

# LABORATORY TESTING SERVICES

Around the world  
Under the earth  
Above & beyond



Having your soil and synthetic materials tested by an independent laboratory is important to demonstrate that these construction materials meet your standards. This type of quality assurance can satisfy your design specifications and provide a measure of due diligence that is documented. In today's complex environment, it is more important than ever to test materials in order to identify potential problems caused by manufacturing defects, construction installation or even natural disasters. As an owner or project manager, you are concerned not only with the long-term viability and profitability of your facility, but keeping current construction costs as low as possible. This means that materials testing must be quick, reliable and reasonably priced.

# Solutions that **STAND** the **TEST OF TIME**

## QUALITY ASSURANCE

Golder has fully equipped geotechnical and geosynthetic laboratories that test materials quickly, accurately, and cost-effectively. With our state-of-the-art equipment and advanced technologies, we can conduct more than 60 geotechnical and geosynthetic tests—all standardized by the American Society for Testing and Materials (ASTM). For some materials, ASTM standards have not yet been created. In those situations, we draw on our professional experience to develop testing techniques that provide you with a comfortable level of quality assurance. When your technical needs go beyond normal lab testing, we also draw upon the environmental and geotechnical experience of Golder professionals who are located throughout a worldwide network of offices.



## GEOTECHNICAL TESTING

Golder's geotechnical labs offer the most complete range of standardized geotechnical soils testing available in the industry. For example, our labs have more than 60 permeability cells in offices worldwide with the majority located in the United States. These perm cells make use of a flow pump, expediting results faster than typical falling head results. From grain size distribution to permeability and strength testing, the geotechnical labs produce accurate results that are presented in a technical—but simple—format, making interpretation easy. Golder works towards ensuring the quality of procedures, staff and results by membership in the ASTM D18 Committee on Soils and participation in the American Association of State Highway and Transportation Officials (AASHTO) standardization program. AASHTO has accredited our Atlanta laboratory office and the US Army Corps of Engineers has also accredited our Atlanta office lab. A list of the ASTM tests we conduct are listed to the right.

*Grain Size Analysis  
ASTM D422*

## GEOTECHNICAL TESTS

Atterberg Limits	ASTM D4318
Calif. Bearing Ratio	ASTM D1883
Carbonate Content	ASTM D3042
	ASTM D4373
Consolidation	ASTM D2435
Direct Shear	ASTM D3080
Moisture Content	ASTM D2216
	ASTM D4643
Organic Content	ASTM D2974
pH Determination	ASTM D1293
Permeability (granular)	ASTM D2434
Permeability (flex member)	ASTM D5084
Pinhole Dispersion	ASTM D4647
Proctor	ASTM D698
	ASTM D1557
Resistivity	ASTM G57
Settlement of Cohesive Soils	ASTM D4546
Sieve Analysis (wet)	ASTM C136
Sieve Analysis (#200)	ASTM D1140
Sieve w/Hydrometer	ASTM D422
Triaxial	ASTM D2850
	ASTM D4767
Unconfined Compression	ASTM D2166
Unit Weight & Moisture	ASTM D2937
Visual-Manual Class.	ASTM D2488



*Direct Shear  
(Interface Friction) Testing  
ASTM D5321*



*Tensile Properties  
of a Geomembrane  
ASTM D638*

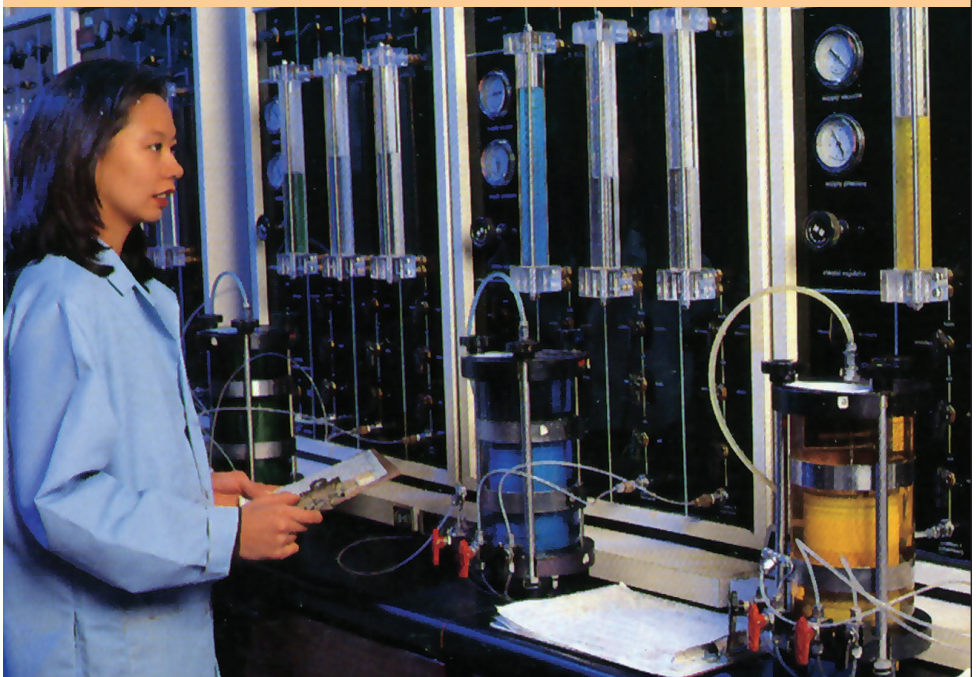
## GEOSYNTHETIC TESTING

The geosynthetic laboratory tests for the mechanical and physical characteristics of seamed and unseamed geomembrane, geotextile, geonet, geo-composites, geogrid, and geosynthetic clay liner materials. As an example of our capability, we can test 100 geomembrane seam destructive samples in a normal business day.

Our geosynthetics lab is accredited by the Geosynthetic Accreditation Institute, a division of Geosynthetic Institute (GSI), to conduct more than 40 ASTM tests, as indicated in the list to the right. The U.S. Environmental Protection Agency and U.S. Army Corps of Engineers recognize the Geosynthetic Accreditation Institute as the official accrediting organization for geosynthetic testing.

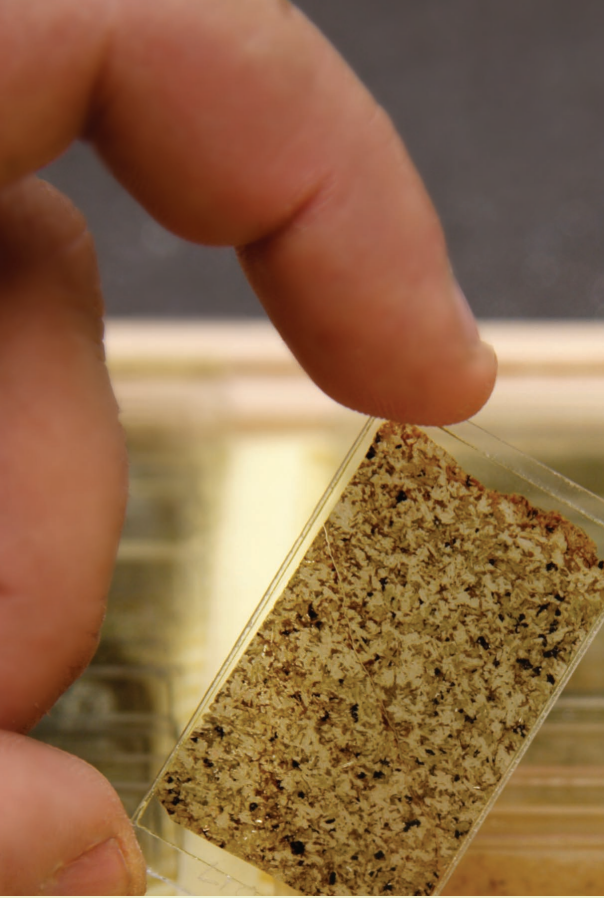
As active members of the GSI and the ASTM D35 Subcommittee on geo-synthetics, our lab professionals have a developmental role in testing standards and procedures and stay abreast of the rapid changes that occur in the industry.

*Soil Permeability Testing  
ASTM D5084*



## GEOSYNTHETIC TESTS

Apparent Opening Size	ASTM D4751	Melt Flow Index	ASTM D1238
Asperity Height	GRI GM12	Peel Adhesion	ASTM F904
Burst Strength, Mullen	ASTM D3786	Permittivity/Permeability	ASTM D4491
Carbon Black Content	ASTM D1603	Puncture	ASTM D4833
Carbon Black Dispersion	ASTM D5596	Soil Burial	ASTM D3083
Density/Specific Gravity	ASTM D792	Tear Resistance	ASTM D1004
	ASTM D1505	Tensile Properties	ASTM D638
Destructive (peel/shear)	ASTM D6392		ASTM D882
Dimensional Stability	ASTM D1204	Thickness	ASTM D1593
Direct Shear	ASTM D5321		ASTM D5199
	ASTM D6243		ASTM D5994
Environmental Stress Crack	ASTM D1693	Transmissivity	ASTM D4716
Fluid Loss	ASTM D5891	Trapezoidal Tear Strength	ASTM D4533
Free Swell	ASTM D5890	Volatile Loss	ASTM D1203
	GRI GCL 1	Water Absorption	ASTM D570
Grab Strength	ASTM D4632	Water Extraction	ASTM D1239
Mass Per Unit Area	ASTM D5261	Wide Width Tensile	ASTM D4595
	ASTM D5993		



# Engineering Earth's Development. *Preserving Earth's Integrity.*

## Global Issues

At GOLDER ASSOCIATES we strive to be the most respected global group specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

## Local Solutions

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