



SIC BLOCK HEAT EXCHANGERS

SiC Polybloc® heat exchangers lead to optimized performance and are the first choice for applications in the pharmaceutical and fine chemicals industry. They can be installed instead of existing graphite block heat exchanger units as a technical upgrade with no piping modification. The blocks are made from Boostec® sintered Silicon Carbide, an ideal material for corrosion-resistant heat exchangers. Boostec is a Mersen company.

FEATURES

■ No particle emission

- Highly resistant against abrasion, hardness close to diamond
- 0 % porosity thus no impregnation
- No permeation
- No contamination for high purity applications

■ The most compact heat exchanger

- Higher fluid velocity
- Extremely high thermal conductivity, close to aluminum
- Higher efficiency

■ Solution suitable for extreme environment

- Resistant to temperatures of nearly 1000°C
- Universal anticorrosive solution
- Pressure resistance up to 40bars
- Thermal shock resistance compared to graphite and glass-lined

■ Easy maintenance

- Low fouling
- No preventive maintenance
- Tell Tale system (leak detection)
- Compatible with many cleaning methods (in-place, pyrolysis, high-pressure water-jet, heavy chemicals detergents)

KEY MARKETS

- Fine chemicals, specialty chemicals, condensers for API
- Enhanced process
- Abrasive product inside a corrosive stream
- Extreme Environment (Temperature, Pressure)
- Hydrofluoric acid
- Flash or forced evaporators, thermosyphon
- Bromine
- Heat recovery units - Interchanger



SIC BLOCK HEAT EXCHANGER KEY FEATURES

SiC Polybloc® heat exchangers are assembled as a stack of single blocks which is then inserted into a metallic shell; seals are placed between the individual blocks. Due to this design, Polybloc® heat exchanger offers the opportunity to easily replace single blocks in case of a defect. During the engineering study, Polybloc® heat exchanger can be designed in a flexible way due to the SiC material properties.

TELL-TALE LEAKAGE DETECTION SYSTEM

In a Polybloc®, the two streams are separated by a wall of silicon carbide and gaskets. As the unit ages, the gaskets can become more brittle and prone to failure. Without any specific design feature or maintenance program, this could lead to a cross contamination between streams. In certain applications, such contamination of the product can lead to high profit loss. Solutions exist in other technologies such as a double tube sheet shell & tube design heat exchanger but not for a block heat exchanger.

The goal of the « Tell-Tale Hole » is to prevent any flow from one side to the other. The placement of safety holes between the two gaskets will insure that if one of them fails, only one stream will enter the safety chamber and then pass through the holes to the environment. The leak can then be detected by any kind of device (visual, electronic ...), enabling the user to stop the process and replace the gaskets before continuing production. Another detection method, is to pressurise the safety chamber with a product that would not pollute the process, in the case of a gasket failure. Therefore when the chamber loses pressure the gaskets must be replaced.



SIC POLYBLOC® PRODUCT ADVANTAGES

- Fully compliant with cGMP requirements
- Flexible design and engineering concept, with Easy&Fast Cleaning and leakage detection system
- Option of installation in existing Mersen graphite blocks heat exchangers to upgrade the corrosion resistance with identical foot-print.
- Competitive solution when tantalum or PTFE impregnated graphite (Mersen's Graphilor® XTH impregnated graphite) are not suitable
- Dimensional range: block diameters up to 350 mm, hole diameter from 6 mm to 24 mm
- Compact unit compared to other solutions, due to low heat transfer area required
- High quality raw materials produced within Mersen facilities

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GLOBAL EXPERT IN ELECTRICAL
POWER AND ADVANCED MATERIALS

EUROPE

FRANCE

Mersen France Py S.A.S.
Tel : +33 (0)3 83 81 60 81
info.pagny@mersen.com

GERMANY

Mersen Deutschland
Linsengericht GmbH
Tel : +49 (0) 6051 71 037
info.lsg@mersen.com

ITALIA

Mersen Italia S.p.A.
Tel : +39 02 82 681 31
ce.italia@mersen.com

SPAIN

Mersen Iberica fma, S.A.
Tel : +34 93 685 7800
olga.martinez@mersen.com

THE NETHERLANDS

Mersen Benelux B.V.
Tel : +31(0)10 298 30 30
contact.schiedam@mersen.com

UNITED KINGDOM

Mersen UK Teesside Ltd.
Tel : +44 (0)1642 790100
victoria.stephenson@mersen.com

RUSSIA & EASTERN EUROPE

Tel : +7 (964) 768 14 05
jean-pierre.lemoine@mersen.com

TURKEY

Mersen Istanbul San. Ür. A. Ş.
Tel : +90 262 751 0262
sales.istanbul@mersen.com

ASIA

CHINA

Mersen XIANDA
Tel : +86 21 5752 7777
info.xianda@mersen.com

INDIA

Mersen India
Tel : +91 9845331292
/+91 9840078844
sales.ce.india@mersen.com

JAPAN

MERSEN FMA JAPAN K.K.
Tel : +81 (3) 5368-3250
hajime.kagaya@mersen.com

KOREA

Mersen Korea Co., Ltd.
Tel : +82 (0)2 598 0071
sales.korea@mersen.com

SOUTH EAST ASIA

Tel : +91 9500041487
srikrishna.natesan@mersen.com

NORTH AMERICA

USA

Mersen USA Salem
Tel : +1 540 389-7535
joel.svec@mersen.com

Mersen USA Gonzales

Tel : +1 225 647-6752
dsholar@mersen.com

AFRICA

MOROCCO

Mersen Maroc S.A.R.L.
Tel : + 212 (0) 523 38 30 12
contact.maroc@mersen.com

SOUTH AFRICA

Mersen South Africa, (Pty) Ltd.
Tel : +27 011 474 0000
keith.pillay@mersen.com

MIDDLE EAST & AFRICA

Tel : +33 (0)3 83 81 60 81
Info.pagny@mersen.com

SOUTH AMERICA

ARGENTINA

Mersen Argentina, S.A.
Tel : +54 11 49 18 21 21
infos.latam@mersen.com

BRAZIL

Mersen Do Brasil, Ltda.
Tel : +55 (11) 4529 1160
jorge.lopes@mersen.com

CHILE

Mersen Chile
Tel : +56 22 621 5680
ventas@mersen.cl

COLOMBIA

Mersen Colombia
Tel : +57 (1) 3684588
ace.latam@mersen.com

MEXICO & LATIN AMERICA

Mersen Mexico Monterrey
Tel : +52 (81) 8127 2812
ace.latam@mersen.com



WWW.MERSEN.COM