

HIGH-PERFORMANCE CERAMICS

CERAMIC TUBES IN CHEMICAL PROCESSES

Application:

Hydrocyanic acid (HCN) production

Material:

Alumina

Ceramic tubes are central components of the reactor system in the "BMA" process for hydrocyanic acid (HCN) production. They serve as reaction chambers, where a gas mixture of methane (CH₄) and ammonia (NH₃) is passed through at very high temperatures exceeding 1300 °C. Inside these tubes, a platinum catalyst coating initiates the endothermic reaction.

The reaction takes place in a bundle of parallel ceramic tubes, which are indirectly heated by burners surrounding the reactor. These tubes must maintain structural and chemical integrity under constant thermal and chemical stress.

Solutions for high-temperature processes

Kyocera offers tubes made of DEGUSSIT high-purity alumina that are ideally suited for such demanding applications. They exhibit excellent temperature and creep resistance, as well as durability under prolonged exposure to reactive gases such as ammonia, hydrogen, and HCN. Thanks to the long-standing expertise in tube extrusion, Kyocera produces 2000 mm long tubes with thin walls and exceptional surface quality, ensuring outstanding performance under cyclic high-temperature loads and a long service life.

**Material properties of DEGUSSIT oxide ceramics**

Products made of DEGUSSIT oxide ceramics have been specially developed for use at high temperatures.

The strength, and thus the corrosion resistance, is determined by the chemical resistance of the grain boundary of the material structure. For optimum results, high-purity alumina is used while reducing the share of by-products, particularly silicon oxide (SiO₂).

Kyocera is an experienced specialist in technical ceramics and a reliable partner in the development solutions for demanding applications.

- ▶ Extreme resistance to heat
- ▶ Excellent resistance to corrosion
- ▶ High dimensional stability
- ▶ Resistant to wear