

Category: Materials, Coatings & Processes

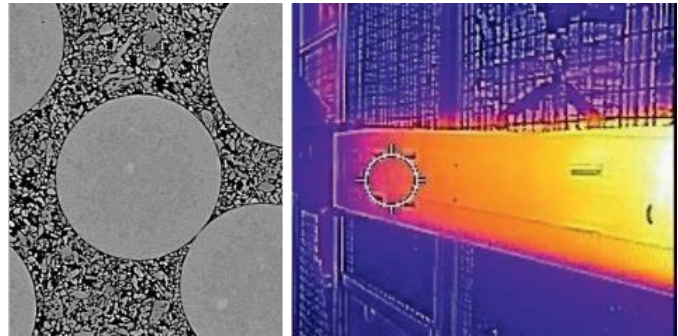
Reference: TD-DE-1047

WHIPOX - fiber ceramic coating

High-temperature resistant, non-brittle, oxide ceramic Fiber Composite Material (OCMC). Ideal for applications in oxidizing and corrosive media.

The oxide ceramic fiber composite WHIPOX® (Wound Highly Porous Oxide Ceramic Matrix Composite) was developed to component maturity for reentry vehicles.

In addition to applications in aero-gas turbines and missiles, which are being worked on in interdisciplinary projects, the material has also been successfully tested for use in non-aerospace applications.



WPX - Characteristics	AA15	MA15
Density [g/cm ³]	2,8	2,5
Porosity [vol%]	32	32
Flexural strength [MPa]	280	240
E-modulus [GPa]	125	85
ILSS [MPa]	14	9
Thermal conductivity [W/mK at 1.300 °C]	2,4	1,7
Thermal expansion [10 ⁻⁶ /K bei 1.200°C]	8,2	6,7

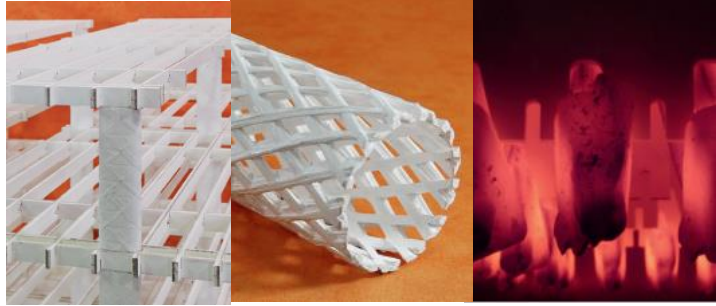
Innovative Aspects:

WHIPOX® combines the positive properties of metals and ceramics:

- Thermal shock resistant
- High temperature stable up to over 1,300°C
- Oxidation and corrosion resistant
- Resistant to metallic melts
- High tensile and flexural strength
- Low component weight
- Ductile, non-brittle fracture behavior
- Electromagnetic transparency
- Electrical insulator
- Low thermal conductivity
- Low heat capacity

Application Areas:

The specific and unique combination of properties of fiber-reinforced oxide ceramics enables new innovative approaches to solving material problems in industrial furnace construction, metallurgical plant engineering, filter technology, fire protection, catalysts and soot filters, electrical engineering and medical applications.



In the field of industrial furnace construction, high-speed burner nozzles are already being manufactured under license by a ceramic manufacturer.

Cooperation:

There is interest in material sales as well as the development of WHIPOX components to specific requirements.

Offered are standardized semi-finished products (sheets, grids, tubes) as well as customized solutions (components and systems) made of oxide fiber composite ceramics.

Standard grades AA, MA and MM are made of mullitic or Al₂O₃ fiber / matrix for temperature ranges T<1,150°C, T<1,250°C, T>1,250°C.