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IRMCo, Malta
INTEGRATED RESOURCES MANAGEMENT (IRM) COMPANY LIMITED

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ProMine leads the way towards global stewardship of raw material use & the development of innovative, value added high quality products.

Five innovative nano-particle products have been developed from mining waste:

1) Nano-silica for special concrete

2) Nano-silica for paper coating

3) Schwertmannite for colour pigments

4) Schwertmannite for water treatment

5) Rhenium for aerospace industry

ProMine

Presents

Nano-particle products made out of mining waste streams

Green Innovation EXPO 2012
Tokyo, Japan

A research and technological development project co-funded by the European Commission's Seventh Framework Programme within Theme 4: NMP - Nanosciences, Nanotechnologies, Materials and new Production Technologies.

promine.gtk.fi

Green products from mining waste

By utilising waste and by-products from the mining industry, the ProMine products convert environmental threats into costumer value:

- Nano-silica in specialised concrete reduces the need for cement in construction industries, which account for 5-10% of global CO_2 emissions.

Innovative products downsize your life-cycle environmental footprint

- Schwertmannite effectively treats mining and industrial effluents, such as the removal of arsenic, one of the most toxic waste products of mining.
- Rhenium products utilise green chemistry, reducing the use of hazardous substances in the manufacturing process.

Nano-silica for special concrete

James Baker, SELOR, selor@telfort.nl

Nano-silica produced from olivine, for concrete:

- Has a high compressive strength, gives a more durable and flexible concrete (ratio 1:10kg) and a longer lifespan than any other concrete.

- Requires less brick volume, reducing transport and construction costs.
- Is a sustainable, cost-effective and innovative alternative to cement.

An excellent replacement for cement

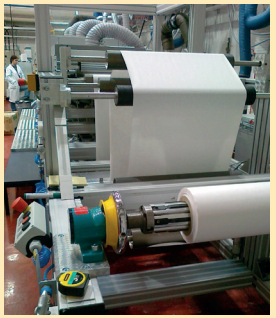
Nano-silica for paper coating

Eija Kenttä, VTT, eija.kentta@vtt.fi

Silica pigment coated paper, made from silicate mining side streams:

- Guarantees fast ink absorption, improved print density and more controlled ink spreading on matt-coated ink jet printing paper.
- Is cheaper to produce than what is currently available.

Higher print quality



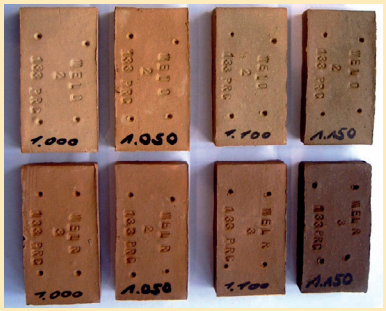
Lower price

Schwertmannite for colour pigments

Susan Reichel, G.E.O.S., s.reichel@geosfreiberg.de

Colour pigments, created from iron rich and high purity schwertmannite:

- Are resistant to the most aggressive weather conditions, including salt spray, and are thus ideal for the creation of anti-corrosive paints.
- Surpass similar products in quality.
- Are suitable for colouring ceramics and bricks and create numerous shades of red and brown.



Ideal for anti-corrosive paints, ceramics and bricks

Schwertmannite for water treatment

Eberhard Janneck, G.E.O.S., e.janneck@geosfreiberg.de

The iron rich mineral schwertmannite:

- Adsorbs arsenic and metal anions in mining water and industrial effluents.
- Is produced by an energy efficient and natural microbial process and cuts costs dramatically compared to other methods.
- Is a necessity in the mining world and water treatment industries.

Natural, energy efficient solution for water treatment

Rhenium for aerospace industry

Wojciech Satora, Ecoren, w.satora@ecoren.pl

Spherical rhenium and rhenium alloys:

- Result in lower porosity, higher density, better liquidity and greater durability.
- Achieve higher purity and homogeneity in super alloys.
- Create increased durability and heat resistance in turbine blades and engines.
- Will greatly benefit aircraft and aerospace industries.

Increased durability and heat resistance in turbines and engines