

**Y**trium oxide based surface coatings are applied to further enhance the anodized aluminum metal primary used in machinery IC chamber components.

Corrosion and erosion resistance are critical and important properties for parts used in vacuum chamber and Semi Conductor (IC) manufacturing, where both corrosive chemistries and high energy plasma bombardment reduce component lifetime and create contamination problems.

HA 4002 Yttrium Oxide powders, when thermal sprayed, provide a protective coating on the aluminum alloy chamber components which improves the resistance of the surface to corrosion and erosion dramatically. Particularly in the flourine and oxygen plasma

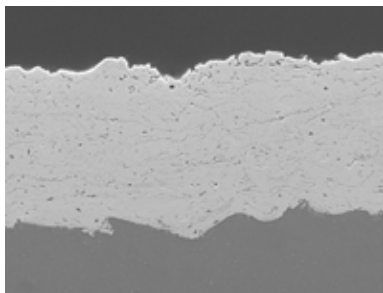


Fig 1. - SEM x 200

environment used in the fabrication of IC's, improvements by a factor of 5 are realized.

Coatings produced (Fig. 1.) with the HA 4002 powders exhibit high densities, with less than 1% porosity, engineered surface finishes, and excellent corrosion and erosion resistance.

**Powder Characteristics**

- Our Ytria powders are a minimum of 99.9% pure Yttrium Oxide (Y<sub>2</sub>O<sub>3</sub>) powders, designed to meet stringent semi-conductor industry requirements.
- All HA 4002 powders have spherical shape (Fig 2.) as produced by either agglomerated or agglomerated and sintered process for maximum flow-ability.
- Some of the available powder size distributions are shown in Table 1 and Fig. 3.
- Typical chemical analysis is shown in Table 2.



Fig 2.

**Chemical Properties**

Element	Weight Percent
Y <sub>2</sub> O <sub>3</sub>	99.9 min.
Al <sub>2</sub> O <sub>3</sub>	<0.007
CaO	<0.020
Fe <sub>2</sub> O <sub>3</sub>	<0.003
SiO <sub>2</sub>	<0.025
ZrO <sub>2</sub>	<0.015
Cr <sub>2</sub> O <sub>3</sub>	<0.002
All Others	<0.070

Table 2

**Particle Size Distributions**

Powder Number	Powder Type	Particle Size	Ra [µinch]
HA 4002	spray dried	-63+5 µm (-230 mesh + 5 µm)	200
HA 4002-1	spray dried/sintered	-53+10 µm (-270 mesh + 10 µm)	220
HA 4002-2	spray dried/sintered	-75+15 µm (-200 mesh + 15 µm)	250

Table 1.

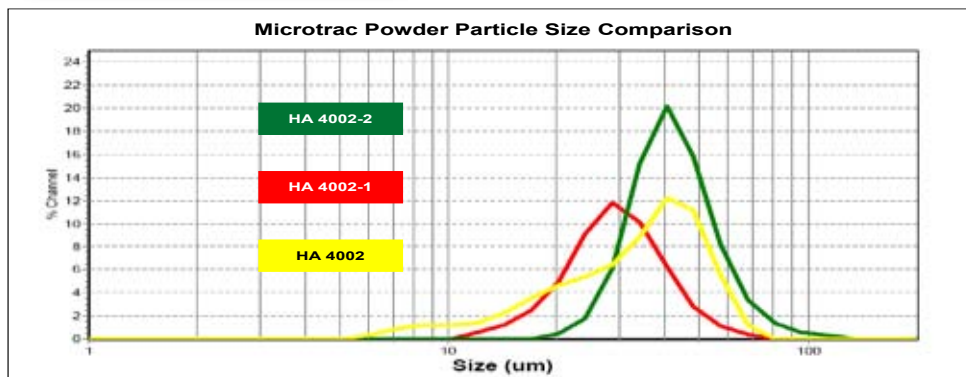


Fig 3.

**Contact Us**



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