

MEDICAL INNOVATION

CERAMIC MIRACLES

Irma Venter | Contributing Editor



HOW IT IS MADE
Inside the Mtunzini factory

It's the stuff of lateral thinking. For the past 40 years materials scientist **Dirk Kotzé** meticulously studied ceramic materials, their manufacture, application and properties.

For the past ten years the family business, Dakot (that he had started), produced patented high-tech microporous ceramic material used for the handling and flow control of molten aluminium.

However, Kotzé was convinced, and noted so in his original 1991 patent, that the extraordinary properties of the particular ceramic material that he had developed would have many applications outside the industrial sector.

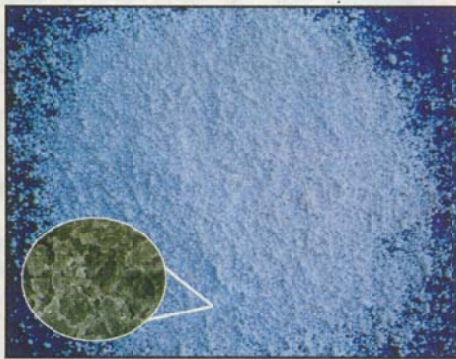
In a joint project with Dr **Ernst Eiselen**, the local GP in Mtunzini, Kwazulu-Natal, where the Dakot factory is located, this theory was shown to be correct when Eiselen found that the microporous ceramic granules made excellent wound dressings, while also exhibiting healing properties.

The product was subsequently patented internationally and now, five years later, there are two factories at Mtunzini. Dakot still produces industrial ceramics, but the other factory, Cerdak, produces bioceramic wound-treatment devices, with other medical products to join the product line soon.

After years of development and garnering the necessary quality and clinical approvals, such as the CE mark and ISO 9000 and the specialist medical ISO 13485 ratings, "we are now aiming to become a leader in the manufacture and supply of wound-treatment devices within the next five years," says Cerdak CEO **Cobus Kotzé**, who, along with brother Manie and father Dirk, make up the team that manages Cerdak.

Described officially as a wound-treatment device, the Cerdak product is made from microporous ceramic spheres contained in a sachet made of organic material.

This sachet is placed on a wound and held in



HOW IT WORKS
The secret is in these microporous granules

place either by bandages or a plaster.

"Placed on the wound, the ceramic triggers a capillary reaction as soon as it is contacted by moisture," explains Cobus.

"The ceramic granules have a three-dimensionally interconnected pore structure, so the micro-sized pore cavities absorb the wound moisture, and lock it inside the ceramic. This means the ceramic sachet also removes the harmful bacteria contained in the wound moisture and lessens the chance of infection, as well as improving the rate of healing.

"When you have an open wound, the body produces moisture containing fresh growth factors and when this moisture stagnates, these factors mutate into antigrowth factors. The Cerdak device separates old and fresh wound fluid and locks the old moisture away, while keeping fresh healing factors present in a micromost wound bed," explains Cobus.

He calls this process mechanical disinfection and growth enhancement, which is a completely new concept.

"By not having to attack the bacteria chemically, but rather just absorbing them, they develop no resistance to treatment."

Cobus notes that competing products do not have the same ability of separating the old and new wound moisture, and are, on average, 70% more expensive.

Because Cerdak creates such a clean wound environment, it allows for the partial or even complete regeneration of tissue, leading to good cosmetic results, he adds.

This also aids the healing of chronic wounds, especially among diabetics and quadriplegics.

Finally, like the healing process, the application of the devices is simple, allowing for home treatment by care givers or patients themselves.

Cobus says the products are currently being used in all major South African private hospi-

tals and by many GPs, as well as being available in pharmacies. Cerdak is also being exported in test quantities to Europe, while larger commercial shipments are made regularly to Australia, Portugal and Romania.

"We are also negotiating with an Indian company which is currently conducting clinical trials with the product."

Though Cerdak has shopped around for an overseas partner in an effort to break into this difficult market, Cobus notes that the major companies feel that the Cerdak technology undermines their own research and product development in this field.

"The advanced wound-care market is a highly competitive \$8-billion-a-year industry but we are confident that these companies will eventually admit to the benefits of our product over their own developments."

Cobus adds that Cerdak is conducting the entire commercialisation project without any outside financial aid, noting that a particular government fund took one year to decide not to assist the company.

Should the promising Indian deal be put in ink, he believes the ceramic production will take place locally, while the packaging process will be done in India, owing to the Indians, willingness to fund the operation and their lower labour costs. Should any European deal be signed, full production will take place locally.

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