

What is X-CERA™?

X-CERA™ is a high-performance ceramic foam. The porosity is not interconnected.

Stiff and easily machinable in its final state – even with hand tools – and it holds an edge.

-200°C to 1,300°C+

**Continuous Operation in Air:
with variants up to 1650°C+**

It is stiff and structurally strong, Compressive Strength of 500 psi.

X-CERA™ is also 7 times lighter than water: 0.15g/cc, or less than 10 lbs. per cubic foot.



X-CERA™ Thermal Protection

Property	LI-900 (Shuttle)	FRCI	PICA (Ablative)	X-CERA™
Density	~0.144 g/cc	higher	low	0.15 g/cc
Maximum Reuse Temperature	1260°C	1260°C	N/A	1300°C 1400°C 1650°C+
Strength	very low	medium	low	200-500 psi
Machinability	fragile	moderate	poor	easy
Thermal k @ 20°C (W/m·K)	0.049	0.060	0.11-0.17	0.034
Thermal k @1,000°C (W/m·K)	~0.120	~ 0.15	0.4-0.7	0.11-0.13 (best effort test data)
Vacuum Stable E595	yes	yes	yes	yes

X-CERA™ THERMAL SHOCK TEST

Typical thermal shock tests:

500-1000°C per **minute**.

X-CERA™ shows:

- **Zero Shedding**
- **Zero Cracking**
- **Zero Deformation**

In our shock test of over
1000°C per second,

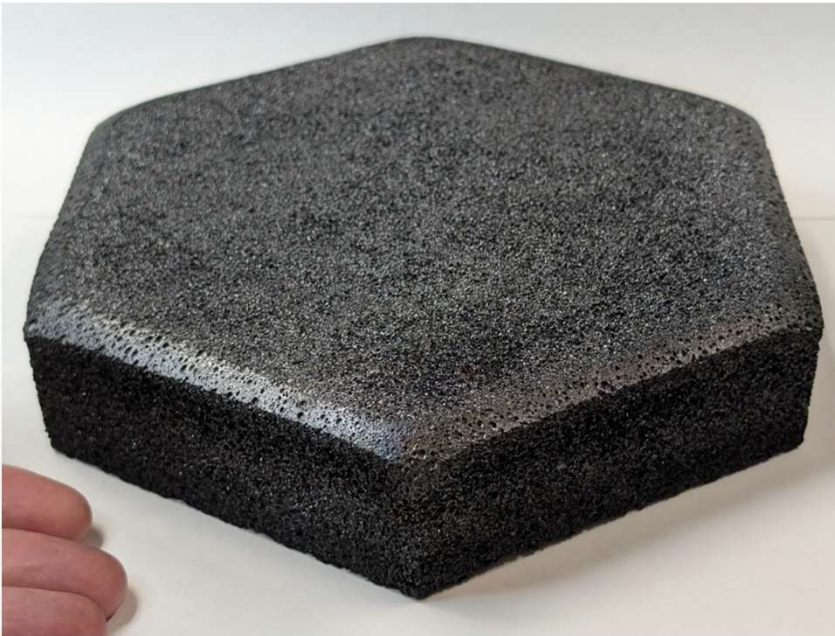
We subjected it to:

- **Liquid nitrogen (-200°C)**
- **Propane blowtorch (2,000°C)**
- **Back to liquid nitrogen**

Video available upon request



X-CERA™ WATERPROOF COATING



Our fired waterproofing coating is made of X-CERA™...very little CTE mismatch. **We engineer surface treatment / densification / coating variants.**

X-CERA™ FIELD REPAIR



We also have a field-repairable (slurry + torch) version of the skin.

Fix the tile surfaces in situ

X-CERA Extreme

We have developed formulations that have demonstrated insignificant mass loss **after 20 hours at 1650°C in air.**



X-CERA Extreme

These doped, **high-zirconia** foams show stable crystalline structure
in XRD tests before and after 1650°C for 20 hours in air.

