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Type H

Hafnium Oxide Water-Based Coating

Type H is a Hafnium Oxide (HfO_2) coating which uses a thermodynamically stable Yttrium Aluminum Garnet (YAG, $3Y_2O_3*5Al_2O_3$) binder in order to attain very high use temperatures and stability. After firing to temperatures >600 C, the coating composition is 95% HfO_2 and 5% YAG. Type H yields a well-bonded Hafnium Oxide coating when applied to most substrates and is non-reactive with many ceramics and alloys, solid or molten. Hafnium Oxide has a "Normal Total Emittance" of 0.8 to 0.9 up to 2000 C, which is a quite unique property of being near blackbody, and has a very high dielectric constant.



Key Attributes

- Non-reactivity with solid or molten metals/alloys
- Upper use limit temperature expected to be over 1900 C in all atmospheres
- Unique YAG-bonded HfO_2 composition: 95% HfO_2 and 5% YAG after firing to T > 600 C
- High emissivity, high thermal neutron capture cross-section, and high dielectric constant of Hafnium and HfO_2
- Fired (T > 600 C) coating can be lightly burnished to produce a slick, lubricative finish

Ideal Use

- Very-high-temperature molten metal processing and transport
- Aerospace, nuclear, and other demanding applications
- Barrier coating to prevent diffusion, reactions, and sticking of parts during heat treating

Use Notes

1. Resuspend if needed.
2. Use full strength, or dilute as desired with distilled or deionized water.
3. Clean surfaces to be painted of any oils, dirt, scale, etc.
4. Apply 1-2 layers by brush or spray, drying after each layer.
5. Allow to thoroughly dry before use.

Specifications

Active Ingredient	HfO_2
Max Use Temperature	
All Atmospheres	>1900 C (> 3452 F)
Fired Composition	
95% HfO_2, 5% YAG [$3Y_2O_3*5Al_2O_3$]	
Liquid Carrier	Water
Binder Phase	YAG
Brookfield Viscosity (cps)	1550 @3/60
Specific Gravity	1.4
Color	White
Shelf Life (months	>12
Coverage (ft^2/gal)	100 to 400
Coating pH	3
H F R Ratings	1-0-0
Substrate Use	All

Sizes and colors

Type H is a white colored paint.

Standard Size: 4 oz. Nalgene
8 oz. Nalgene

Safety Information

- Consult SDS before use.
- Avoid breathing of spray/vapors.
- For Industrial Use only.

CAUTION: DO NOT CONTACT WET COATINGS WITH MOLTEN METAL

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