

# GEO-Synthetic & GEO-Textile Testing Instruments

- for*
- Traffic, Water conservancy, Tunnel Construction
  - Road & Bridges Constructions
  - Erosion Control
  - Soil Stabilization
  - Slops Stability
  - Thermal Insulation
  - Filtration, Drainage & Separation Application



**EIE INSTRUMENTS PVT. LTD.**  
(An ISO 9001:2015 Certified Company)



# Geotextile Universal Testing Machine

(GT-111TSG/GT-111TIG/GT-111THSG/GT-111THIG)

## Compliance Standards

ASTM D4632, ASTM D4833, ASTM D6241, ASTM D4533, ASTM D4595

## Applications : Used in

- Traffic, Water conservancy, Tunnel Construction
- Road & Bridges Constructions
- Erosion Control
- Soil Stabilization
- Slops Stability
- Thermal Insulation
- Filtration, Drainage & Separation Application

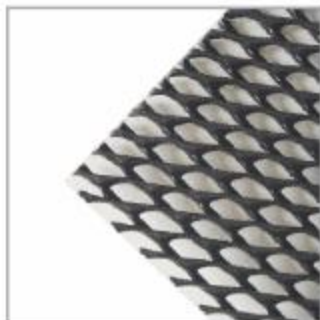
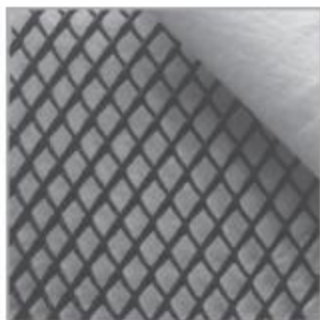
## Technical Specifications

Type of System	Servo Controlled Model	Induction Controlled Model
Type of machine	Floor standing model	Floor standing model
Horizontal clearance	400-450 mm	400-450 mm
Vertical clearance	1000 mm	1000 mm
Total cross head travel (Excluding grips)	700 mm	700 mm
Motor	Servo Motor	Induction Motor
Motor capability	3 KW/5 KW	3 KW/5 KW
Speed range	0.001 mm/min to 450 mm/min	10 mm/min to 350 mm/min
Speed variation	Dedicated SERVO DRIVE	Variable AC Frequency drive
No of load cells	02 Nos	02 Nos
Load cell least count	0.01 kn & 0.1 kn respectively	0.01 kn & 0.1 kn respectively
Encoder	Elongation indication, 2500 PPR	Elongation indication, 2500 PPR
Elongation least count	0.01 mm	0.1 mm
Controlling system	PLC Controller & 7" HMI Touch screen	Microprocessor based LCD Controller
Indication parameter	<ul style="list-style-type: none"> <li>• Maximum Load</li> <li>• Current Load</li> <li>• Breaking Load</li> <li>• Maximum Elongation</li> <li>• %Elongation</li> <li>• Elongation @ Break</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum Load</li> <li>• Current Load</li> <li>• Breaking Load</li> <li>• Maximum Elongation</li> <li>• % Elongation</li> <li>• Elongation @ Break</li> </ul>
Unit selection	N, KN, KGF, LBF, TONE	N, KN, KGF, LBF, TONE
Exterior structure	<ul style="list-style-type: none"> <li>• High grade steel</li> <li>• Robust machine frame</li> <li>• High stiffness</li> <li>• Column protection over total traverse stroke</li> </ul>	<ul style="list-style-type: none"> <li>• High grade steel</li> <li>• Robust machine frame</li> <li>• High stiffness</li> <li>• Column protection over total traverse stroke</li> </ul>
Paint	Powder coating paint	Powder coating paint
Power supply	440 volts, 50 hz, 3-phase, AC Supply	440 volts, 50 hz, 3-phase, AC Supply



**Load Cell capacity:** Different capacity models are available as per following table. The rigidity and stiffness of design structure of the frame varies based on the load cell capacity. Select the one which best suits to your needs.

Type of model	Load cell capacity	Servo Controlled System Model No.	Induction Controlled System Model No.
Twin column floor standing structure (Two Load Cell Model)	5kn & 50kn	GT-111TSG5/50	GT-111TIG5/50
Twin column floor standing structure (Two Load Cell Model)	5kn & 30kn	GT-111TSG5/30	GT-111TIG5/50
Twin column floor standing structure (Three Load Cell Model)	0.5kn, 30kn & 50kn	GT-111THSG0.5/30/50	GT-111TIG0.5/30/50



#### Supplied with following Fixtures

- 1 Grab Test fixture
- 2 Index puncture test fixture
- 3 CBR Puncture test fixture (Using 50mm Probe)
- 4 Trapezoid tear test fixture
- 5 Wide width tensile test fixture

- Supplied complete with Dedicated PC Software and RS-232 Interface Cable.
- Available in both-Servo Motor/Induction motor version.





## Constant Head Geotextile Permeability Test Apparatus (GT-101CF)

### Compliance Standards

ASTM D4491, IS : 14324, EN ISO 11058

### Applications:

These test methods cover procedures for determining the hydraulic conductivity (water permeability) of Geo Textiles in terms of permittivity under standard testing conditions, in the uncompressed state (No Load condition)

### Comprises of Following Parts and accessories

- Main working unit mounted on Table Top Bench with back support
- Upper & Lower unit made of Transparent acrylic material, which are fastened together
- Geo textile specimen holder assembly between Upper & Lower unit
- Inlet and outlet valves with PVC Pipe network
- Head differential measurement arrangement mounted on a stand
- Manual observation of quantity of flow (in case of Constant Head Test) and Head change (In case of Falling Head Test)
- Supplied complete with Calibration disc

### Technical Specifications

- Can hold specimen : 50 mm
- Head differential scale : 150 x 0.2mm

### List of essential accessories

1. Digital Stop watch
2. Dissolved oxygen meter
3. Low temperature circulating chiller – GT-101CF.1
4. De-Airing System With Vacuum Pump - GT-101CF.2

## Falling Head Geotextile Permeability Test Apparatus (GT-101F)

### Compliance Standards

ASTM D4491, EN ISO 11058

### Governing principle

A column of water is allowed to flow through the geo textile and reading of head changes versus time is taken. The flow rate of water through the GEO textile shall be slow enough to obtain accurate readings.

### Comprises of Following Parts and accessories

- Vertical permeability tester with pressure differential method to determine falling head loss.
- Automatic head change determination using continuous Fluid level sensor & Dedicated HMI touch screen controller
- Equipped with solenoid valve at drain for complete automatic operation
- Automatic calculation as per ASTM D4491, EN ISO 11058
- Main working unit mounted on Table Top Bench with back support
- Upper & Lower unit made of Transparent acrylic material, which are fastened together
- GEO-textile specimen holder assembly between Upper & Lower unit
- Inlet and outlet valves with PVC Pipe network



### List of Essential Accessories:

1. R.O. Water, having  $\leq 6$  ppm dissolved oxygen content
2. Dissolved Oxygen Meter
3. Digital Stop Watch
4. De-airing system with Vacuum arrangement



# Effective Apparent Opening Size Tester (GT-102RD)

## Compliance Standards

ASTM D4751, BS 6906 (Part 2), IS 14294, EN ISO 12956

## Purpose

A Geo-Textile specimen is placed in a sieve frame, and sized glass beads are placed on the Geo-Textile surface. The Geo-Textile and frame are shaken laterally so that the jarring motion will induce the beads to pass through the test specimen. The procedure is repeated on the same specimen with various size glass beads until its apparent opening size has been determined.



## Details of complete Set-Up

The complete test set up essentially requires

1. Ro-Tap Sieve Shaker (GT-102RD)
2. Spherical Glass Beads (GT-102RD.1)
3. Fine sieves for Glass Beads Separation (GT-102RD.2)
4. Sieve set for supporting Geotextile Fabric (GT-102RD.3)
5. Rubber clamping arrangement for Geotextile Fabric (GT-102RD.4)
6. Electronic Balance

## Construction details of Ro-Tap Sieve Shaker

- Robust & Heavy design
- Make process of sieving simple and quicker
- Doesn't require special foundation
- Shaking in both the direction
- Tapping action from the top

- Accurate & dependable results
- The mechanism for imparting, circular action and tapping action, is permanently lubricated in a tank and is motorized.
- The shaker can accommodate up to 7 Nos Sieves of diameter 200mm (7 nos sieves + 1 set of Lid-Pan).
- Fitted with Digital time switch adjustable from 1-99 minutes.
- Comes with optional "Noise Reduction Cabinet".
- Suitable for operation on 230 volts, 50 Hz, single phase, AC Supply

## Physical data of the machine

- Height : 960 mm approximately
- Length : 485 mm approximately
- Width : 610 mm approximately
- Unpacked weight : 151 kg approximately



## Spherical Glass Beads (GT-102RD.1)

### Compliance Standards

ASTM D4751, BS 6906 (Part 2), IS 14294

### Details

- Glass bead for Apparent Opening Size (AOS) Test
  - Covers the ASTM Mesh sizes from #18 to #140
  - Size in Microns : Each of 2 kgs as per following designation will be supplied.
1. 90 (Passing) - 150 (Retention) microns : 2 kgs
  2. 125 (Passing) - 106 (Retention) microns : 2 kgs
  3. 180 (Passing) - 150 (Retention) microns : 2 kgs
  4. 250 (Passing) - 212 (Retention) microns : 2 kgs
  5. 355 (Passing) - 300 (Retention) microns : 2 kgs
  6. 500 (Passing) - 425 (Retention) microns : 2 kgs
  7. 710 (Passing) - 600 (Retention) microns : 2 kgs

## Characteristic Opening Size Apparatus

(Wet Sieve Opening Size Tester)  
(GT-102EMW)

### Compliance Standards

EN ISO 12956

### Application

To determine the characteristic opening size of a Single layer geotextile or geotextile related products, using the wet sieving principle.

### Working Principle

A quantity of graded granular material is spread on the surface of the Geotextile and washed through with water. The geotextile acts as a sieve and the graded granular material, which as soil, passes through the geotextile and is analyzed for available characteristic opening size in geotextile.

### Salient Features

1. Suitable to test various geotextile and geotextile related products.
2. Consists of Electromagnetic sieve shaker, Characteristic opening size frame, Spray nozzle, flow control valve as per EN ISO 12956
3. Equipped with spray nozzle to ensure even wetting of the test specimen
4. Equipped with Flow control valve and water Pump arrangement
5. The specimen is placed on the metal grid to avoid excessive deformation of the specimen under the weight of the granular material.
6. Vibrating time is adjustable
7. Digital display of time & amplitude

### Note

End user shall have Stop watch, Balance, Drying Oven and Filter paper to perform the entire experiment, which can be procured at extra cost.



### Technical Specifications

- Clamp holder size : 130 mm Dia
- Vibrating frequency : 50 Hz
- Vibrating amplitude : 0.5 to 3.0 mm
- Jet (Water) pressure : 300 kpa
- Water flow rate : 0.5 liters/min
- Timer Range : 0-99.99 Minutes
- Aperture of support screen :  $10 \pm 1$  mm
- Weight : 100 kgs
- Power Supply : 230 Volts, 50 Hz, Single Phase, AC Supply



# Cone Drop Test for Geo-Synthetic (Dynamic Perforation Tester) (GT-103ISO)

## Compliance Standards

EN ISO 13433 (2006), BS 6906 (Part 6)

## Application

Mainly used to measure the puncture strength as well as the fabric quality to withstand aggregate penetration.

## Details

EIE - Cone drop tester specifies a method to determine the resistance of Geosynthetics to penetration by a steel cone dropped from a fixed height. The degree of penetration is an indication of the behaviour of the Geosynthetic, when sharp stones are dropped on its surface. The smaller the hole, the greater the resistance of geosynthetic/geotextile to damage and vice versa.

The specimen is clamped between two steel rings. A steel cone (45° tip angle, 1000 g) is dropped from a height of 500 mm onto the centre of the specimen. The degree of penetration is measured by insertion of a graduated cone into the hole. Graduated conical measure will be the part of standard supply.

## Technical Specifications

- Internal diameter of Clamping : 150 ± 0.5mm
- Drop Height : 500 ± 2mm
- The angle of Brass cone : 45 degree
- The weight of Brass cone : 1000 ± 5g

## Optional Accessories At Extra Cost

Electrical arrangement to release the cone automatically



# Dead Weight Type Digital Thickness Gauge-2 KPA (GT-104DI220)/(GT-104DM220)

## Compliance Standards

ASTM D5199, IS 13162 (Part-3), ISO 9863-1

## Applications

- Suitable to measure Thickness of Geotextile, Geocomposite, Geonets & HDPE Geomembrane etc.

## Simple to operate

- Dead-weight type
- Simple to operate
- Simple mechanism to apply desired foot pressure varying from 0 to 2 kPa
- Surface plate is grounded and is rust free to enable reproducible results.

## Salient Features

- Mounting : Self-Standing table top
- Anvil Type : Flat
- Range : 0-10 mm
- Resolution : 0.001 mm (1 micron)
- Accuracy : ± 5 µm
- Tip : Steel/Ceramic
- Dial Type : Digital
- Power : Button cell for digital sensor
- Digital gauge make : INSIZE/MITUTOYO/REPUTED Make
- Lifting Lever : Manual Lifting Lever (Press to open, release to measure)

Sr. No.	Pressure Foot	Applied Load(Kpa)	Application
1	6.35 mm	2 ± 0.01	For Laboratory measurement of Geotextile & Geomembrane
2	10 mm	2 ± 0.01	For Laboratory measurement of HDPE Geomembrane.

# Dead Weight Type Digital Thickness Gauge-20 & 200 KPA (GT-104DI200)/(GT-104DM200)



## Compliance Standards

ASTM D5199, ASTM D 5199, BS EN 964, ISO 9863, ASTM D1777-99

## Applications

- To control the physical properties of Geotextile and Geosynthetic Material.

## Salient Features

- Dead-weight type load applicator mechanism
- Makes complex operation simple using Load ratio
- Simple mechanism to apply desired foot pressure varying from 20 to 200 kPa
- Counter weight to maintain the equilibrium

## Salient Features

- Mounting : Self-Standing table top
- Anvil Type : Flat
- Range : 0-10 mm
- Resolution : 0.001 mm (1 micron)
- Accuracy :  $\pm 5 \mu\text{m}$
- Tip : Steel/Ceramic
- Dial Type : Digital
- Power : Button cell for digital sensor
- Digital gauge make : INSIZE/MITUTOYO/REPUTED Make
- Lifting Lever : Manual Lifting Lever (Press to open, release to measure)

Sr. No.	Pressure Foot	Applied Load (Kpa)	Application
1	56.4 mm	20, 200 $\pm$ 0.1	Shall be used for measurements of Geotextiles, Geo-composite drainage material and Geo-nets.

# Color Matching Cabinet (GT-105A)

## Salient Features

- Standardized and controlled lightening conditions
- Wide Viewing Area
- High Quality Light sources used.
- Equipped with "Philips" Make - 05 Different light sources
- Supported by "Philips" Electronic Ballast.
- Separate Rocker Switch for each light source
- Also, equipped with "Hour Meter" Which shows total usage of light sources in hours
- Supplied complete with instruction manual
- Standards: ISO 3664, BS 950, ASTM D 1729, DIN 6173

The equipment is fitted with FIVE Light Sources as per CIE International Standards

- D - 65 : Artificial daylight : 02 Nos : 6500 degree K
- TFL : Tungsten Filament : 02 Nos : 2300-2800 degree K
- TL - 84 : Light Point of Sale : 02 Nos : 4000 degree K
- UVB : Ultra Violet : 01 No
- CWF : Cool white fluorescent : 01 No : 4100 degree K
- Angle of viewing booth : 45 degree
- Viewing Booth Material : Wood or Steel





# In-Plane Permeability Test Apparatus

(Horizontal Permeability) (GT-106)



## Compliance Standards

ASTM D4716, BS EN ISO 12958

## Principle

To determine horizontal permeability (In-Plane Water flow rate) of Geo-Synthetic Material under constant water flow conditions.

## Test Method Summary

The flow rate per unit width is determined by measuring the quantity of water that passes through a test specimen in a specific time interval under a specific normal stress and a specific hydraulic gradient. The hydraulic gradient(s) and specimen contact surfaces are selected by the user either as an index test or as a performance test to model a given set of field parameters as closely as possible. Measurements may be repeated under increasing normal.

## Details about the Apparatus

- A sturdy metal base with smooth & water tight flat bottom and sides capable of holding a test specimen.
- In flow ACRYLIC/GLASS Reservoir tank of 100-200 liters capacity with provision of maintaining constant water level
- Loading mechanism (Electro-Mechanical) to apply constant normal compressive stress in the range from 10-600 KPA
- Out flow ACRYLIC/GLASS Reservoir tank of 100-200 liters capacity with a rectangular weir
- Refrigerated chiller/waterbath to maintain water temperature at  $21 \pm 2^\circ\text{C}$
- De-airing system to supply de-aired water to the entire flow assembly
- Outflow collection tank (Discharge from the specimen collection tank)
- Rubber substrate of adequate thickness and size to model soil adjacent to Geo-synthetic material
- Inlet and outlet Pressure transducer to measure
- Open channel steel calibration block

## Technical Specification

- Test specimen thickness :  $\leq 50\text{mm}$
- Thickness of rubber sheet : 10, 15, 20, 25mm
- Normal pressure : 0~600Kpa, adjustable
- Normal pressure accuracy :  $\pm 2\%$
- Normal pressure resolution : 5Kpa
- Range of head loss : 0~400mm, continuously adjustable
- Accuracy of head loss :  $\pm 1\text{mm}$
- Inflow reservoir specification : 805mm height x 370mm in width with the scale of 0~400mm
- Outflow reservoir specification : 165x370mm (HxW)
- Volume of water storage tank : 120 Liters
- Height of Weir : 100 mm

# Computerized Digital Direct Shear Test Apparatus for Geotextile (GT-107DPC)

## Compliance Standards

ASTM D5321



## Applications

This test method covers a procedure for determining the shear resistance of a Geosynthetic against soil, or a Geosynthetic against another Geosynthetic, under a constant rate of deformation.

## Salient Features

- Tactfully Designed Computerized model with Stepper/Servo Motor controlled system.
- Hard Chrome Plated essential internal components.
- Shear box made from Complete S.S. Material.
- Linear bearing for minimum horizontal friction.
- Can apply horizontal shear and vertical load capacities of 50 kN.
- Tests large soil, geosynthetic or Soil/Geosynthetic samples unto 12 inches (305 mm) square.
- Built in electronics, Touch screen HMI & PLC Controller to control test and display data in real time.
- Facility to select measurement units i.e. KN, KG
- Pneumatic Loading system for application of vertical load (Shear Load).
- Precisely controls pneumatic piston for vertical application of loads.
- Precise and accurate control through electronic system coupled with PC Software.
- Facility to start or stop the entire experimental process from software itself.
- User can control and vary the strain rate (Motor Speed) from the software itself.
- Easy handling of readings and Graphs data.
- User friendly software guide.
- Suitable for operation on 415 volts, 50Hz, 3 phase, A.C. Supply.

## Supplied complete with following hardware

1. Shear Box assembly for square specimen size 30 x 30 x 15 cm - 01 Nos
2. Shear Box housing, large, complete with two ball roller strips - 01 Nos
3. Plain gripper plates - 02 Nos
4. Perforated Gripper Plates - 02 Nos
5. Perforated Spacer Plates - 02 Nos
6. Base Plate - 01 Nos
7. Loading Pad - 01 Nos

## Supplied complete with following electronic components

1. Load cell 50 KN capacity (Tension/Compression) - 02 Nos.
2. Displacement transducers  $\pm 100$  mm - 02 Nos.
3. A four channel touch screen HMI & PLC Controller - 01 No.
4. Dedicated PC software with RS-485 Communication cable - 01 No

In addition to other components like shear box assembly, Gripper assembly, porous stones, plain grid plates, perforated grid plates, loading pads, specimen cutter, set of weights, shear box housing, loading unit as per the conventional instrument, the Electronic Digital Direct Shear Machine is fitted with following additional electronics components.



# Gradient Ratio Test Apparatus

## ASTM D5101 (GT-108M)

### Compliance Standards

ASTM D3776, ASTM D5261

### Details of apparatus

- Soil Geotextile Permeameter (three piece unit) 100mm Equipped with support stand, Soil Geotextile support screen
- Piping barriers (caulk), clamping brackets, and plastic tubing Fig. 2 of ASTM D5101
- Two Constant Water Head Devices, one mounted on a jack stand (adjustable) and one stationary Fig. 3 of ASTM D5101
- Soil Levelling Device
- Manometer Board, of parallel glass tubes and measuring rulers
- Two Soil Support Screens, of approximately 5 mm (No. 4) mesh
- Soil Support Cloth, of 150  $\mu$ m (No. 100) mesh
- Algae Inhibitor/Micro screen
- 150  $\mu$ m Mesh Screen, (No. 100) for manometer ports
- Wooden rod - 20 mm (3/4 in.) dia x 150 mm (6 in) long

### Optional accessories at extra cost

1. Thermometer (0 to 50  $\pm$  1  $^{\circ}$ C)
2. Graduated Cylinder, 100  $\pm$  1 cm<sup>3</sup> capacity
3. Stopwatch
4. Electronic Balance 2 kg x 0.1 Gram
5. Carbon Dioxide, (Co<sub>2</sub>), gas cylinder and regulator
6. Water Recirculation System
7. Water De airing System
8. Soil Sample Splitter
9. Pan, for drying soil
10. Mortar and Pestle, for pulverizing soil



# Melt Flow Index Tester (GT-109)

### Compliance Standards

ASTM D1238, IS 2530

### Applications

The Melt Flow Index Test measures the rate of extrusion of a Thermoplastic material through orifice of Specific Length and Dia under prescribed conditions of temperature and pressure.

### Salient Features

- Temperature range : 0 to 400 $^{\circ}$ C
- Temperature resolution : Up to 0.1 $^{\circ}$ C
- Temperature accuracy :  $\pm$  0.1% F.S.D.
- Digital Timer Range : 0 - 999.9 Seconds with buzzer output
- Dead Weights : 1.2, 2.16, 3.8, 5 & 21.6 kg chrome plated weights
- Power supply : 230 volts, 50 Hz, Single Phase, AC Supply
- Standard accessories : Orifice, Piston, Material charger, Barrel Cleaner, Orifice cleaner, Sample cutter



### Selection Guide

Type of model	Model No	Sample Cutting	Sample Weighing	Reading Calculations
Basic Model	GT-109MCMW	Manual	Manual	Manual
Advanced Model	GT-109ACMW	Automatic	Manual	Manual
Premium Model	GT-109ACAW	Automatic	Automatic	Automatic

A : Automatic | C : Cutting | M : Manual | W : Weighing

# Abrasion Resistance Testing Machine for Geotextile

## ASTM D4886 (GT-110)



### Compliance Standards

ISO 13427, ASTM D4886, IS 14714, Annex B of IS 16653

### Applications

Geotextile Abrasion Resistance Tester is used to determine the resistance of geotextile or geotextile-related products to abrasion using an abrasion tester by Sand Paper/Sliding Block Method. It is only applicable to geotextile, not to geomembranes, geogrids. A predetermining electro-magnetic counter allows the sample to be abraded to the desired number of strokes.

### Technical Specification

- Upper/Lower Plate size : 50 × 200 mm
- Stroke length : 90 Cycles/Minute
- Speed of reciprocating plate: 25 ± 1 mm
- Weight (Including the upper plate & dead weight) : 6 ± 0.01 kg
- Counter range : 1~9999, 1~99990, 1~999900 - Settable
- Power Supply : 230 Volts, 50 Hz, Single Phase, AC Supply

# Direct Reading GSM Balance

## (Grammage Tester) (EIE-GSM-203)

### Compliance Standards

ASTM D3776, ASTM D5261

### Electronic Grammage Tester (Microcontroller Based)

- Digital Quadrant Scale is intended for measuring the GSM of paper and other sheet materials by weighing a small test sample with given dimensions. The GSM of the specimen is being displayed directly on digital panel

### Applications:

- To check Transport worthiness of packages
- It simulates the vibrations & jolts subjected to various packages during transportation.

### Salient Features:

- Covered with transparent shield
- Stainless Steel tearing templates
- Displays direct weight in GSM in two range : 20 X 25 cm<sup>2</sup> and 10 X 10 cm<sup>2</sup> templates
- Accuracy : 0.1 GSM
- Measuring range: 200 gm/m<sup>2</sup>





# Carbon Black Content Tester

(GT-112PD)



## Compliance Standards

ASTM D 1603, ASTM D297, IS 4984, IS 2530, ISO 6964 , IS 17216

### Introduction:

This test method is used to determine the average carbon black content in materials like plastic pipes, films, sheets, cables, water tanks. The test is often used as a quality control measurement for black polyolefin. This is particularly more effective in polyolefin and polyethylene.

### Brief Construction Details:

- Consists of a tubular furnace fabricated using mild steel.
- Exterior body is powder coated in attractive shades.
- The temperature of the furnace can be adjusted from ambient to 950° C working temperature.
- Relatively low operating wattage of the heater ensures that the furnace life span is much better.
- The heaters are made from best quality alloys to avoid premature fusions.
- Temperature is controlled by Programmable (8/16 channels) Digital PID Temperature Indicator cum Controller with built in rate-of-rise device function to practically avoid any over-shoots and under-shoots & to offer better temperature stability.
- Equipped with a nitrogen flow meter (Rotameter) and a full set of glass parts.
- Rotameter is adjusted such that it will provide the nitrogen flow rate of  $1.7 \pm 0.3$  Liters/Min only as per the test requirements.
- Complete instrument will be supplied with wooden supporting back rack with clamp attachment to hold the glass parts firmly during the experiment.

### Standard Accessories inclusive with main unit

- 1 Quartz tube/boat
- 2 'U' tube with stand
- 3 Gas flow meter (Rota meter)
- 4 Rubber cork
- 5 Spirit level
- 6 Leveling bolt
- 7 Desiccator
- 8 Two pyrolisite collecting wash bottle with trap and stand with fitting for above items
- 9 Boat puller/pusher
- 10 Tongs
- 11 Gloves
- 12 A heat resistant boat Lander
- 13 Spanner to tight the clamps
- 14 Back supporting UPVC/Wooden rack

# Carbon Black Dispersion Tester

(GT-113PD)



## Purpose:

The dispersion of carbon is as similar to its content. The unbalanced dispersion of carbon causing cracking or crazing in material. The satisfactory dispersion of carbon presenting the best processing techniques of homogenous mixing. EIE - Carbon Black Dispersion Test Apparatus is mainly used for the determination of carbon black dispersion. It finds wide application in the plastic industry.

## Test Standard:

The instrument is manufactured as per IS 4984 & IS 4985 standards. The complete experimental set up includes - Digitally controlled hot plate with 8" diameter top and on/off switch, projection microscope with 6" diameter screen, built-in variable halogen lamp, light with special rack & pinion and mechanical arrangement.

## Salient Features:

- Hot plate comfortably accommodates sample.
- Highly accurate microscope provides magnification of 100X and 450X.
- Temperature can be adjusted as per requirement.
- The hot plate retaining S.S. cast plate for better heat distribution makes thermal equilibrium of glass slides.
- The tong makes very easy migration of slides from hotplate to microscope.
- Easy experimental set up
- Supply with essential chemicals and handy tools for operator comfort.

## Technical Specifications of Microscope

- |                     |                                       |
|---------------------|---------------------------------------|
| 1 Magnification     | : 100X, 450X                          |
| 2 Light source      | : halogen lamp 6-12 Volt, 50Watts     |
| 3 Screen            | : 6" (Inches)                         |
| 4 Paint             | : Powder coating in attractive shades |
| 5 Operating Voltage | : 230 Volt, 50 Hz, AC Supply          |

## Technical Specifications of Hot Plate

- |                          |                                       |
|--------------------------|---------------------------------------|
| 1 Power                  | : 1 kw                                |
| 2 Temperature range      | : From ambient to 200 °C              |
| 3 Paint                  | : Powder coating in attractive shades |
| 4 Controlling method     | : Digital Temperature Controller      |
| 5 Operating Voltage      | : 230 Volt, 50 Hz, AC Supply          |
| 6 Top plate of Hot plate | : Made of Stainless Steel Material    |



# Drop Impact Tester for Geomembrane & Geosynthetic (GT-115FH)



## Compliance Standards

Annex C of IS 17374 , Annex C of IS 15351

## Applications

For the purpose of determination of impact failure load for geosynthetics fabrics

## Specification :

- Height of fall : 660 mm, 1524 mm
- Height adjustment : Manual (Hand operated)
- Dart Shaft : Consists of 38.1 mm diameter hemispherical head fitted with 6.4 mm diameter shaft 11.5 cm long, to accommodate removable mass.
- Hemispherical heads : 38.10 mm ( $\pm 0.13$  mm), SS Material: 01 Nos,
- Aluminum: 01 Nos, Phenolic : 01 Nos
- Max dia of test sample : 315 mm
- Material of striker : M.S (Chrome Plated)
- Shaft : Made of aluminum with 12.7 mm long steel tip at the end
- Counter : Digital counter for counting the no. of falls in single test
- Weight of striker : 3000, 1000 & 500 grams - 01 No each  
300, 200, 100 grams - 02 Nos each
- Weights dimensions : 8-10 cm diameter, 1 cm thickness, hole dia 0.65 cm
- Release mechanism : Pneumatically release mechanism supporting 3 Kgs of weight with a centering device to ensure reproducible drop
- Specimen clamping : Pneumatically Operated Clamps have been used to hold Film.
- Paint : Powder coating.

# Hydrodynamic Sieve Test Apparatus

(GT-116)



## Applications

The percentage passing of different fractions determines the permeability of the geotextile investigated. In the Hydrodynamic Sieving Method, the geotextile specimen, loaded with a certain quantity of glass bead fraction, is continuously rotated in a water trough, forcing the glass beads to pass through the geotextile openings.

## Details

- The apparatus consists of two test drums of 14 cm dia x 7 cm effective length with 16 nos. of 4 mm dia rods. These rods are provided circumferentially at equal spacing to hold the geotextile specimen in position.
  - Two (02) troughs to contain the test drums are supported on horizontal axis, facilitating free rotation and capable of being filled with distilled water to a level of 20 mm below the drum axis.
  - The clearance between the trough and the geotextile could be maintained at about 40 mm.
- The apparatus is provided with a motor drive and gear assembly to enable rotation of the drums at a speed of 5 rpm to 30 rpm.

## Test Procedure (How the test shall be carried out?)

For conducting the test, the Geotextile specimen is cut and stitched to get a shape of 14 cm dia and 10 cm length to insert over the drum tightly, after immersing the specimen in distilled water for one hour, and secured by rubber 'O' rings.

After placing 50 gram of smallest size glass beads inside the drum, the lid is secured and the drum with the geotextile placed in distilled water is rotated at 20 rpm for 1,500 cycles. In order to get the optimum filtration opening size, the drum is rotated at a speed of 5 rpm to 30 rpm for 250 to 2,500 revolutions. The percentage of beads passed through the geotextile by dry weight is determined. The test is repeated with increasing size of glass beads till 5% or less of the beads by weight pass through the geotextile.

## Note:

End user will need to have rounded glass beads to conduct the complete experiment. Glass beads shall be procured at extra cost.

- Rounded Beads made of glass, size 0.850 mm (passing 1 mm and retained at 0.85 mm)
- Rounded Beads made of glass, size 0.425 mm (passing 0.85 mm and retained at 0.425 mm)
- Rounded Beads made of glass, size 0.250 mm (passing 0.425 mm and retained at 0.25 mm)
- Rounded Beads made of glass, size 0.180 mm (passing 0.25 mm and retained at 0.18 mm)
- Rounded Beads made of glass, size 0.150 mm (passing 0.18 mm and retained at 0.15 mm)
- Rounded Beads made of glass, size 0.075 mm (passing 0.15 mm and retained at 0.075 mm)



# GSM Round Cutter for Paper and Fabric (PT-106DIA113)

## Compliance Standards

ASTM D3776, ISO 3801, BS 2471, BS 3424, IS 14716

## Applications:

- Used to cut the samples in various industries for materials like Acrylic sheets, Aluminum foils, Bags & Luggage of Cotton, Pulp, Paper, Printing, Packaging etc.

## Details:

- The equipment consists of Sample cutter with safety catch lock and Long life cutting pads.
- The Sample Cutter has 4 Nos. of German reversible blades. The blades are reversible in design i.e. if one side gets blunt due to continuous usage, the blades can be turned to the other side. In this way, all the four sides of the blades can be used.
- The unit is recommended for yield testing i.e. the determination of weight per unit area. The sample cutter cuts out rapidly and accurately circular specimen of 100 Cm<sup>2</sup>, which is exactly 1/100<sup>th</sup> of a square meter with the depth of up to 5 mm. The result is grams, multiplied by 100, gives the GSM (Grams per square meter) directly.



## Technical Specification

Attribute	Specifications
Sample Area	100 cm <sup>2</sup>
Sample Diameter	113 mm
Type of cut	Standard
Blade holders	4 Nos. Stainless Steel
Blades	Heavy duty Reversible Blades
No of Blades	4 Nos
Safety Lock	Fine Brass Lock
Hand wheel (Handle)	Special Bakelite Handle
Cutting pad	New Rubber-Foam Pad



# Bursting Strength Tester (PT-101SH/PT-101DH)

## Compliance Standards

ASTM D3786, D774, D2738, T810, T403

## Salient Features

- Sturdy in construction
- Noise-Less functioning
- Stepper motor with automatic fluid pump
- Logical detection of sample failure
- Capacity : 25kg/cm<sup>2</sup> or 50kg/cm<sup>2</sup>
- Display resolution : 0.1 kg/cm<sup>2</sup> (Only Digital Models)
- Unit selection : kg/cm<sup>2</sup>, PSI
- Stores data upto last five readings
- Also, gives readings for BS (Bursting Strength) & BF (Bursting Factor)
- Reset function to initiate new batch testing

Type of Heads	HMI Touch Screen & PLC Controller based Fully Automatic Model		Microprocessor Based Digital Controller - Economy Model		Manual Bourdon Type Pressure Gauge Model
Single Head	PT-101SH25FA	PT-101SH50FA	PT-101SH25DE	PT-101SH50DE	PT-101SH25M
Dual Head	PT-101DH10/25FA	PT-101DH10/50FA	PT-101DH10/25DE	PT-101DH10/50DE	PT-101DH10/40M

# Humidity Test Chamber (Environmental Test Chamber) (EIE-106RP)



## Technical Specifications

- Temp. Measurement : By PID Controller.
- Rh Measurement : By capacitance type Rh sensor.
- Temperature Range : 10 °C to 70 °C
- Temperature Accuracy :  $\pm 0.1$  °C
- Humidity Range : 40 % RH to 95 % RH
- Humidity Accuracy :  $\pm 3$  % RH

## Construction Details

- CE Certified.
- Double wall construction.
- Interior fabricated from high grade stainless steel (S.S.304/S.S. 316).
- Exterior body made of Mild steel/stainless steel (S.S.304/S.S. 316).
- Non condensing steam injection type humidity system.
- Water level circuit.
- Castor wheels for easy movement.

## Heating & Cooling System

- Long lasting SS tubular heaters.
- Hermetically sealed compressor, CFC free refrigerant (134 A gas).
- Evaporation coil and condenser.

## Selection Guide

Working chamber sizes (CM) (H x D x W)	Overall dimensions (CM) (H x D x W)	Volume (Liters)	No of Trays	Power Ratings (KW)	Weight (KG)	Digital Model Numbers (EIE-106RP)
45 x 45 x 45 cm	119 x 74 x 66	92	2	1.5	115	EIE-106RP92
70 x 50 x 50 cm	145 x 76 x 71	175	3	1.5	135	EIE-106RP175
60 x 60 x 60 cm	135 x 84 x 81	216	3	2.0	150	EIE-106RP216
90 x 60 x 60 cm	165 x 84 x 81	324	3	2.0	157	EIE-106RP324
125 x 60 x 60 cm	201 x 84 x 81	450	4	2.5	175	EIE-106RP450

R : Refrigerated | G : GMP | P : Powder coating

# Hot Air Oven (EIE-101)

## Salient Features

- Double walled design
- Thick glass wool insulation to prevent heat loss
- Microprocessor based AUTO-TUNE PID Digital Temp Controller cum indicator
- Temperature range : 50 °C-250 °C
- Temperature Accuracy:  $\pm 0.5$  °C
- Temperature display : Digital LED Display
- Operates on : 230 Volts, 50 Hz, Single phase, AC supply
- Special heavy duty stainless steel lock and door hinges
- Heavy duty stainless steel trays for sample placement
- Forced air circulation blower for Uniform Temperature Distribution
- Supplied complete with Calibration certificate

## Selection Guide

Inner chamber size(cms) (D x W x H)	Overall dimensions (cms) (D x W x H)	No of trays	Chamber capacity (Liters)	Power consumption (Kw)	Approx Weight (Kgs)	Digital Model Numbers (EIE-103DP)	Digital GMP Model Numbers (EIE-101DG)
30 x 30 x 30	52 x 45 x 64	1	27	1	45	EIE-101DP27	EIE-101DG27
35 x 35 x 35	57 x 50 x 72	1	64	1	52	EIE-101DP64	EIE-101DG64
45 x 45 x 45	67 x 60 x 82	2	92	1.5	72	EIE-101DP92	EIE-101DG92
45 x 45 x 60	67 x 60 x 97	2	121	1.5	78	EIE-101DP121	EIE-101DG121
60 x 60 x 60	82 x 75 x 97	3	216	2	110	EIE-101DP216	EIE-101DG216
60 x 60 x 90	82 x 75 x 125	3	324	2.5	148	EIE-101DP324	EIE-101DG324

D : Digital | T : Thermostatic | G : GMP | P : Powder coating Note : Customized sizes are also available



Hot Air Oven (S.S.)

Hot Air Oven (S.S.)



# Seal & Peel Tester (PT-115DP50SP)

## Compliance Standards

ASTM F88, ASTM F904, ASTM D882

## Applications:

- Paper/Kraft Paper tensile strength test
- Polyfilm tensile strength test
- Medical Packaging Tensile strength test
- Seal & Peel test of Adhesive bond of packaging material

## Suitable for

- Interlaminar Bond Strength Test (T-Peel Test) - Fixture Included
- Seal Strength Test. - Fixture Included
- Tensile Strength & Elongation Test. - Fixture Included
- Coefficient of Static Friction - (Check optional accessories)
- Coefficient of Kinetic Friction - (Check optional accessories)

## Salient Features:

- Bench Top Model
- Fitted with Microprocessor based Programmable Logical controller
- Peak Hold Facility
- Variable Travel speed
- Computer interface through RS-232 Connection
- Equipped with Ball screw for friction less traverse
- Rotary encoder for high accuracy in elongation
- Dedicated PC Software (User will have to arrange PC)
- You can get graph for load v/s elongation (stress v/s strain) and also get a excel sheet with a single click.

## Safety Features

- In built Over Load Safety
- In built Over Travel Safety
- Auto Reverse facility
- Auto Break



## Technical Specification

Attribute	Specifications
• Type of operation	CRT (Constant rate of Traverse)
• No. of screws	Single screw mechanism driven through motor & gearbox
• Load cell Capacity	50 Kgf (500 N) (0.5 KN)
• Load cell	'S Type' load cell of reputed make
• Display	Digital LCD Display
• Vertical Clearance	300-500 mm
• Results displayed on screen	Load, Elongation values, Testing speed and type of test
• Least count for load	2 Grams (0.02 N)
• Least count for elongation	0.01 mm
• Load units	Kg/Newton as per selection
• Speed Range	10mm/min - 300mm/min
• Clamping pressure	Adjustable upto 5 kg/cm <sup>2</sup> (In case of Pneumatic Gripping)
• Software	Specially designed Windows based Graphical Software
• Power Supply	230 Volt, 50 Hz, Single Phase, AC Supply
• Data Communication	Through RS-232 Interface

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