SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
- Trade name: Yttria Stabilized Zirconia
- Other means of identification: 1266, 1267, 1268, 1313, 1325, 1341, 7007, 7015, 9137, 9202, 9204, 9204-1061, 9204-1403, 9214, 9215, 9216, 9228, 9233, 9236, 9237, 9239, 9311, 9325, 7007, 7015, #202, #204, #204C, #204F, #204GEP, #204HP, #204HP F, #204PR, #204PR HP, #204RR, #204SS, #204-1613, #241, #285, #1190, #204HP, AG1 HP, AG1 YZ, AG4, DV1313, DV1348, DV1402, DV1422, DV1423, DV1428, DV1429, MHCP010/0006

1.2 Relevant identified uses of the substance or mixture and uses advised against
- Application of the substance / the mixture: Powder coating material
- Uses advised against: No further relevant information available.

1.3 Details of the supplier of the Safety Data Sheet
- Manufacturer/Supplier: Saint Gobain Coating Solutions
  One New Bond Street
  Worcester, MA 01615-0137
  (508) 795-5000
  CeramicMaterials@saint-gobain.com

1.4 Emergency telephone number: ChemTel Inc.
  (800) 255-3924 (North America)
  (801) 1 (813)248-0585 (International) 400-120-0751 (China)
  (802) 300-954-583 (Australia) 000-800-100-4086 (India)
  (803) 800-591-6042 (Brazil) 800-099-0731 (Mexico)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008
  The product is not classified as hazardous according to OSHA GHS regulations within the United States.
  The product is not classified as hazardous according to the CLP regulation.

2.2 Label elements
- Labelling according to Regulation (EC) No 1272/2008
  The product is not classified as hazardous according to the CLP regulation.
  The product is not classified as hazardous according to OSHA GHS regulations within the United States.
- Hazard pictograms Not Regulated
- Signal word Not Regulated
- Hazard-determining components of labelling: None.
- Hazard statements Not Regulated.
- Additional information:

(Cont'd. on page 2)
Trade name: Yttria Stabilized Zirconia

Long term inhalation of product dust may be harmful. Safety data sheet available on request.

- **2.3 Other hazards** There are no other hazards not otherwise classified that have been identified.
- **Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.

### SECTION 3: Composition/information on ingredients

#### 3.2 Mixtures

<table>
<thead>
<tr>
<th>Components:</th>
<th>CAS: 1314-23-4</th>
<th>Zirconium oxide substance with a Community workplace exposure limit 43-92%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 215-227-2</td>
<td>Reg.nr.: 01-2119486976-14-XXXX</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components:</th>
<th>CAS: 1314-36-9</th>
<th>Yttrium oxide substance with a Community workplace exposure limit 6-55%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 215-233-5</td>
<td>Reg.nr.: 01-2119971254-36-XXXX</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components:</th>
<th>CAS: 12055-23-1</th>
<th>Hafnium dioxide substance with a Community workplace exposure limit 1-2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 235-013-2</td>
<td>Reg.nr.: 01-2119967820-31-XXXX</td>
<td></td>
</tr>
</tbody>
</table>

- **Additional information:**
  For the listed ingredient(s), the identity and/or exact percentages are being withheld as a trade secret.
  Radionuclides: This product contains trace quantities of natural occurring radioactive material (NORM): Uranium - 238 and Thorium - 232 (Source Material). The concentration of Source Material is less than 0,05% by weight. The total combined activity of Source Material is less than 2,0 Bq/gram.

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

- **After inhalation:**
  Supply fresh air; consult doctor in case of complaints.
  Provide oxygen treatment if affected person has difficulty breathing.

- **After skin contact:**
  Brush off loose particles from skin.
  Immediately rinse with water.
  If skin irritation is experienced, consult a doctor.

- **After eye contact:**
  Remove contact lenses if worn, if possible.
  Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

- **After swallowing:**
  Rinse out mouth and then drink plenty of water.
  Do not induce vomiting; call for medical help immediately.

#### 4.2 Most important symptoms and effects, both acute and delayed

Breathing difficulty
Coughing
Nausea in case of ingestion.
May cause gastro-intestinal irritation if ingested.
Trade name: Yttria Stabilized Zirconia

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents:
The product is not flammable.
Use fire extinguishing methods suitable to surrounding conditions.

For safety reasons unsuitable extinguishing agents: None.

5.2 Special hazards arising from the substance or mixture
Formation of toxic gases is possible during heating or in case of fire.

5.3 Advice for firefighters

Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation
Avoid formation of dust.
Do not breathe dust.

6.2 Environmental precautions
Avoid release to the environment.

6.3 Methods and material for containment and cleaning up
Sweep up and place into an appropriate container.
Send for recovery or disposal in suitable receptacles.

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Use only in well ventilated areas.
Prevent formation of dust.
Any unavoidable deposit of dust must be regularly removed.

7.2 Conditions for safe storage, including any incompatibilities
Requirements to be met by storerooms and receptacles:
Storage area should be dry and well-ventilated.

Information about storage in one common storage facility: Store away from foodstuffs.

7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

(Cont'd. on page 4)
### 8.1 Control parameters

#### Ingredients with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Chemical Reference Number</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1314-23-4</td>
<td>Zirconium oxide</td>
</tr>
<tr>
<td>1314-36-9</td>
<td>Yttrium oxide</td>
</tr>
<tr>
<td>12055-23-1</td>
<td>Hafnium dioxide</td>
</tr>
</tbody>
</table>

#### Zirconium oxide

<table>
<thead>
<tr>
<th>Country</th>
<th>Short-term value</th>
<th>Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL (Canada)</td>
<td>10 mg/m³</td>
<td>5 mg/m³ as Zr</td>
</tr>
<tr>
<td>WEL (Great Britain)</td>
<td>10 mg/m³</td>
<td>5 mg/m³ as Zr</td>
</tr>
<tr>
<td>OEL (Ireland)</td>
<td>10 mg/m³</td>
<td>5 mg/m³ as Zr</td>
</tr>
<tr>
<td>PEL (USA)</td>
<td>5 mg/m³</td>
<td>5 mg/m³ as Zr</td>
</tr>
<tr>
<td>REL (USA)</td>
<td>10 mg/m³</td>
<td>5 mg/m³ as Zr</td>
</tr>
<tr>
<td>TLV (USA)</td>
<td>10 mg/m³</td>
<td>5 mg/m³ as Zr</td>
</tr>
</tbody>
</table>

#### Yttrium oxide

<table>
<thead>
<tr>
<th>Country</th>
<th>Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL (Canada)</td>
<td>1 mg/m³ as Y</td>
</tr>
<tr>
<td>PEL (USA)</td>
<td>1 mg/m³ as Y</td>
</tr>
<tr>
<td>REL (USA)</td>
<td>1 mg/m³ as Y</td>
</tr>
<tr>
<td>TLV (USA)</td>
<td>1 mg/m³ as Y</td>
</tr>
</tbody>
</table>

#### Hafnium dioxide

<table>
<thead>
<tr>
<th>Country</th>
<th>Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL (Canada)</td>
<td>0,5 mg/m³ as Hf</td>
</tr>
<tr>
<td>PEL (USA)</td>
<td>0,5 mg/m³ as Hf</td>
</tr>
<tr>
<td>REL (USA)</td>
<td>0,5 mg/m³ as Hf</td>
</tr>
<tr>
<td>TLV (USA)</td>
<td>0,5 mg/m³ as Hf</td>
</tr>
</tbody>
</table>

- **DNELs**: No further relevant information available.
- **PNECs**: No further relevant information available.

### 8.2 Exposure controls

- **Engineering measures**: Provide adequate ventilation.
- **General protective and hygienic measures**: The usual precautionary measures are to be adhered to when handling chemicals. Keep away from foodstuffs, beverages and feed.
Do not breathe dust.
Avoid contact with the eyes.
Avoid close or long term contact with the skin.

**Respiratory protection:**
In case of inadequate ventilation wear respiratory protection.
Particulate mask should filter at least 99% of airborne particles.

**Protection of hands:**
Wear gloves for the protection against mechanical hazards according to NIOSH or EN 388.

**Eye protection:** Follow relevant national guidelines concerning the use of protective eyewear.

**Body protection:** Protective work clothing

**Limitation and supervision of exposure into the environment:**
No further relevant information available.

**Risk management measures:** No further relevant information available.

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**SECTION 9: Physical and chemical properties**

9.1 Information on basic physical and chemical properties

- **Appearance**
  - Form: Powder
  - Colour: Yellow
  - Odour: Odourless
  - Odour threshold: Not determined.

- **pH-value:**
- **Melting point/freezing point:**
- **Initial boiling point and boiling range:**
- **Flash point:** Not applicable.

- **Flammability (solid, gas):**
- **Auto/Self-ignition temperature:**
- **Decomposition temperature:**
- **Explosion properties:** Product does not present an explosion hazard.

- **Explosion limits**
  - Lower: Not determined.
  - Upper: Not determined.

- **Oxidising properties**
  - Non-oxidising.

- **Vapour pressure:**
- **Density:**
  - Relative density: Not determined.
  - Vapour density: Not applicable.
  - Evaporation rate: Not applicable.

- **Solubility in / Miscibility with water:**
  - Not miscible or difficult to mix.

- **Partition coefficient: n-octanol/water:**
  - Not determined.
Trade name: Yttria Stabilized Zirconia

(Cont’d. from page 5)

Viscosity
- Dynamic: Not applicable.
- Kinematic: Not applicable.

9.2 Other information
No further relevant information available.

SECTION 10: Stability and reactivity

- 10.1 Reactivity
No further relevant information available.

- 10.2 Chemical stability
- Thermal decomposition / conditions to be avoided:
  No decomposition if used and stored according to specifications.

- 10.3 Possibility of hazardous reactions
No dangerous reactions known.

- 10.4 Conditions to avoid
Prevent formation of dust.

- 10.5 Incompatible materials
No further relevant information available.

- 10.6 Hazardous decomposition products
No dangerous decomposition products known.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
  - Acute toxicity: Based on available data, the classification criteria are not met.
  - LD/LC50 values relevant for classification: None.
  - Primary irritant effect
  - Skin corrosion/irritation: Based on available data, the classification criteria are not met.
  - Serious eye damage/irritation: Based on available data, the classification criteria are not met.
  - Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.
  - Carcinogenic categories
    - IARC (International Agency for Research on Cancer):
      None of the ingredients are listed.

  - Probable routes of exposure:
    Ingestion.
    Inhalation.
    Eye contact.
    Skin contact.

  - Repeated dose toxicity:
    Repeated or long-term inhalation of product dusts may cause pulmonary disease.
  - Germ cell mutagenicity: Based on available data, the classification criteria are not met.
  - Carcinogenicity: Based on available data, the classification criteria are not met.
  - Reproductive toxicity: Based on available data, the classification criteria are not met.
  - STOT-single exposure: Based on available data, the classification criteria are not met.
  - STOT-repeated exposure: Based on available data, the classification criteria are not met.
  - Aspiration hazard: Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

(Cont’d. on page 7)
**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS

Revision: 23 June 2020

**Trade name:** Yttria Stabilized Zirconia

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### 12.1 Toxicity
- **Aquatic toxicity:** No further relevant information available.

### 12.2 Persistence and degradability
No further relevant information available.

### 12.3 Bioaccumulative potential
No further relevant information available.

### 12.4 Mobility in soil
No further relevant information available.

### Additional ecological information:
- **General notes:** Generally not hazardous for water.

### 12.5 Results of PBT and vPvB assessment
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 12.6 Other adverse effects
No further relevant information available.

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### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods
- **Recommendation**
  Smaller quantities can be disposed of with household waste.
  Contact waste processors for recycling information.
  The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

- **Uncleaned packaging:**
  - **Recommendation:** Disposal must be made according to official regulations.

---

### SECTION 14: Transport information

#### 14.1 UN-Number
- **DOT, ADR/RID/ADN, IMDG, IATA**
  Not Regulated

#### 14.2 UN proper shipping name
- **DOT, ADR/RID/ADN, IMDG, IATA**
  Not Regulated

#### 14.3 Transport hazard class(es)
- **DOT, ADR/RID/ADN, IMDG, IATA**
  - **Class**
  Not Regulated

#### 14.4 Packing group
- **DOT, ADR/RID/ADN, IMDG, IATA**
  Not Regulated

#### 14.5 Environmental hazards:
- **Marine pollutant:**
  No

#### 14.6 Special precautions for user
- Not applicable.

#### 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
- Not applicable.

(Cont'd. on page 8)
SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

· United States (USA)
  SARA
  · Section 302 (extremely hazardous substances): None of the ingredients are listed.
  · Section 313 (Specific toxic chemical listings):
    1344-28-1 Aluminium oxide
  · TSCA (Toxic Substances Control Act): All ingredients are listed or exempt.

· Proposition 65 (California):
  · Chemicals known to cause cancer: None of the ingredients are listed.
  · Chemicals known to cause developmental toxicity for females: None of the ingredients are listed.
  · Chemicals known to cause developmental toxicity for males: None of the ingredients are listed.
  · Chemicals known to cause developmental toxicity: None of the ingredients are listed.
  · EPA (Environmental Protection Agency) None of the ingredients are listed.
  · IARC (International Agency for Research on Cancer) None of the ingredients are listed.
  · Canadian Domestic Substances List (DSL) All ingredients are listed or exempt.

· Other regulations, limitations and prohibitive regulations
  · Substances of very high concern (SVHC) according to REACH, Article 57 None of the ingredients are listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and acronyms:
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
Trade name: Yttria Stabilized Zirconia

EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bio-accumulable, Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative

Sources
Website, European Chemicals Agency (echa.europa.eu)
Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/overview/home.do)
Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
Safety Data Sheets, Individual Manufacturers

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