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# Type CE Blackbody

## Cerium Oxide Coating

Type CE Blackbody is a water-based, high-emissivity Cerium Oxide ( $\text{CeO}_2$ ) coating that has the good thermodynamic stability of Rare Earth Oxides (REOs) and forms 90%  $\text{CeO}_2$  after outgassing at 500-600 C. The Type CE Blackbody coating has very good chemical and erosion resistance, and is designed for ceramic/refractory substrates. A conservative upper use limit for the coating is 1500 C (2732 F). See our US Patent 6,007,873 on  $\text{CeO}_2$  for a high emissivity coating.

### Key Attributes

- Yields 90%  $\text{CeO}_2$  on heating over 600 C
- High emissivity:  $\geq 0.9$  from 1000 C to  $\geq 1500$  C
- Expected non-reactive with most materials
- Good chemical/erosion resistance
- Low thermal conductivity\*\* and electrical conductivity
- Water-based, easy to use like house paint

### Ideal Use

- Whenever a high-emissivity/blackbody coating is required
- Faster heatup/cooldown for furnaces
- Better temperature uniformity
- Interaction barrier coating and release layer

### Use Notes

1. Resuspend if needed. Can dilute with water.
2. Clean surfaces to be painted of any oils dirt, scale, etc.
3. Apply one thin layer by brush or spray like ordinary house paint. Apply additional layers if needed, after drying prior layer.
4. Allow to thoroughly dry at room temperature before use.

### Safety Information

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



### Specifications

Active Ingredients	99.9% Cerium Oxide, $\text{CeO}_2$
Max Use Temperature	$\geq 1500$ C (2732 F)
Use Atmosphere	All
Fired Composition	90% $\text{CeO}_2$
Liquid Carrier	Water
Binder Phase	Proprietary
Brookfield Viscosity	4180 @4/60
Specific Gravity	1.65
Color	Light Yellow
Shelf Life (months)	>12
Coverage (ft <sup>2</sup> /gal)	100 to 400
Coating pH	3-4
H F R Ratings	1-0-0
Substrate Use	Ceramics

Note:

\*\*Kiichi Suzuki et al., "Thermal and Mechanical Properties of  $\text{CeO}_2$ ," J. Am. Ceram. Soc., 102 [4], 1994-2008 (2019). Note: see Figure 9.

### Sizes and colors

Type CE Blackbody is a light yellow paint.  
Standard Size: 1 gallon pail, 1 quart Nalgene

### CAUTION: DO NOT CONTACT WET COATINGS WITH MOLTEN METAL

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