

## Capabilities of GeoTesting Express' Rock Testing

GeoTesting Express, Inc. (GTX), provides one-stop rock preparation and laboratory testing. Servicing the geotechnical, tunneling, mining and excavation industries, we provide rapid strength and index testing of rock samples. We can prepare test specimens from cobbles, boulders, blocks or cores with our equipment. We can also core specimens perpendicular to the direction of a core run.

GeoTesting Express performs a full-range of tests on rock. We prepare and tests rock specimens in-house. Servicing the geotechnical, tunneling, mining and excavation industries, we provide rapid strength and index testing of rock samples. We can prepare test specimens from cobbles, boulders, blocks or cores with our equipment. We can also core specimens perpendicular to the direction of a core run.

We utilize specialized equipment and have developed detailed processes for preparing specimens to meet the specifications set forth in ASTM D4543: "Preparing Rock Core Specimens and Determining Dimensional & Shape Tolerances", which is a requirement for any rock strength test. GTX is validated by the U.S. Army Corps of Engineers and accredited by A2LA for testing rock samples.

Rock requiring unconfined compression or triaxial compression testing must be prepared and meet very strict dimensional tolerances in accordance with ASTM D4543. Our technicians can prepare up to 8 rock specimens at one time with a higher degree of precision using our Okamoto surface grinder.

GTX is one of the few labs in the world that strictly adheres to the ASTM requirements for dimensional tolerances. Tests performed without well prepared surfaces will give much lower unconfined compressive strength which can mislead one to choose the wrong mining equipment.

GeoTesting Express utilizes state-of-the-art automated testing equipment to perform high-end strength testing of rock (Unconfined Compression, Direct Shear, Brazilian Tensile Strength, Elastic Moduli, Triaxial, etc.). Advantages of this equipment include:

- Complete electronic controls over test parameters & resultant report
- Fast turnaround of test results
- Standardized test report formats
- Electronic report deliverables (including before & after photographs of samples)



# Rock Testing

Typical Rock Tests Performed	Test Method Performed
Cerchar Abrasivity Index (CAI)	ASTM D7625 ♦
Direct Shear Strength and Sliding Friction of Rock Under Constant Normal Force	ASTM D5607 ♦
Direct Tensile Strength	ASTM D2936 ♦
Drillability Test Suite (Brittleness Value ( $S_{20}$ ), Sievers' J-Value (SJ), Abrasion Value (AV) and Abrasion Value Cutter Steel (AVS) - Drilling Rate Index, Bit Wear Index and Cutter Life Index	NTNU's 13A-98 Drillability Test Methods & SINTEF's Standards
Elastic Moduli of Intact Rock Core Specimens in Triaxial Compression	ASTM D7012 ♦ / D5407
Elastic Moduli of Intact Rock Core Specimens in Uniaxial Compression	ASTM D7012 ♦ / D3148
Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions	ASTM D5312
Evaluation of Durability of Rock for Erosion Control Under Wetting and Drying Conditions	ASTM D5313
Permeability of Rocks by Flowing Air	ASTM D4525
Petrographic Analysis of Rock	ISRM
Point Load Index Test	ASTM D5731 ♦
Preparing Rock Core Specimens and Determining Dimensional and Shape Tolerances	ASTM D4543 ♦
Pulse Velocities and Ultrasonic Elastic Constants	ASTM D2845 ♦
Punch Penetration Index	Handwith method ♦
Shore Hardness	ISRM
Slake Durability of Shales and Similar Weak Rocks	ASTM D4644 ♦
Splitting (Brazilian) Tensile Strength of Intact Rock Core Specimens	ASTM D3967 ♦
Total Hardness (Schmidt Hammer and Taber Abrasion)	ISRM & 15th Rock Symposium
Triaxial Compression Strength of Undrained Rock Core Specimens	ASTM D7012 ♦ / D2664
Unconfined Compression Strength of Intact Rock Core Specimens	ASTM D7012 ♦ / D2938

♦ Tests for which GeoTesting Express is accredited by A2LA

The trademarked acronyms and terms DRI™, BWI™, CLI™, SAT™, Drilling Rate Index™, Bit Wear Index™, Cutter Life Index™ and Soil Abrasion Test™ are unique for test results and calculated indices originating from NTNU/SINTEF and can only be obtained by testing samples at their reference laboratory in Trondheim, Norway



Validated by the U.S.  
Army Corps of Engineers

Accredited by:

