



## Services

### Flow Properties Testing

The design of bulk solids handling plants requires knowledge of the flow properties of the material under a range of operating conditions. These operating conditions include varying consolidation pressures for instantaneous and extended time storage as well as environmental factors such as temperature, moisture and humidity.

The comprehensive laboratory facilities at TUNRA Bulk Solids permit the characterisation of bulk material properties using well-established test procedures to determine the bulk strength and friction angles as a function of bed depth and major consolidation stress for the bulk material. This testing is principally performed using a TUNRA direct shear testing machine.

The type and range of tests required depend on the moisture content of bulk material and the type of storage facility to be designed.



**TUNRA Bulk Solids conducts custom tests to suit the individual needs of our clients**







## What Flow Properties Testing Services are available?

- ▶ Dust Extinction Testing
- ▶ Transportable Moisture Limits
- ▶ Wall Friction
- ▶ Adhesion
- ▶ Bulk Density and Compressibility
- ▶ Solids or Particle Density
- ▶ Wind Tunnel Testing
- ▶ Chute Wall Angles
- ▶ Hopper Wall Angles
- ▶ Bin Opening Dimensions
- ▶ Ratholing Characteristics
- ▶ Effects of Vibration Time Storage
- ▶ Effects of Undisturbed Time Storage
- ▶ Angle of Repose
- ▶ Conveyor Roll-Back Angle
- ▶ Belt Surcharge Angle
- ▶ Dewatering Characteristics
- ▶ Fluidisation and Deaeration
- ▶ Internal Friction Angle
- ▶ DEM Calibration Tests
- ▶ Particle Shape Characterisation
- ▶ Direct Shear Testing  
(low and high consolidation)
- ▶ Worst Case Moisture Content Determination
- ▶ Stockpile Veneer Treatment Efficiency Testing
- ▶ Wall Liner Abrasion Wear Testing
- ▶ Wall Liner Impact Wear Testing
- ▶ Slurry Wear Testing
- ▶ Stockpile Drainage Testing



## Why TUNRA Bulk Solids?

### Experience and Expertise

We have provided expert solutions to industry for over 45 years and are the leading organisation for materials handling research and consulting in Australia and internationally

### Research and Development

We have a proven track record in research and development through the close association with The University of Newcastle

### Quality Service

We have highly qualified, well-trained and specialist staff that are committed to delivering excellence

### First Class Facilities

Our laboratory is a state of the art facility located within the Newcastle Institute of Energy and Resources (NIER) at The University of Newcastle

### Industry Standards

We are accredited to ISO 9001, ISO 45001 and ISO 14001

### Independent

We are independent and not for profit



## Further information

- To access our Case Studies visit **[www.bulksolids.com.au](http://www.bulksolids.com.au)**
- To discuss your industry and business needs phone **02 4033 9055**