



2.3

AGGREGATES

2.3.1 GEOMETRIC PROPERTIES PAGE 238

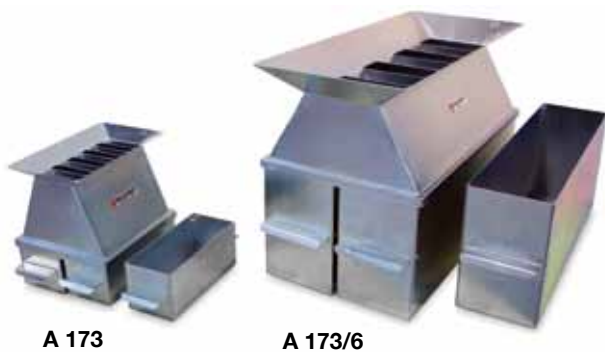
2.3.2 DETERMINATION OF RESISTANCE PAGE 242

2.3.3 MECHANICAL AND PHYSICAL PROPERTIES PAGE 246

ITEMS	PAGE	ITEMS	PAGE
Abrasion	241-243	Los Angeles	241
Aggregate crushing	238	Length comparator	246
Aggregate crushing value (ACV)	239	Methylene blue	249
Aggregate gauge (shape index)	240	Micro-deval	242-243
Andreasen pipette	250	Organic impurities in fine aggregates	250
Bulk density measure	250	Polished stone value	242
Deval	242	Reactivity with alkalies	246
Dorry	245	Roller bottle - jar mill	249
Filler compaction	251	Specific gravity test.	247
Flakiness index grid sieves	240	Sample splitters	238
Gasometer	245	Sand equivalent	248
Hydrostatic weighing table	247	Scratch hardness test	246
Impact value	239	Tribometer	244

2.3.1 GEOMETRIC PROPERTIES

TECNOTEST



A 173

A 173/6



A 174



A 173/M



A 168



A 261/1

SAMPLE SPLITTERS

EN 932-1 BS 1377 ASTM C 702 ASTM C 136
ASTM D 271 ASTM D 421

Used for the rapid preparation of representative samples. Made of sheet metal. Each sample splitter is supplied with three metal receiving pans.

Model	Number of slots	Slot width		Dimensions mm
		mm	inch	
A 172	12	7		150 x 140 x 200 (h)
A 172/2	12	15		250 x 240 x 250 (h)
A 173	10	19	¾"	270 x 220 x 250 (h)
A 173/1	10	25	1"	320 x 240 x 280 (h)
A 173/3	10	30		360 x 250 x 310 (h)
A 173/4	8	38	1 ½"	361 x 250 x 310 (h)
A 173/5	8	45		460 x 250 x 360 (h)
A 173/6	8	50	2"	500 x 250 x 360 (h)
A 173/2	8	64	2 ½"	650 x 310 x 420 (h)

LARGE CAPACITY SAMPLE SPLITTER

A 174

(108 mm MAX. OPENING)

The main feature of this model consists in the fact that the slot bars are adjustable, thus providing the following openings:

Opening mm	12	24	36	48	60	72	84	96	108
Slot number	36	18	12	8	6	6	4	4	4

Made of zinc-plated sheet steel.

Two receiving pans are supplied as standard.

DIMENSIONS: 550 x 400 x 800 (h) mm.

WEIGHT: 45 kg.

SPARE PART:

A 174/V Spare receiving pan for A 174

SAMPLE SPLITTER FOR SANDS

A 173/M

Made of sheet stainless steel. 12 slots with width of 5 mm. Supplied complete with three containers.

DIMENSIONS: 135 x 135 x 160 (h) mm.

WEIGHT: 1 kg.

QUARTERING CANVAS

A 169

2 x 2 m. Heavy-duty and waterproof.

WEIGHT: 4 kg.

WHEELBARROW

A 168

Tub in sheet steel. Capacity 75 litres. Frame in metal tube. One tyred wheel.

DIMENSIONS: 1300 x 600 x 800 (h) mm.

WEIGHT: 40 kg.

AGGREGATE SCOOP PAN

A 261/1

Made of steel sheet.

DIMENSIONS: 700 x 300 x 100 (h) mm.

WEIGHT: 5 kg

FLAKINESS SIEVE SET

A 265

BS 812

Consists of seven sieves in galvanized sheet steel:

A 265/1	4.9 x 30 mm slot
A 265/2	7.2 x 40 mm slot
A 265/3	10.2 x 50 mm slot
A 265/4	14.4 x 60 mm slot
A 265/5	19.7 x 80 mm slot
A 265/6	26.3 x 90 mm slot
A 265/7	33.9 x 100 mm slot

The largest flakiness sieve is 470 x 300 mm, the others are progressively smaller. Total weight approx. 15 kg.



A 265

BAR SIEVES TO DETERMINE THE "FLAKINESS INDEX"

A 262

EN 933-3 NF P 18- 561

The set consists of 13 frame (anodized aluminium, 30 x 30 cm/side each), with 5 mm dia. stainless steel bars. Set weight: approx. 40 kg. Each sieve can be ordered separately.

A 263/1	Bar sieve: openings 2.50 mm
A 263/2	Bar sieve: openings 3.15 mm
A 263/3	Bar sieve: openings 4.00 mm
A 263/4	Bar sieve: openings 5.00 mm
A 263/5	Bar sieve: openings 6.30 mm
A 263/6	Bar sieve: openings 8.00 mm
A 263/7	Bar sieve: openings 10.00 mm
A 263/8	Bar sieve: openings 12.50 mm
A 263/9	Bar sieve: openings 16.00 mm
A 263/10	Bar sieve: openings 20.00 mm
A 263/25	Bar sieve: openings 25.00 mm
A 263/31	Bar sieve: openings 31.50 mm
A 263/40	Bar sieve: openings 40.00 mm



A 262

BAR SIEVE: OPENINGS 7,10 mm

A 263/11

EN 1097-8



A 372

SHAPE INDEX CALIPER

A 372

CNR 95 EN 933-4

To check the volumetric coefficient of aggregates. A piece of aggregate is placed with its maximum length between the measuring points of the gauge. When rotated, the same piece of aggregate should not pass through the lateral reference gauge. If this is so then the coefficient is acceptable and the aggregate may be used in concrete mixes. Stainless steel made.

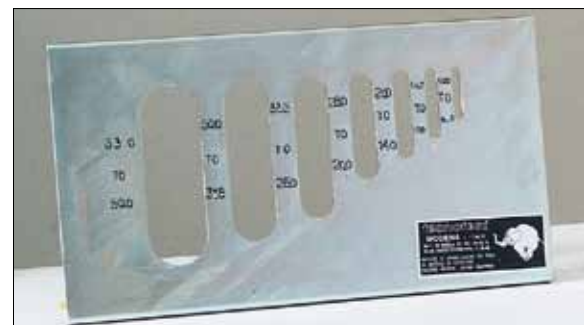
DIMENSIONS: 320 x 160 mm in carrying case.

WEIGHT: 1 kg.

LENGTH GAUGE (ELONGATION INDEX)

A 891

BS 812



A 892

FLAKINESS GAUGE

A 892

BS 812

In heavy gauge steel with standard holes.

DIMENSIONS: 200 x 300 x 20 (h) mm

WEIGHT: 0.6 kg.



A 891

2.3.1 GEOMETRIC PROPERTIES

TECNOTEST



A 258



A510



A 525

AGGREGATE IMPACT VALUE

(AIV) APPARATUS

A 258

BS 812-112

Used to determine aggregate impact value. Free fall of hammer during tests and built-in blow counter. Complete with cylindrical measure dia. 75 x 50 mm deep and steel tamping bar dia. 16 mm x 600 mm long.

DIMENSIONS: diameter 250 x 480 (h) mm.

WEIGHT: 59 kg

AGGREGATE CRUSHING VALUE (ACV) TEN PERCENT FINES VALUE (TFV)

BS 812

STANDARD TEST:

A 257/01	Steel cylinder internal dia. 150 mm, supplied with plunger and base plate
A 257/02	Metal measure dia. 115 x 180 mm
AT 211/P	Steel tamping rod dia. 16 x 600 mm

TESTS FOR AGGREGATES SMALLER THAN 10 MM:

A 257/03	Steel cylinder internal dia. 75 mm, supplied with plunger and base plate
A 257/04	Metal measure dia. 57 x 90 mm
A 257/05	Steel tamping rod dia. 8 x 300 mm

CRUSHING RESISTANCE OF LIGHTWEIGHT AGGREGATES

EN 13055-1

GALVANIZED STEEL:

A 510	Apparatus conforming to "procedure 1" Cylinders having internal diameter 113 mm, base, piston, ring with blocking screws. Dimensions: 160 x 160 x 250 (h) mm. Weight: 15 kg.
A 511	Apparatus conforming to "procedure 2" Cylinders having internal diameter 76.2 mm, base, piston. Dimensions: 110 x 110 x 150 (h) mm. Weight: 9 kg.

REACTION CONTAINER

A 525

UNI 8520 ASTM C 289

Stainless steel made; air-tight cover. Capacity approx 60 ml. Used in the chemical determination of potential reactivity of aggregates with alkalies (cement).

DIMENSIONS: 90 x 80 x 120 (h) mm.

WEIGHT: 1.5 kg.

LOS ANGELES ABRASION MACHINE**D 504**

ASTM C 131 CNR 34 EN 1097-2

Used to measure the resistance of aggregates to abrasion. The test sample and abrasive charges are placed into the drum which is then rotated for 500 or 1000 revolutions (depending on sample size).

The difference between initial weight of sample and final weight of material not passing a 1.68 mm sieve (expressed as % of initial weight) is the % of weight loss or abrasion. The machine has a steel frame that supports the drum. A speed reducer turn the drum at 30-33 rpm.

Abrasive charges (standard size and weight according to the Standards) must be ordered apart.

Galvanised steel tray for the collection of material.

The electronic control panel consists of a pilot light and mains switch, start/stop button and programmable 5 digit revolution counter (with automatic stop at end of cycle).

The drum is fitted with self-aligning ball bearings.

POWER: 220 V, 50 Hz, single phase, 750 W.

DIMENSIONS: 1100 x 1000 x 1140 (h) mm.

WEIGHT: 320 kg.



D 504
D 504/PP

ACCESSORIES AND SPARE PARTS:

D 504/S	Set of 12 abrasive charges: 1.13/16" (7 pcs) and 1.7/8" (5 pcs). (ASTM, C.N.R)
D 504/T	Set of 12 abrasive charges: 1.7/8" (EN)
D 504/PP	Safety device. Perforated sheet-metal structure, which turns around axis of machine. Equipped with safety micro-switch.

N.B.: D 504/P AND D 504/PP HAVE TO BE ORDERED TOGETHER WITH THE MACHINE.



D 504
D 504/PP

SOUND-PROOFING CABINET**D 504/P**

The Los Angeles test is particularly noisy and for this reason the machine is usually positioned outside the laboratory. This special sound proof cabinet overcomes this inconvenience by reducing the noise level from 105 to 75 dB thus permitting the operator's exposure to be increased from one hour to the whole working day.

The control panel is located externally.

The door is locked by key. Double safety micro-switch.

DIMENSIONS: 1150 x 1180 x 1150 (h) mm

WEIGHT: 180 kg.



D 504
D 504/P

2.3.2 DETERMINATION OF RESISTANCE

TECNOTEST



D 506/2



D 506/2
D 506/PP

DEVAL ABRASION MACHINE

D 506/2

NF P 18-577

To determine the abrasive resistance of aggregates under an action of friction and impact.

The machine consists of a revolving frame (30-33 rpm) which supports two cylinders which are inclined at 30° to the rotation axis.

Speed reducer and revolution counter.

Two galvanised steel trays for the collection of waste material.

The control panel consists of an on/off neon and switch, start/stop button, 5 digit display to set the number of revolutions and automatic stop at end of cycle.

POWER: 220 V, 50 Hz, single phase, 750 W.

DIMENSIONS: 1500 x 500 x 700 (h) mm

WEIGHT APPROX.: 200 kg.

PROTECTION AND SOUND-PROOFING

D 506/P

Useful in the case of extended indoor use.

The container (sheet steel covered in a sound-absorbing material) reduces the noise to below 75 dB.

Safety micro-switch.

SAFETY DEVICE

D 506/PP

Perforated sheet-metal structure.

Safety microswitch.

N.B.: See section 3.1.3 (Roads), page 302 for SKID Tester and accelerated polishing machine.

POLISHED STONE VALUE APPARATUS

(ACCELERATED POLISHING MACHINE)

TB 512

BS 812 CNR 140 EN 1097-8

Apparatus for determining resistance of aggregates used for road paving to surface wear caused by the polishing action of vehicle tyres. Used to prepare aggregate samples for testing resistance with a Skid Tester.

Samples are prepared in special moulds and then mounted on a metal wheel. Such specimens are brought into contact with a special tyred wheel which is subjected to increasing loads via a lever. Details on page 302.

POWER SUPPLY: 220 V, 50 Hz, single phase

DIMENSIONS: 760 x 700 x 1000 (h) mm

WEIGHT: 175 kg

A 263/11

Bar sieve with 7.1 mm openings
(CNR 140 - EN 1097-8)
Dimensions: 300 x 300 mm



TB 512

WITH ACCESSORIES

MICRO-DEVAL**D 508/2**

EN 1097-1 EN 13450 CNR 109 NF P 18-572 NF P 18-576

To determine the resistance to wear of aggregates contained in a rotating cylinder with abrasive charges. The mass of abrasive charges varies according to sample characteristics (4 - 6.3 mm, 6.3 - 10 mm, 10 - 14 mm). Four stainless steel cylinders (dia. 200 x 154 mm height) are rotated at a constant speed on two metallic roller bearers that are covered in an anti-wear material. Programmable revolution counter with automatic stop at the end of cycle. Supplied complete with 20 kg of stainless steel spheres dia. 10 mm.

POWER: 220 V, 50 Hz, single phase, 750 W.**DIMENSIONS:** 1500 x 500 x 650 (h) mm.**WEIGHT:** 140 kg.**MICRO-DEVAL****D 508**

Same as D 508/2 but supplied without cylinders and abrasive charge.

MICRO-DEVAL**D 510**

Micro-Deval model, according to Machine Directive and CE standards (safety- noise): Machine complete with sound-proofing. Useful in the case of extended indoor use.

The container (sheet steel lined with a sound-absorbing material) reduces the noise to below 75 dB.

Safety microswitch for container blocking.

POWER: 220 V, 50 Hz, single phase.**DIMENSIONS:** 1300 x 500 x 720 (h) mm.**WEIGHT:** 180 kg.**MICRO-DEVAL****D 511**

Same as D 510 but supplied without cylinders and abrasive charge.

ACCESSORIES AND SPARES:**D 508/A** Abrasive charge: spheres 10 mm dia., 20 kg set**D 508/S** Abrasive charge: stainless steel spheres 10 mm dia., 20 kg set**D 508/T** Abrasive charge: spheres 30 mm dia., kit of 10 pcs. (NF P18-576)**D 508/V** Abrasive charge: spheres 18 mm dia., kit of 50 pcs. (NF P18-576)**D 508/C** Cylinder dia: 200 x 154 mm**D 508/G** Cylinder dia: 200 x 400 mm (EN 1097/1)

D 510 with 4 pieces D 508/C
(supplied as standard)

ABRASION TESTER FOR NATURAL STONES**AND CONCRETE PRODUCTS****D 513**

EN 1338 EN 1339 EN 1340 EN 1341 EN 1342 EN 1344 EN 14157

Used to determine the resistance to deep abrasion of natural stones and concrete products. Abrasion resistance is determined by measuring the length of the groove produced in the surface of the specimen by a disc rotating at constant speed and pressure. Supplied complete with aspirator for powders. Disc speed (75 revolutions per second) is controlled electronically with automatic stop after the set number of revolutions has been reached.

- Disc: 70 mm thick

- Max. sample dimensions: 100 x 100 x 60 mm

Supplied with:

- 5 kg of white corundum

- Boulonnaise marble tile for calibration purposes

- 400 g lead weight

- special wrench for disc removal

POWER SUPPLY: 220 V, 50 Hz, single phase, 300 W**DIMENSIONS:** 530 x 480 x 830 (h) mm.**WEIGHT:** 55 kg**PACKING DIMENSIONS:** 600 x 550 x 750 (h) mm**TOTAL WEIGHT:** 80 kg**ACCESSORIS AND SPARE PARTS:****D 513/1** Disc 200 mm dia. x 70 (h) mm**D 513/2** White corundum (5 kg)**D 513/3** Marble tile for calibration**D 513****D 510 with 2 pieces D 508/G**

2.3.2 DETERMINATION OF RESISTANCE

TECNOTEST



D 810

LABORATORY CRUSHER

D 810

Charge hopper with opening 150 x 180 mm.
 Crusher mouth 100 x 60 mm.
 Jaw opening: min. 5 mm, max. 15 mm.
 Output 100-400 kg per hour.
 Metal supporting frame on which the crusher is bolted.
 Jaws in manganese steel.
 Metal safety guard.
 Separate control panel which can be affixed to a wall.
 Emergency stop button.

POWER SUPPLY: 220/380 V, 50 Hz, 3 phase, 750 W.

DIMENSIONS: 360 x 1000 x 620 (h) mm

WEIGHT: 115 kg

TRIBOMETER

D 514

The machine determines abrasive wear strength to marble, tiles and other construction materials.
 Current reference standards are DIN and ASTM (although by extension rather than in specific).

The test method consists in subjecting two specimens to wear: one obtained from marble for reference, the other being the material to be tested.

The ratio between the reduction in thickness (measured in hundreds of a millimetre) of the first specimen compared with the second gives the wear strength.

A cast iron disk normally takes 500 m (250 rotations) to perform the test.

A special carborundum aggregate mixed with mineral oil is the abrasive material used in testing.

The number of rotations is pre-set on the digital counter of control panel : the machine switches off automatically at the end of the test.

Surcharge weights are supplied with the machine.

Mechanical and electrical safety devices ensure operator safety.

SPECIFICATIONS:

- Speed of the flat, circular crown supporting the specimens: 1 m/s;
- Rotation speed of the specimens around their axes : 1 cycle per 50 cycles of the track;
- Specimen holder suitable for 50 sq.cm (square section);
- Loading devices to obtain 0.3 kg/sq.cm unit pressure;

POWER SUPPLY: 380 V, 50 Hz, 3 phase, 2.5 kW

DIMENSIONS: 1150 x 1550 x 1010 (h) mm

WEIGHT: 640 kg



D 514



DORRY ABRASION MACHINE (AAV) D 517

BS 812 EN 1097-8

The machine is used for determining the resistance of aggregates to surface wear by abrasion.

The test is carried out with two samples placed so to as come into contact with the rotating disc, while abrasive sand is fed across the surface of the sample through a hopper. The abrasion value is determined after 500 revolutions, at a speed of between 28 and 31 r.p.m., this being the difference between the initial and final weight of the sample.

THE MACHINE IS SUPPLIED COMPLETE WITH:

- Iron steel disc, dia. 610 mm.
- Two specimen moulds
- Two flat plates
- Two trays on which to place the samples
- All weights, hoppers and clamps required to perform the test

POWER SUPPLY: 220 V, 50 Hz, 1ph

DIMENSIONS: 800 x 700 x 1100 (h) mm

WEIGHT: 200 kg

ACCESSORY:

D 517/1 Pack of 25 Kg of abrasive sand

DIETRICH-FRÜHLING GASOMETER D 520

For determining the CaCO_3 in limestone and lime marl. Comprising a glass container and connected gas-holder. A reaction in the glass container between the sample calcium carbonate and a solution of diluted hydrochloric acid produces carbon dioxide which is subsequently measured in the gas-holder.

This volume can be used to calculate the CaCO_3 content of the sample.

DIMENSIONS: 275 x 200 x 1100 (h) mm

WEIGHT: 12 kg.

ACCESSORIES:

D 520/F Glass bottle: 292 cc, \varnothing 34 mm, 242 g

D 520/P Pipette: 10 cc



D 517



D 520



A 523



A 530



C 385/1



C 385

SCRATCH HARDNESS TEST EQUIPMENT**A 523**

ASTM C 235

The part of soft material is obtained scratching the coarse aggregate. It consist of a metal rod, having a brass rounded point of 1.6 mm dia. mounted in its frame. The load applied on the specimen is 8.9 ± 0.4 N.

DIMENSIONS: 160 x 200 x 350(h) mm.

WEIGHT: 8 kg.

MOULD (STEEL MADE): 25 x 25 x 280 mm**A 530**

UNI 8520-22

For determination of the potential reactivity of aggregates with alkalis.

Three-place mould for beams 25 x 25 x 280 mm, complete with N.6 inserts for linear shrinkage determination. Steel made, Vickers hardness > HV 200.

DIMENSIONS: 120 x 300 x 35 (h) mm.

WEIGHT: 4.5 kg

A 530/P Kit of 12 inserts for A 530 (spares)

C 211 Hard wood tamper/scrapper

MOULD (STEEL MADE): 50 x 50 x 200 mm**A 540**

EN 1367-4

Three-place mould for beams 50 x 50 x 200 mm, complete with 6 inserts for linear shrinkage determination. Steel made, Vickers hardness > HV 200.

DIMENSIONS: 170 x 220 x 60 (h) mm.

WEIGHT: 8 kg.

LENGTH COMPARATOR**C 385**

ASTM C 151 ASTM C 490 BS 1881 EN 1367-4 EN 12617-4

Precision apparatus used for measuring length changes. Support for 0.001 dial gauge, as required by Standards, and two stainless steel contact points. Reference rod with negligible thermal expansion coefficient, 300 mm long (C 385/A) is supplied as standard.

DIMENSIONS: 260 x 240 x 500 mm.

WEIGHT: 8 kg.

LENGTH COMPARATOR**C 385/1**

Identical to C 385 but with digital 0.001 dial gauge, battery operated.

ACCESSORIES: INVAR TYPE STAINLESS STEEL RODS

C 385/A 300 mm reference rod (ASTM)

C 385/B 170 mm reference rod (ASTM)

C 385/C 205 mm reference rod (BS 1881 - EN 1367-4)

C 385/D 230 mm reference rod (BS 6073)

C 385/E 298.5 mm reference rod (BS)

C 385/F 305 mm reference rod (BS 6073)

C 385/G 160 mm reference rod (AFNOR P 15-413 - EN 12617-4)

C 385/H 280 mm reference rod (UNI 8148)

C 385/M 295 mm reference rod

C 385/N 190 mm reference rod (ASTM-UNI)

SPECIFIC GRAVITY TEST SET T 620

ASTM C 128 BS 812 EN 1097-6

THIS SET CONSISTS OF:

V 753	GLASS PYCNOMETER For sands and fine aggregates, 1000 cc capacity with conical top.
T 620/2	SAND ABSORPTION CONE AND TAMPER For fine aggregates. Chrome-plated brass cone (dia. 40 and 90 mm); 25 mm dia. tamping rod.
T 620/1	WIRE BASKET FOR SAMPLES Made of ASTM N.100 Mesh (0.15 mm) 140 mm diameter, 150 mm height



T 620/2

V 753

T 620/1

HYDROSTATIC WEIGHING TABLE TL 508

Large capacity. For weighing in air and in water with both electronic and mechanical balances (with hooks underneath). An extremely practical winch lowers and raises the platform that holds the water tank (50 litre capacity, dimensions 400 x 400 x 350 mm).

The balance, the baskets and the support system should be ordered separately.

DIMENSIONS: 650 x 500 x 900 (h) mm.

WEIGHT: 28 kg.

ACCESSORIES AND SPARE PARTS:

T 620/4	Support system for 15-20 cm/side cubes
T 620/9	Made of ASTM N. 30 Mesh (0.6 mm) 100 mm diameter, 120 mm height
T 620/8	Made of ASTM N. 12 Mesh (1.7 mm) 140 mm diameter, 160 mm height
T 620/3	Made of ASTM N.6 Mesh (3.35 mm) 200 mm diameter, 200 mm height
T 620/5	Made of ASTM N. 12 Mesh (1.7 mm) 200 mm diameter, 200 mm height
T 620/1	Made of ASTM N.100 Mesh (0.15 mm) 140 mm diameter, 150 mm height
T 620/6	Made of ASTM N. 16 Mesh (1.18 mm) 100 mm diameter, 120 mm height
T 620/7	Made of ASTM N. 30 Mesh (0.6 mm) 140 mm diameter, 150 mm height



TL 508



TL 407

HYDROSTATIC WEIGHING TABLE TL 407

Enamelled metal structure. Shelf can be positioned at various heights. Wheel in rubber. Plastic tank capacity approximately 75 litres.

Supplied complete with the following stainless steel baskets:

T 620/1	Made of ASTM N.100 Mesh (0.15 mm) 140 mm diameter, 150 mm height
T 620/3	Made of ASTM N.6 Mesh (3.35 mm) 200 mm diameter, 200 mm height

TABLE TANK DIMENSIONS: 590 x 410 x 330 (h) mm

DIMENSIONS: 600 x 450 x 750 (h) mm.

WEIGHT: 20 kg



T 620/4



T 641



T 641/T



T 642

SAND EQUIVALENT TEST SET

T 641

ASTM D 2419 EN 933-8

The apparatus (contained in a carrying case), consists of 4 graduated plastic cylinders, rubber stopper, irrigator tube, weighted foot assembly, syphon assembly, rubber tubing, measuring tin, funnel and bottle of special concentrated solution (250 ml).

DIMENSIONS: 350 x 550 x 130 (h) mm.

WEIGHT: 6.5 kg.

ACCESSORIES AND SPARE PARTS:

T 641/S	Solution ready for use (250 ml) Concentrated liquid (to be diluted for test solution) containing formaldehyde, glycerol analar and calcium chloride in proportions as foreseen by Standards
T 641/S1	Concentrated solution: same as T 641/S but 1 litre bottle
T 615/B	Plastic bottle (5 litres)
T 641/C	Graduated perspex cylinder
Z 87	Calcium chloride (1000 g)
Z 78	Glycerol analar (bottle 2.5 l)
Z 89	Formaldehyde, 37% solution, 2.5 litres
SA 004/75	Stainless steel sieve 200 mm dia. frame With calibrated 4.75 mm mesh (ASTM N. 4)
T 641/T	Metal base with rod and bottle support
T 641/1	Siphon assembly
T 641/2	Irrigator tube with tap
T 641/3	Weighted foot (EN)

ELECTRIC SAND EQUIVALENT SHAKER

T 642

ASTM D 2419 EN 933-8

A robust frame gives a good stability to the machine, completely automatic.

Stroke 203 mm - Rate 175 strokes/min.

The cycles are done according to the Standards.

Electric motor kW 0.18. A timer stops the machine at the end of the test. Safety guard integrated as standard, complete with microswitch.

POWER SUPPLY: 220 V, 50 Hz, single phase.

DIMENSIONS: 895 x 350 x 465 (h) mm.

WEIGHT: 30 kg.

BLUE VALUE DETERMINATION

EN 933-9

D 657 LABORATORY STIRRER

Mechanically-controlled continuous speed selection via knurled knob. Graduated scale with speed control index; 50-1300 rpm. Shaft with clearance hole to allow easy regulation of stirrer rod height. Clamping capacity: 1-10 mm. Base, supporting rod, clamp, stirring rod with propeller.

POWER SUPPLY: 220 V, 50 Hz, single phase

DIMENSIONS: 200 x 300 x 700 (h) mm.

WEIGHT: 5 kg

V 766	Graduated glass beaker, 1000 ml
V 772/3	Graduated glass burette 50 ml capacity, 0.1 divisions
V 775/P	Burette holder: metal base, rod (Ø 10 mm) and plastic clamp
B 570/1	Filter paper discs n° 40. Pack of 100
V 730	Glass stirring rods. Pack of 20
Z 98	Blue methylene. 500 ml bottle
V 759	Graduated bottle, 1000 ml, with lid
DB 501/D	Digital stop watch (0.01") 59 min - 59 sec
TL 235	Cent -o- gram balance, 311 g Sensitivity 0.01 g
ES 100/B	Thermostatic oven, 100 litres capacity
DB 782/1	Glass thermometer (-30 to +50° C) 1° C divisions
DV 719	Stainless steel spatula
V 777/2	Plastic desiccator. With tap on the cover
Z 28	Silica gel with indicator (500 g)
Z 99	Kaolinite (500 g)

ROLLER BOTTLE - JAR MILL

Suitable for mixing of liquids and, using the special jar, for grinding small specimens. Metal frame. Rollers covered in rubber (second roller can be placed in various positions so as to accept different size bottles).

DIMENSIONS: 640 x 350 x 140 (h) mm.

WEIGHT: 20 kg.

D 768/2 Model with 0.5 hp motor
Power supply: 220 V, 50 Hz, single phase The drive Roller rotates at 73 rpm

D 768/S Model with 0.5 hp motor.
Power supply: 220 V, 50 Hz, single phase Variable Roller speed: 0-95 rpm

GRADUATED GLASS BOTTLES

V 760	250 ml bottle with lid
V 761	500 ml bottle with lid
V 759	1000 ml bottle with lid



D 657 - V 766 - V 772/3 - V 775/P
B 570/1 - V 730 - Z 98 - V 759 - DB 501/D



D 768/S



D 813/1



V 759

V 761

V 760

See page 366 section 5.3.2 for jars and balls



V 778



V 779 + V 779/1



V 761

Z 55/A

V 254



AT 207



A 240/01

A 240/05

A 240/10

A 240/20

SEDIMENTATION (PIPETTE METHOD)

BS 1377-2

V 778 ANDREASEN APPARATUS

Graduated 500cc glass cylinder (0-20 cm) with a ground tapered neck (to NS 29-37), special stopper, two way tap and capillary suitable for transferring sediments of grain size smaller than 60 microns.

DIMENSIONS: 180 x 100 x 600 (h) mm.

WEIGHT: 1 kg.

V 779 ANDREASEN PIPETTE STAND

Permits the micrometric movement of the pipette without transmitting vibrations to the sample.

V 779/1 ANDREASEN PIPETTE: 10 cc

ORGANIC IMPURITIES IN FINE AGGREGATES

ASTM C 40

V 254 STANDARD COLOUR SCALE

Five permanent organic colour glasses, used in place of the standard colour reference solution.

V 761 GLASS BOTTLE 500 cc

Z 55/A SODIUM HYDROXIDE (1 kg pack)

VOLUMEASURE

AT 207

Used to determine specific weight of coarse aggregates. Made of sheet steel with water outlet.

DIMENSIONS: 200 x 200 x 350 (h) mm.

WEIGHT: 6 kg.

BULK DENSITY MEASURE

Made of stainless steel.

Handles in 10 - 20 litre models.

A 240/01 Bulk density measure: 1 litre
(EN 1097-3, EN 12350-6, ASTM C 29)

A 240/05 Bulk density measure: 5 litres
(EN 1097-3, EN 12350-6, ASTM C 29, C 138)

A 240/10 Bulk density measure: 10 litres
(EN 1097-3, EN 12350-6,
ASTM C 29, C 138, BS 812)

A 240/20 Bulk density measure: 20 litres
(EN 1097-3, EN 12350-6, ASTM C 29)

SURFACE MOISTURE IN FINE AGGREGATES

ASTM C 70 AASHTO T 142

V 754/1 CHAPMAN FLASK

Made in glass and graduated to 200 ml between bulbs and from 375 to 450 ml above the second bulb.



V 754/1

MAGNESIUM SULPHATE TEST

EN 1367-2 ASTM C 88

T 620/8 Wire basket. Stainless steel
Made of ASTM N.12 Mesh (1.7 mm)
140 mm diameter, 160 mm height

T 626/4 Hydrometer ASTM C88
Graduated: 1,150-1,200

T 626/5 Hydrometer ASTM C88
Graduated: 1,250-1,300

Z 65 Barium chlorate

Z 71 Magnesium sulphate GPR

DV 790/4 Sample tin with cover
5 litres - ø 180 x 220 mm



T 620/3 - T 626/4 - T 626/5 - Z 65 - Z 71 - DV 790/4

GAY-LUSSAC PYCNOMETERS

ASTM D 854 BS 812 BS 1377 EN 1097-7

Made of glass complete with capillary vent stopper.

V 725/T 100 ml capacity (calibrated)

V 726/T 50 ml capacity (calibrated)

V 724 HUBBARD-CARMICK DENSITY BOTTLE

For specific gravity determination. 25 ml capacity.

Pyrex glass. 45 mm height, base dia. 40 mm, neck diameter 25 mm. Frosted stopper with 1 mm hole.



V 724

V 725/T

V 726/T

COMPACTED FILLER APPARATUS

A 293

BS 812 CNR 23 EN 1097-4

For determining the void content of dry compacted filler.
Made of steel.

It consists of a 150 mm dia. base, a 25 mm dia. cylinder and a precision plunger sliding freely in the cylinder.

DIMENSIONS: 150 x 300 mm.

WEIGHT: 4 kg.



A 293

