



**ciss**  
Commodities  
International  
Survey Services



**Coal & Ore  
SURVEY**



*It's Shipping & Survey*

## ABOUT COMPANY



**CISS GROUP** – is a Group of companies spread around the world with the HQ located in Singapore.

**CISS GROUP** is a **GLOBAL provider** of independent inspection, weighting, sampling and testing services for the bulk mining raw materials and commodities (like coal, iron ore, bauxites, rock phosphates and others).

Cargo inspection and laboratory testing is our main business.

Due to huge experience of our staff & modern equipment, **LABORATORY CISS GROUP** provides all testing results in soonest terms with guarantee of accuracy and reliability.





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# TESTING

The main and essential part of bulk cargo quality inspection – proper cargo sampling either from piles or from conveyor belt.

Composite cargo sample preparation (cargo grinding) taking place before the testing.

In most cases physical and chemical testing for mining raw materials consists of basic analyses like moisture content determination and sizing.

Some specific analyses can be performed even in several laboratories in different countries (like Cold Compression Strength or Abrasion Index).

We also use third party laboratories, which is ISO 9001 approved. All laboratories is successfully passing ring test which proves the accuracy of measurements and the professionalism of employees.

Close cooperation with our customers, in many cases over the course of decades, means that we are familiar with their needs, and we include this knowledge in the development and continuous improvement of our analysis systems.

**Our laboratory has the most modern equipment, which is upgrading as soon as market provides new model with highest accuracy.**





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## Inspection could be provided at:

### Mining area, Warehouses & Storage places:

- Sampling & composite sample preparation, testing of all required parameters against international standards.
- Temperature control, Stock monitoring, Piles volume measurements.

### During inland transportation or at incoming control to the port area:

- sampling, analyses, weight control by asserting the weight bridge, loading/discharge supervision.

### Vessel shipments:

- Loading and discharge supervision.
- Draft survey.
- Holds inspection, holds unsealing/sealing.
- Cargo sampling and composite sample preparation.
- Testing of all required parameters against international standards.





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Coal laboratory has capacity to provide full list of analyses on coaled minerals.

**The main coal analyses includes (but not limited):**

- Total moisture
- Volatile matter
- Specific energy/Calorific value
- Ash
- Total sulfur
- Fixed carbon
- Relative density
- Particle size distribution
- Ash fusion temperature test
- Crucible swelling index (free swelling index)
- Proximate analyses
- Ultimate analyses
- Handgrove Grindability Index
- Coal radiation





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We also perform analyses for parameters, which effecting Environment: chlorine, flouring, mercury, arsenic, phosphorus.

**Laboratories working in accordance with following standards:**

- American Society for Testing and Material (ASTM),
- International organization of standartization (ISO),
- GuoBiao (known as GB Chinese Standard)

**COAL**





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The transportation of iron ore has a lot of commercial risks to all parties involved. The quality and quantity of the cargo must be accurately determined to know the grade of iron ore being transported.

**CISS GROUP** provides inspection and supervision services including weight control, sampling, chemical and quality analysis.

A close-up photograph of iron ore, showing dark, layered rock formations with a reddish-brown hue. The texture is rough and fractured.

**IRON  
ORE**



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## **Inspection of iron ore consists of:**

- Preshipment inspection
- Loading/discharge supervision
- Sampling
- Holds inspection
- Holds sealing/unsealing
- Draught survey
- Shore hopper scales control and weight witnessing
- Quality analyses
- Certificate issuing







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List of main chemical analyses: Fe, FeO, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, CaO, MgO, P, S, MnO, TiO<sub>2</sub>, K<sub>2</sub>O+Na<sub>2</sub>O, B<sub>2</sub>(CaO/SiO<sub>2</sub>), B<sub>4</sub>(CaO+MgO)/(SiO<sub>2</sub>+Al<sub>2</sub>O<sub>3</sub>), H<sub>2</sub>O

Additional physical tests: float-sink test (for iron ore pellets), size distribution, Cold Compression Strength, abrasion index.

**IRON  
ORE**





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Bauxite is a sedimentary rock. This is one of the most important industrial mineral and it being the aluminum ore, is the principal raw material with a relatively high aluminum content for the production of alumina. It is the world's main source of aluminum.





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## **Basic services during bauxites inspection:**

- Inspection of holds cleanliness / containers / vehicle / wagons
- Inspection of vehicle suitability for bauxite carriage
- Loading/discharge supervision twenty-four-hour a day
- Visual inspection of bauxite quality during loading/discharging operations (control of absence of foreign materials)
- Bauxite sampling during loading/discharge
- A composite sample preparation as representative for whole cargo amount
- Draught survey (cargo volume determination on the vessel)
- Sealing of vessel's holds
- Photo report of all inspection stages
- Laboratory testing and analyses



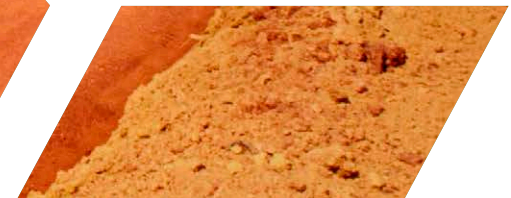
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### UNITS OF A BAUXITE TESTING LABORATORY

- Chemical analytical laboratory
- X-ray laboratory
- Technological testing and simulation laboratory
- Physico-chemical laboratory

Bauxite chemical composition of the investigated samples consists mostly of the aluminium minerals gibbsite ( $\text{Al}(\text{OH})_3$ ), boehmite ( $\gamma\text{-AlO}(\text{OH})$ ) and diasporite ( $\alpha\text{-AlO}(\text{OH})$ ), mixed with the two iron oxides goethite ( $\text{FeO}(\text{OH})$ ) and haematite ( $\text{Fe}_2\text{O}_3$ ), the aluminium clay mineral kaolinite ( $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})$ ) and small amounts of anatase ( $\text{TiO}_2$ ) and ilmenite ( $\text{FeTiO}_3$  or  $\text{FeOTiO}_2$ ).

**BAUXITES**





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**Sands (titanium ore)  
and ilmenite, rutile and  
zirconium concentrates.  
In most cases these rare  
materials in shipped by  
containers.**

A white rectangular box containing the word 'SANDS' in a bold, white, sans-serif font, centered over a close-up photograph of a mineral sand sample. The sand is a mix of brown, orange, and grey particles.



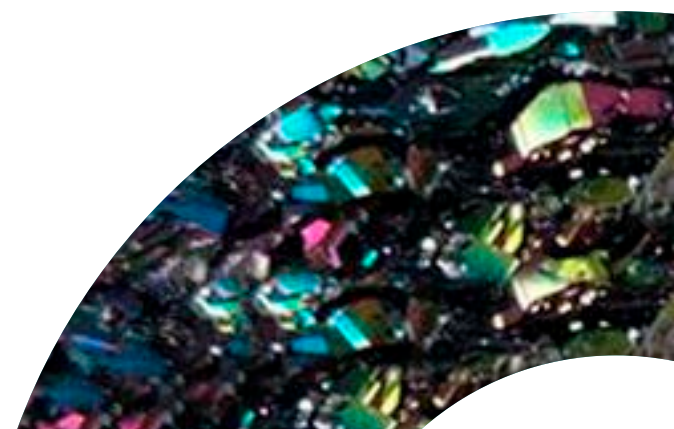
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**SANDS**

**We provide the following analyses:**

- Ilmenite content,  $\text{TiO}_2$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{FeO}$ ,  $\text{V}_2\text{O}_5$ ,  $\text{P}_2\text{O}_5$ ,  $\text{Cr}_2\text{O}_3$ ,  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{MnO}$ ,  $\text{CaO}$ ,  $\text{MgO}$ .
- For zircon -  $\text{ZrSiO}_4$  or  $\text{ZrO}_2$ .
- Rutile -  $\text{TiO}_2$  and others impurities:  $\text{Cr}$ ,  $\text{Nb}$ ,  $\text{Ta}$ ,  $\text{V}$ ,  $\text{Sn}$ ,  $\text{Ta}_2\text{O}_5$ .





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