

MERSEN flash

June 2013

Anticorrosion and Process Equipment

SiC Polybloc®

The high-performance solution for corrosion, discharge and abrasion issues

Mersen has extended its materials range and offer an innovating range of SiC Polybloccs®. With the acquisition of Boostec, an industrial company specialising in the manufacture of **sintered silicon carbide**, Mersen can now offer SiC Polybloc®, the silicon carbide (SiC). **Silicon carbide** is a silicon and carbon compound with the chemical formula SiC. The properties of SiC make it suitable for design and use in exchangers for aggressive environments up to 1400°C

For internal use only

KEY ADVANTAGES

- High thermal conductivity ($160 \text{ W.K}^{-1}.\text{m}^{-1}$ (RT) at 20°C) with good resistance to thermal shock
- $0.6\mu\text{m}$ roughness → complying with pharma requirement
- Robustness proven by a European Spatial body that has certified Boostec SiC as the only material with sound stability
- High mechanical strength with 210 Mpa tensile strength, close to some steel materials
- High thermo-chemical resistance with a maximum temperature resistance of 1400°C
- No permeation with 0% open porosity → fully tight
- High abrasion resistance : hardness similar to diamond material
- No particle emission, free silica : no contamination for high purity applications
- FDA approved material



SiC Polybloc® - Application : cooler



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3 SiC Polybloc® orders to solve 3 different problems

- Last May, Mersen delivered its first 4 m² SiC Polybloc® to a French chemical plant for a new acid regeneration unit. Polybloc® will be used as an acid cooler, for hydrofluoric or sulphuric acid. SiC Polybloc® was chosen for its **anticorrosive** qualities.
- The second important SiC Polybloc® order concerns the fine chemicals sector and more specifically the manufacture of active pharmaceutical ingredients (APIs). The 4 m² SiC Polybloc® will be used as a condenser for reactor output. It was chosen for its **anticorrosive** properties (chlorine at output) and its **lack of material discharge**. This last point is crucial in the API sector where the prices of ingredients can be extremely high.
- The third order concerns SiC Polybloc® in a **very abrasive and corrosive** environment. As part of an optimisation process, the British customer chose SiC Polybloc® for its anticorrosive qualities, its resistance to hydrofluoric environments and also its solidity. Polybloc's very flexible design was also a decisive point in the final selection.

Mersen offers design options to facilitate maintenance

SiC Polybloc® is quick to clean :

Mersen has developed a design that allows to remove the cover while keeping the tightness between exchange blocs. The cleaning of the equipment is easy and the commissioning quick.

“Tell Tale”, a control option :

In order to make the contamination between process and service fluids impossible, Mersen proposes “Tell Tale” design that consists in an independent safety drilling of both fluids.



SiC Polybloc®

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