PRODUCT CATALOGUE / / / CAT-006

Yttria Thermal Spray Powder

YSP-40

Clean plasma, *dense* coatings.

Strocera

STROCERA.COM · © 2026 STROCERA

POSITION / / / CAT-006

A coating starts as a **powder**.

HIGH-PURITY Y_2O_3 / / / 4N / / / AGGLOMERATED & SINTERED / / / APS FEEDSTOCK

Y_2O_3 coatings are the reference protective layer on plasma-etch and deposition chamber components, where they resist fluorine and chlorine plasma erosion and keep particle generation low. YSP-40 is a high-purity yttrium oxide powder engineered as feedstock for atmospheric plasma spray.

The powder is supplied as spherical, agglomerated-and-sintered granules with a median size of about 20 µm, selected for stable feeding, complete melting in standard APS torches and dense, smooth coatings. Granules are spray-dried with an organic binder that is burnt out during sintering.

01 / / / PURITY

Purity

≥ 99.99% on a total oxide basis (4N) and ≥ 99.995% Y_2O_3/TREO. Non-rare-earth impurities are controlled to published limits and reported on every batch.

02 / / / FEED

Feed

D50 15 to 25 µm, D90 ≤ 45 µm, fines below 5 µm ≤ 5% by volume. Hall flow ≤ 60 s / 50 g to ASTM B213, apparent density 1.4 to 2.0 g/cm³ to ASTM B212.

SPECIFIED PER CUSTOMER PROCESS

- / Finer cuts by classification
- / Tighter limits for individual elements
- / Coarser YSP-40/30 cut, under development



STR-TDS-YSP-40 / / / YSP-40

Yttria Thermal Spray Powder

Clean plasma, *dense* coatings.

HIGH-PURITY Y_2O_3 / / / 4N / / / AGGLOMERATED & SINTERED / / / APS FEEDSTOCK

SPECIFICATION / / / STR-TDS-YSP-40

Yttria Thermal Spray Powder YSP-40

HIGH-PURITY Y_2O_3 / / / 4N / / / AGGLOMERATED & SINTERED / / / APS FEEDSTOCK

STATUS

Preliminary. This sheet is a target specification issued for product qualification. Limits shown are the design targets of the development programme; measured values for each delivery are reported on the batch Certificate of Analysis, which takes precedence over this document.

DELIVERY AND HANDLING

- Dry, white, free-flowing spherical granules; binder burnt out during sintering.
- 1 kg and 5 kg HDPE containers; 25 kg fibre drum with PE liner. Screw or locking lid with tamper-evident seal. Batch, cut and revision on the label.
- Sealed, dry, 5 to 35 °C, away from direct sunlight; reseal immediately after use. 2 years sealed.
- Measured values for each delivery are reported on the batch Certificate of Analysis. SDS available on request.

KEY DATA · TARGET

PURITY, Y_2O_3	≥ 99.99% (4N)
PHASE	cubic, single phase
MORPHOLOGY	spherical granules
D50, MEDIAN	15 to 25 µm
D90	≤ 45 µm
HALL FLOW	≤ 60 s / 50 g
APPARENT DENSITY	1.4 to 2.0 g/cm³
RESIDUAL CARBON	reported on CoA

FULL TARGET SPECIFICATION / / / STR-TDS-YSP-40

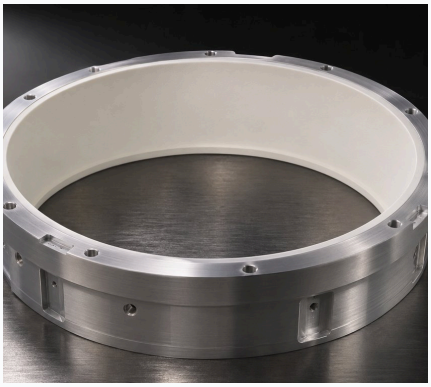
NOTES

- YSP-40/20 is intended for dense, smooth coatings and standard APS nozzles.
- A coarser YSP-40/30 cut (D50 ≈ 30 µm) for higher deposition rates is under development; finer cuts can be produced by classification on request.
- PSD limits are target values for qualification batches and will be tightened as process data accumulates.
- Coating properties (porosity, hardness, adhesion, erosion rate) depend on torch, parameters and substrate and are not specified here.

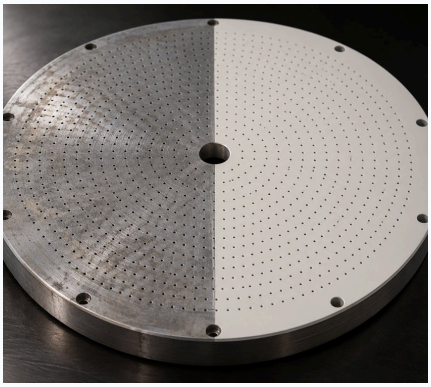
APPLICATIONS / / / CAT-006

In service

YSP-40



PLASMA-ETCH CHAMBER COMPONENTS
SEMICONDUCTOR EQUIPMENT



CHAMBER HARDWARE REFURBISHMENT
SEMICONDUCTOR EQUIPMENT



REACTIVE-METAL RELEASE COATINGS
INDUSTRY

USE CASES

- Plasma-etch and deposition chamber components (liners, rings, showerheads)
- Halogen-plasma erosion barriers on Al, SS and ceramic substrates
- Protective and release coatings for reactive-metal melting and casting
- High-temperature barrier and oxidation-resistant layers
- Feedstock for Y_2O_3-based composite and blended spray powders
- Refurbishment and recoating of in-service chamber hardware

Images are illustrative. Strocera supplies the powder; forming, firing and spraying stay on your line.

REQUIREMENT AND RESPONSE / / / CAT-006

What it **answers**

YSP-40

The left column is the problem on your side. The right column names the sector that carries the application.

REQUIREMENT	MATERIAL RESPONSE	SECTOR
Clean coatings on plasma-facing parts	≥ 99.99% (4N), Y_2O_3/TREO ≥ 99.995%. Fe_2O_3 ≤ 10 ppm, Al_2O_3 ≤ 20 ppm, other rare-earth oxides ≤ 50 ppm.	SEMICONDUCTOR EQUIPMENT
Stable feeding in a standard APS torch	Spherical agglomerated and sintered granules. Hall flow ≤ 60 s / 50 g, apparent density 1.4 to 2.0 g/cm³.	SEMICONDUCTOR EQUIPMENT
Repeatable recoating between lots	D50 15 to 25 µm, D90 ≤ 45 µm, hollow or fractured granules ≤ 10% by number. Measured values on each batch certificate.	SEMICONDUCTOR EQUIPMENT
Protective layers in reactive-metal processing	Cubic Y_2O_3 with no secondary phase detected by XRD, loss on ignition ≤ 0.5%.	INDUSTRY

PROCESS / / / CAT-006

Specification first

YSP-40

FORMULATION / / / CHARACTERIZATION / / / QUALIFICATION / / / DELIVERY

01 / / / FORMULATION

Formulation

Your specification is the starting point. Tighter limits for individual elements and particle options are agreed against your process.

02 / / / CHARACTERIZATION

Characterization

Impurities by ICP-MS and ICP-OES, phase by X-ray diffraction, particle size by laser diffraction, morphology by FE-SEM, to the methods named on the datasheet.

03 / / / QUALIFICATION

Qualification

Limits are target values for qualification batches. Sample quantities for qualification: 1 to 5 kg per cut.

04 / / / DELIVERY

Delivery

HDPE containers and PE-lined fibre drums with tamper-evident seals. Batch and revision on the label. Measured values on the batch Certificate of Analysis.

Strocera

Bring your *specification*.

STROCERA.COM / / / INFO@STROCERA.COM

FULL SPECIFICATION / / / STR-TDS-YSP-40