# Guide to Minimum Sample Masses for Civil Engineering Laboratory Tests (New Zealand Standards)

GEOTECHNICS

## CONCRETE AGGREGATE

| Nominal size (mm) | Minimum field sample mass (kg) | Sieve (kg) | Moisture content (kg) | Density and absorption (kg) | Cleanness (g) | Lightweight Particles (g) | Unit Mass and Voids Content (kg) | Crushing Resistance of Coarse Aggregate (kg) | Weathering Resistance of Coarse Aggregate (kg) | Sand Equivalent (g) | Voids Content Flow Time and Percentage of Oversize Material in Sand | Flakiness Index and Elongation (kg) | Angularity (kg) | Alkali Reactivity Fast Test (kg) | Sodium Sulphate Soundness Test (kg & g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | 100 | 30 | 12 | 3 | 20000±1000 | Sand | 75-37.5mm - 90kg | 10.5kg passing | 2kg ± 5g | 500g passing | 2.5kg dry mass | 63mm - 50kg | At least 10kg | 10kg coarse | Coarse |
| 37.5 | 35 | 15 | 6 | 2.5 | 10000±500 | 100g to 200g | 37.5-26.5mm - 30kg | 13.2mm and | passing 19mm | 4.75mm | | 40mm -15kg | of the predominant | aggregate | 63-37.5mm - 5kg |
| 26.5 | 30 | 10 | 4 | 2 | 2500±125 | coarser than | 26.5-13.2mm - 15kg | retained on | and retained | | | 28mm - 5kg | size from the | 5kg sand | 37.5-19mm - 1.5kg |
| 19 | 25 | 8 | 3 | 2 | 2500±125 | 300µm | | 9.5mm | on 9.5mm | | | 20mm - 2kg | grading | | 19-9.5mm - 1kg |
| 16 | 20 | 6 | 3 | 1.5 | 2500±125 | | | | and 3kg ± 5g | | | 14mm -1kg | | | 9.5-4.75mm - 0.3kg |
| 13.2 | 15 | 4 | 2 | 1.5 | 2500±125 | | 13.2-4.75mm - 10kg | Gives three | passing 9.5mm | | | | | | Fine |
| 9.5 | 10 | 1 | 1 | 1.5 | 2500±125 | | | subsamples of | and retained | | | 10mm - 0.5kg | | | <9.5mm -100g each |
| Sand | 5 | 0.2 | 0.5 | 2 | | | | 3.5kg | on 4.75mm | | | <3mm - 0.1kg | | | size specified |

## ROAD AGGREGATE

| Nominal size (mm) | Minimum field sample mass (kg) | Moisture content (kg) | Cone Penetration (g) | Plastic Limit (g) | Clay Index (g) | Sand Equivalent (g) | Solid Density <19mm (g) | Solid Density >19mm (g) | Particle-size distribution by sieving (kg) | Cleanness Value (g) | Crushing Resistance to a Specified Load (kg) | Weathering Quality Index (kg) | Los Angeles Abrasion (kg) | Size & Shape (kg) | Broken faces (kg) | CBR (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AP 100 | 150 | 6kg | 260g passing | 260g passing | As per | 500g passing | 1000g dry | 1000g dry | 50kg | 2500g ± 125g | 3.5kg passing | 2kg ± 5g | Different gradings | 5kg riffled into | | 10kg |
| AP 75 | 100 | 6kg | 425µm | 425µm | moisture | 4.75mm | | | | | 13.2mm and | passing 19mm | to make up a 5kg | 1kg sub | | with 6.5kg |
| AP 65 | 70 | | | | content then | | | | 25kg | | retained on | and retained | sample | samples | | passing 19mm |
| AP 50 | 50 | | | | 8g passing | | | | | | 9.5mm | on 9.5mm | | then split into | | |
| AP 40 | 35 | 4kg | | | 75µm | | | | 10kg | | | and | | 100 specimens | >37.5mm - 5kg | |
| AP 25 | 30 | 3kg | | | | | | | | | | 3kg ± 5g | | | 37.5-19mm - 5kg | |
| AP 20 | 25 | 2kg | | | | | | | 5kg | | | passing 9.5mm | | | 19-9.5mm - 0.5kg | |
| AP 14 | 15 | 1kg | | | | | | | | | | and retained | | | 9.5-4.75mm - 0.2kg | |
| AP 9.5 | 10 | 0.5kg | | | | | | | 0.5kg | | | on 4.75mm | | | | |
| AP 5 | 10 | 0.1kg | | | | | | | 0.2kg | | | | | | | |

## SOIL

| Nominal size (mm) | Minimum field sample mass (kg) | Moisture content (kg & g) | Cone Penetration (g) | Liquid Limit (g) | Plastic Limit (g) | Linear Shrinkage (g) | Solid Density of Coarse, Medium and Fine Soils (kg) | Particle-size distribution by sieving Size (mm) | Particle-size distribution by sieving Mass (kg) | Particle-size Distribution by Hydrometer (g) | Organic Matter Content by Ignition (kg) | pH Value by Electrometric (g) | Allophane Content (g) | NZ Standard and Heavy Compaction (kg) | NZ Vibrating Compaction (kg) | Maximum and Minimum Density (kg) | CBR (kg) | Density by Wax Immersion (g) | Unconfined Compressive Strength | One-dimensional Consolidation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| >90% passing 63mm | 30 | 3kg | 1kg split to | 1kg split to | 100g split to | 800g split to | 1.5kg coarse and | 75 | 75 | 1kg split to | 3.5kg | 600g | 30g | 25kg passing | 80kg passing | <19mm -50kg | 10kg | >50g | >38mm and | >58mm diameter |
| >90% passing 20mm | 3 | 300g | 200g passing | 250g passing | 30g passing | 150g passing | medium or | 63 | 50 | 50 to 100g | 600kg | | | 19mm | 37.5mm | <37.5mm - 160kg | with 6.5kg | | D > 6x max | |
| >90% passing 2mm | 0.5 | 30g | 425µm | 425µm | 425µm | 425µm | 1kg for fine | 53 | 40 | passing 63µm | 150kg | | | | | | passing 19mm | | particle size | |
| | | | | | | | | 37.5 | 15 | | | | | | | | | | 2:1 H/D ratio | |
| | | | | | | | | 26.5 | 5 | | | | | | | | | | | |
| | | | | | | | | 191 | 2 | | | | | | | | | | | |
| | | | | | | | | 13.2 | 1 | | | | | | | | | | | |
| | | | | | | | | 9.5 | 0.5 | | | | | | | | | | | |
| | | | | | | | | 6.7 | 0.2 | | | | | | | | | | | |
| | | | | | | | | <2 | 0.15 | | | | | | | | | | | |