



# Solutions for Construction Testing

Machines • Software • Calibration • Service



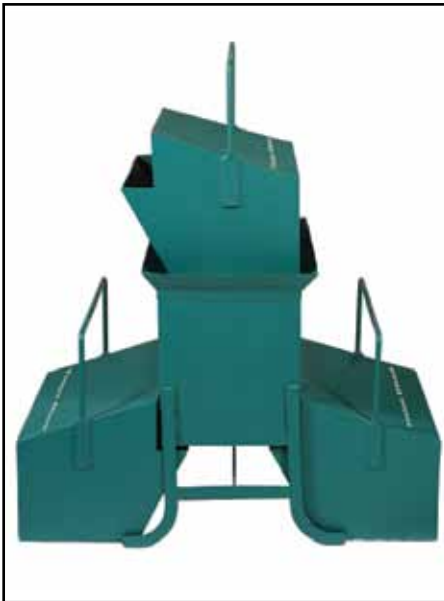


## Sand, Aggregate & Fillers

### **SAMPLING, PHYSICAL PROPERTIES**

For rapid collection of samples from aggregates, sand and fillers, a sample divider is required.

### **Riffle Sample Divider**



### ***System Description***

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***

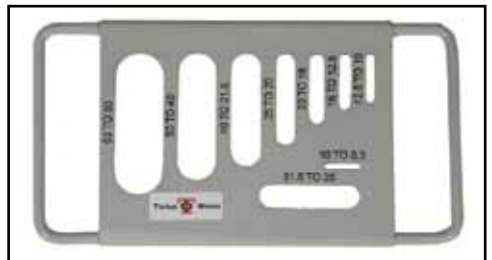
BS 1377, 1924, 812, EN 932-1

### ***Ordering Information***

TO-445 Riffle Sample Divider 13 mm slot width, 14 slots, approx 2.1 dm<sup>3</sup> capacity

TO-446 Riffle Sample Divider 25 mm slot width, 16 slots, approx 4.4 dm<sup>3</sup> capacity

### **Determination of Flakiness & Elongation**



## System Description

Aggregates that are flaky and/or elongated will often lower the work ability 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 flakiness index and elongation index of the aggregate respectively.

## Applicable Standards

BS 812

## Ordering Information

TO-450 Thickness Gauge Constructed from heavy gauge sheet steel

TO-446 Length Gauge Constructed from steel, mounted on a hardwood base.

## CRUSHING & GRINDING

### Laboratory Ball Mill



## System Description

This is primarily designed for grinding pigments and cement. Material is ground at a set speed using steel grinding balls for a predetermined length of time. The

system is configured for 415V 3 ph 50 Hz AC power but can be reconfigured to your requirements.

## Ordering Information

TO-441 Laboratory Ball Mill, 5 kg capacity

## Accessories

Recommended balls for ball mill  
Samples Number of Steel Balls

TO-44101 40 mm dia - 43 req'd

TO-44102 30 mm dia - 67 req'd

TO-44103 25 mm dia - 10 req'd

TO-44104 19 mm dia - 71 req'd

TO-44105 12.5 mm dia - 94 req'd

**Note** - above no of balls required for 5kg charge. Multiply number by 2 or 4 for 10kg or 20kg charges respectively.

## Jaw Crusher



## 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 6 mm opening.
- Supported with strong steel frame.
- Suitable for operation with 440 V, 3 ph, AC power (other voltages available)

**Ordering Information**

TO-442            415 VAC, 50Hz, 3ph  
 TO-442-SP       220 VAC, 50Hz, 1ph

**Pulveriser**



**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 having planetary movement in vertical plane.
- Suitable for operation with 440 V, 3 ph, AC power (other voltages available).

**Ordering Information**

TO-443            415 VAC, 50Hz, 3ph  
 TO-442-SP       220 VAC, 50Hz, 1ph

**GRAVITY AND WATER ABSORPTION**

**Density Basket**



**System Description**

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

**Applicable Standards**

ASTM C 127 & AASHTO T85

**Ordering Information**

TO-453 Density Basket

**Bulk Density, Voids and Bulking**

**System Description**

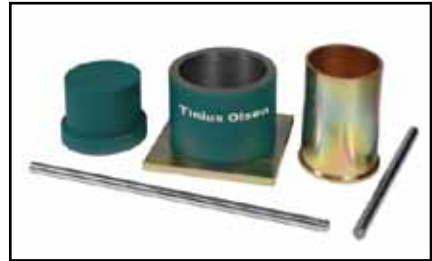
The shape of the particles of aggregate is very important. This is because it effects the ease of handling the mixture of aggregate and binder, for example, the work ability of concrete, or the stability of mixtures that depends on the interlocking of particles. The bulk density and voids in between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



## MECHANICAL PROPERTIES OF AGGREGATES

The selection of proper aggregate for a given application is essential to attain material Performance. The following mechanical tests are designed to meet this requirement.

### Crushing Value Equipment



### Applicable Standards

BS 312, ASTM C 29, C 138

### Ordering Information

TO-454 Measures (set of 3, 15, 30 litres)  
with TO 345 Tamping Rod  
TO-454-01 Measures, 3 Litres  
TO-454-02 Measure, 15 Litres  
TO-454-03 Measure, 30 Litres

### Bulk Density Measures

These are used to determine the unit weight of aggregates. The Bulk Density measures indicated in TO 339 can be utilized to do the test.

### Ordering Information

TO-33901 Bulk Density Measure, 20 Litres  
TO-33902 Bulk Density Measure, 10 Litres

### System Description

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

### Applicable Standards

BS 812-110, 111

### Ordering Information

TO-455 Crushing Value Equipment

### Accessories

TO-455-01 Cylindrical Cell,  $150 \pm 0.5$  mm ID x 130 to 140 mm height  
TO-455-02 Plunger,  $148 \pm 0.5$  mm diameter x 100 to 115 mm height  
TO-455-03 Base Plate, 200 to 230 mm square x 6 mm thickness  
TO-455-04 Tamping Rod, 16 mm diameter X 450 to 600 mm length  
TO-455-05 Metal Measure,  $110 \pm 0.5$  mm ID x  $180 \pm 0.5$  mm height

## Aggregate Impact Tester with Blow Counter



### **System Description**

This is used to determine the aggregate impact value and has been designed in accordance with ASTM and BS Standards. The sturdy construction consists of a base and support columns. These form a rigid frame work 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 + 5 mm. The hammer is provided with a locking arrangement.

### **Applicable Standards**

BS 812-112

### **Ordering Information**

TO-456 Aggregate Impact Tester with Blow Counter

### **Accessories**

TO-456-01 Cylindrical Cup

TO-456-02 Metal Measure 75 mm ID x 50 mm deep

TO-456-03 Tamping Rod

TO-456-04 Automatic Blow Counter

## Abrasion Testing

### **Los Angeles Abrasion Machine**



### **Key Features**

- European and ASTM methods
- Revolution counter
- Full width cover

### **System Description**

The Los Angeles Abrasion Machine comprises a heavy steel cylinder, rotated about its 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 Tinius Olsen Los Angeles Abrasion Machine's 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. Its is also Supplied with one set of abrasive charges as standard.

It is suitable for operation on 200 V, 50 Hz/110 V, 60 Hz, Single Phase AC supply.

### ***Applicable Standards***

ASTM C 131, C 535, EN 1097-2,  
AASHTO T96

### ***Ordering Information***

TO-458-1 Los Angeles Abrasion Machine

Model No + Electric Requirements Suffix

Example: TO-458-1-02

Where Suffix:

-01 - 110 VAC, 60 Hz, 1 ph

-02 - 220 VAC, 60 Hz, 1 ph

-03 - 220 VAC, 50 Hz, 1 ph

**Particle Size Analysis  
Sieve Analysis**

ASTM D 422, AASHTO T88

The analysis of soil by particle size provides a useful engineering classification system from which a considerable amount of empirical data can be obtained. This helps in ascertaining possible frost action, determining graded filters, selection of grouting materials, designing of cement and asphaltic concrete mixes etc.

Two different procedures are used for coarse and fine soils.

- Sieving is used for gravel as well as sand size particles.
- Sedimentation procedures are used for finer soils. For soils containing coarse and fine soil particles.

It is usual to employ both sieving and sedimentation procedures.

We provide the following range of equipment for performing particle size analysis:

- Sieves, GI Frame of 45 cm diameter
- Sieves, GI Frame of 30 cm diameter



Aperture Size (mm)	TO-051 (45 cm dia)	TO-052 (30 cm 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

## MOBILE LABORATORY

At Tinius Olsen we can also offer a complete mobile lab solution to the construction and civil engineering industry. Conceived with the rigorous

table, wooden shelving, steel sinks, and drain points.

- Standard door frame with aluminium door and fire exit.
- Concealed electrical wiring and outlets with single and three phase power.
- Optional facility to provide generator, based on load requirements.

### **Ordering Information**

Consult Tinius Olsen sales team for site specific order information



QC/QA requirements and need to have these on project locations, the mobile laboratory concept is quick and easy to install; these labs are not only configured with Tinius Olsen equipment but they can also accommodate equipment supplied by the End User on site. The novel use of retired shipping containers, rebranded by Tinius Olsen, is cost effective for our customers, supports efficient logistics and is environmentally friendly.

### **Key Features**

- Custom designed in 6 m (20 ft) or 12 m (40 ft) containers.
- Thermal insulation for all 4 sides and roof.
- Internal walls and roof covered with laminated pylon wooden frame with split air conditioning system.
- Working space equipped with lab work



## SOFTWARE

Tinius Olsen is proud to introduce you to the next evolution of testing software with our Horizon package. As part of our development process, we have taken the best features of our existing software offerings, including Test Navigator, QMat, EP600 and Impact software, added a host of report writing and data manipulation capabilities and in the process, we've created a new, unparalleled testing platform that will make easy work of your materials testing programs, whether they're designed for the demanding rigours of R&D or the charting and analysis functions of QC testing.

### **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 wKnowledge Center (requires Internet access)

One the first features you see within the Horizon software is

its use of the most current Windows environments. These familiar formats make it easy to use and learn, especially since the same familiar functionality is maintained throughout the program.

Horizon software can accept data from all manner of testing equipment, including, but not limited to, compression testers, Marshall tester, Speedy testers, Super L, etc. , and can take manual data entry from equipment such as the slump cone test, Vicat penetration test, Blaine apparatus, sieve grading results, consistometer etc. 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 take all these results and produce a consolidated testing report complete with your, and/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 and has future enhancements readily available as your testing needs change and grow. talk to your sales engineer to see how Horizon software can best suit your needs and wants.



## **CALIBRATION AND SERVICE SUPPORT**

Quality is our business. We understand that the quality of your product depends not only on the testing equipment that you purchase, but also on the quality and commitment of the support that stands behind that equipment.

Tinius Olsen has been manufacturing, calibrating and servicing physical testing equipment of the highest quality for decades. We have established an enviable record of reliability, by building highquality machines, encouraging customer programs of proper preventative maintenance and a trained field staff that are committed to maximizing equipment performance and longevity.

Our calibration equipment and software has been developed for the exclusive use of our calibration and service personnel, and it demonstrates our continuing commitment to your quality assurance and support needs. The software ensures our customers of our strict compliance with the requirements of the applicable ISO and ASTM standards. Our quality program has also been recognized and approved by companies in the aerospace, nuclear, steel, and other quality critical industries.

Tinius Olsen's calibration service is accredited in accordance with the International Standard ISO/IEC 17025:2005 by A2LA (American Association for Laboratory Accreditation) for our United States location and UKAS (United Kingdom Accreditation Service) for our Surrey, UK location for a variety of calibration standards.

A2LA and UKAS are signatories to the ILAC (International Laboratory

# SYSTEMS INTEGRATION

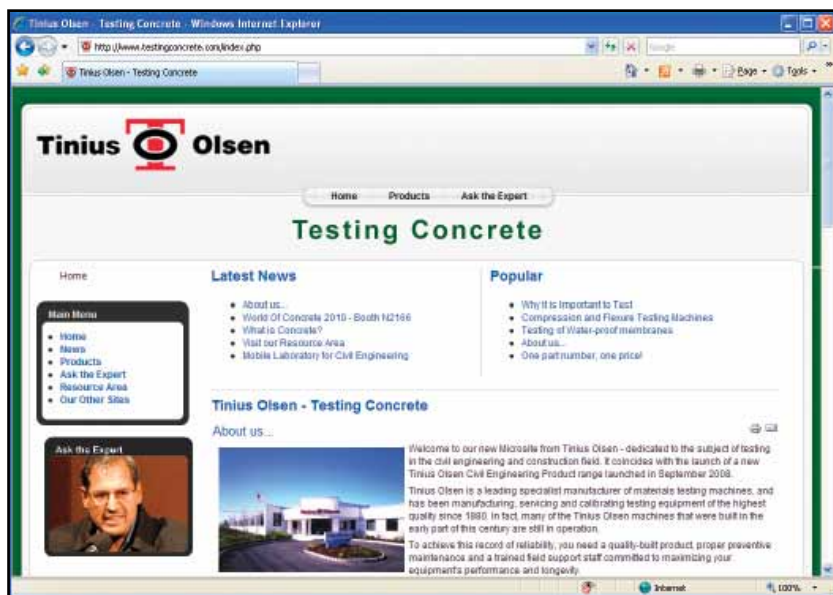
Accreditation Cooperation) Mutual Recognition Arrangement, whose aim is to develop international cooperation for facilitating trade by promoting the acceptance of accredited tests and calibration results from accredited laboratories by industry, as well as government, including results from laboratories in other countries. For a complete listing of our Accreditation Scopes, please check our website at [www.TiniusOlsen.com](http://www.TiniusOlsen.com) for more details.

We are also able to calibrate a variety of other manufacturers' tensile and compression equipment, as well as their extensometry and other instrumentation. This truly translates into one source for all your certification needs. Please check with your local representative for calibration and service capabilities.

In addition to equipment calibration and service capabilities, Tinius Olsen can help you with your application questions.

As one of the founding companies of the materials testing industry in the 19th century, we have a wealth of application experience and expertise. This knowledge base is available to everyone through our application based websites where users can ask questions of

our experts regarding their unique testing issues. Check the address below to see the kinds of questions and answers.



## **OTHER SYSTEMS FROM TINIUS OLSEN**

Tinius Olsen also manufactures other types of physical testing equipment that can be used by governmental or commercial civil engineering test labs and universities. Examples of these lines of equipment include, but are not limited to, benchtop materials testing machines, laser or video extensometers, high force electromechanical testers, impact testers, and drop dart testers,

### ***Benchtop Materials Testing Machines***

Tinius Olsen manufactures two key lines of benchtop testers, namely the S series and the T series. These machines are available in a variety of frame capacities, namely 1 kN (200 lbf), 5 kN (1,100 lbf), 10 kN (2,200 lbf), 25 kN (5,500 lbf), 50 kN (11,000 lbf) and 75 kN (16,500 lbf). The primary difference between the S series and T series is the display options; the T series is strictly controlled

by a PC and software, whereas the S series has a built in display which allows quick simple tests to be performed, in addition to being able to be controlled from a PC and software.

These machines are ideally

suited for the testing of geotextiles, waterproof membranes, sealants, tiles, insulation material and other kinds of plastic materials.



### ***High Force Electromechanical Testers***

Tinius Olsen has several options available in this category of tester, namely the LoCap series, the U series or the Electomatic series. These machines each have their own unique place in the market and are perfectly suited to a wide variety of applications and budgets.



### ***Extensometry***

For those demanding applications where long travel or elevated temperature





testing is being used, Tinius Olsen has a couple of solutions to offer. The first one is a laser extensometer and the other is a video extensometer; both are non-contact methods and suited to a wide range of temperature limits and can still maintain extremely high accuracy.



## ***Impact Testing***

Tinius Olsen can offer pendulum impact testers capable of performing either Charpy or Izod impact tests at a variety of capacities, namely 2J, 25J, 50J, 406J or 542J; ideal for testing plastic or metallic specimens.

The higher capacity pendulum impact testers can be motorized to allow safer and quicker testing.

## ***Drop Dart Testers***

Ideally suited for the rapid testing of plastic sheet or geotextile materials. The systems work on a simple concept where a the height at which a defined falling weight penetrates the clamped specimen.

These systems represent just a part of the product offerings from Tinius Olsen. Be sure to check with your local representative about all the appropriate products from Tinius Olsen for your applications.





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