YTTRIUM OXIDE  GRADE A, GRADE AT, GRADE B, GRADE C

<table>
<thead>
<tr>
<th>Chemical Formula</th>
<th>Y$_2$O$_3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>Yttrium Oxide</td>
</tr>
<tr>
<td>Description of Product</td>
<td>White Powder</td>
</tr>
<tr>
<td>HS Number</td>
<td>28469000</td>
</tr>
</tbody>
</table>

### Grades Available
- Y$_2$O$_3$ Grade A
- Y$_2$O$_3$ Grade AT
- Y$_2$O$_3$ Grade B
- Y$_2$O$_3$ Grade C

### Chemical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Grade A</th>
<th>Grade AT</th>
<th>Grade B</th>
<th>Grade C</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss on Ignition (L.O.I.)$^{1)}$</td>
<td>max. 1.00</td>
<td>1.00</td>
<td>1.50</td>
<td>1.00</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>min. 99.00</td>
<td>99.00</td>
<td>98.50</td>
<td>99.00</td>
<td>%</td>
</tr>
<tr>
<td>Total Rare Earth Oxides (TREO)</td>
<td>min. 99.90</td>
<td>99.90</td>
<td>99.90</td>
<td>99.95</td>
<td>%</td>
</tr>
<tr>
<td>Y$_2$O$_3$/TREO</td>
<td>max. 0.005</td>
<td>0.005</td>
<td>0.005</td>
<td>0.005</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>min. 0.003</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>max. 0.005</td>
<td>0.005</td>
<td>0.005</td>
<td>0.005</td>
<td>%</td>
</tr>
</tbody>
</table>

### Physical Characteristics

- **Specific Surface Area**$^{2)}$:
  - Grade A: 4.0 – 9.0 m$^2$/g
  - Grade AT: 1.0 – 7.0 m$^2$/g
  - Grade B: 4.0 – 12.0 m$^2$/g
  - Grade C: 10.0 – 16.0 m$^2$/g

- **Particle Size Distribution**$^{3)}$:
  - **D 90 %**
    - Grade A: 4.0 – 9.0 µm
    - Grade AT: 4.0 – 9.0 µm
    - Grade B: 2.0 – 4.0 µm
    - Grade C: 1.0 – 2.0 µm
  - **D 50 %**
    - Grade A: 1.5 – 3.0 µm
    - Grade AT: 1.5 – 3.0 µm
    - Grade B: 0.9 – 1.7 µm
    - Grade C: 0.6 – 0.9 µm
  - **D 10 %**
    - Grade A: 0.6 – 1.5 µm
    - Grade AT: 0.6 – 1.5 µm
    - Grade B: 0.3 – 0.6 µm
    - Grade C: 0.2 – 0.5 µm

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1) 1 h/1000°C. 2) TriStar 3-point by BET per ASTM D 3663.
3) MASTERSIZER by Laser Light Diffraction per ASTM B 822, deglomeration with high energy ultra sonic before analysis.
Packaging

**Grade A and AT:** 50 kg steel drums with polyethylene inlet (60 l).
8 drums on one pallet CP 1 (1000 x 1200 mm) = 1 packaging unit of 400 kg.

**Grade B:** 25 kg steel drums with polyethylene inlet (60 l).
8 drums on one pallet CP 1 (1000 x 1200 mm) = 1 packaging unit of 320 kg.

**Grade C:** 15 kg steel drums with polyethylene inlet (60 l).
8 drums on one pallet CP 1 (1000 x 1200 mm) = 1 packaging unit of 120 kg.
Other packaging/quantity on request.

**Lot Size:** Yttrium oxide powders are available in homogeneous lots up to 500 kg.

Storage and Handling

Storage and handling are subject to the rules and regulations in the country of use. Store in a closed container.

Hazards identification in Advertising (REGULATION (EC) No 1272/2008 Article 48)

None.

Documentation

An inspection document in accordance with EN 10204 is supplied with every shipment.

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4) Secondary Electron Image (SEI)