Yttrium Oxide Thermal Spray Powder

■ High Purity Yttrium Oxide

FUJIMI's high purity yttrium oxide (>99.99%) is an agglomerated and sintered composite powder of Y_2O_3 for thermal spray.

<Product feature>

1. Free of spitting by powder classification technology and particle strength control
2. Designed for various types of Plasma Spray Guns to achieve higher deposition efficiency

■ Purity of Yttrium oxide

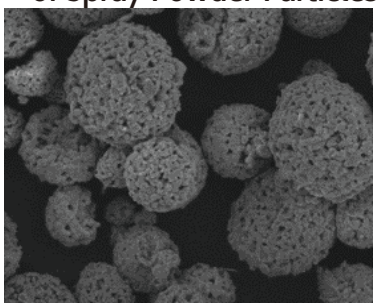
Yttrium oxide thermal spray coat is used in semiconductor and liquid-crystal-display (LCD) fabricating equipments, and demanded high purity more than 99.99% to prevent from contaminations. FUJIMI thermal spray powder are manufactured under very strict quality control, and supply our customer with yttrium oxide of high quality and purity.

■<Typical chemical composition>

wt%

	Typical chemical composition (ppm)							
Element	Y_2O_3	Fe	Na	Mg	Al	Si	K	Ca
High purity Y_2O_3	>99.99%	7	<1	<1	<1	<1	<22	6

■SEM Image of Spray Powder Particles



FUJIMI 's yttrium oxide powder are spherical particles and designed to achieve the highest deposition efficiency. FUJIMI has sophisticated classification technology and powder size can be customized to suit a wide range of application needs.

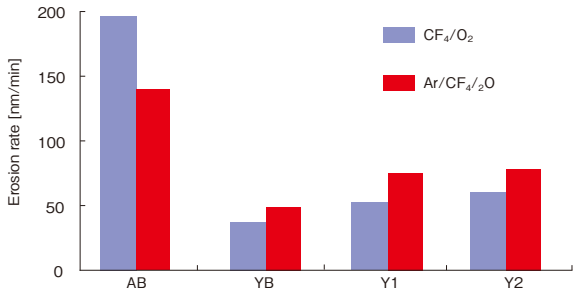
Coating Characteristics

■Plasma-erosion Properties of Yttrium Oxide Coating

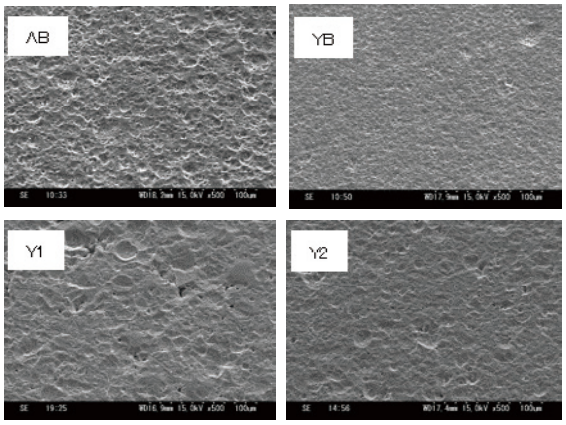
FUJIMI has investigated the erosion rate of yttrium oxide and aluminium oxide coatings under $Ar/CF_4/O_2$ and $/CF_4/O_2$ plasma and the surface morphologies after the erosion test condition using reactive ion etching (RIE).

No.	Material	Manufacturing method	Primary particle diameter (μm)
AB	Al_2O_3	Bulk	
YB	Y_2O_3		
Y1		Agglomerated and sintered	0.6
Y2			2.9

1) Erosion rate of the plasma spray coatings



2) Surface morphologies after the erosion test



These results show :

- Yttrium oxide coating has higher anti-plasma erosion resistance than aluminium oxide coating.
- Within yttrium oxide spray coatings, although the erosion rates are almost same at both conditions, but surface morphologies are different, where eroded surface becomes smoother from Y1 to Y2. It shows that using larger primary particle is effective to retain smooth surface against plasma erosion.

Based on these results, FUJIMI's yttrium oxide have been set the primary particle size approximately 3μm .

Applications

■Applications of high purity Yttrium Oxide

<Coating Characteristics>
- ●High purity (>99.99%)
- ●Chemical Stability
- ●Anti-plasma erosion resistance

<Applications>
- ●Plasma etch equipments
- ●CVD equipments
- ●ESC(Electrostatic chuck)

High purity yttrium oxide is applied in the semiconductor and liquid-crystal-display (LCD) production equipment with Anti-plasma erosion resistance.

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