

FRIALIT®-DEGUSSIT® HIGH-PERFORMANCE CERAMICS

INSULATORS FOR CRYOGENIC APPLICATIONS

Application:

Insulators for cryogenic applications
(Cryogenic Ceramic Breaks)

Material:

Aluminium oxide FRIALIT F99.7 and FRIALIT F99.7 hf



FRIALIT-DEGUSSIT High-Performance Ceramics are increasingly used in cryogenics, i.e. applications using liquid nitrogen (LN₂) or liquid helium (LHe).

Insulators and insulation tubes made of FRIALIT F99.7 and FRIALIT F99.7 hf can be fitted with ribs and glaze on the outside. The rib structure increases the creepage distance, leading to higher electric strength when used in atmospheric applications. The glaze facilitates handling and cleaning of the component.

The ceramic-to-metal assemblies can be customised to suit the requirements of the respective application by selecting suitable metal parts and brazing materials as well as appropriate constructions and wall thicknesses. They are ideally suited to withstand stresses from pressure, corrosion and temperature. Depending on the type of construction, the insulating tubes can be used in temperatures ranging from -271°C to 450°C and for internal pressures up to approx. 100 bar.

As standard, the insulation tubes are tested for vacuum tightness (He leak test with a leakage rate: < 10⁻⁹ mbar l/s). They can be fitted with different types of flanges, such as CF, KF or COF.

Optional tests like pressure tests, thermal cycling or electrical tests for resistance, dielectric strength and creepage distance could also be performed.

Well-known institutes such as the GSI (FAIR) in Darmstadt, CERN in Meyrin and the Institute of Modern Physics in Langzhou use our products.

Fields of Application:

- Energy technology, electrical insulation of superconducting cables
- High-energy technology (particle physics), insulation of LN₂ or LHe conductors
- Medical technology, medical gas extraction or storage of sample material

- Small desorption and leakage rates
- High pressure resistance
- Best insulation properties
- Temperature resistance between -271°C and 450°C

Competence in Advanced Ceramics Engineering for customised solutions