

**alliance**  
geotechnical & environmental solutions

**Soil & Rock Mechanics | Specialty Testing**

# Strength & Mechanical

Alliance employ the best laboratory people in the commercial sector investigating Soil/Rock Strength and Stiffness behaviour, Soil Settlement and Swelling potential using the latest GDS Triaxial & Automated Oedometer machines providing the most accurate and reliable testing results.

Triaxial and Oedometer test results are used when designing foundations, excavations, embankments, tunnels, earth wall structures, settlement, drainage and slope stability analysis.

Primary parameters obtained from the tests may include the angle of shearing resistance ( $\phi'$ ), cohesion ( $c'$ ), undrained shear strength ( $S_u$ ), pore water pressure measurement ( $\mu$ ), coefficient of consolidation ( $C_v$ ), coefficient of volume compressibility ( $M_v$ ), void ratio ( $e$ ), and permeability ( $k$ ).

Talk to us about performing Australian/International test Standards, or customized specialist in-house procedures for specific projects, design or research requirements.



## Strength & Mechanical Tests

- Triaxial (UCS) - Unconfined Compression Test on Cohesive Soil
- Triaxial (UU) - Unconsolidated Undrained without pwp measurement
- Triaxial (CU) - Consolidated Undrained with pwp
- Triaxial (CD) - Consolidated Drained
- Soil Direct Shear - Peak / Residual / Constant Volume
- 1-D consolidation with optional loops/unloads/reloads/rebounds / Creep
- Free Swell, Magnitude of Swell, Swelling Pressure Index
- Collapse/Swell Strain
- Stepped Consolidation after Free Swell or Collapse Strain
- Point Load Testing
- UCS Testing



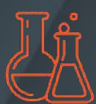


# Hydraulic Testing

At Alliance we are always continuing to develop and expand our testing capabilities to meet your needs. We are experts at delivering specialist customised testing for specific project, design or research requirements.

The hydraulic characters of materials in the geotechnical engineering are important not only because they control how liquids transport through the geo-matrix, but also affect the strength performance of the materials as the permeation of liquids affect their drainage and durability under physical and chemical erosions.

We have the latest GDS hydraulic conductivity testing equipment which provide services that measure the rate at which water moves through soil, porous rock and other porous materials. We also provide customized tests using different types permeant, eg site mine water, waste leachate, etc.



## Hydraulic Tests

- Triaxial Permeability - Constant Head
- Triaxial Permeability - Constant Flow
- Falling Head Permeability
- Emerson Class
- Pinhole Dispersion (Erodibility) Test



# Physio-Chemical Testing

Alliance incorporates the use of innovative and state of the art testing equipment and technology to assist our clients in design, mining, construction and research.

Alliance either conduct or can externally arrange soil chemical properties testing to test for aggressiveness, acidity and other chemical properties to RMS, Australian or International testing Standards.

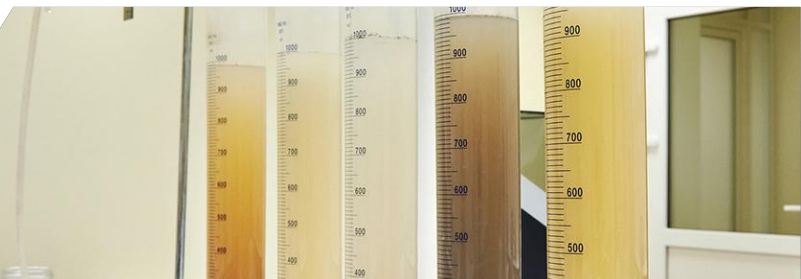
The physio-chemical properties of geotechnical materials (e.g., soils, rocks, aggregates) often control their strength and mechanical performance. A better understanding of those parameters provide engineers and designers with more knowledge and confidence in their work.

Our experienced testing team can provide a range of basic and high-tech specialist testing in the physical, classification, durability and environmental-related tests.



## Physio-Chemical Tests

- Particle Density
- Particle Size Distribution with Hydrometer
- Soluble Salt Content of Soil
- Porosity
- Slake Durability
- Petrographic Examination & Quartz content
- Rock Clay Mineralogy
- XRD (qualitative and SIROQUANT quantitative)
- SPOCAS (Acid Sulphate Soils)
- NAPP, NAG (Acid Mine Drainage)
- Asbestos





## Ian Goldschmidt

*Soil & Rock Mechanics Department Manager*

Ian (Goldy) Goldschmidt is the Department Manager of our specialty geomechanical testing section responsible for client management, strategic development, and innovation. Ian has been a NATA Technical Assessor in Geotechnical and Civil Construction Materials Testing since 1996 for Soil & Rock Mechanics. Ian has over thirty years of experience in the civil, geotechnical, environmental & mining industries in Australia & Internationally.



## Nicholas Botross

*Lab Coordinator (SR Lab)*

Nicholas is our Specialty Coordinator, with a Bachelor's degree in Geology and Geophysics, he has 5 years' experience working in Geophysical investigations and Asphalt Laboratory testing. He is responsible for receiving and reconciling samples, client relations, coordinating staff and training, maintaining equipment and calibrations, and managing deadlines. Nicholas is also a NATA signatory for several Australian Standard and Transport for NSW (TfNSW) rock mechanics testing.




# alliance



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