Aggregates Testing

Aggregates comprise a significant proportion of all materials used in the many different construction processes, so it is important to determine the properties of different types of aggregates through effective testing and measurement.

The required properties will vary from project to project, for example, resistance to polishing will be unimportant in a pavement base course but will be crucial in a wearing course. However, the key criteria throughout are accurate and repeatable test procedures, and our range of aggregate testing equipment has therefore been designed to help determine a wide range of factors. These include: particle size, shape and texture; relative, bulk and compacted densities; soundness and resistance to chemical attack; and mechanical properties.

Sampling & Preparation of Aggregates

Sampling & Preparation of Aggregates

Sampling and preparation of aggregates and fillers is necessary for a variety of reasons including research, design and quality control. The main aim of sampling is to obtain a sample representative of the average quality. Sampling techniques and procedures are described in various standards including BS 812: Part 101 and 102 and ASTM D75. Individual items of equipment necessary for sampling and preparation are described in the soils section of the catalogue.

Drying, Weighing & Moisture Content

Most test techniques involve the use of drying ovens and balances. The moisture content of aggregate is of importance e.g. when batching concrete or when compacting unbound materials to achieve a specified density. Accurate means of determining moisture content are specified in various Standards and include methods suitable for use in the laboratory or on the construction site.

Oven Drying Method

Grouped Product Standards:

BS 1377, BS 1924, BS 2648, BS 598, BS 598-104, EN 12697-32, EN 13280-4

The standard method for determining the moisture content of soil is the Oven Drying Method, which is recommended for a Soils Laboratory. See page 270 of the Soil section.

Particle Size & Shape

Grouped Product Standards:

EN 933-1, BS 812, ASTM C136

See Laboratory Testing Equipment section pages 271-276 for a comprehensive range of Sieves and Shakers.

Sand Equivalent Value

Grouped Product Standards:

AASHTO T176, ASTM D2419.

See the Soils Testing Equipment section pages 26-28 for further information.

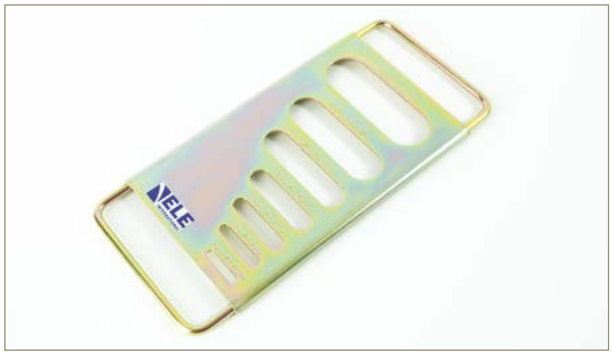
Determination of Flakiness & Elongation

Aggregates which are flaky and/or elongated will often lower the workability of a concrete mix and may also affect long term durability. In bituminous mixtures flaky aggregate makes for a harsh mix and may also crack and break up during compaction by rolling.

Flakiness Sieves & Gauges

Flakiness Gauge

Product Code: 42-0410



Product Standards:

BS 812

Constructed of heavy gauge sheet steel to the dimensions specified in BS 812.

Specifications	
Weight (kg)	0.06

Sieves Set For Flakiness Testing

Product Code: 42-0600

Product Standards:

BS 813

Comprising 1 each of, 4.9 mm, 7.2 mm, 10.2 mm, 14.4 mm, 19.7 mm, 26.3 mm and 33.9 mm.

Grid Sieves

A series of grid sieves formed from 5 mm diameter steel parallel bars securely fixed in a metal frame.

Product Code	Passing Size (mm)	Retained Size (mm)	Slot Width (mm)
42-0300	5	4	2.5
42-0302	6.3	5	3.15
42-0304	8	6.3	4
42-0306	10	8	5
42-0308	12.5	10	6.3
42-0310	16	12.5	8
42-0314	20	16	10
42-0316	25	20	12.5
42-0318	31.5	25	16
42-0320	40	31.5	20
42-0322	50	40	25
42-0324	63	50	31.5
42-0326	80	63	40

Determination of Flakiness & Elongation

Determination of the Shape Index

This method described in EN933-4 measures the ratio of length to width of individual aggregate particles using a vernier caliper and a specially designed 3:1 length gauge.

Shape Index Caliper 3.1

Product Code: 42-0821

Product Standards:

EN 933-4

Designed to measure the ratio of length to width of individual aggregate particles.

Specifications	
Weight (kg)	1

Elongation Index

This method classifies aggregate elongation by measuring the length of individual particles. The test is not applicable to material retained on a 63 mm BS test sieve.

Length Gauge

Product Code: 42-0820

Product Standards:

BS 812-105

Manufactured to the dimensions specified in BS 182.

Specifications	
Weight (kg)	0.7

Vernier Caliper (LCD)
Range 0 to 200 mm x 0.01 mm

Product Code: 81-0590

Product Standards:

EN 933-4

Dual measuring range, highly accurate, vernier caliper 0 to 200 mm x 0.01 mm (8 inch x 0.001 inch) to comply with BS 887 and BS 6365. Complete with liquid crystal display.

Specifications	
Weight (kg)	0.1
Measuring Range (mm)	0 to 200 x 0.01

Vernier Caliper
Range 0 to 200 mm x 0.02 mm

Product Code: 81-0588

Product Standards:

EN 933-4, BS 1377

Vernier caliper 0 to 200 x 0.02 mm. Graduated in mm and inches.

Specifications	
Measuring Range (mm)	0 to 200 x 0.02

Density, Voids & Bulking

As with any porous material, the value obtained for the particle density of an aggregate will depend on the method of test and apparatus used. Different particle sizes within a sample often have different particle densities. The term particle density expressed in Mg/m³ is numerically equal to the specific gravity. Various methods, depending upon the type and size of material to be tested, are specified in standards for testing aggregate.

Buoyancy Balance 6.2 kg x 0.1 g supplied with Support Frame, Water Tank & Suspension Hook

Product Code: 42-1000/01, 42-1000/02

Method for Aggregate between 63 mm and 5 mm.

Product Standards:

EN 1097-6, EN 12697-6, BS 812, ASTM C127, AASHTO T85

The buoyancy balance system developed by ELE consists of a rigid support frame incorporating a water tank mounted on a platform. A mechanical lifting device is used to raise the water tank through the frame height, immersing the specimen suspended below the balance. The balance supplied may also be used as a standard weighing device, thus providing a versatile and comprehensive weighing system in the laboratory.

Further Information:

For 220-240 V AC, 50-60 Hz, 1 ph.

Specifications

Product Code	Power Supply
42-1000/01	220-240 V AC, 50-60 Hz, 80 W
42-1000/02	110-120 V AC, 50-60 Hz

Wire Basket, Brass with Handle, Nominal 6000 cm³ Capacity with 1.7 mm Wire Mesh

Product Code: 42-1005

Product Standards:

EN 1097-6, EN 12697-6, BS 812, ASTM C127, AASHTO T85

For BS 812 Relative Density.

Specifications

Dimensions (mm)	200 dia x 190 deep x 1.70 wire mesh

Bulk Density Measures

Grouped Product Standards:

ASTM C138, ASTM C29, BS 812, EN 1097-3, EN 12350-6

Manufactured from heavy gauge steel these bulk density measures comply with the requirements of either BS 812 or ASTM C-29. Other than the 3 litre size, all measures incorporate carrying handles as standard.

Product Code	Capacity (Litres)
34-2800	30
34-2820	15
34-2830	10
42-2000	7
42-1995	3

Density, Voids & Bulking

Determination of Bulk Density of Aggregates Set

Grouped Product Standards:

BS 812

Set Contains:

Product Code	Product
34-0130	Tamping Rod
34-2800	30 ltrs Bulk Density Measure
34-2820	15 ltrs Bulk Density Measure
42-2000	7 ltrs Bulk Density Measure
42-1995	3 ltrs Bulk Density Measure

Particle Density (Specific Gravity) & Water Absorption for Fine Aggregates

The Gas Jar method described in BS 812 is suitable for all aggregates smaller than 20 mm in size and is particularly suited to friable aggregates.
Please see page 25 of the Soils Section.

The Pyknometer method described in ASTM C128 is suitable for determining the particle density of samples of fine aggregates.
Please see page 26 of the Soils Section.

The particle density of fillers can be determined using the Density Bottle method specified for testing cement.

Specific Gravity & Absorption of Fine Aggregates Set

Grouped Product Standards:

ASTM C128, AASHTO T84

Set Contains:

Product Code	Product
24-2885	Pyknometer 1 kg capacity
42-1700	Sand Absorption Cone
42-1720	Tamping Rod
81-4020	Sample Tray (306 x 306 x 38 mm)

Sand Absorption Cone

Product Code: 42-1700

Product Standards:

BS 812, ASTM C128, AASHTO T84

Made of brass to the dimensions given in BS 812, ASTM C128 and AASHTO T84.

Specifications

Dimensions: Top dia x base dia x H (mm)	90 x 40 x 80

Accessories:

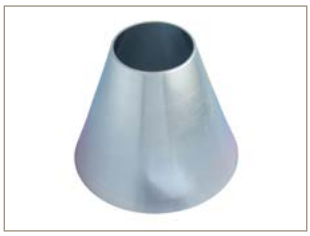
200 mm diameter BS Sieve 75 Micron Stainless Steel mesh. (79-0080)

Funnel (82-2660)

Sample Container, plastic 10 litres (81-3540)

Sample Container, tinned steel 10 litres (81-3060)

Sample Tray, 305 mm diameter x 50 mm (81-4700)



Tamping Rod for Sand Absorption Cone

Product Code: 42-1720

Product Standards:

BS 812, ASTM C128, AASHTO T84

For use with Cone. Tamping face 25 mm diameter.

Specifications

Dimensions: Dia x H (mm)	25.4 x 168

Soundness & Chemical Tests

The presence of organic matter and certain chemicals can have a considerable influence on the strength and durability of concrete. The ability of aggregates to resist excessive changes in volume due to physical changes in the environment is also of importance. Knowledge of these potentially harmful factors will ensure that precautions can be taken at the mix design stage of a project.

Chloride Content: Rapid Method

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 a result.

Quantab Chloride Titrator Type 1175

Product Code: 42-2950

Type 1175 titration range 0.005% to 0.1% (30 to 600 ppm) NaCl. Pack of 40.

Specifications	
Range (ppm)	30 to 600
Weight (g)	10

Quantab Chloride Titrator Strips Type 1176

Product Code: 42-2952

Type 1176 titration range 0.05 % to 1% (300 to 6000 ppm) NaCl. Pack of 40.

Specifications	
Range (ppm)	300 to 6000
Weight (g)	10

Soundness & Chemical Tests

Organic Impurities in Fine Aggregate

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.

Glass Bottle

Product Code: 42-3000

Product Standards:

ASTM C40

12 ounce (300 ml approx) capacity, graduated at 2, 4 and 7 ounce positions, complete with screw cap.

Specifications	
Weight (kg)	0.34

Colour Standard

Product Code: 42-3040

Product Standards:

ASTM C40, AASHTO T21

With five organic colour transparencies mounted in a holder.

Specifications	
Colour Standards	Five, on non-fading glass
Dimensions W x D x H	3 x 2-7/8 x 4 inches 76 x 73 x 102 mm
Weight	Net 4 oz (113 g)

Spares/Consumables:

Sodium Hydroxide Pellets 500g (82-7141)

Soundness of Aggregates

Product Standards:

ASTM C88, AASHTO T104, BS 812, EN 1367-2

The soundness of aggregates to physical changes caused by the environment is important to the long-term durability characteristics of concrete. Excessive changes in volume can be caused by freezing and thawing, thermal changes at temperatures greater than freezing, and cycles of wetting and drying. For Hydrometers and Wire Baskets also see the Laboratory Equipment Section.

Product Code	Product
82-3505	Hydrometer Type L50 1150 to 1200 Relative Density
82-3510	Hydrometer Type L50 1250 to 1300 Relative Density

Wire Baskets (Various Sizes)

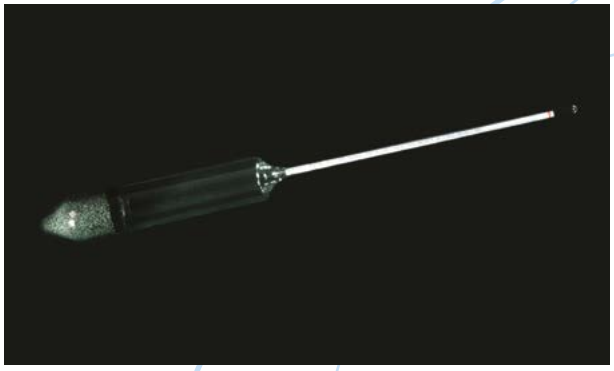
Specifications			
Product Code	Standards	Dimensions dia x depth	Aperture
81-4819	BS 812 Type 1 EN 1367-2	65 mm x 80 mm	150 µm wire mesh
81-4821	BS 812 Type 2 EN 1367-2	95 mm x 120 mm	600 µm wire mesh
81-4823	BS 812 Type 3 EN 1367-2	95 mm x 120 mm	1.18 mm wire mesh
81-4825	BS 812 Type 4 EN 1367-2	120 mm x 120 mm	3.35 mm wire mesh

Soundness of Aggregates in Sodium Sulphate or Magnesium Sulphate to ASTM C88 and AASHTO T104 Set

Product Code	Product
42-1005	Wire Basket 6000 cm³ capacity 1.7 mm
45-6550/01	30 ltrs Heating Bath
79-5030	8 inch dia ASTM Sieve 4 mm
79-5500	8 inch dia ASTM Sieve 8 mm
79-5550	8 inch dia ASTM Sieve 16 mm
79-5600	8 inch dia ASTM Sieve 31.5 mm
81-4821	Wire Basket BS 812 Type 2 EN 1367-2
82-3505	Hydrometer Type L50 1150 to 1200 Relative Density
82-3510	Hydrometer Type L50 1250 to 1300 Relative Density

Hydrometer

Product Code: 82-3505



Product Standards:

BS 812, EN 1367-2, ASTM C88, AASHTO T104, BS 7188

Type L50, ASTM C 88 graduated 1150 to 1200 relative density (used with sodium sulphate method).

Hydrometer

Product Code: 82-3510

Product Standards:

BS 812, EN 1367-2, ASTM C88, AASHTO T104

Type L50, ASTM C 88 graduated 1250 to 1300 relative density (used with magnesium sulphate method).

Sulphate Content: Rapid Method

A qualitative or semi-quantitative test is recommended for determining sulphate ions in aqueous solutions. Sulphate test strips are convenient measuring devices for preliminary assessment of sulphate content.

Sulphate Test Strips

Product Code: 42-2958

Detection range 200 to 900 mg/l. Pack of 100.

Specifications	
Weight (g)	10

Mechanical Properties

Mechanical Properties

The diverse range of aggregates available to the engineer makes it essential to select a material that is adequate for a given application. The following equipment is designed to determine various mechanical characteristics that need to be known in order to select the most suitable type of aggregate.

Aggregate Crushing Value (ACV) & Ten Percent Fines Value (TFV)

These tests are a measure of the crushing properties of aggregate and use the same basic equipment. The ACV test requires a standard load of 400 kN to be applied over a period of 10 minutes while the TFV test measures the force required to produce a specified depth of plunger penetration.

ADR Touch 1500 Compression Machine with Digital Readout

Product Code: 36-0720/01

Product Standards:

BS EN ISO 7500-1; ASTM E4; BS 812-110, BS 812-111

The Compact 1500 range of compression machines has been designed to meet the need for a simple, economic and reliable means of ACV/TFV testing.

Load Indication:

The ADR digital readout is a microprocessor controlled instrument which is fitted as standard to all digital machines in the range. Load can be displayed in kN, lbf or kgf as selected by the operator.

- 1500 kN / 350,000 lbf capacity.
- Efficient hydraulic power packs.
- Economic machines ideal for site use.

Specifications	
Power Supply	220-240 V AC, 50-60 Hz, 1 ph
Force Capacity (kN)	1500
Max Ram Travel (mm)	50
Dimensions L x W x H (mm)	430 x 600 x 1035
Rated Power (W)	1350
Cubes (Concrete)	Up to 150 mm
Cylinders (Concrete)	Up to 160 x 320 mm
Blocks	N/A
Flexural Testing	Via Flexural Frame
TFV and ACV	Yes
Frame Type	Welded
Max Vert. Clearance	340 mm
Max Hor. Clearance	325 mm
Platen Sizes	Lower, Upper 222 mm
Weight (kg)	350

Note: All other ELE Compression Machines from the Concrete Section are suitable for ACV/TFV testing.

Aggregate Crushing Value & Ten Percent Fines Value Apparatus

Product Codes: 42-4300, 42-4500

Product Standards:

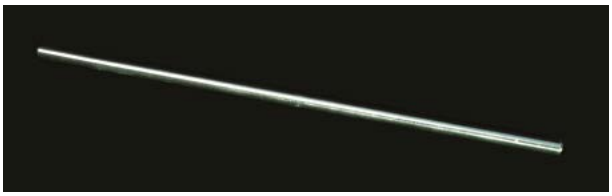
BS 812-112

Comprising of 75 mm or 150 mm nominal diameter steel cylinder, plunger and base plate supplied complete with metal measure and tamping rod (2 sizes).

Specifications	
150 mm Crushing Value Apparatus (42-4300)	
Nominal Diameter (mm)	150
Weight (kg)	16.6
75 mm Crushing Value Apparatus (42-4500)	
Nominal Diameter (mm)	75
Weight (kg)	3.5

Spare Tamping Rods

Product Codes: 34-0130, 42-4580



Specifications	
Spare Tamping Rod (34-0130)	
Dimensions (Dia x Length) (mm)	16 x 600
ACV / TFV Test (mm)	150
Spare Tamping Rod (42-4580)	
Dimensions (Dia x Length) (mm)	8 x 300
ACV / TFV Test (mm)	75

Spare Metal Measures

Product Codes: 42-4360, 42-4560

Specifications	
Spare Metal Measure (42-4560)	
ACV / TFV Test (mm)	150
Spare Metal Measure (42-4360)	
ACV / TFV Test (mm)	75

Mechanical Properties

Aggregate Impact Value (AIV)

The apparatus has been designed in a particularly heavy duty form, with specially hardened steel surfaces for minimum wear. The assembly is heavily plated to ensure corrosion resistance and forms a rigid frame around the quick-release trigger mechanism, which ensures an effective free fall of the hammer when released. A built-in counter automatically indicates the number of blows delivered. The apparatus is supplied complete with cylindrical measure 75 mm diameter x 50 mm deep, and a steel tamping rod 16 mm diameter x 600 mm long.

Aggregate Impact Value Apparatus

Product Code: 42-4005

Product Standards:

BS 812-112

Heavy duty construction, heavily plated assembly ensures corrosion resistance.

Specifications	
L x W x H (mm)	500 x 300 x 980

Los Angeles Abrasion Machine

- European and ASTM methods.
- Revolution counter.
- Safety cut-out.
- Full width cover.

The Los Angeles Machine comprises a heavy steel cylinder, rotated about its horizontal axis. The cylinder incorporates a removable internal shelf, as specified in the ASTM and EN test methods. The steel cylinder is manufactured from structural steel plate conforming to S275 of EN 10025:1993. The filling aperture is provided with a cover and a safety stop button is prominently positioned. The machine is fitted with a revolution counter and steel tray for specimen unloading. Supplied without abrasive charges which should be ordered separately.

Los Angeles Abrasion Machine with CE Safety Cabinet fitted with Microswitches

Product Codes: 42-5310/01, 42-5310/06

Product Standards:

EN 1097-2, ASTM C131, ASTM C535, AASHTO T96, NF P18-573

The machine consists of a closed hollow cylindrical steel drum rotating around its horizontal axis on ball bearing units mounted on a sturdy base framework. The full enclosure ensures noise is minimized. The drum is driven at a speed of between 30 to 33 rpm via an enclosed belt drive arrangement from an electric motor/gearbox unit situated on the base frame. Inside the drum a full length steel shelf is attached, accessed by a dust-proof opening. The cylinder incorporates a removable internal shelf, one shelf position is provided to meet the requirements of both the ASTM and EN test standards. Controls are located easily on the right-hand side of the machine at convenient operator height. Start and stop push buttons and a subtracting revolution counter allows the user to preset the number of revolutions before an automatic stop.

Specifications	
Power Supply	
42-5310/01	220-240 V AC, 50 Hz, 1 ph
42-5310/06	220-240 V AC, 60 Hz, 1 ph

Los Angeles Abrasion Machine Meets ASTM and European Standards

Product Code: 42-5315/01, 42-5315/06

Product Standards:

EN 1097-2, ASTM C131, ASTM C535, AASHTO T96, NF P18-573

Specifications	
Motor	1 hp
Capacity	5,000 g each of aggregate and charge
Drum Speed (rpm)	30 to 33
Frame	Welded structural steel
Counter	Adjustable; automatic shut-off; push-button reset and adjustment
Controls	Magnetic motor starter with overload protection and integral on/off switches
Dimensions W x D x H	38.6 x 36.2 x 38.6 inches 980 x 920 x 980 mm
Weight	Net 882 lbs (400 kg)
Power Supply	
42-5315/01	220-240 V AC, 50 Hz, 1 ph
42-5315/06	220-240 V AC, 60 Hz, 1 ph

Abrasive Charge Set of 12 (EN)

Product Code: 42-5305/10

Product Standards:

EN 1097-2, ASTM C131, ASTM C535
Set of 12.

Abrasive Charges Set of 12 (ASTM)

Product Code: 42-5300/10

Product Standards:

EN 1097-2, ASTM C131, ASTM C535, AASHTO T96

Set of 12.

Specifications	
Weight (lbs)	11.3

Mechanical Properties

Skid Resistance Testing

The Pendulum Skid Resistance Tester was originally designed in the 1940s in the USA, and further developed in the 1960s at the TRL (Transport Research Laboratory) for the testing of road surfaces. The device measures the frictional resistance between a rubber slider mounted on the end of a pendulum arm and the surface to be tested. This provides road engineers with a method of checking the resistance of wet and dry surfaces to slipping and skidding, both in the laboratory and in-situ. It operates by a pendulum rotating about a spindle which is attached to a vertical pillar. At the end of the tubular arm, a head of known mass is fitted with a rubber slider. The pendulum is released from a horizontal position so that it strikes the sample surface at a constant speed. The distance travelled by the head after hitting the sample is determined by the friction of the sample surface.

Pendulum Skid Resistance Tester

Product Code: 42-6000

Product Standards:

EN 1097-8:2009, EN 1436:1997, EN 13036-4:2003, ASTM E303-93, BS 812 Pt 114, BS 6077 Pt 1, BS 7044, BS 7188, BS 8204, BS 7976

Further Information:

Applications:

- Assessment of surface friction and skid resistance properties.
- Testing of aggregates in the PSV (Polished Stone Value) test.
- Testing of new road surface materials.
- Testing of pedestrian pavements.
- RTA (road traffic accidents).
- Litigation investigations

Features:

- Designed for laboratory and on-site road surface testing.
- Factory calibrated to EN 1097-8.
- Low friction arm and lightweight pointer.
- Supplied with 'F' scale for use with small slider set for 76 mm slide length (PSV test).
- Highly repeatable.
- Supplied with carrying case and tool kit.

Specifications	
Dimensions W x D x H (mm)	695 x 295 x 695
Volume (m^3)	0.15
Weight (kg)	30

Spreader Feet for Skid Resistance Tester for In-situ Testing. Set of 3

Product Code: 42-6000/10

Skid Resistance Tester Base Plate for Laboratory Testing

Product Code: 42-6200

Rubber Mounted PSV Slider

Slider for polished stones for use with Pendulum Skid Resistance Tester (42-6000)

Product Code	Product Description
42-6000/11	1.25" Rubber Mounted PSV Slider
42-6000/12	3" Rubber Mounted TRL (55) Slider
42-6000/13	3" Rubber Mounted Four S (96) Slider
42-6000/14	3" Rubber Mounted CEN Slider
42-6000/15	First Traceable Calibration for Pendulum Skid Resistance Tester

Sampling & Preparation Equipment for Aggregates

Product Code	Product	Qty
23-3200	Riffle Box 38 mm Slot Width complete with Three Containers	1
23-3350	Riffle Box 64 mm Slot Width complete with Three Containers	1
81-0220	Aluminium Scoop Large	1
81-0240	Shovel (Flat)	1
81-3060	Sample Container 10 ltr capacity	10
81-4160	Sample Tray 910 x 910 x 76 mm	1
81-4765	Polythene Bag 254 x 380 mm, Pack of 100	100
81-4775	Polythene Bag 450 mm x 1 m x 1000 g Priced each	100

Determination of Moisture Content (Oven-Drying) Method

Standard(s) EN 1097-5, BS 812-109

This is the definitive method for the determination of water content of aggregates drying in a ventilated oven.

Product Code	Product	Qty
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
78-6020/01	6 kg x 0.1 g Balance	1
78-6040/01	30 kg x 1 g Balance	1
81-0120	Spatula 150 x 25 mm	2
81-0222	Aggregate Scoop with two handles 250 mm long x 125 mm dia, 5 kg capacity	1
81-3040	Sample Container. 2.5 ltr capacity	10
81-3545	22 ltr Transport/Storage Container complete with Snap-on Lid and Handle	5
81-4020	Sample Tray 306 x 306 x 38 mm	6
82-2110	Desiccator Cabinet Non-Vacuum	1
82-7091	Silica Gel 6-16 Mesh Quantity 500 g	1

Determination of Moisture Content, Modified High Temperature Drying Method

This is an alternative test method to the Oven Dry method. Results from this test method should be checked using the Oven Method.

Standard(s) BS 812-109

Product Code	Product	Qty
78-3104/01	Hotplate Digital Temperature Indication 0 to 300°C 300 x 500 mm heating area 220-240 V AC, 50 Hz, 1 ph.	1
78-6020/01	6 kg x 0.1 g Balance	1
81-0140	Spatula 200 mm Blade	1
81-4700	Stainless Steel Tray 305 mm dia	1

Determination of Particle Size Distribution

This test method determines the particle size distribution of aggregates using test sieves.
The test method is suitable for natural or artificial aggregates, including lightweight aggregates up to 63 mm nominal size but excluding filler.

Standard(s)	EN 933-1, BS 812-103	
Product Code	**Product**	**Qty**
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
78-6000/01	200 g x 0.001 g Balance	1
78-6020/01	6 kg x 0.1 g Balance	1
78-6040/01	30 kg x 1 g Balance	1
79-0010	200 mm dia Lid	1
79-0020	200 mm dia Receiver	1
79-0070	200 mm dia BS Sieve 63 Mic Stainless Steel Mesh	1
79-0110	200 mm dia BS Sieve 125 Mic Stainless Steel Mesh	1
79-0150	200 mm dia BS Sieve 250 Mic Stainless Steel Mesh	1
79-0190	200 mm dia BS Sieve 500 Mic Stainless Steel Mesh	1
79-0230	200 mm dia BS Sieve 1 mm Stainless Steel Mesh	1
79-0270	200 mm dia BS Sieve 2 mm Stainless Steel Mesh	1
79-1500	200 mm dia BS Sieve 4 mm Perforated Plate	1
79-1540	200 mm dia BS Sieve 8 mm Perforated Plate	1
79-2010	300 mm dia Lid	1
79-2020	300 mm dia Receiver	1
79-2580	300 mm dia BS Sieve 16 mm Perforated Plate	1
79-2630	300 mm dia BS Sieve 31.5 mm Perforated Plate	1
79-2670	300 mm dia BS Sieve 63 mm Perforated Plate	1
79-2710	300 mm dia BS Sieve 125 mm Perforated Plate	1
79-7210	Sieve Brush Double-Ended Nylon	3
80-0200/01	ELE Sieve Shaker complete with separate Control Panel, 220-240 V AC, 50 Hz, 1 ph	1
81-4030	Sample Tray 406 x 406 x 50 mm	4

Determination of Flakiness and Elongation

The flakiness index of an aggregate sample is found by separating the flaky particles and expressing their mass as a percentage of the mass of the sample tested.
This test method is not applicable to material passing a 6.3 mm sieve or retained on a 63 mm sieve.

Standard(s)	BS 812-105	
Product Code	**Product**	**Qty**
42-0410	Flakiness Gauge	1
42-0600	Set of Flakiness Sieves comprising 1 each 4.9 mm, 7.2 mm, 10.2 mm ,14.4 mm, 19.7 mm 26.3 mm and 33.9 mm	1
42-0820	Length Gauge	1
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
78-6020/01	6 kg x 0.1 g Balance	1
78-6030/01	Electronic Top Loading Balance 15 kg x 1g	1
79-2010	300 mm dia Lid	1
79-2020	300 mm dia Receiver	1
79-2525	300 mm dia BS Sieve 6.3 mm Perforated Plate	1
79-2555	300 mm dia BS Sieve 10 mm Perforated Plate	1
79-2575	300 mm dia BS Sieve 14 mm Perforated Plate	1
79-2595	300 mm dia BS Sieve 20 mm Perforated Plate	1
79-2615	300 mm dia BS Sieve 28 mm Perforated Plate	1
79-2640	300 mm dia BS Sieve 37.5 mm Perforated Plate	1
79-2655	300 mm dia BS Sieve 50 mm Perforated Plate	1
79-2670	300 mm dia BS Sieve 63 mm Perforated Plate	1
80-0200/01	ELE Sieve Shaker complete with separate Control Panel, 220-240 V AC, 50 Hz, 1 ph	1
81-0240	Shovel (Flat)	1
81-4030	Sample Tray 406 x 406 x 50 mm	4
81-4230	Sample Tray 1200 x 1160 x 50 mm	1

Determination of Flakiness

This test method determines the flakiness index of aggregate and is suitable for natural or artificial aggregates, including lightweight aggregates.
The test procedure is not suitable for particle sizes less than 4 mm or greater than 80 mm.

Standard(s)	EN 933-3	
Product Code	**Product**	**Qty**
42-0300	Grid Sieve 2.5 mm Slot Width for EN Aggregate Flakiness Test	1
42-0302	Grid Sieve 3.15 mm Slot Width for EN Aggregate Flakiness Test	1
42-0304	Grid Sieve 4 mm Slot Width for EN Aggregate Flakiness Test	1
42-0306	Grid Sieve 5 mm Slot Width for EN Aggregate Flakiness Test	1
42-0308	Grid Sieve 6.3 mm Slot Width for EN Aggregate Flakiness Test	1
42-0310	Grid Sieve 8 mm Slot Width for EN Aggregate Flakiness Test	1
42-0314	Grid Sieve 10 mm Slot Width for EN Aggregate Flakiness Test	1
42-0316	Grid Sieve 12.5 mm Slot Width for EN Aggregate Flakiness Test	1
42-0318	Grid Sieve 16 mm Slot Width for EN Aggregate Flakiness Test	1
42-0320	Grid Sieve 20 mm Slot Width for EN Aggregate Flakiness Test	1
42-0322	Grid Sieve 25 mm Slot Width for EN Aggregate Flakiness Test	1
42-0324	Grid Sieve 31.5 mm Slot Width for EN Aggregate Flakiness Test	1
42-0326	Grid Sieve 40 mm Slot Width for EN Aggregate Flakiness Test	1
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
78-6030/01	Electronic Top Loading Balance 15 kg x 1g	1
79-2010	300 mm dia Lid	1
79-2020	300 mm dia Receiver	1
79-2500	300 mm dia BS Sieve 4 mm Perforated Plate	1
79-2515	300 mm dia BS Sieve 5 mm Perforated Plate	1
79-2525	300 mm dia BS Sieve 6.3 mm Perforated Plate	1
79-2540	300 mm dia BS Sieve 8 mm Perforated Plate	1
79-2555	300 mm dia BS Sieve 10 mm Perforated Plate	1
79-2565	300 mm dia BS Sieve 12.5 mm	1
79-2580	300 mm dia BS Sieve 16 mm Perforated Plate	1
79-2595	300 mm dia BS Sieve 20 mm Perforated Plate	1
79-2605	300 mm dia BS Sieve 25 mm Perforated Plate	1
79-2630	300 mm dia BS Sieve 31.5 mm Perforated Plate	1
79-2645	300 mm dia BS Sieve 40 mm	1
79-2655	300 mm dia BS Sieve 50 mm Perforated Plat.	1
79-2670	300 mm dia BS Sieve 63 mm Perforated Plate	1
79-2684	300 mm dia BS Sieve 80 mm Perforated Plate	1
81-4030	Sample Tray 406 x 406 x 50 mm	4

Determination of the Shape Index of Aggregate

This test method determines the shape index of coarse aggregate. It is suitable for aggregates of natural or artificial origin including lightweight aggregates.
The test procedure is not suitable for particle sizes less than 4 mm or greater than 63 mm.

Standard(s)	EN 933-4	
Product Code	**Product**	**Qty**
42-0821	3.1 Shape Index Caliper	1
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
78-6020/01	6 kg x 0.1 g Balance	1
78-6040/01	30 kg at 1 g Balance	1
81-4030	Sample Tray 406 x 406 x 50 mm	4
Also required		
79-0010	200 mm dia Lid	1
79-0020	200 mm dia Receiver	1
79-0070	200 mm dia BS Sieve 63 Mic Stainless Steel Mesh	1
79-0110	200 mm dia BS Sieve 125 Mic Stainless Steel Mesh	1
79-0150	200 mm dia BS Sieve 250 Mic Stainless Steel Mesh	1
79-0190	200 mm dia BS Sieve 500 Mic Stainless Steel Mesh	1
79-0230	200 mm dia BS Sieve 1 mm Stainless Steel Mesh	1
79-0270	200 mm dia BS Sieve 2 mm Stainless Steel Mesh	1
79-1500	200 mm dia BS Sieve 4 mm Perforated Plate	1
79-1540	200 mm dia BS Sieve 8 mm Perforated Plate	1
79-2010	300 mm dia Lid	1
79-2020	300 mm dia Receiver	1
79-2580	300 mm dia BS Sieve 16 mm Perforated Plate	1
79-2630	300 mm dia BS Sieve 31.5 mm Perforated Plate	1
79-2670	300 mm dia BS Sieve 63 mm Perforated Plate	1
79-2710	300 mm dia BS Sieve 125 mm Perforated Plate	1
79-7210	Sieve Brush Double-Ended Nylon	3
80-0200/01	ELE Sieve Shaker complete with separate Control Panel, 220-240 V AC, 50 Hz, 1ph	1

Particle Density & Water Absorption of Aggregate

This test method is used for the determination of particle density and water absorption of aggregate between 63 mm and 5 mm.

Standard(s)	BS 812-2, EN 1097-6	
Product Code	**Product**	**Qty**
42-1000/01	Buoyancy Balance 6 kg x 0.1g, complete with Support Frame Water Tank and Suspension Hook	1
42-1005	Wire Basket Brass with Handle nominal 6000 cm^3 capacity with 1.7 mm Wire Mesh	1
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
81-0518	Timer Clock	1
81-3060	Sample Container 10 ltr capacity	3
81-4030	Sample Tray 406 x 406 x 50 mm	4
82-5420	Digital Pocket Thermometer -49.9˚C to +199.9˚C	1
Also required.		
79-0010	200 mm dia Lid	1
79-0020	200 mm dia Receiver	1
79-0070	200 mm dia BS Sieve 63 Mic Stainless Steel Mesh	1
79-0310	200 mm dia BS Sieve 4 mm Stainless Steel Mesh	1
79-1630	200 mm dia BS Sieve 31.5 mm Perforated Plate	1
79-1670	200 mm dia BS Sieve 63 mm Perforated Plate	1

Particle Density & Water Absorption of Aggregate (Gas Jar Method)

This test method is used for the determination of particle density and water absorption of aggregate between 40 mm and 5 mm.

Standard(s)	BS 812-2	
Product Code	**Product**	**Qty**
24-2830	Gas Jar 75 mm dia x 300 mm with Glass Cover and Rubber Bung	2
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
78-6020/01	6 kg x 0.1 g Balance	1
79-1515	200 mm dia BS Sieve 5 mm Perforated Plate	1
81-3060	Sample Container 10 ltr capacity	3
81-4700	Stainless Steel Tray 305 mm dia	2

Particle Density & Water Absorption of Aggregate (Pyknometer Method)

This test method is used for the determination of particle density and water absorption of aggregate between 4 mm and 0.063 mm.

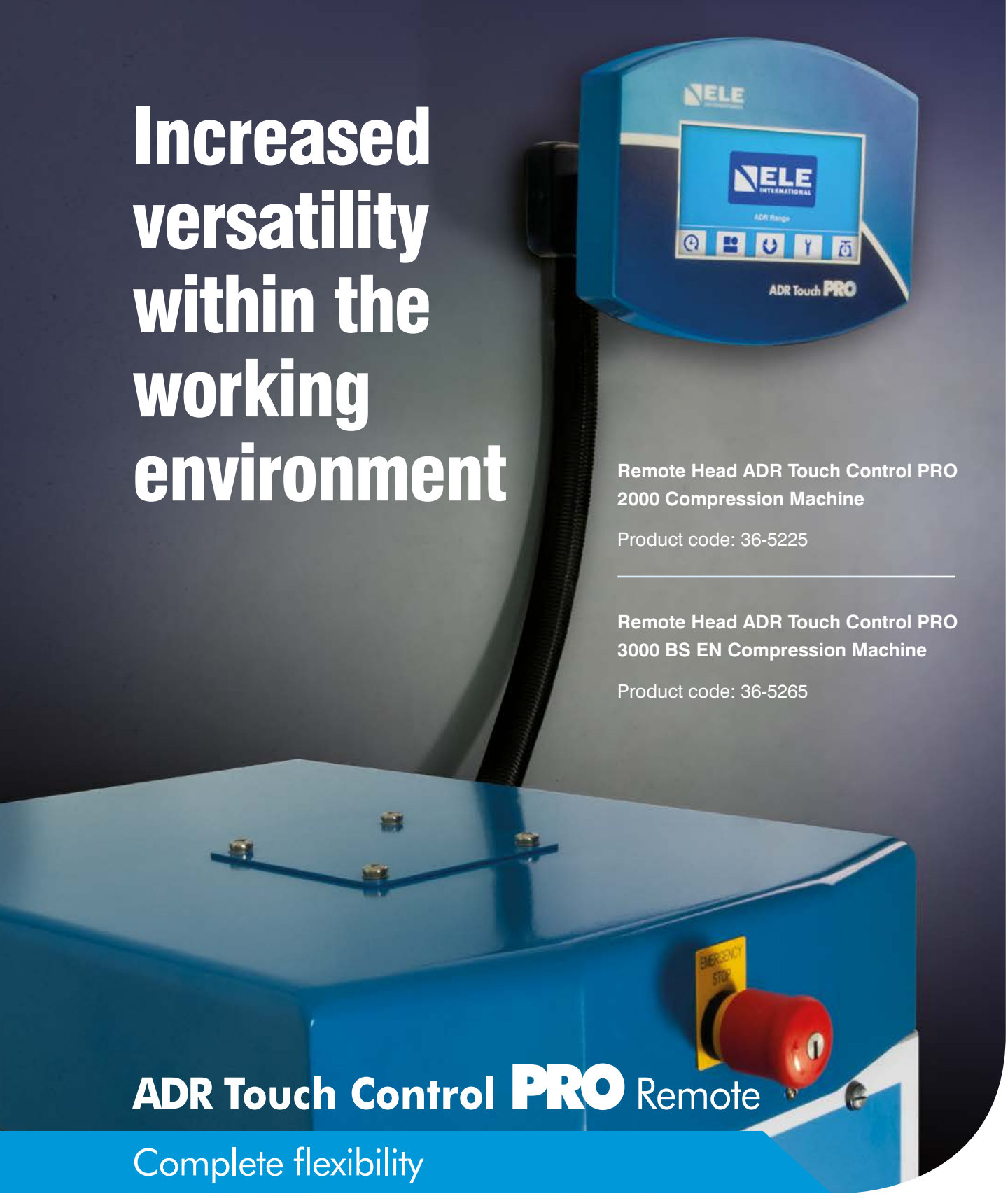
Standard(s)	EN 1097-6, BS 812-2	
Product Code	**Product**	**Qty**
24-2885	Pyknometer complete with Non-Corrodable Cone and Rubber Seal 1 kg capacity	2
42-1700	Sand Absorption Cone	1
42-1720	Tamping Rod	1
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with Shelves and 1 Year Warranty	1
78-6020/01	6 kg x 0.1 g Balance	1
79-0080	200 mm dia BS Sieve 75 Mic Stainless Steel Mesh	1
81-3060	Sample Container, 10 ltr capacity	3
81-3540	Plastic Sample Container 10 cu Decimetre capacity complete with Lid suitable for CBR Soaking Test	1
81-4700	Stainless Steel Tray 305 mm dia	2
82-2660	Polythene Funnel 180 mm dia	1

Aggregate Abrasion Value using Los Angeles Abrasion Machine

This test method determines the resistance to fragmentation of coarse aggregate.
The Los Angeles test method is the reference method and applies to natural or artificial aggregates used in civil engineering.

Standard(s)	EN 1097-2	
Product Code	**Product**	**Qty**
42-5315/01	Los Angeles Abrasion Machine meets ASTM and European Standards, 220-240 V AC, 50 Hz, 1ph	1
42-5305/10	Set of 12 Abrasive Charges (EN)	1
78-1320/01	Drying Oven 220 ltr capacity, Fan-Circulated, complete with 4 Shelves and 1 Year Warranty	1
78-6040/01	30 kg x 1 g Balance	1
79-0010	200 mm dia Lid	1
79-0020	200 mm dia Receiver	1
79-0255	200 mm dia ISO:565 3310/1 Sieve 1.6 mm Stainless Steel Mesh	1
79-1555	200 mm dia BS Sieve 10 mm Perforated Plate	1
79-1565	200 mm dia BS Sieve 12.5 mm Perforated Plate	1
79-1575	200 mm dia BS Sieve 14 mm Perforated Plate	1

Increased versatility within the working environment



Remote Head ADR Touch Control PRO 2000 Compression Machine

Product code: 36-5225

Remote Head ADR Touch Control PRO 3000 BS EN Compression Machine

Product code: 36-5265

ADR Touch Control PRO Remote

Complete flexibility

The ADR Touch Control Pro delivers all the features and quality of the established ADR-Auto range, with its 20 year history.

Now with a new sleek remote head, we can give you even more flexibility in your working environment.

- Remote Head option for ADR Touch Control PRO (TCP) allows a distance of up to 1.3 metres between the console and head.
- Three options available:
  - Desk mounting for ADR TCP head.
  - Desk mounting for Head and PC monitor.
  - Wall mounting option (as shown in the image).

Contact the team now for further information: +44 (0)1525 249 200 • ele@eleint.co.uk