

# SHP- 199™ HFC

HFC Precursor



POLYMER – TO – CERAMIC™ TECHNOLOGY

## Technical Data Sheet

SPH-199 HFC is a commercially available one-component precursor to form thermally stable hafnium carbide. It is in a saturated aqueous based solution. SPH-199 HFC is an ideal candidate for ceramic matrix composites and for production of high purity carbon rich HFC. It offers a reduction in manufacturing ease compared to other traditional ceramic forming techniques when forming complex shapes.

## High Ceramic Yields

Low temperature green cure at 200°C >25% yield, depending on the degree of hardness required, allows for flexibility in the use of a variety of inexpensive mold materials.

Amorphous (glassy) HFC forms at 850–1600°C with 70-76% ceramic yield. Nano-crystalline HFC forms at 1600°C.

## High Thermal Stability and High Purity

The ceramics formed are stable up to 3500°C based on conditions, making them ideal for high temperature hypersonic and re-entry vehicle applications.

The HFC produced has a 1:1-2 hafnium to carbon atomic ratio.

## Ease of Use

SPH-199 HFC contains and requires no additional solvents for processing.

SPH-199 HFC contains and requires no fillers for processing but can be added to enhance the performance of matrices formed from pyrolysis.

## Properties of SPH-199™ HFC

Density	1-1.5 g/cm <sup>3</sup>
Appearance	Amber Brown
Viscosity	3-5 cps at 25°C
Compatible Solvents	Alcohol
Compatible Filler Type	Refractory carbides, carbon (optional)
Odor	None
Catalyst	None
DOT / IATA Regulations	Non-Hazardous
Storage	Inert Container

### Warranty

No analysis of this product is permitted. The data provided relates only to the material identified above, as supplied by Starfire Systems®, Inc. (SSI). Because conditions and methods of use of our products are beyond our control, this information should not be used as a substitution for customer's tests to ensure that SSI's products are safe, effective, and fully satisfactory for the intended end use. SSI's sole warranty is that the product will meet sales specifications in effect at the time of shipment.