.20.1 (10 mm or greater)*	Depending on the nominal size of the Aggregate ie... 10, 14, 20, 40 mm refer to the Particle Size Distribution guidelines above.	
Average Least Dimension *AS1141.20.2 (5 mm and 7 mm)*	5 mm Aggregate: 1 kg 7 mm Aggregate: 2 kg	
Average Least Dimension *AS1141.20.3 / Q202*	This test procedure is a calculation only. Particle Size Distribution and Flakiness index test results required to conduct calculation.	
Aggregate Crushing Value *AS1141.21*	50 kg or sufficient material to yield 10 kg of the passing 13.2 mm / retained 9.5 mm fraction.	
Particle Shape* by Proportional Calliper *AS1141.14* ***Test can be called 'Mishappen Particles'***	**Nominal Size (mm)**	**Graded Aggregate (kg)**
	75	30
	40	15
	28 / 20 / 14	5
Aggregate Soundness - Evlauation by Exposure to Sodium Sulphate Solution *AS1141.24 / Q209*	**Nominal Size (mm)**	**Graded Aggregate (kg)**
	75	30
	40	15
	28 / 20 / 14	5 - 10
	10 / 7 / 5	5
	Sand or Fine Aggregate	1 - 2
Weak Particles *AS1141.32 / Q217*	**Nominal Size (mm)**	**Graded Aggregate (kg)**
	> 40	15
	> 20 ≤ 40	10
	> 10 ≤ 20	2
	> 7 ≤ 10	1
	< 7	1
Clay and Fine Silt (Settling Method) *AS 1141.33*	0.5 - 1 kg Sand / Fine Aggregate	
Organic Impurities other than Sugar *AS1141.34*		
Particle Density and Water Absorption of Fine Aggregate *AS1141.5 / Q214A*	Sufficient material to produce 2 kg of material passing a 4.75 mm sieve: • on smaller size Aggregate ie... 5, 7 and 10 mm: 5 - 10 kg • on larger sized Aggregate ie... 14, 20, 40 mm: 20+ kgs. Due to the small amount of fines in large Aggregates, testing may not be possible.	
Particle Density and Water Absorption of Coarse Aggregate *AS1141.6.1 / Q214B*	Sufficient material to produce 10 kg of material retained on a 4.75 mm sieve: • on larger size Aggregates ie... 10, 14, 28, 40 mm: 20 kgs. Testing not possible on 5 and 7 mm Aggregates. Refer to AS1141.5 / Q214A above	
Bulk Density of Aggregate (Unit Mass) *AS1141.4*	**Nominal Size (mm)**	**Graded Aggregate (kg)**
A: Loose Unit Mass of Aggregate B: Compacted Unit Mass of Aggregate *Q221A / Q221B*	5 mm to 20 mm	20 kg
	Under 5 mm	10 kg

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