

Rio Tinto Minerals' natural solutions for high performance rubber

May 18, 2009 –Toulouse – at IRC / DKT 2009 in Nuremburg, Rio Tinto Minerals – a leader in industrial minerals supply and science – will be showcasing its portfolio of microcrystalline and high aspect ratio (HAR) talcs, and its range of zinc borate fire retardants.

Mistron® microcrystalline talc, a low-environment-impact replacement for carbon black

With carbon black pricing indexed to the price of oil and increasing emphasis on using natural substances in industrial processes, rubber compounders are looking for environmentally sound alternatives to reduce their compound costs.

Mistron® is a unique, micronized talc which can be used as a cost-effective partial replacement to carbon black in rubber. Mistron® acts in synergy with carbon black, lowering compound viscosity, improving mould flow and extrusion rates. It also improves the toughness and durability of carbon black reinforced rubber goods by significantly enhancing their cut/tear resistance.



Without Mistron®



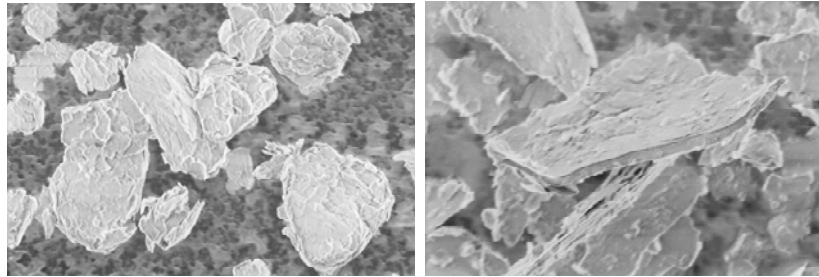
With Mistron®

Mistron® restricts the diffusion of liquids and gases enabling manufacturers to reduce the thickness of rubber parts. It extends service life of carbon black reinforced rubber whilst maintaining tensile properties at high temperatures due to the lamellarity of the talc which limits plasticizer release.

High aspect ratio Mistron HAR® talc to enhance barrier properties

A key property of high performance tire inner liners is impermeability. When impermeability is good, tires offer enhanced performance in terms of handling, cornering, rolling resistance and wear. Good impermeability, particularly to oxygen and water vapor, also prevents pressure build up in the carcass, which can cause oxidative destruction of the steel ply and breaker cords.

Used as a reinforcing filler, talc's lamellar properties restrict liquid and gas diffusion in rubber compounds increasing the diffusion path and improving impermeability. Developed using a unique, proprietary delamination process, which dramatically increases aspect ratio, Rio Tinto Minerals' new Mistron HAR[®] is five times more lamellar than a standard talc. Mistron HAR[®]-reinforced tire inner liners demonstrate 40 percent lower air permeability rates than liners filled with carbon black.



Standard talc

Mistron HAR[®] talc

This enhanced impermeability enables tire manufacturers to reduce liner thickness and overall tire weight, enhancing rolling resistance and resulting in fuel savings and lower CO₂ emissions. Mistron HAR[®] is also ideal for stoppers, membranes and hose applications.

Mistron HAR[®] and Mistron[®] are natural, inert, free-flowing talcs, available in high-density, dust-free micro-beads for easy handling and high processing throughput.

Firebrake[®] ZB, a multifunctional boron-based fire retardant

Firebrake[®] ZB is a unique form of zinc borate which provides excellent flame retardant, smoke and afterglow suppressant, char promoter and anti-dripping properties. Firebrake[®] ZB can be used in both halogen containing and halogen free systems as a complete or partial replacement of antimony trioxide. It lowers heat release rate and is an effective anti-arcing and anti-tracking agent.

Firebrake[®] ZB is suitable for use in elastomers, SBR, silicone, EPDM and polychloroprene for wire and cable, conveyor belting, roofing membrane, flooring insulation, coating and sealant applications.

Firebrake[®] ZB has a typical particle size of 9µm.



About Rio Tinto Minerals

Rio Tinto Minerals is the acknowledged world leader in developing industrial minerals—building blocks for life and for products that contribute to better living—and in developing solutions to build its customers' businesses.

The organization encompasses 2,300 people working at 35 facilities on five continents to serve more than 6,000 customers worldwide. It supplies 25 percent of global demand for talc under the *Luzenac* brand and 43 percent of global demand for refined borates under the *Borax 20 Mule Team®* brand. Borates are key ingredients in fiberglass, glass, ceramics, detergents, agricultural nutrients and wood preservatives. Talcs enhance performance in applications such as paper, paints, polymers, ceramics, personal care products, agriculture and pharmaceuticals.

Rio Tinto Minerals is leader in developing additives for polymers that improve end product performance, lower formulation costs and add value and functionality across a wide range of applications. Drawing on its world-class mining operations and in-depth experience of rubber compounding technology, the company offers customers a wide range of talcs and borates and the polymers-specific expertise they need to match the right mineral to the specific function. Rio Tinto Minerals' laboratories in France and the United States have built a solid reputation helping customers to develop new formulations.

We are committed to developing new products that will provide customers with innovative and cost-effective solutions for many years to come.