



SAFETY DATA SHEET

Creation Date 12-Oct-2010

Revision Date 10-Feb-2011

Revision Number 4

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Description: Hafnium(IV) oxide
Cat No. 192030000; 192030010
Synonyms Hafnia.; Hafnium dioxide

Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Laboratory chemicals
Uses advised against No Information available

Details of the supplier of the safety data sheet

Company

Acros Organics BVBA
Janssen Pharmaceuticaalaa 3a
2440 Geel, Belgium

E-mail address begel.sdsdesk@thermofisher.com

Emergency Telephone Number

For information in the US, call: 001-800-ACROS-01
For information in Europe, call: +32 14 57 52 11

Emergency Number, Europe: +32 14 57 52 99
Emergency Number, US: 001-201-796-7100

CHEMTREC Phone Number, US: 001-800-424-9300
CHEMTREC Phone Number, Europe: 001-703-527-3887

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Not hazardous

Classification according to EU Directives 67/548/EEC or 1999/45/EC

For the full text of the R phrases mentioned in this Section, see Section 16

R -phrase(s) none

Label Elements

Signal Word None

Hazard Statements

Other Hazards

No information available.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

| Component | EC No. | Weight % | CAS-No | Classification | GHSCLAS | REACH Reg. No. |
|---|-------------------|----------|------------|----------------|---------|----------------|
| Hafnium oxide (HfO ₂) 12055-23-1 | EEC No. 235-013-2 | >95 | 12055-23-1 | - | - | - |

For the full text of the R phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

Description of first aid measures

| | |
|---------------------------|---|
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes Obtain medical attention |
| Skin Contact | Wash off immediately with plenty of water for at least 15 minutes Get medical attention immediately if symptoms occur |
| Ingestion | Do not induce vomiting Obtain medical attention |
| Inhalation | Move to fresh air If breathing is difficult, give oxygen Get medical attention immediately if symptoms occur |
| Notes to Physician | Treat symptomatically |

5. FIRE-FIGHTING MEASURES

Extinguishing media
Suitable Extinguishing Media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

Extinguishing media which must not be used for safety reasons

No information available.

Special hazards arising from the substance or mixture

Fine dust dispersed in air may ignite

Advice for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation.

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Environmental precautions

Should not be released into the environment.

Methods and material for containment and cleaning up

Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Wear personal protective equipment Ensure adequate ventilation Avoid contact with skin, eyes and clothing Avoid ingestion and inhalation Avoid dust formation

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place

Specific End Uses

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure limits

Component

Hafnium oxide (HfO₂)

| European Union | The United Kingdom | France | Belgium | Spain |
|----------------|--------------------|--------|---------|-------------------------------|
| | | | | VLA-ED: 0.5 mg/m ³ |

Component

Hafnium oxide (HfO₂)

| Italy | Portugal | The Netherlands | Finland | Denmark |
|-------|----------------------------|-----------------|---------|---------|
| | TWA: 0.5 mg/m ³ | | | |

Component

Hafnium oxide (HfO₂)

| Austria | Switzerland | Poland | Norway | Ireland |
|----------------------------|-------------|--------|--------|---------|
| MAK: 0.5 mg/m ³ | | | | |

Derived No Effect Level (DNEL)

No information available.

Predicted No Effect Concentration (PNEC)

No information available.

Exposure controls

Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location Ensure adequate ventilation, especially in confined areas

Personal protective equipment

Eye Protection

Goggles

Hand Protection

Protective gloves

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice

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Environmental exposure controls No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---------------------|---------------------------|
| Physical State | Solid |
| Appearance | White |
| pH | No information available. |
| Vapor Density | No information available. |
| Boiling Point/Range | 5400°C / 9752°F @ 760mmHg |
| Melting Point/Range | 2810°C / 5090°F |
| Flash Point | No information available. |
| Water Solubility | Insoluble |
| Specific Gravity | 9.680 |
| Molecular Formula | Hf O ₂ |
| Molecular Weight | 210.49 |

10. STABILITY AND REACTIVITYReactivityChemical Stability

Stable under normal conditions.

Possibility of Hazardous ReactionsHazardous Polymerization

Hazardous polymerization does not occur.

Hazardous Reactions .

None under normal processing..

Conditions to Avoid

Incompatible products, Excess heat, Avoid dust formation.

Incompatible Materials

Strong oxidizing agents.

Hazardous Decomposition Products

None under normal use

11. TOXICOLOGICAL INFORMATIONInformation on Toxicological EffectsAcute ToxicityProduct Information

No acute toxicity information is available for this product

Component InformationChronic Toxicity

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11. TOXICOLOGICAL INFORMATION

| | |
|--|--|
| Carcinogenicity | There are no known carcinogenic chemicals in this product |
| Sensitization | No information available. |
| Mutagenic Effects | No information available |
| Reproductive Effects | No information available. |
| Developmental Effects | No information available. |
| Target Organs | None known. |
| Other Adverse Effects | The toxicological properties have not been fully investigated. |
| Endocrine Disruptor Information | None known |

12. ECOLOGICAL INFORMATION

Toxicity
Ecotoxicity effects Do not empty into drains

Persistence and degradability
No information available

Bioaccumulative potential
No information available.

Mobility in soil
No information available.

Results of PBT and vPvB assessment
Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Waste from Residues / Unused Products Dispose of in accordance with local regulations

Contaminated Packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

IMDG/IMO Not regulated

ADR Not regulated



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14. TRANSPORT INFORMATION

IATA Not regulated

15. REGULATORY INFORMATION

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

International Inventories

| Component | EINECS | ELINCS | NLP | TSCA | DSL | NDSL | PICCS | ENCS | CHINA | AICS | KECL |
|-----------------------------------|-----------|--------|-----|------|-----|------|-------|------|-------|------|---------------|
| Hafnium oxide (HfO ₂) | 235-013-2 | - | | X | X | - | - | X | X | - | KE-18176 X |

Legend

- TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
- EINECS/ELINCS** - European Inventory Lists
- DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
- PICCS** - Philippines Inventory of Chemicals and Chemical Substances
- ENCS** - Japan Existing and New Chemical Substances
- CHINA** - China Inventory of Existing Chemical Substances
- AICS** - Inventory of Chemical Substances
- KECL** - Existing and Evaluated Chemical Substances

Chemical Safety Assessment

16. OTHER INFORMATION

Text of R phrases mentioned in Section 2-3

No information available.

Revision Date 10-Feb-2011
Revision Summary Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

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End of Safety Data Sheet