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Testing Solutions for the
Civil & Construction Industry

EQUIPMENT, SOFTWARE, CALIBRATION, SERVICE AND AFTER SALES SUPPORT

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Specifications in
this catalogue are
subject to change
without notice



The industrial history of materials testing by machine can be traced to Tinius Olsen, a visionary inventor who built the first universal testing machine.

By 1880, he had proven and patented enough revolutionary ideas and designs to create an entire line of testing machines and launch his own company. Over the years, he introduced and innovated application-specific solutions for materials testing that spanned industrial manufacturing and construction.

After the turn of the century and the innovations of motor vehicles and modern highways, the scope of Tinius Olsen's offerings expanded to include a new product line dedicated to the testing of cement, concrete and road materials.

Nearly 140 years later and many of Tinius Olsen's original designs and technological approaches are still viewed as industry standards and are testament to his knowledge of the sciences, the natural and man-made materials that make up

our world, and of best engineering practices.

At Tinius Olsen, we are proud of our founder's legacy and continue to seek to build on it with new and creative systems that combine the best of proven materials testing machine technologies with the latest in automation and in digital monitoring, control and analysis software.

We offer equipment for testing high performance metals, the latest engineering grades of plastics, the toughest textiles and the most exotic composites. Building on some of the early solutions of our founder, we also offer one of the industry's most comprehensive and reliable lines of products and services for testing construction-related materials.

The breadth of machines and testing resources on the following pages is supported by our technical team, which keeps our ever-growing customer base up and running with precisely-calibrated testing machinery.



Tinius Olsen



Tinius Olsen proudly owns in US, UK, India and China:

- Customer service centers
- Training centers
- Showrooms
- Calibration facilities

Our global partner for the civil and construction industry is PowerCept Technologies. Contact details are:

PowerCept Middle East LLC
PO BOX 123489
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Website: www.powercept.com
Email: info@powercept.com

Key highlights of PowerCept are:

- Combines 45 years of regional knowledge and experience in the field of testing and measurement across the dynamic markets of the Middle East, Europe, India SAARC and Asia Pacific
- Specialises in packaged product and support solutions for civil engineering, education & research and manufacturing.
- Provides clients with comprehensive application advice, customer service, calibration, repair and training.
- Ensures value through close working relationships with regulatory bodies, technology partners and end users.
- Empowers local customers with proven track record of bringing diverse business cultures together with best-in-class engineering solutions.

Package Solutions



Turnkey Project Management



All Tinius Olsen Package Solutions include the following:

- Lab layouts and machine placements
- Power requirements
- Manpower requirements
- Comprehensive product training
- Application and technical support
- Calibration support
- Installation & commissioning
- Pre and post-sales support
- Certification and traceability
- User application training
- After sales and warranty support



Tinius Olsen offers Package Solutions as per BS/ASTM/EN/ISO/AASHTO International Standards for the following:

- Ready Mix Plant
- Pre Cast Factory
- Educational Laboratory
- Cement Plant
- Contractors Laboratory
- Accredited Commercial Laboratories for testing:
 - Rebar
 - Geotextiles
 - Membranes
 - Concrete
 - Aggregate
 - Soil
 - Asphalt
 - Cement
 - General Laboratory Testing

Horizon Software

Key features

- Test method library
- Test Editor
- Tabbed Test and Recall Area
- Multiple Machine Control
- Closed loop control of compression testers
- Output Editor
- Multilingual with translation
- Basic statistics
- Exporting (printing and ASCII)
- Central server capability and connectivity
- Help Desk access
- Multifaceted security
- Tinius Olsen Knowledge Center (requires internet access)



Tinius Olsen is proud to introduce the next evolution of its testing software with the Horizon package. As part of the development process, we have taken the best features of our existing software offerings, added a host of report writing and data manipulation capabilities and, in the process, created a new, unparalleled testing platform. This will make easy work of your materials testing programs, whether they're designed for the demanding rigors of R&D or the charting and analysis functions of QC testing.

Horizon software uses the most current Windows environments. These familiar formats make it easy to use and learn, especially because the same familiar functionality is maintained throughout the program.

Horizon software can accept data from not only our tension compression materials testing machines but it can also take manual data entry from equipment such as the Marshall tester,

CBR, Soil Compactor, Speedy testers, Blaine apparatus, Sieve grading results and all types of Civil Engineering Equipment test results.

If your testing hardware has PC communication and control capabilities, then Horizon software can also automatically control the tests for you, in accordance with the appropriate testing specifications, gather the test data and calculate the required results. Horizon can then take these results and produce a consolidated testing report that can incorporate your or your customer's logo.

Modular in design, Horizon software can be configured in a number of different ways so that your immediate needs are addressed; further enhancements are readily available as your testing needs change and grow.

Talk to your sales engineer to see how Horizon software can best meet your needs.

MODEL TO-203

Accelerated Polishing Machine

Tinius Olsen manufactures state-of-the-art Aggregate Polishing Machines. Specimens are manufactured in accurately machined and matched molds. They are then removed from the molds and located on the 'road wheel'.

The wheel is then rotated and enters into contact with a spring-loaded solid rubber tire. Abrasive charges are continuously fed by mechanical feeders at a fixed speed. Feed rates for corn emery and flour emery are as per British and American standards. The water is supplied at a controlled rate through a water container. Used water and abrasives are collected in a large removable tray.

APPLICABLE STANDARDS

- **BS 812; ASTM D331**

ORDERING INFORMATION

- **TO-203-01-BS** Accelerated Polishing Machine as per BS, 110VAC, 60Hz
- **TO-203-02-BS** Accelerated Polishing Machine as per BS, 220VAC, 60Hz
- **TO-203-03-BS** Accelerated Polishing Machine as per BS, 220VAC, 50Hz
- **TO-203-01-ASTM** Accelerated Polishing Machine as per ASTM, 110VAC, 60Hz
- **TO-203-02-ASTM** Accelerated Polishing Machine as per ASTM, 220VAC, 60Hz
- **TO-203-03-ASTM** Accelerated Polishing Machine as per ASTM, 220VAC, 50Hz

Key features

- High safety standards.
- Sealed long life bearings.
- Sealed control bearings.
- Heavy welded steel mainframe with adjustable pads.
- Specimens manufactured and easily removed from accurately machined moulds.
- Water gravity fed from high level tank through calibrated flow meter.



MODEL TO-441

Laboratory Ball Mill

The Laboratory Ball Mill is primarily designed for grinding pigments and cement. The material is ground at a specific speed for a specific period using a specific quantity of grinding steel balls. The size range of balls provided to support the tests is from 12.5 to 40mm. The size of ball varies with the requirement of the tests and complied standard. The Laboratory Ball Mill capacity also varies according to the application and ranges from 5-20kg.

The equipment is provided with a counter for recording the number of revolutions.

Apart from the cement industry, it is also used in the paint, plastic, granite and tile industries.

ORDERING INFORMATION

- **TO-441-02** Laboratory Ball Mill, 5kg capacity without steel balls, 415V, 60Hz, 3ph
- **TO-441-03** Laboratory Ball Mill, 5kg capacity without steel balls, 415V, 50Hz, 3ph
- **TO-441-10-02** Laboratory Ball Mill, 10kg capacity without steel balls, 415V, 60Hz, 3ph
- **TO-441-10-03** Laboratory Ball Mill, 10kg capacity without steel balls, 415V, 50Hz, 3ph
- **TO-441-20-02** Laboratory Ball Mill, 20kg capacity without steel balls, 415V, 60Hz, 3ph
- **TO-441-20-03** Laboratory Ball Mill, 20kg capacity, without steel balls, 415V, 50Hz, 3ph

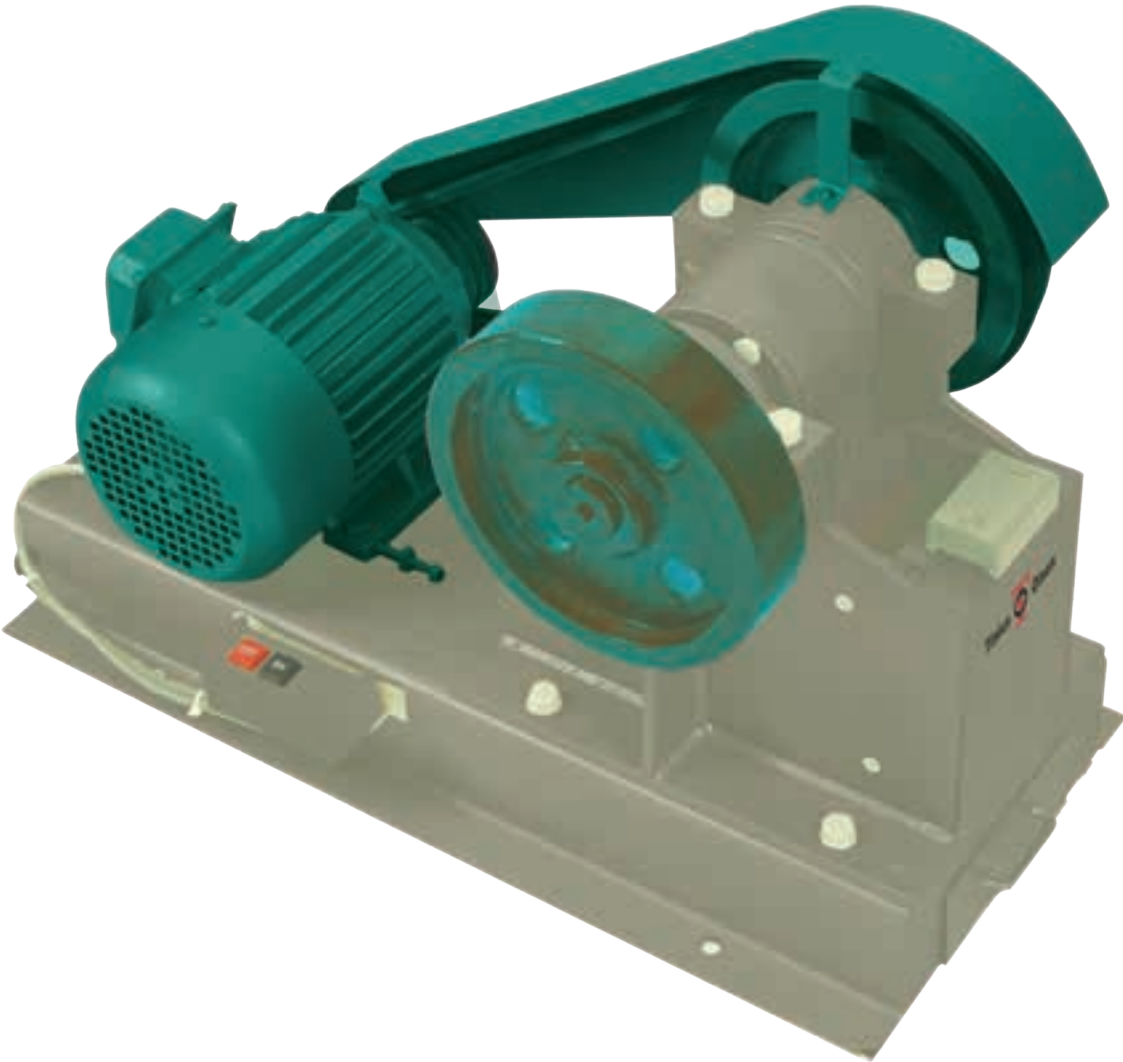
OPTIONAL ACCESSORIES

- **TO-44101** Steel ball 40mm, single ball
- **TO-44102** Steel ball 30mm, single ball
- **TO-44103** Steel ball 25mm, single ball
- **TO-44104** Steel ball 19mm, single ball
- **TO-44105** Steel ball 12.5mm, single ball



MODEL TO-442

Jaw Crusher



Jaw crushers were one of the earliest crushing machines to be developed in the materials industry, before it began to modify functionalities and introduce new types to the market. With a simple and solid structure, reliable operation, easy maintenance and repair, and low production and construction fees, jaw crushers have long been widely used for coarse, medium and fine crushing of various kinds of ores and rocks in many industrial sectors such as metallurgy, chemistry, building material, power plant and transportation.

The Tinius Olsen Jaw Crusher is compact and of rugged construction for general laboratory use in small pilot plant operations. Two jaws of manganese steel are provided and the moveable jaw produces two blows for every revolution to reduce oversizing to a minimum.

ORDERING INFORMATION

- **TO-442-01** Jaw Crusher, 110V 60Hz
- **TO-442-02** Jaw Crusher, 220V 60Hz
- **TO-442-03** Jaw Crusher, 220V 50Hz

PACKAGING INFORMATION

- **Net weight:** 125kg; **gross weight:** 155kg
- **Packaging dimensions:** 92 x 53 x 78cm

Key features

- Designed to speed up crushing of aggregates, ore, mineral, coal and similar materials.
- Compact and rugged for laboratory and small production units.
- Manganese steel jaws adjustable up to 6mm opening.
- Supported with strong steel frame.

MODEL TO-443

Pulverizer

Pulverizers are used specifically for grinding soft and brittle material into fine powder. Aimed at the cement industry, this machine helps in crushing or grinding up any stone up to 45mm size to powder for better quality cement. The strong steel frame of this machine offers longer duration of run time and helps in crushing approximately 250kg of materials in eight hours.

This machine, used for crushing materials to produce fine mesh samples, is a self-contained grinder with a rotating disc that has planetary movement in vertical plane.

Key features

- Designed for grinding materials to produce fine mesh samples.
- Ideal for use in cement and chemical industries.
- Self-contained grinder with a rotating disc features planetary movement in vertical plane.
- 250kg materials can be crushed in approximately eight hours.
- Discharging opening adjustment range: 3-10mm.
- Suitable for crushing any type of stone up to 45mm.

ORDERING INFORMATION

- TO-443-01** Pulverizer, 110V, 60Hz
- TO-443-02** Pulverizer, 220V, 60Hz
- TO-443-03** Pulverizer, 220V, 50Hz



MODEL TO-456

Aggregate Impact Tester with Blow Counter

The Aggregate Impact Tester with Blow Counter is used to determine aggregate impact value and has been designed in accordance with ASTM and BS Standards. The sturdy construction consists of a base and support columns that form a rigid framework around the quick release trigger mechanism to ensure an effective free-fall of the hammer during test. The free-fall can be adjusted through 380 + 5mm. The hammer is provided with a locking arrangement.

APPLICABLE STANDARD

- BS 812-112**

ORDERING INFORMATION

- TO-456-BS** Aggregate Impact Tester with Blow Counter as per BS specification

SUPPLIED AS STANDARD

- TO-45601** Cylindrical Cup
- TO-45602** Metal measure, 75mm ID x 50mm deep
- TO-45603** Tamping rod
- TO-45604** Automatic blow counter

OPTIONAL ACCESSORIES

- TO-45601** Cylindrical cup
- TO-45602** Metal measure, 75mm ID x 50mm deep
- TO-45603** Tamping rod
- TO-45604** Automatic Blow counter

Key features

- ASTM & BS compliant.
- Blow counter.
- Sturdy frame.
- Adjustable free-fall.

PACKAGING INFORMATION

- Net weight:** 55kg; **gross weight:** 90kg
- Packaging dimensions:** 76 x 53 x 115cm



MODEL TO-458

Los Angeles Abrasion Apparatus

The Los Angeles Abrasion Machine comprises a heavy steel cylinder, rotated about a horizontal axis. The cylinder incorporates a removable internal shelf. Two alternative shelf positions are provided: one for ASTM and one for the EN test method. The heavy duty steel cylinder is manufactured from structural steel plate. The filling aperture is provided with a cover. The machine is fitted with a digital revolution counter and steel tray for specimen unloading. It is also supplied with one set of abrasive charges as standard.

APPLICABLE STANDARDS

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

ORDERING INFORMATION

BS/EN Standards

- **TO-458-01-EN** Los Angeles Abrasion Testing Machine with abrasive charge, 110V 60Hz
- **TO-458-02-EN** Los Angeles Abrasion Testing Machine with abrasive charge, 220V 60Hz
- **TO-458-03-EN** Los Angeles Abrasion Testing Machine with abrasive charge, 220V 50Hz

ASTM Standards

- **TO-458-01-ASTM** Los Angeles Abrasion Testing Machine with abrasive charge, 110V 60Hz
- **TO-458-02-ASTM** Los Angeles Abrasion Testing Machine with abrasive charge, 220V 60Hz
- **TO-458-03-ASTM** Los Angeles Abrasion Testing Machine with abrasive charge, 220V 50Hz

AUS Standards

- **TO-458-01-AS** Los Angeles Abrasion Testing Machine with abrasive charge, 110V 60Hz

- **TO-458-02-AS** Los Angeles Abrasion Testing Machine with abrasive charge, 220V 60Hz
- **TO-458-03-AS** Los Angeles Abrasion Testing Machine with abrasive charge, 220V 50Hz

STANDARD FEATURES

BS/EN Standards

- **TO-45801-EN** Abrasive charge, consisting of a set of 12 hardened steel balls of 48mm diameter

ASTM Standards

- **TO-45801-ASTM** Abrasive charge, consisting of a set of 12 hardened steel balls of 48mm diameter

AUS Standards

- **TO-45801-AS** Abrasive charge, consisting of a set of 12 hardened steel balls of 48mm diameter

OPTIONAL ACCESSORIES

- **TO-45801-EN** Abrasive charge, consisting of a set of 12 hardened steel balls of 48mm diameter
- **TO-45801-ASTM** Abrasive charge, consisting of a set of 12 hardened steel balls of 48mm diameter
- **TO-45801-AS** Abrasive charge, consisting of a set of 12 hardened steel balls of 48mm diameter

PACKAGING INFORMATION

- **Net weight:** 407kg; **gross weight:** 477kg
- **Packaging dimensions:** 112 x 120 x 99cm



Key features

- European and ASTM methods.
- Revolution counter.
- Full width cover.
- Cabinet option is also available with Los Angeles.

MODEL AIRJET

Airjet Sizer



For sieving difficult, electrostatic and very fine dry particles from 20µm and greater, the Airjet Sizer is recommended. It is easy to use, extremely efficient and provides accurate reproducible results. Most sieving operations can be accomplished in just a matter of minutes. It is supplied complete with its own separate vacuum source that connects to the back of the sizer. Electrical power for the vacuum unit is supplied by a single on/off switch. connector. A safety microswitch ensures that the unit cannot operate unless a sieve is in place on the sieve mounting plate.

WEIGHT

- 12kg

ORDERING INFORMATION

- **Airjet sizer(B)** Automatic sieve

AIRJET SPECIFICATIONS

Dimension	345 x 375 x 295mm (WxDxH)
Air volume	480 liter/min (maximum)
Air pressure	Adjustable from 10-85milibar (negative pressure)
Time range	0-10mins
Sieve diameter	200mm airjet sieves
Aperture range	20µm-1mm
Operating voltage	220-240V 50/60Hz
Power consumption	25VA plus (extraction units available)
Capacity	Up to eight full height 200mm (8in) sieves

MODEL TO-D200

Octagon D200 Digital

Ideal for laboratory or on site use, the Octagon D200 Digital is a robust, compact, and portable shaker for 20mm and 8in diameter sieves. A digital display takes the guesswork out of user settings.

Powered by an electromagnetic drive, the Octagon D200 Digital has no rotating parts to wear, making it maintenance-free. It is extremely quiet in operation.

Vibratory action moves the sample over the sieve in a unique way to produce faster, more efficient sieving. Rapid vertical movements help to keep the apertures from clogging.

Controls include process timer, an amplitude setting, and continuous or intermittent vibration.

The shaker is fitted with a unique clamp that ensures sieves are held firmly without over-tightening, yet are easily removed or replaced. Non-metallic springs and anti-vibration mountings prevent excessive vibrations and reduce noise.

A wet sieving conversion kit is available as an option. It includes a top clamping plate, Perspex cover, spray rose, watertight seals and stainless steel receiver with drainage spout.

MODEL TO-D200 SPECIFICATIONS	
Height	210mm (excluding rods)
Diameter	410mm (handles, 2 x 35mm)
Power	230V, 50Hz, 300VA 115V, 60Hz, 300VA
Capacity	up to eight full height and 18 half height 200mm (8in) diameter sieves plus lid and receiver



- WEIGHT**
- 55kg (packed); 43kg (unpacked)
- ORDERING INFORMATION**
- Octagon D200 digital automatic sieve shaker
 - Octagon D200 wet sieving conversion kit

MODEL TO-D450

D450 Digital



The D450 Digital uses the same dynamic control panel as the Octagon D200. The main difference between these units is that the complete vibration system of the D450 has been built to handle the sample weights of larger diameter sieves.

Like the Octagon D200, the D450 offers total operator control, no mechanical moving parts, and the ability to do wet or dry sieving.

MODEL TO-D450 SPECIFICATIONS	
Height	280mm (excluding rods)
Diameter	685mm
Power	230V, 50Hz, 1280VA 115V, 60Hz, 1600VA (other voltages on request)
Capacity	Up to 11 x 250mm sieves, nine x 300mm, nine x 315mm, 11 x 350mm, 10 x 400mm or seven x 450mm; plus lid and receiver (or inch equivalent). Capacity increased with half height sieves

- WEIGHT**
- 170kg (packed); 140kg(unpacked)
- ORDERING INFORMATION**
- **D450** Digital automatic sieve shaker

MODEL EFL2000

EFL2000 Sieve Shaker

This heavy-duty shaker is for sieves up to 315mm and 12in in diameter. The EFL2000 is equipped with a dynamic power source that ensures the right vibration is imparted to the sample for fast, accurate, and reproducible tests.

Vertical movement is fixed to ensure that the sample spends maximum time seeking apertures rather than being suspended in mid-air. Unique vibratory action keeps the sieve's apertures from clogging. A special clamping device holds sieves firmly in place; conversely, they can be removed and replaced quickly and easily.

The EFL2000's timer can be pre-set for any duration up to 60 minutes or continuously. The shaker has non-corrodible, non-metallic springs. It can be used for both wet or dry sieving.

- WEIGHT**
- 100kg (packed); 83kg (unpacked)
- ORDERING INFORMATION**
- EFL2000** Automatic sieve shaker

MODEL EFL2000 SPECIFICATIONS	
Diameter	510mm (handles 2 x 35mm)
Timer	0-60min or continuous
Power	230V, 50Hz, 485VA 115V, 60Hz, 390VA (other voltages on request)
Capacity	up to 12 full height, 24 half height sieves of 250mm/8in or six full height or 12 half sieves of 315mm; includes lid and receiver



MODEL TO-M200

Sieve Analysis by Endecotts

This sieve combines low cost with the benefits of a well designed and engineered shaker. The Minor M200 is suitable for 200mm/8in or 100mm diameter sleeves (sold separately). It is ideal for either the laboratory or plant because it is compact and genuinely portable, weighing just 17kg. There are no rotating parts, so it is quiet and maintenance-free.

The sieve stack is held firmly in position between the location and clamp plates by straps that allow the unit to fit in spaces less than 200mm high. For continuous timed sieving, set the 0 to 60 minute timer and select "I". The vibrating action imparts a precise movement to the sieve stack, ensuring efficient sieving and excellent repeatability. Anti-vibration feet ensure good stability.

- WEIGHT**
- 17kg
- ORDERING INFORMATION**
- Minor M200 (B)** Automatic sieve shaker

MODEL TO-M200 SPECIFICATIONS	
Height	180mm(excluding sieve stack)
Timer	0-60min or continuous
Power	230V, 50Hz, 80VA 115V, 60Hz, 60VA
Capacity	Up to eight full height 200mm (8in) sieve



MODEL SIEVE

Sieves

Tinius Olsen offers a wide range of sieve models from the Endecotts line. Most are brass or stainless steel. The following tables include the most popular ones, which are based on the most widely used ISO, BSI and ASTM standards.

Wire mesh series ISO 3310-1:2000 BS 410-1:2000 Nominal aperture sizes									
mm									
125.00	112.00	106.00	100.00	90.00	80.00	75.00	71.00	63.00	56.00
53.00	50.00	45.00	40.00	37.50	35.50	31.50	28.00	26.50	25.00
22.40	20.00	19.00	18.00	16.00	14.00	13.20	12.50	11.20	10.00
9.50	8.00	7.10	6.70	6.30	5.60	5.00	4.75	4.50	4.00
3.55	3.35	3.15	2.80	2.50	2.36	2.24	2.00	1.80	1.70
1.60	1.40	1.25	1.18	1.12	1.00				
µm									
900	850	800	710	630	600	560	500	450	425
400	355	315	300	250	224	212	200	180	160
150	140	125	112	106	100	90	80	75	71
63	56	53	50	45	40	38	36	32	25
20									

International test sieve series ISO 3310:2000 British standard sieve series BS 410:2000

Perforated plate series ISO 3310-2:1999 BS 410-2:2000 Nominal aperture sizes				Sieve diameters and frame materials			
mm	mm	µm		Diameter	Height	Depth to mesh or plate	Frame material
mm	mm	µm		mm		mm	
125.00	20.00	3.55		38.00	Full	19.00	Br or SS
112.00	19.00	3.35		100.00	Full	40.00	Br or SS
106.00	18.00	3.15		100.00	Half	20.00	Br or SS
100.00	16.00	2.80		150.00	Full	38.00	SS
90.00	14.00	2.50		200.00	Full	50.00	Br or SS
80.00	13.20	2.36		200.00	Half	25.00	Br or SS
75.00	12.50	2.24		250.00	Full	60.00	SS
71.00	11.20	2.00		300.00	Full	75.00	Br or SS
63.00	10.00	1.80		300.00	Half	40.00	Br or SS
56.00	9.50	1.70		315.00	Full	75.00	SS
53.00	9.00	1.60		350.00	Full	60.00	SS
50.00	8.00	1.40		400.00	Full	65.00	SS
45.00	7.10	1.25		450.00	Full	100.00	SS
40.00	6.70	1.18					
37.50	6.30	1.12					
31.50	5.60	1.00					
28.00	5.00						
26.50	4.75						
25.00	4.50						
22.40	4.00						



American standard sieve series ASTM E11:95

Sieve diameters and frame materials			
Diameter	Height	Depth to mesh or plate	Frame material
inches		inches	
3	Full	1-1/4	Br or SS
8	Full	2	Br or SS
8	Half	1	Br or SS
12	Full	3	Br or SS
12	Half	1	Br or SS
18	Full	3-1/2	SS

Wire mesh series Designation							
Standard	Alternative	Standard	Alternative	Standard	Alternative	Standard	Alternative
mm	inch or no.	µm	inch or no.	mm	inch or no.	µm	inch or no.
125.00	5.00	850	No. 20	12.50	1/2	45	No. 325
106.00	4.24	710	No. 25	11.20	7/16	38	No. 400
100.00	4	600	No. 30	9.50	3/8	32	No. 450
90.00	3-1/2	500	No. 35	8.00	5/16	25	No. 500
75.00	3	425	No. 40	6.70	0.265	20	No. 635
63.00	2-1/2	355	No. 45	6.30	1/4		
53.00	2.12	300	No. 50	5.60	No. 3-1/2		
50.00	2	250	No. 60	4.75	No. 4		
45.00	1-3/4	212	No. 70	4.00	No. 5		
37.00	1-1/2	180	No. 80	3.35	No. 6		
31.50	1-1/4	150	No. 100	2.80	No. 7		
26.50	1.06	125	No. 120	2.36	No. 8		
25.00	1	106	No. 140	2.00	No. 10		
22.40	7/8	90	No. 170	1.70	No. 12		
19.00	3/4	75	No. 200	1.40	No. 14		
16.00	5/8	63	No. 230	1.18	No. 16		
13.20	0.530	53	No. 270	1.00	No. 18		



MODEL TO-051

Particle Size Sieve Analysis

Tinius Olsen offers the following range of equipment for performing particle size analysis:

- APPLICABLE STANDARDS
- **ASTM D422; AASHTO T88**

Options

Aperture size(mm)	TO-051 (45cm dia)	TO-052 (30cm dia)
125.00	TO-05101	-
106.00	TO-05102	-
100.00	TO-05103	TO-05230
90.00	TO-05104	TO-05225
80.00	TO-05105	-
75.00	TO-05106	TO-05202
63.00	TO-05107	TO-05203
53.00	TO-05108	TO-05204
50.00	TO-05109	TO-05205
45.00	TO-05110	TO-05206
40.00	TO-05111	TO-05207
37.50	TO-05112	TO-05208
31.50	TO-05113	TO-05209
26.50	TO-05114	TO-05210
25.00	TO-05115	TO-05211
22.40	TO-05116	TO-05212
20.00	TO-05117	TO-05213
19.00	TO-05118	TO-05214

16.00	TO-05119	TO-05215
14.00	-	TO-05235
13.20	TO-05120	TO-05216
12.50	TO-05121	TO-05217
11.20	TO-05122	TO-05218
10.00	TO-05123	TO-05219
9.50	TO-05124	TO-05220
8.60	TO-05125	-
8.00	TO-05126	TO-05221
6.70	-	TO-05224
6.30	TO-05128	TO-05222
6.00	-	TO-05236
5.00	TO-05129	TO-05223
4.75	TO-05130	TO-05224
4.00	-	TO-05224-SI
3.35	-	TO-05226
2.80	TO-05131	TO-05233
3.36	TO-05132	TO-05232
2.00	-	TO-05237
Pan & cover	TO-05150	TO-05250



- ORDERING INFORMATION
- **TO-051** Sieve, GI frame of 45cm diameter
 - **TO-052** Sieve, GI frame of 30cm diameter

MODEL TO-339

Bulk Density, Voids and Bulking

The shape of aggregate particles is very important. This is because it affects the ease of handling the mixture of aggregate and binder, for example, the workability of concrete or the stability of mixtures that depends on the interlocking of particles. The bulk density and voids in between aggregates can be ascertained using Cylindrical Metal Measures.

- APPLICABLE STANDARDS
- **BS 812; ASTM C29, C138**

- ORDERING INFORMATION
- **TO-339** Bulk density apparatus
 - **TO-454** Measures, set of three

- SUPPLIED AS STANDARD
- **TO-45401** Measures, 3 liter
 - **TO-45402** Measures, 15 liter
 - **TO-45403** Measures, 30 liter
 - **TO-354** Steel tamping rod, 16mm dia

- OPTIONAL ACCESSORIES
- **TO-33901** Bulk density, 20 liter
 - **TO-33902** Bulk density, 10 liter
 - **TO-354** Steel tamping rod, 16mm dia
 - **TO-45401** Measures, 3 liter
 - **TO-45402** Measures, 15 liter
 - **TO-45403** Measures, 30 liter
 - **TO-45404** Measures, 7 liter



MODEL TO-445

Riffle Sample Divider

The Riffle Sample Divider consists of a metal box, fitted with a series of chutes of equal width, which discharge the material alternatively in opposite directions into separate pans. The chutes of the riffle are steep enough to allow rapid flowing of the material. Supplied complete with three containers.

APPLICABLE STANDARDS

- **BS 1377, 1924, 812; EN 932-1**

DIMENSION

- 910 x 530 x 1190mm (L x W x H)

ORDERING INFORMATION

- **TO-445** Riffle Sample Divider 13mm slot width, 14 slots, approx 2.1dm³ capacity
- **TO-446** Riffle Sample Divider 25mm slot width, 16 slots, approx 4.4dm³ capacity



MODEL TO-450

Determination of Flakiness and Elongation



Aggregates that 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 aggregates make for a harsh mix and may also crack and break up during compacting by rolling. The flakiness of aggregate is determined by measuring the thickness of individual particles. We offer both a thickness gauge and length gauge to check the flakiness index and elongation index of the aggregate respectively.

APPLICABLE STANDARD

- **BS 812**

ORDERING INFORMATION

- **TO-450** Thickness gage constructed from heavy gage sheet steel
- **TO-451** Length gage constructed from steel, mounted on a hardwood base

MODEL TO-453

Density Basket

Ruggedly constructed from galvanized wire mesh, 20cm dia x 20cm high (approximate).

APPLICABLE STANDARDS

- **ASTM C127; AASHTO T85**

ORDERING INFORMATION

- **TO-453** Density basket



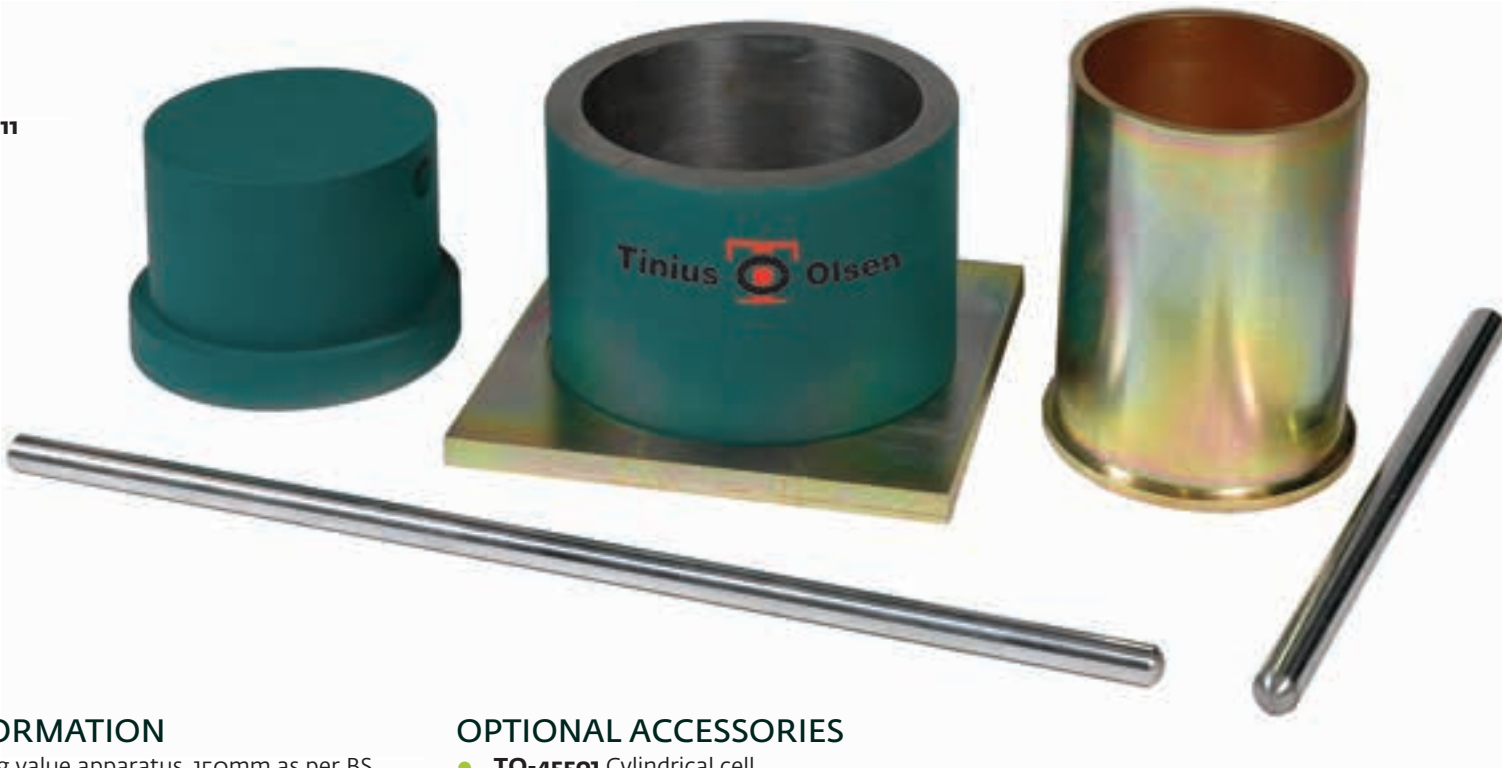
MODEL TO-455-BS

Crushing value equipment

This equipment is used for measuring the crushing resistance of an aggregate.

APPLICABLE STANDARDS

- **BS 812-110, BS 812-111**



ORDERING INFORMATION

- **TO-455-BS** Crushing value apparatus, 150mm as per BS

SUPPLIED AS STANDARD

- **TO-45501** Cylindrical cell
- **TO-45502** Plunger
- **TO-45503** Base plate
- **TO-45504** Tamping rod, 16mm dia, 600mm length
- **TO-45505** Metal measure

OPTIONAL ACCESSORIES

- **TO-45501** Cylindrical cell
- **TO-45502** Plunger
- **TO-45503** Base plate
- **TO-45504** Tamping rod, 16mm dia, 600mm length
- **TO-45505** Metal measure
- **TO-455-BS-1** Crushing value apparatus, 75mm

Standards Reference Listing

AASHTO			
Standard	Title	Equipment Reference	Page
E131	Test is used to determine the quantity of water required to produce a cement paste of 'standard' consistency	Vicat Apparatus	55
IP49	In this test, a chosen force is applied over a given area for a know period of time and the depth of penetration or the depression made in the sample is measured in tenths of a millimeter, which is expressed as a penetration number	Bitumen Penetration Kit	88
T22	Standard method of test for compressive strength of cylindrical concrete specimens	DG Series Semi Automatic Concrete Compression Testers	18
		FA Series Fully Automatic Concrete Compression Testers	8
T23	Making and curing concrete compression and flexural test specimens in the field	Curing Tank	34, 43
T49	Standard method of test for penetration of bituminous materials	Bitumen Penetration Kit	88
T51	Standard method of test for ductility of asphalt materials	Ductility Testing Machine	83
T53	Standard method of test for softening point of bitumen (ring-and-ball apparatus)	Softening Point – Ring and Ball Apparatus	81
T58	Test for determining bitumen percentage in bituminous paving mixtures	Centrifuge Extractor Apparatus	82
T71	Standard method of test for effect of organic impurities in fine aggregate on strength of mortar	Flow Table	48
T85	Standard method of test for specific gravity and absorption of coarse aggregate	Density Basket	76

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T88	Standard method of test for particle size analysis of soils	High Speed Stirrer	117
		Particle Size Sieve Analysis	72
T89	Test for determining the liquid limit of soils	Liquid Limit Device	89
T90	Standard method of test for determining the plastic limit and plasticity index of soils	Liquid Limit Device	89
T92	Standard method of test for determining the shrinkage factors of soils	Shrinkage Limit	115
T96	Standard method of test for resistance to degradation of small-size coarse aggregate by abrasion and impact in the Los Angeles machine	Los Angeles Abrasion Apparatus	64
T99	These methods of test are intended for determining the relation between the moisture content and density of soils compacted in a mold of a given size with a 2.5kg (5.5lb) rammer dropped from a height of 305mm (12in)	Automatic Soil Compactor	98
		Proctor Compaction Apparatus	119
T100	This method covers determination of the specific gravity of soils by means of a pycnometer	Pycnometer	116
T106	Standard method of test for compressive strength of hydraulic cement mortar	Flow Table	48
T107	Standard method of test for autoclave expansion of hydraulic cement	Cement Autoclave	47
		Volume Change Apparatus with Length Comparator	45
T126	Standard method of test for making and curing concrete test specimens in the laboratory	Consistometer	40
		Motorized Flow Table	31

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T129	Standard method of test for normal consistency of hydraulic cement	Vicat Apparatus	55
T134	Standard method of test for moisture density relations of soil-cement mixtures	Automatic Soil Compactor	98
		Proctor Compaction Apparatus	119
T135	Standard method of test for wetting-and drying test of compacted soil-cement	Automatic Soil Compactor	98
		Proctor Compaction Apparatus	119
T136	Standard method of test for freezing-and thawing tests of compacted soil-cement mixtures	Automatic Soil Compactor	98
		Proctor Compaction Apparatus	119
T137	Standard method of test for air content of hydraulic cement mortar	Flow Table	48
T152	Standard method of test for air content of freshly mixed concrete by the pressure method	Air Entrainment Meter – Type B	29
T153	Standard method of test for fineness of hydraulic cement by air permeability apparatus	Air Permeability Apparatus (Blaine type)	54
		Auto Blaine Apparatus	46
T160	Standard method of test for length change of hardened hydraulic cement mortar and concrete	Volume Change Apparatus with Length Comparator	45
T164	Standard method of test for quantitative extraction of asphalt binder from hot mix asphalt (HMA)	Centrifuge Extractor Apparatus	82

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Standard	Title	Equipment Reference	Page
T180	This method of test is intended for determining the relationship between the moisture content and density of soils when compacted in a given mold of a given size with a 4.54kg (10lb) rammer dropped from a height of 457mm (18in)	Automatic Soil Compactor	98
		Proctor Compaction Apparatus	119
T193	Standard method of test for the California Bearing Ratio	CBR Test Apparatus – Analog	101
		CBR Test Apparatus – Digital	104
		Triaxial Test Load Frame	91
T197	Standard method of test for time of setting of concrete mixtures by penetration resistance	Spring Type Concrete Penetrometer	41
T215	Standard method of test for permeability of granular soils (constant head)	Laboratory Permeability Apparatus (Falling Head)	120
T216	Standard method of test for one-dimensional consolidation properties of soils	Consolidation Apparatus – Analog	107
		Consolidation Apparatus – Digital	108
T217	This test is used to determine the moisture content of soils by means of a calcium carbide gas pressure moisture tester in the field. The tester is referred to as the “Speedy”	Speedy Moisture Meter	113
T231	Standard practice for capping cylindrical concrete specimens	Cylindrical Specimen Capping Equipment	44
T245	Standard method of test for resistance to plastic flow of bituminous mixtures using Marshall Apparatus	Automatic Compactor for Bituminous Mixes – Light Compaction	80
		Marshall Stability Test Machine – Analog	86
		Marshall Stability Test Machine – Digital	87
T256	Standard method of test for pavement deflection measurements	Benkelman Beam	84

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C31	Standard practice for making and curing concrete test specimens in the field	Beam Molds	33
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C39	Standard test method for compressive strength of cylindrical concrete specimens	DG Series Semi Automatic Concrete Compression Testers	18
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C78-02	Standard test method for flexural strength of concrete (using simple beam with third-point loading), beams, concrete, flexural strength testing	Cylindrical Molds	33
		Flexural Testing Machine	16, 26
C87	Standard test method for effect of organic impurities in fine aggregate on strength of mortar	Flow Table	48
C109	Standard test method for compressive strength of hydraulic cement mortars (using 2in or 50mm cube specimens)	Cement Molds	58
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		Flow Table	48

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C127	Standard test method for density, relative density (specific gravity), and absorption of coarse aggregate	Density Basket	76
C131	Standard specification for liquid membrane forming compounds having special properties for curing and sealing concrete, acid resistance	Los Angeles Abrasion Apparatus	64
C138	Standard test method for density (unit weight), yield and air content (gravimetric) of concrete	Bulk Density Measures	42
C141	Standard specification for hydraulic hydrated lime for structural purposes	Cement Autoclave	47
		Vicat Apparatus	55
C143	Standard test method for slump of hydraulic-cement concrete	Slump Cone Test	30
		Universal Penetrometer	78
C151	Standard test method for autoclave expansion of hydraulic cement	Cement Autoclave	47
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		Volume Change Apparatus with Length Comparator	45
C155	Standard classification of insulating firebrick	Cement Autoclave	47
C157	Standard test method for length change of hardened hydraulic-cement mortar and concrete	Volume Change Apparatus with Length Comparator	45

ASTM			
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C185	Standard test method for air content of hydraulic cement mortar	Flow Table	48
C187	Standard test method for normal consistency of hydraulic cement	Vicat Apparatus	55
C188	Standard test method for density of hydraulic cement	Cement Autoclave	47
C191	Standard test method for time of setting of hydraulic cement by Vicat needle	Vicat Apparatus	55
C192	Standard practice for making and curing concrete test specimens in the laboratory	Beam Molds	33
		Cube Molds	33
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C204	Standard test methods for fineness of hydraulic cement by air-permeability apparatus	Air Permeability Apparatus (Blaine type)	54
		Auto Blaine Apparatus	46
C213	Specification for alumina-silica castable refractories for boiler furnaces and incinerators	Air Entrainment Meter – Type B	29
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C230	Standard specification for flow table for use in tests of hydraulic cement	Flow Table	48

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C243	Standard test method for bleeding of cement pastes and mortars	Flow Table	48
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C348	Standard test method for flexural strength of hydraulic-cement mortars	Flow Table	48
C359	Standard test method for early stiffening of hydraulic cement (mortar method)	Vicat Apparatus	55
C403	Standard test method for time of setting of concrete mixtures by penetration resistance	Spring Type Concrete Penetrometer	41
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D558	Standard test methods for moisture-density (unit weight) relations of soil-cement mixtures	Automatic Soil Compactor	98
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D559	Standard test methods for wetting and drying compacted soil-cement mixtures	Proctor Compaction Apparatus	119
D560	Standard test methods for freezing and thawing compacted soil-cement mixtures	Automatic Soil Compactor	98
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D854	Standard test methods for specific gravity of soil solids by water pycnometer	Pycnometer	116
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D4944	Standard test method for field determination of water (moisture) content of soil by the calcium carbide gas pressure tester	Speedy Moisture Meter	113
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