For Abrasive, Corrosive and Erosive Applications

Fine Ceramic Valves

COSMIX™

Made in Japan
COSMIX™ Fine Ceramic Ball Valves

Ceramic materials offer greater hardness and excellent abrasion and corrosion resistance. Cosmix Ball Valves feature fine ceramics in all wetted parts.

Features
- Excellent durability due to ceramic materials.
- Excellent flow control performance.
- Floating ball structure, especially useful in slurry applications.
- Simple construction, lightweight and compact.
- Easy maintenance.

Performance

<table>
<thead>
<tr>
<th>Item</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td>0.98 MPa</td>
</tr>
<tr>
<td>Maximum Operating Differential Pressure</td>
<td>0.98~0.49 MPa (Depend on valve sizes)</td>
</tr>
<tr>
<td>Maximum Operating Temperature</td>
<td>200 °C</td>
</tr>
<tr>
<td>Seat Leakage</td>
<td>1/10000 of Maximum Cv Value [ANSI FCI 70-2 CLASS IV (ANSI B 16.104)]</td>
</tr>
<tr>
<td>Valve Size</td>
<td>1/2&quot;~6&quot;</td>
</tr>
<tr>
<td>Rangeability</td>
<td>15:1</td>
</tr>
<tr>
<td>Flange Connection</td>
<td>DIN PN 10, ANSI 150, JIS 10K</td>
</tr>
</tbody>
</table>
Applications

For flow control and on-off service of abrasive and corrosive fluids

Coal-Fired Thermal Power Plants
Flue Gas Desulphurization Plants

Limestone slurry
Gypsum slurry
Fly ash slurry
Waste water
Coal powder

Pulp & Paper Mills
Green liquor
White liquor
Black liquor
Lime mud
Talc
Clay

Chemical Plants
Hydrogen fluoride
Phosphoric acid
Caustic soda

Alumina Refining
Caustic soda
Alumina powder

Steel Plants
Dry dust remover
Coal powder

Oil Sands

Fujikin is committed to protecting the environment
COSMIX
Fine Ceramic Ball Valves

For Flow Control & On-Off Service of Abrasive and Corrosive Fluids

Structure

Features
1. Excellent durability for abrasive and corrosive fluids. Wetted parts are made from solid fine ceramics.
2. Excellent flow controllability:
   Each valve size offers 3-4 equal percentage (EQ%) triangular ports for precise flow control and a round hole ball for on-off service.
3. Floating ball structure.
4. Low seat leakage.
5. Small number of parts.
6. Simple structure, lightweight and compact.
7. Good maintainability.

Features

Cv Value Curves

Cv Value Table

Manual Operated Type Dimension Table

Accessories

Actuator

Pneumatic Actuator
Electric Actuator

Standard: EL-O-MATIC
AUMA
ROTORK

Positioner

Regulator

Standard: SSS
Standard: SSS
Characteristics of Fine Ceramic Materials

Key Features
1. Greater hardness
2. Greater compressive strength
3. Stronger chemical resistance
4. Higher maximum temperature
5. Smaller bulk density

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Material (Kyocera No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>White</td>
</tr>
<tr>
<td>Water Absorptivity (%)</td>
<td>0</td>
</tr>
<tr>
<td>Vickers Hardness, kg/m²</td>
<td>1650</td>
</tr>
<tr>
<td>Flexural Strength (MPa)</td>
<td>31</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>220</td>
</tr>
<tr>
<td>Thermal Conductivity at 20°C</td>
<td>0.06</td>
</tr>
<tr>
<td>Maximum Use Temperature (ºC)</td>
<td>1500</td>
</tr>
<tr>
<td>Cost Comparison (%)</td>
<td>100</td>
</tr>
</tbody>
</table>

Fine Ceramic Reducers, Pipes and Orifices

Reducer  Straight Pipe Spool  Restriction Orifice Plate  Flange Adapter

Ceresist
COSMIX
Fine Ceramic Plug Valves
For Precise, Small-Cv Flow Control of Abrasive and Corrosive Fluids

Structure

Colored parts made by Fine Ceramics

Performance

<table>
<thead>
<tr>
<th>Item</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td>1.96 MPa</td>
</tr>
<tr>
<td>Maximum Operating Differential Pressure</td>
<td>1.47 MPa</td>
</tr>
<tr>
<td>Maximum Operating Temperature</td>
<td>200 °C</td>
</tr>
<tr>
<td>Seat Leakage</td>
<td>1/1000 of Maximum Cv Value (ANSI FCI 70-2 CLASS III) (ANSI B 16.104)</td>
</tr>
<tr>
<td>Valve Size</td>
<td>1/2” — 1 1/2”</td>
</tr>
<tr>
<td>Rangeability</td>
<td>15:1</td>
</tr>
<tr>
<td>Flange Connection</td>
<td>DIN PN 10, 16, ANSI 150, 300, JIS10K, 20K</td>
</tr>
</tbody>
</table>

Features

1. Excellent durability for abrasive and corrosive fluids. Wetted parts are made from solid fine ceramics.
2. Excellent flow controllability:
   Each valve size offers 3-6 equal percentage (EQ%) triangular ports for precise flow control.
3. Low seat leakage.

Cv Value Table

<table>
<thead>
<tr>
<th>Sizes</th>
<th>Rated Cv Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2”</td>
<td>5 3.5 1.5 0.7 0.5 0.35</td>
</tr>
<tr>
<td>3/4”</td>
<td>7 5 3.5 1.5 0.7 0.35</td>
</tr>
<tr>
<td>1”</td>
<td>17 7 3 – –</td>
</tr>
<tr>
<td>1 1/2”</td>
<td>35 25 15 – –</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Sizes</th>
<th>L</th>
<th>A</th>
<th>ANSI 150</th>
<th>ANSI 300</th>
<th>DIN PN10, 16</th>
<th>Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2”</td>
<td>64</td>
<td>35</td>
<td>507</td>
<td>60.5</td>
<td>DC</td>
<td>N</td>
</tr>
<tr>
<td>3/4”</td>
<td>76</td>
<td>40</td>
<td>516</td>
<td>69.9</td>
<td>DC</td>
<td>N</td>
</tr>
<tr>
<td>1”</td>
<td>102</td>
<td>45</td>
<td>530</td>
<td>79.3</td>
<td>DC</td>
<td>N</td>
</tr>
<tr>
<td>1 1/2”</td>
<td>114</td>
<td>55</td>
<td>727</td>
<td>98.6</td>
<td>DC</td>
<td>N</td>
</tr>
</tbody>
</table>

Accessories

Positioner (EP/PP)

Regulator

Cv Value Curves

Rated Cv Value vs. Lift (%) graph for 1/2” valve size.
Fujikin®’s Osaka Plant is ISO 9001 certified.

AWARDS

Vaaler Award
- Chemical Processing, U.S.A.

24th 10 Best New Products Award
- The Business & Technology Daily News, JAPAN

9th Researcher Achievement Award
- Ministry of Science and Technology, JAPAN

Invention Grand Prize
- Japan Institute of Invention and Innovation
  - The Business & Technology Daily News, JAPAN

Best Products Award
- Society of Chemical Engineers
  - Japan Management Association, JAPAN

CE Marking

Fujikin’s Cosmix fine ceramic ball valve’s main application is flue gas desulphurization. For this application, or any other application for which the working fluid is a liquid from Fluid Group 2 (i.e., a non-hazardous liquid), COSMIX falls within the range of Table 9 on the category graphs of the PED. Taking the maximum operating pressure and nominal size of the valve into account and referring to Table 9, COSMIX comes under the scope of Article 3, Paragraph 3 (referred to as Sound Engineering Practices) of the PED.

Article 3 of the PED states that “pressure equipment covered in this category must be designed using The SEP, must be accompanied by adequate instructions for safe use and must bear a mark which allows identification of the manufacturer.” Pressure equipment covered under Article 3, Paragraph 3 of the PED does not carry the CE mark, and therefore Cosmix valves do not bear the CE mark.