



EKasic® SILICON CARBIDE MICROREACTORS

ESK microreactors are made of sintered silicon carbide advanced ceramic for process intensification in the pharmaceutical and fine chemicals industries. For the first time ever, hermetically tight, universal corrosion-resistant microreactors made of ceramic are available.

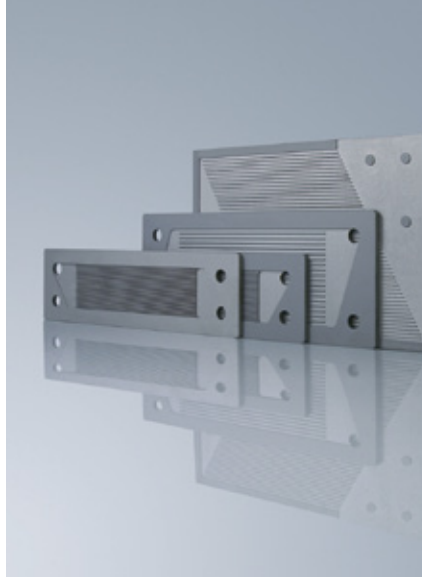
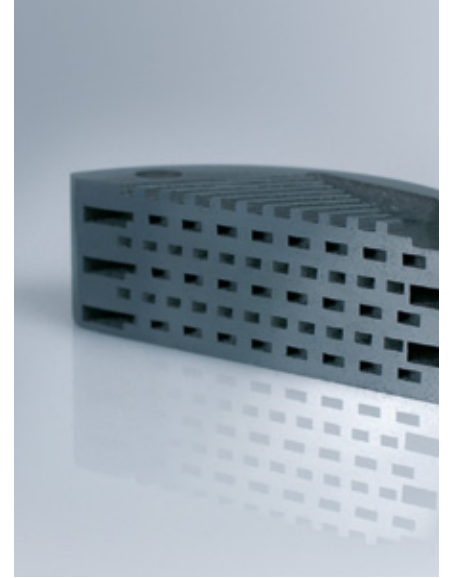


Plate components of EKasic® silicon carbide



Monolithic microreactor of EKasic® silicon carbide

Properties

ESK microreactors are used in the chemical and pharmaceutical industry, particularly for the synthesis of aggressive media and sensitive or explosive substances. Processes become intensified and yield is increased. The material used, EKasic® silicon carbide, offers all-round resistance to acids, alkalis and hot water, is lightweight, and features excellent thermal conductivity. It has already proven itself a millionfold in mechanical seals, sliding bearings in process fluid-lubricated pumps, nozzles and heat exchangers.

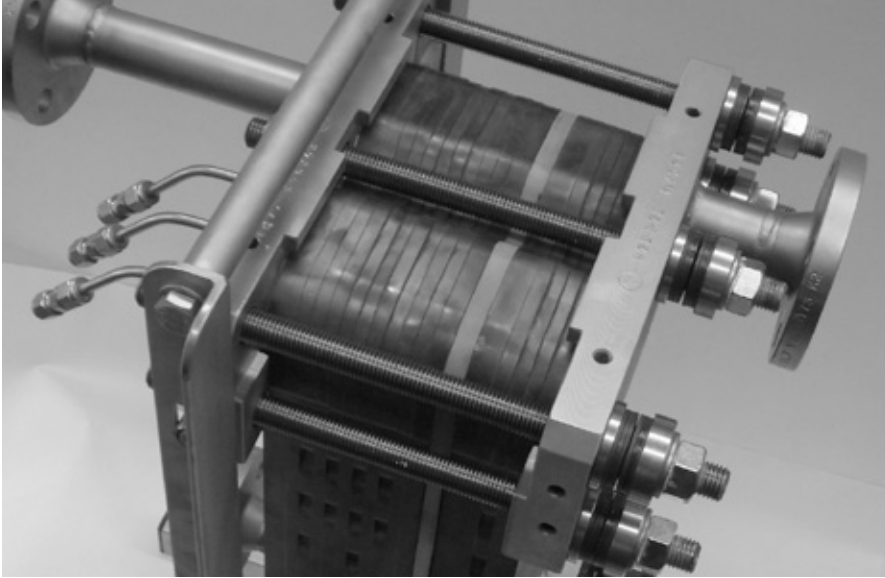
EKasic® silicon carbide is also extremely hard and wear resistant, and does not release particles or metal ions. The material is approved for drinking water

applications according to KTW, WRAS and Fresenius, and is also harmless for food-contact applications.

ESK microreactors permit long lifetimes, high safety and improved product quality.

Advantages

- High operation pressures
- Hermetically tight and mechanically stable
- High reliability
- Compact design and low weight
- High pressure differences can be handled
- High wear resistance significantly increases product quality

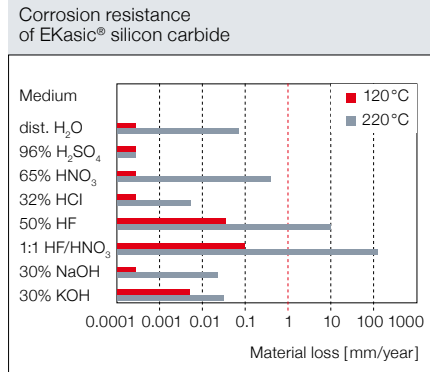


EKasic[®] silicon carbide microreactor

Processing

ESK microreactors are welded into a monolithic block by a patented joining technology. There are neither weld seams nor metal or glass-ceramic boundary layers. The characteristic strength, thermal conductivity and corrosion resistance of EKasic[®] are retained in full. Pressure resistance exceeds 150 bar. Operation pressure of 25 bar is allowed. The monolithic microreactors maintain their integrity up to 1500 °C. This guarantees the safety of the core of your process engineering system.

ESK microreactors have intricately structured microchannels of various geometries. Fluids are intensively mixed, and heat can be applied and extracted fast due to the extraordinary thermal conductivity of 125 W/mk. There are almost no limits to the complexity of the channels. The crucial advantage is that the different streams are kept hermetically tight in the robust apparatus and safely separated even at high pressures.



Application

- Synthesis of corrosive media
- Treatment of sensitive substances
- Processing of explosive materials
- Temperatures up to 1500 °C
- Cryogenic temperatures
- Operation pressure up to 25 bar

Special Designs

ESK microreactors of EKasic[®] silicon carbide are available in customized special designs. We will be pleased to provide no-obligation advice.

The data presented in this leaflet are in accordance with the present state of our knowledge, but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this leaflet should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The recommendations do not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the products for a particular purpose.

The management system has been certified according to DIN EN ISO 9001, DIN EN ISO 14001. EKasic[®] is a registered trademark of ESK Ceramics GmbH & Co. KG.

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