

INTERFACE SHEAR

SHEARTRAC III

The ShearTrac III system is capable of performing the consolidation and shearing phases of an interface shear test on a 305 x 305 x 205 mm (12 x 12 x 8 in) sample to determine the interface frictional properties of soil and geosynthetics (geomembrane, geotextile, GCL, geogrid, etc.) and internal friction of GCLs. The same system can perform a direct or residual shear test on a soil or aggregate sample. With additional accessories, the user can further perform direct simple shear or rock shear testing. Testing is performed under fully automated control with convenient monitoring and instant test results. It consists of a computer-controlled unit using independent, electro-mechanical micro-stepper systems to apply highly precise vertical and horizontal loads.

- Built in safety features
- Smart and sophisticated technologies to simplify testing
- Repeatable, reliable, and accurate results you can trust
- Real-time and remote test parameter changes for quality control
- Convenient reporting and data export
- Faster, smarter, better: designed with full automation and manual control options
- Easy upgrade to perform additional test types
- Designed and manufactured in the USA

Applicable Test Standards

- ASTM D5321, D6243, D3080, D5607
- AASHTO T236
- BS 1377-7
- ISO/TS 17892-10
- AS 1289.6.2.2



Standard Interface Shear System

INTERFACE SHEAR SHEARTRAC III



TECHNICAL SPECIFICATIONS

LOAD CAPACITY

Up to 90 kN (20 klb) vertical
Up to 90 kN (20 klb) horizontal

VERTICAL MOTORS

Micro-stepper system with built-in controls

HORIZONTAL MOTORS

Micro-stepper system with built-in controls

SPEED RANGE

0.00003 to 7.5 mm per min
(0.00001 to 0.3 in per min)

VERTICAL TRAVEL

100 mm (4 in)

HORIZONTAL TRAVEL

+/- 100 mm (4 in)

DIMENSIONS

610 x 1194 x 1168 mm (24 x 47 x 46 in)

WEIGHT

311 kg (685 lbs)

INCLUDED

- GeoNet-U USB 2.0 network adapter and cable to link to PC/laptop
- DS4 software module to automatically run and report tests

ACCESSORIES

- Gripping plates
- Rock shear rings and jig set
- Reduced sample size inserts - 152 mm (6 in) or 205 mm (8 in)
- Direct simple shear hardware
- DS4 REPORT: editing/reporting software for multiple tests

WARRANTY

12 month warranty; extended warranties available

Date Export and Custom Reporting (example)

	Client:	ABC Company	
	Project Name:	XXX	
	Project Location:	---	
	GTX #:	XXX	
	Start Date:	04/04/19	Tested By:
	End Date:	04/09/19	Checked By:
	GCL ID:	Roll #1466 (Group 1) Lot# LL-09-2019	
	GCL Description:	Black, nonwoven / white, nonwoven GCL	
	Geomembrane ID:	Roll #G18F001136	
	Geomembrane Description:	Black, 60 mil microspike HDPE	

Interface Shear Test Series by ASTM D6243

Test Series #: 8
Test Profile - Top to Bottom: steel plate / GEOMEMBRANE / GCL / spiked gripping surface
GCL / Geosynthetic Preparation: Test set-up saturated at normal load for 16 hours prior to shear. The shiny side of the geomembrane was placed against the black side of the GCL.
Test Equipment: Top box = 12 in x 12 in; Bottom box = 12 in x 12 in; Load cells and LVDTs connected to data acquisition system for shear force, normal load and horizontal displacement readings; Flat plate clamping device; surface area = 144 in²
Horizontal Displacement, in/min: 0.04 (specified by client) Test Condition: inundated

Parameter	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
GCL Initial Moisture Content, %	27.4	32.8	27.1	---	---	---
GCL Final Moisture Content, %	99.0	80.6	61.0	---	---	---
Normal Compressive Stress, psf	10000	20000	30000	---	---	---
Peak Shear Stress, psf	4284	7890	10700	---	---	---
Post Peak Shear Stress, psf	2931	4380	6530	---	---	---
Peak Secant Friction Angle, °	23.2	21.5	19.6	---	---	---
Post-Peak Secant Friction Angle, °	16.3	12.4	12.3	---	---	---
Pre-Test: Average Asperity, mils	28.9	34.4	33.7	---	---	---
In-Line Peel Strength, lbs/in	11.8	12.4	13.8	---	---	---

NOTES:	Peak Friction Angle: 17.8 degrees
	Peak Adhesion: 1209 psf
	Post Peak Friction Angle: 10.2 degrees
	Post Peak Adhesion: 1015 psf

Figure a. Shear Force vs. Horizontal Displacement

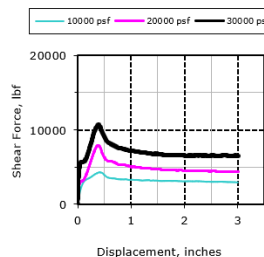
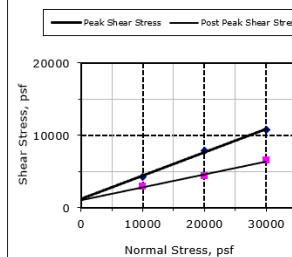


Figure b. Shear Stress vs. Normal Stress



User-Friendly Interface



Delay s	Shear Control	Rate /s	Maximum Disp. mm	Maximum Force N	Read Table
1	Force	0	0	0	Time
2	Displacement	0	0	0	Time
3	Displacement	0	0	0	Time
4	Displacement	0	0	0	Time
5	Displacement	0	0	0	Time
6	Displacement	0	0	0	Time
7	Displacement	0	0	0	Time
8	Displacement	0	0	0	Time
9	Displacement	0	0	0	Time
10	Displacement	0	0	0	Time