Aggregate

Aggregate is a component of a composite material used to resist compressive stress and provide bulk to the composite material.

For efficient filling, aggregate should be much smaller than the finished item, but have a wide variety of sizes.

It is vastly used in most combination of construction material such as concrete and asphalt technology to which aggregates may either be specified or designed to suit a particular engineering requirement while not suiting another.

The properties of aggregates can vary and hence affect the final construction material. Therefore it is important to test the different parameters such as resistance to polishing, particle size, shape and texture, relative, bulk density, crushing value, impact value, organic impurities, compacted densities, specific gravity, soundness and abrasion resistance.
Flakiness Sieves

DESCRIPTION:
Flakiness Sieves are used to determine particle size shape or geometrical characteristics of the aggregates. Aggregate particles are considered as flaky when their thickness is less than 0.6 of their mean sieve size.

Aggregate to be classified is separated into seven sieve fractions from 6.3 to 63 mm and each fraction is examined separately. The dimensions of each sieve comply with the relevant International Standard, manufactured from heavy gauge steel sheet and coated with electrostatic paint. The accuracy of the slot size is better than 0.1 mm.

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Slot size</th>
<th>Weight (approx.)</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG 0101-7</td>
<td>4.9x30 mm</td>
<td>30x220x80 mm</td>
</tr>
<tr>
<td>AG 0101-1</td>
<td>7.2x40 mm</td>
<td>320x240x80 mm</td>
</tr>
<tr>
<td>AG 0101-2</td>
<td>10.2x50 mm</td>
<td>320x220x80 mm</td>
</tr>
<tr>
<td>AG 0101-3</td>
<td>14.4x60 mm</td>
<td>360x260x80 mm</td>
</tr>
<tr>
<td>AG 0101-4</td>
<td>19.7x80 mm</td>
<td>390x280x80 mm</td>
</tr>
<tr>
<td>AG 0101-5</td>
<td>25.3x90 mm</td>
<td>420x300x80 mm</td>
</tr>
<tr>
<td>AG 0101-6</td>
<td>33.9x100 mm</td>
<td>470x320x80 mm</td>
</tr>
</tbody>
</table>

Grid Sieves

DESCRIPTION:
Used for the determination of the flakiness index of the aggregate. Consisting of an electrostatically painted frame and 5 mm diameter stainless steel bars with apertures state below.

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Aperture</th>
<th>Weight (approx.)</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG 0102</td>
<td>2.5 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-1</td>
<td>3.15 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-2</td>
<td>4 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-3</td>
<td>5 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-4</td>
<td>6.3 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-5</td>
<td>8 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-6</td>
<td>10 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-7</td>
<td>12.5 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-8</td>
<td>16 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-9</td>
<td>20 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-10</td>
<td>25 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-11</td>
<td>31.5 mm</td>
<td>340x320x80 mm</td>
</tr>
<tr>
<td>AG 0102-12</td>
<td>40 mm</td>
<td>340x320x80 mm</td>
</tr>
</tbody>
</table>
Flakiness and Thickness Gauge

DESCRIPTION:
Flakiness Gauge is used to determine if the aggregate particles are to be considered as flaky, i.e., their thickness is less than 0.6 of their nominal size.

Length Gauge classifies aggregate elongation by measuring the length of individual particles.

Aggregate particles are considered elongated when their length is more than 1.8 of their nominal size. Length Gauge test is not applicable to material retained on 63.0 mm BS test sieve.

<table>
<thead>
<tr>
<th>Product code</th>
<th>Weight</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG 0103</td>
<td>0.4 Kg</td>
<td>310x130x10 mm</td>
</tr>
<tr>
<td>AG 0103-1</td>
<td>0.82 Kg</td>
<td>370x70x70 mm</td>
</tr>
</tbody>
</table>

Shape Index Gauge

DESCRIPTION:
Shape Index Gauge is used to determine the shape factor of individual aggregates by comparing the ratio of length to width.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>450x150x50 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (approx.)</td>
<td>0.4 kg</td>
</tr>
</tbody>
</table>

Particle Density Specific Gravity and Water Absorption (Sand Absorption Cone and Tamping Rod)

DESCRIPTION:
The Sand Absorption Abraham Cone Set is used in determining the specific gravity and water absorption of fine aggregates smaller than 10 mm.

The apparatus is manufactured from plated steel for protection against corrosion.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>90x90x180 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (approx.)</td>
<td>0.5 kg</td>
</tr>
</tbody>
</table>
Quantab Chloride and Sulfate Content Instant Test Strips

**DESCRIPTION:**
Quantab chloride titrators can be used for estimating the chloride content of aqueous solutions.

They are suitable for site testing and quality control of aggregates requiring less than 30 minutes to obtain result.

The determination is based on the reaction of the silver dichromate strip with the chloride in the sample solution, and the proportional content of chloride in the sample is indicated by the calibration chart which is supplied complete with the test kit.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Number of tests</th>
<th>40</th>
<th>50</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td>Chloride - as Cl-</td>
<td>Chloride - as Cl-</td>
<td>Sulfate</td>
</tr>
<tr>
<td>Platform</td>
<td>Test Strip</td>
<td>Test Strip</td>
<td>Test Strip</td>
</tr>
<tr>
<td>Range</td>
<td>300 - 6000 Cl-</td>
<td>30 - 600 Cl-</td>
<td>200 to 900 mg/l.</td>
</tr>
<tr>
<td>Ship Wt. (lbs)</td>
<td>0.2</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Smallest Increment Steps</td>
<td>10-20 ppm increments</td>
<td>10-20 ppm increments</td>
<td></td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**

- Easy to use, disposable, and inexpensive
- A great way to obtain quick, quantitative answers in the field or in the lab

**ORDERING:**

**AG 0108**
Quantab Chloride Titrator strips. Type 1175 titration range 0.005% to 0.1% (30 to 600 ppm) NaCl. Pack of 50

**AG 0109**
Quantab chloride titrator strips. Type 1176 titration range 0.05% to 0.1% (300 to 6000 ppm) NaCl. Pack of 40

A qualitative or semi-quantitative test is recommended for determining sulfate ions in aqueous solutions. Sulfate test strips are convenient measuring devices for sulfate content.

**AG 0110**
Sulfate Test Strips detection range 200 to 900 mg/l. Pack of 100.

Organic Impurities in Fine Aggregate

**DESCRIPTION:**
If aggregate contains organic impurities it may not be suitable for inclusion in concrete. Organic impurities, usually tannic acid and its derivatives, may interfere with the chemical reactions of hydration. Impurities are more likely to be found in fine (sand) aggregate.

Organic Impurities complete Test Set, containing Graduated Bottle, Reference Color Comparison Chart (Sodium Hydroxide Reagent is not included with this kit and should be sourced locally).

**TECHNICAL SPECIFICATIONS:**

| Weight (approx.) | 300g |

**MAIN FEATURES:**

- Compact, robust and easily portable for site use

**ORDERING:**

**AG 0111**
Organic Impurities complete Test Set.

**ACCESSORIES:**

**AG 0112**
Graduated Bottle, 300 ml

**AG 0113**
Reference Color Comparison Chart

**AG 01114**
Sodium Hydroxide Solution

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Aggregate Crushing Value and Ten Percent Fines Value (ACV/TFV)

DESCRIPTION:
Aggregate crushing Value provides a relative measure of the resistance of an aggregate to crushing under a gradually applied compressive load. Ten Percent Fines Value used for testing aggregate smaller than 10 mm.

Comprises:
150 mm or 75mm diameter steel cylinder, plunger, base plate, tamping rod and metal measure.

TECHNICAL SPECIFICATIONS:
<table>
<thead>
<tr>
<th>AG 0116</th>
<th>AG 0115</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>250x250x600 mm</td>
</tr>
<tr>
<td>Weight approx.</td>
<td>29 Kg</td>
</tr>
</tbody>
</table>

ORDERING:
AG 0115 Aggregate Crushing Value Apparatus 150 mm dia.
AG 0116 Aggregate Crushing Value Apparatus, 75 mm dia.

ACCESSORIES:
AG 0117 Metal Measure 115 mm diameter x 180 mm deep.
AG 0118 Metal Measure 57 mm diameter x 90 mm deep.
AG 0119 Tamping Rod 8 mm diameter x 300 mm long

• All parts are powder coated or galvanized.

MAIN FEATURES:

Aggregates Impact Value

DESCRIPTION:
The Aggregate Impact Value machine has been developed for determining the impact value of aggregates.

Manufactured from plated steel against corrosion, a counter fitted to the machine automatically records the number of blows delivered to the sample.

The AIV is supplied complete with 75 mm diameter x 50 mm deep, cylindrical measure and steel tamping rod.

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Weight</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>52 Kg</td>
<td>450x350x850 mm</td>
</tr>
</tbody>
</table>

MAIN FEATURES:
• Cylindrical measure and steel tamping rod.

ORDERING:
AG 0120 Aggregate Impact Value apparatus complete.
Los Angeles Abrasion Machine

**DESCRIPTION:**

Los Angeles Abrasion Machine is used for determination of aggregates resistance to fragmentation.

The machine consists of an electronic control unit and a rolled steel drum having an inside diameter of 711 mm and internal length 508 mm.

The drum is rotated at a speed of between 31 and 33 r.p.m. The internal shelf is provided with the machine is conforming to ASTM and EN standards.

The machine is equipped with automatic counter, which allows stopping when the preset number of revolutions is completed.

There is a steel tray supplied with machine for easy discharge of specimen.

Safety Cabinet model are installed with electronic control unit and electric safety device which automatically stops the rotation of drum when the door is opened, conforming to CE directives.

**ORDERING:**

- **AG 0121**
  Los Angeles Abrasion Machine
  220V, 50-60 Hz

- **AG 0122**
  Los Angeles Abrasion Machine with safety cabinet, 220V, 50-60 Hz

- **AG 0123**
  Set of 11 abrasive charges conforming to EN

- **AG 0124**
  Set of 12 abrasive charges conforming to ASTM

**ACCESSORIES:**

- Dimensions
  - AG 0121: 850x1000x1100 mm
  - AG 0122: 1100x1150x1250 mm

- Weight (approx.)
  - AG 0121: 350 kg
  - AG 0122: 505 kg

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th></th>
<th>AG 0121</th>
<th>AG 0122</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>850x1000x1100 mm</td>
<td>1100x1150x1250 mm</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>350 kg</td>
<td>505 kg</td>
</tr>
</tbody>
</table>

**EN 1097-2, 12697-17, 13450; ASTM C131, C535, AASHTO T96**

**MAIN FEATURES:**

- A steel tray is supplied with the machine for easy discharge of specimen and abrasive charges.
- Equipped with an electric safety device which automatically stops the rotation.
If aggregate contains organic impurities it may not be suitable for inclusion in concrete. Organic impurities, usually tannic acid and its derivatives, may interfere with the chemical reactions of hydration. Impurities are more likely to be found in fine (sand) aggregate.

Organic Impurities complete Test Set, containing Graduated Bottle, Reference Color Comparison Chart (Sodium Hydroxide Reagent is not included with this kit and should be sourced locally).

**Abrasion Testing Machine**

**DESCRIPTION:**
Abrasion Testing Machine is designed to determine the resistance to abrasion and wear of natural stones and concrete products.

The abrasion wheel is 70 mm thick and rotates with speed of 75 r.p.m.

The machine is equipped with digital counter which stops the rotation at the preset number of revolutions.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Weight</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>85 Kg</td>
<td>220 V, 50-60 Hz, 1 ph</td>
</tr>
</tbody>
</table>

**Digital Point Load Apparatus**

**DESCRIPTION:**
The point tester is used to measure rock strength in the field or in the laboratory.

A load frame, hydraulic jack and digital display are mounted on the base of a carrying case.

With this point load tester, samples up to 4” (101.6mm) diameter can be tested on 2 conical points.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Load range</th>
<th>0-60 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital display</td>
<td>2x16 characters</td>
</tr>
<tr>
<td>Resolution</td>
<td>32.000 div.</td>
</tr>
<tr>
<td>Accuracy</td>
<td>± % 1</td>
</tr>
<tr>
<td>Case dimensions</td>
<td>800 x 500 x 280 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>15 kg</td>
</tr>
</tbody>
</table>

A graduated scale indicates distance between conical points and is also used to measure specimen diameter.

Applied load is digitally displayed to 0.001Kn; accuracy is ±1%; range is 0 to 56Kn. Display shows maximum load and will also read in lb and tons.
Nordic Abrasion Machine

DESCRIPTION:
Nordic Abrasion Machine has been developed for testing the resistance of aggregates to wear by abrasion from studded tires.

The test is performed on natural or artificial stones and aggregates between 11.2 mm and 16.0 mm.

It consists of a rotating aggregate in a drum containing steel abrasive balls and water.

The machine consists of an electronic control unit and a rolled stainless steel drum having an internal diameter of 206.5 mm, internal length of 335 mm and thickness of 6 mm.

The drum is rotated at a speed of 90 ± 3 r.p.m. 3 wings are installed inside of the drum to allow the balls and aggregates to be mixed properly.

The abrasion loss rate of aggregates is calculated after the specified number of revolutions stated in the relevant standard.

11.1 mm diameter steel balls (3.5 kg.) should be ordered separately.

MAIN FEATURES:
• Complete Set Easy Operation

ORDERING:
AG 0128
The Nordic Abrasion Machine

ACCESSORIES:
AG 0129
Steel Balls, Ø 11 mm, 3.5 kg

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>720x400x650 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (approx.)</td>
<td>70 Kg</td>
</tr>
<tr>
<td>Power</td>
<td>600 W</td>
</tr>
</tbody>
</table>

Aggregate Abrasion Value (AVV)

DESCRIPTION:
The Abrasion Machine is used to determine the Aggregate Abrasion Value (AAV) by testing the measure of the resistance of aggregates to surface wear by abrasion.

The Abrasion Machine consists of a flat circular cast iron grinding lap wheel of 600 mm dia. which rotates in a horizontal plane at a speed of 28-31 r.p.m.

The abrasion sand is fed across the surface of the specimen sample through a special funnel.

The machine is supplied complete with two specimen moulds, two trays, two flat plates, weights and clamps.

MAIN FEATURES:
• Complete Set Easy Operation

ORDERING:
AG 0130
The Aggregate Abrasion Value (AAV) Machine

ACCESSORIES:
AG 0131
Specimen Molds, 2 units
AG 0131
Trays, 2 units
AG 0132
Flat Plates, 2 units
AG 0133
Weights
AG 0134
Clamps

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>800x700x1100 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (approx.)</td>
<td>200 Kg</td>
</tr>
<tr>
<td>Power</td>
<td>370 W</td>
</tr>
</tbody>
</table>

EN 1097-1; EN 1341, 1342, 1343; BS 812-113
Accelerated Polishing Machine

**DESCRIPTION:**
Accelerated Polishing Machine is used to measure the resistance of road stone to the polishing action of vehicle tires on a road surface.

The machine consists of road wheel rotating in the speed of between 315 and 325 r.p.m.

The machine is supplies complete with road wheel, side plate, rubber rings, abrasive feed mechanism, corn emery, flour emery, set of 4 specimen mold and 2 mold plates.

**MAIN FEATURES:**
- Complete Set Easy Operation
- Heavy welded steel mainframe, standing in adjustable pads.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>1050x450x950 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (approx.)</td>
<td>105 Kg</td>
</tr>
<tr>
<td>Power</td>
<td>550 W</td>
</tr>
</tbody>
</table>

Micro-Deval Testing Machine

**DESCRIPTION:**
The Micro Deval Testing Machine used to determine the resistance of wear for 25-50mm size aggregates. The machine consists of a steel frame, four stainless steel cylinders, and 25kg of 10 mm diameter stainless steel spheres.

Fitted with an automatic digital counter that allows the machine to stop automatically at preset number of revolutions. Stainless steel 200x 154 drums rotates at speed of 100 (±5) r.p.m.

**MAIN FEATURES:**
- Complete Set Easy Operation

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>820 x 820 x 1260 mm high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packed weight</td>
<td>205 kg</td>
</tr>
<tr>
<td>Volume</td>
<td>0.79 cubic meters</td>
</tr>
<tr>
<td>Height - Frame</td>
<td>1230 mm</td>
</tr>
<tr>
<td>Height - Water tank</td>
<td>1550 mm</td>
</tr>
<tr>
<td>Electrical Supply</td>
<td>230 V/110 V 50/60 Hz 1 ph 13 amp</td>
</tr>
</tbody>
</table>
**Skid Resistance and Friction Tester**

**DESCRIPTION:**
Used for the measurement of surface friction properties, the apparatus is suitable for both site and laboratory applications and for Polished Stone Value (PSV) using curved specimens from accelerated polishing tests.

Supplied complete with additional scale for tests on polished stone value specimens and 6 rubber sliders for site usage.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>AG 0139</th>
<th>Sizes</th>
<th>Weight (approx.)</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1100x1150x1250 mm</td>
<td>505 kg</td>
<td>750 W</td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**
- Low friction release mechanism
- Extremely light pointer
- Easy and reliable height adjusting system

**ORDERING:**
- AG 0139 Skid resistance and friction test set

**ACCESSORIES:**
- AG 0140 Mounted rubber slider, 32 mm
- AG 0141 Mounted rubber slider, 76 mm
- AG 0142 Metal base plate

---

**High Capacity Screen Shaker**

**DESCRIPTION:**
The High Capacity Screen Shaker is ideal for sizing large quantities of crushed stones, sand, gravel, slag, coal, coke, ores, pellets and similar materials.

The screen shaker has a capacity of about 30 kg of sample. For use with 457x660x75mm dimensions screens.

**TECHNICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Weight (approx.)</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Shaker</td>
<td>587x787x850 mm</td>
<td>170 kg</td>
<td>550 W</td>
</tr>
<tr>
<td>Screen Trays</td>
<td>667x452x67 mm</td>
<td>7 kg</td>
<td></td>
</tr>
</tbody>
</table>

**MAIN FEATURES:**
- Made of electrostatic steel frame.
- Stainless steel bars.

**ORDERING:**
- AG 0143 High capacity screen shaker

**ACCESSORIES:**
- AG 0144 Set of Screen Shaker containing all sizes

**PRODUCT CODES:**
- AG 0145 100 mm (4 in)
- AG 0146 90 mm (3 ½ in)
- AG 0147 75 mm (3 in)
- AG 0148 50 mm (2 in)
- AG 0149 45 mm (1 ¼ in)
- AG 0150 37.5 mm (1 ½ in)
- AG 0151 31.5 mm (1 ¼ in)
- AG 0152 25 mm (1 in)
- AG 0153 22.4 mm (7/8 in)
- AG 0154 19 mm (¾ in)
- AG 0155 16 mm (5/8 in)
- AG 0156 12.5 mm (½ in)
- AG 0157 11.2 mm (7/16 in)
- AG 0158 9.5 mm (3/8 in)
- AG 0159 8 mm (5/16 in)
- AG 0160 6.3 mm (¼ in)
- AG 0161 5.6 mm (No. 3 ½ in)
- AG 0162 4.75 mm (No. 4 in)
- AG 0163 4 mm (No. 5 in)

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Slake Durability Apparatus

DESCRIPTION:
This test method has been developed for assessing the deterioration of rocks over a period of time when subjected to water immersion.

The apparatus consists of a motorized drive unit mounted on a baseplate and connected to two drums which rotate at a speed of 20 r.p.m. as per standard.

The machine has a digital display for the visualization of the residual testing time (10 minutes for ASTM D4644). The tank assemblies are filled with water to a level marked on the tank.

The test drums are manufactured from 2.00 mm mesh, 140 mm dia. x 100 mm long. Two drums are already included.

The drums can be mounted or disassembled easily with the quick-release drive units.

The apparatus comes complete with transparent tanks, basement and digital timer.

MAIN FEATURES:
- Complete with digital display
- Transparent water tanks
- Compact machine
- Drums with quick-release

ORDERING:
AG 0164
Slake Durability Apparatus
AG 0165
Pair of mesh Drums
AG 0166
Pair of Transparent Tanks

ACCESSORIES:

TECHNICAL SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>733x413x305 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (approx.)</td>
<td>22.5 Kg</td>
</tr>
</tbody>
</table>