



SAFETY DATA SHEET

MATERION

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

1.1. Product identifier

Trade name or designation of the mixture Cr-Si-SiC
Synonyms None.
Document number C-MSDS0078
Issue date 26-May-2015
Version number 01

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

Identified uses Not available.
Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name Materion Advanced Chemicals Inc.
Address 407 N. 13th Street
1316 W. St. Paul Avenue
Milwaukee, WI 53233
United States
Division Milwaukee
Telephone 414.212.0257
e-mail advancedmaterials@materion.com
Contact person Noreen Atkinson

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification F;R11, N;R50/53

The full text for all R-phrases is displayed in section 16.

Classification according to Regulation (EC) No 1272/2008 as amended

Environmental hazards

Hazardous to the aquatic environment, long-term aquatic hazard Category 3 H412 - Harmful to aquatic life with long lasting effects.

Hazard summary

Physical hazards Highly flammable.
Health hazards Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects.
Environmental hazards Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Specific hazards None known.
Main symptoms Coughing.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Hazard pictograms None.
Signal word None.
Hazard statements
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention

| | |
|---------------------------------------|--|
| P273 | Avoid release to the environment. |
| Response | Wash hands after handling. |
| Storage | Store away from incompatible materials. |
| Disposal | |
| P501 | Dispose of contents/container in accordance with local/regional/national/international regulations. |
| Supplemental label information | 73,17 % of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment. |
| 2.3. Other hazards | None known. |

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

| Chemical name | % | CAS-No. / EC No. | REACH Registration No. | INDEX No. | Notes |
|------------------------|------------------------------------|------------------------|------------------------|-----------|-------|
| Chromium | 10 - < 45 | 7440-47-3 231-157-5 | - | - | # |
| Classification: | DSD: R52/53 | | | | |
| | CLP: Aquatic Chronic 3;H412 | | | | |

Other components below reportable levels 70 - < 80

List of abbreviations and symbols that may be used above

CLP: Regulation No. 1272/2008.

DSD: Directive 67/548/EEC.

M: M-factor

vPvB: very persistent and very bioaccumulative substance.

PBT: persistent, bioaccumulative and toxic substance.

#: This substance has been assigned Community workplace exposure limit(s).

Composition comments The full text for all R- and H-phrases is displayed in section 16.

SECTION 4: First aid measures

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Rinse with water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

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

Coughing.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards

No unusual fire or explosion hazards noted.

5.1. Extinguishing media

Suitable extinguishing media Powder. Dry sand.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Special protective equipment for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special firefighting procedures

Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****For non-emergency personnel**

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8.

For emergency responders

Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

6.2. Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Inform appropriate managerial or supervisory personnel of all environmental releases.

6.3. Methods and material for containment and cleaning up

Stop the flow of material, if this is without risk. Prevent product from entering drains. Following product recovery, flush area with water.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Provide adequate ventilation. Avoid prolonged exposure. Wear appropriate personal protective equipment. Avoid release to the environment.

7.2. Conditions for safe storage, including any incompatibilities

Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****Occupational exposure limits****Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001**

| Components | Type | Value | Form |
|--------------------------------|------|----------------------|----------------------|
| Chromium (CAS 7440-47-3) | MAK | 2 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | MAK | 5 mg/m ³ | Respirable fraction. |
| | STEL | 10 mg/m ³ | Respirable fraction. |

Belgium. Exposure Limit Values.

| Components | Type | Value | Form |
|--------------------------------|------|-----------------------|------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ | |
| Silicon (CAS 7440-21-3) | TWA | 10 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | TWA | 10 mg/m ³ | |

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

| Components | Type | Value | Form |
|--------------------------------|------|---------------------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | TWA | 5 mg/m ³ | Inhalable fraction. |

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

| Components | Type | Value | Form |
|--------------------------------|------|----------------------|------------------|
| Chromium (CAS 7440-47-3) | MAC | 2 mg/m ³ | |
| Silicon (CAS 7440-21-3) | STEL | 4 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | Total dust. |
| Silicon carbide (CAS 409-21-2) | STEL | 4 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | Total dust. |

Czech Republic. OELs. Government Decree 361

| Components | Type | Value | Form |
|--------------------------|---------|-----------------------|-------|
| Chromium (CAS 7440-47-3) | Ceiling | 1,5 mg/m ³ | |
| | TWA | 0,5 mg/m ³ | Dust. |
| | | 0,5 mg/m ³ | |

Denmark. Exposure Limit Values Components

| Components | Type | Value | Form |
|--------------------------|------|-----------------------|-------|
| Chromium (CAS 7440-47-3) | TLV | 0,5 mg/m ³ | Dust. |
| Silicon (CAS 7440-21-3) | TLV | 10 mg/m ³ | |

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

| Components | Type | Value | Form |
|--------------------------------|------|----------------------|------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ | |
| Silicon (CAS 7440-21-3) | TWA | 5 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | TWA | 5 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | |

Finland. Workplace Exposure Limits Components

| Components | Type | Value |
|--------------------------------|------|----------------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ |
| Silicon carbide (CAS 409-21-2) | TWA | 0,1 fibers/cm ³ |

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984 Components

| Components | Type | Value |
|--------------------------------|------|----------------------|
| Chromium (CAS 7440-47-3) | VME | 2 mg/m ³ |
| Silicon (CAS 7440-21-3) | VME | 10 mg/m ³ |
| Silicon carbide (CAS 409-21-2) | VME | 10 mg/m ³ |

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace Components

| Components | Type | Value | Form |
|--------------------------------|------|------------------------|----------------------|
| Chromium (CAS 7440-47-3) | AGW | 2 mg/m ³ | Inhalable fraction. |
| Silicon carbide (CAS 409-21-2) | AGW | 10 mg/m ³ | Inhalable fraction. |
| | | 1,25 mg/m ³ | Respirable fraction. |

Greece. OELs (Decree No. 90/1999, as amended) Components

| Components | Type | Value | Form |
|--------------------------------|------|----------------------|-------------|
| Chromium (CAS 7440-47-3) | TWA | 1 mg/m ³ | |
| Silicon (CAS 7440-21-3) | TWA | 5 mg/m ³ | Respirable. |
| | | 10 mg/m ³ | Inhalable |
| Silicon carbide (CAS 409-21-2) | TWA | 5 mg/m ³ | Respirable. |
| | | 10 mg/m ³ | Inhalable |

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces Components

| Components | Type | Value |
|--------------------------|------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ |

Iceland. OELs. Regulation 154/1999 on occupational exposure limits Components

| Components | Type | Value | Form |
|--------------------------|------|-----------------------|-------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ | Dust. |
| Silicon (CAS 7440-21-3) | TWA | 0,7 mg/m ³ | |
| | | 0,5 ppm | |

Ireland. Occupational Exposure Limits Components

| Components | Type | Value | Form |
|--------------------------------|------|----------------------|-----------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ | |
| Silicon (CAS 7440-21-3) | TWA | 4 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | Total inhalable dust. |
| Silicon carbide (CAS 409-21-2) | TWA | 4 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | Total inhalable dust. |

Italy. Occupational Exposure Limits Components

| Components | Type | Value |
|--------------------------|------|-----------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ |

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

| Components | Type | Value |
|--------------------------------|------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ |
| Silicon carbide (CAS 409-21-2) | TWA | 6 mg/m ³ |

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

| Components | Type | Value |
|--------------------------|------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ |

Luxembourg. Binding Occupational exposure limit values (Annex I), Memorial A

| Components | Type | Value |
|--------------------------|------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ |

Netherlands. OELs (binding)

| Components | Type | Value |
|--------------------------|------|-----------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ |

Norway. Administrative Norms for Contaminants in the Workplace

| Components | Type | Value | Form |
|--------------------------------|------|----------------------------|------------------|
| Chromium (CAS 7440-47-3) | TLV | 0,5 mg/m ³ | |
| Silicon (CAS 7440-21-3) | TLV | 10 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | TLV | 0,1 fibers/cm ³ | Fiber. |
| | | 0,5 mg/m ³ | Respirable dust. |

Poland. MACs. Minister of Labour and Social Policy Regarding Maximum Allowable Concentrations and Intensities in Working Environment

| Components | Type | Value | Form |
|--------------------------------|------|-----------------------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | TWA | 10 mg/m ³ | Inhalable fraction. |

Portugal. OELs. Decree-Law n. 290/2001 (Journal of the Republic - 1 Series A, n.266)

| Components | Type | Value |
|--------------------------|------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ |

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

| Components | Type | Value | Form |
|--------------------------------|------|----------------------------|----------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | TWA | 0,1 fibers/cm ³ | Fiber. |
| | | 3 mg/m ³ | Respirable fraction. |
| | | 10 mg/m ³ | Inhalable fraction. |

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

| Components | Type | Value | Form |
|--------------------------------|------|------------------------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,05 mg/m ³ | |
| Silicon carbide (CAS 409-21-2) | TWA | 10 mg/m ³ | Inhalable fraction. |

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

| Components | Type | Value | Form |
|--------------------------------|------|-----------------------|----------------------|
| Silicon (CAS 7440-21-3) | TWA | 4 mg/m ³ | Respirable fraction. |
| | | 10 mg/m ³ | Inhalable fraction. |
| Silicon carbide (CAS 409-21-2) | TWA | 4 mg/m ³ | Inhalable fraction. |
| | | 1,5 mg/m ³ | Respirable fraction. |

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

| Components | Type | Value |
|--------------------------|------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ |

Spain. Occupational Exposure Limits

| Components | Type | Value | Form |
|--------------------------|------|---------------------|------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ | |

Spain. Occupational Exposure Limits Components

| Components | Type | Value | Form |
|--------------------------------|------|----------------------|----------------------|
| Silicon carbide (CAS 409-21-2) | TWA | 3 mg/m ³ | Respirable fraction. |
| | | 10 mg/m ³ | Inhalable fraction. |

Sweden. Occupational Exposure Limit Values Components

| Components | Type | Value | Form |
|--------------------------------|------|-----------------------|-------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ | Total dust. |
| Silicon carbide (CAS 409-21-2) | TWA | 0,2 fibers/mL | |

Switzerland. SUVA Grenzwerte am Arbeitsplatz Components

| Components | Type | Value | Form |
|--------------------------------|------|-----------------------|------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ | Inhalable dust. |
| Silicon (CAS 7440-21-3) | TWA | 3 mg/m ³ | Respirable dust. |
| Silicon carbide (CAS 409-21-2) | TWA | 3 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | Inhalable dust. |

UK. EH40 Workplace Exposure Limits (WELs) Components

| Components | Type | Value | Form |
|--------------------------------|------|-----------------------|------------------|
| Chromium (CAS 7440-47-3) | TWA | 0,5 mg/m ³ | |
| Silicon (CAS 7440-21-3) | TWA | 4 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | Inhalable dust. |
| Silicon carbide (CAS 409-21-2) | TWA | 4 mg/m ³ | Respirable. |
| | | 10 mg/m ³ | Inhalable |

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU Components

| Components | Type | Value |
|--------------------------|------|---------------------|
| Chromium (CAS 7440-47-3) | TWA | 2 mg/m ³ |

Biological limit values**Czech Republic. Limit Values for Indicators of Biological Exposure Tests in Urine and Blood, Annex 2, Tables 1 and 2, Government Decree 432/2003 Sb.**

| Components | Value | Determinant | Specimen | Sampling time |
|--------------------------|-----------------|----------------|---------------------|---------------|
| Chromium (CAS 7440-47-3) | 0,065 µmol/mmol | Total chromium | Creatinine in urine | * |
| | 0,03 mg/g | Total chromium | Creatinine in urine | * |

* - For sampling details, please see the source document.

Hungary. Chemical Safety at Workplace Ordinance Joint Decree No. 25/2000 (Annex 2): Permissible limit values of biological exposure (effect) indices

| Components | Value | Determinant | Specimen | Sampling time |
|--------------------------|-----------------|-------------|---------------------|---------------|
| Chromium (CAS 7440-47-3) | 0,02 mg/g | chromium | Creatinine in urine | * |
| | 0,043 µmol/mmol | chromium | Creatinine in urine | * |

* - For sampling details, please see the source document.

Spain. Biological Limit Values (VLBs), Occupational Exposure Limits for Chemical Agents, Table 4

| Components | Value | Determinant | Specimen | Sampling time |
|--------------------------|---------|-------------|----------|---------------|
| Chromium (CAS 7440-47-3) | 25 µg/l | Cromo total | Urine | * |
| | 10 µg/l | Cromo total | Urine | * |

* - For sampling details, please see the source document.

UK. EH40 Biological Monitoring Guidance Values (BMGVs)

| Components | Value | Determinant | Specimen | Sampling time |
|--------------------------|-------------|-------------|---------------------|---------------|
| Chromium (CAS 7440-47-3) | 10 umol/mol | Chromium | Creatinine in urine | * |

* - For sampling details, please see the source document.

Recommended monitoring procedures Follow standard monitoring procedures.

| | |
|--|---|
| Derived no-effect level (DNEL) | Not available. |
| Predicted no effect concentrations (PNECs) | Not available. |
| 8.2. Exposure controls | |
| Appropriate engineering controls | Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. |
| Individual protection measures, such as personal protective equipment | |
| General information | Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. |
| Eye/face protection | Wear safety glasses with side shields (or goggles). |
| Skin protection | |
| - Hand protection | Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. |
| - Other | Wear suitable protective clothing. |
| Respiratory protection | In case of insufficient ventilation, wear suitable respiratory equipment. |
| Thermal hazards | Wear appropriate thermal protective clothing, when necessary. |
| Hygiene measures | Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. |
| Environmental exposure controls | Inform appropriate managerial or supervisory personnel of all environmental releases. |

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

| | |
|---|-----------------------------|
| Physical state | Solid. |
| Form | Solid. |
| Colour | Not available. |
| Odour | Not applicable. |
| Odour threshold | Not available. |
| pH | Not available. |
| Melting point/freezing point | 1410 °C (2570 °F) estimated |
| Initial boiling point and boiling range | 2355 °C (4271 °F) estimated |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Not available. |
| Upper/lower flammability or explosive limits | |
| Flammability limit - lower (%) | Not available. |
| Flammability limit - upper (%) | Not available. |
| Vapour pressure | 6005,94 hPa estimated |
| Vapour density | Not available. |
| Relative density | Not available. |
| Solubility(ies) | |
| Solubility (water) | Not available. |
| Solubility (other) | Not available. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |

| | |
|-------------------------------|----------------------------------|
| Explosive properties | Not explosive. |
| Oxidizing properties | Not oxidizing. |
| 9.2. Other information | |
| Density | 4,03 g/cm ³ estimated |
| Specific gravity | 4,03 estimated |

SECTION 10: Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| 10.2. Chemical stability | Material is stable under normal conditions. |
| 10.3. Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| 10.4. Conditions to avoid | Contact with incompatible materials. |
| 10.5. Incompatible materials | Fluorine. Chlorine. |
| 10.6. Hazardous decomposition products | No hazardous decomposition products are known. |

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

| | |
|---------------------|---|
| Inhalation | Prolonged inhalation may be harmful. |
| Skin contact | No adverse effects due to skin contact are expected. |
| Eye contact | Direct contact with eyes may cause temporary irritation. |
| Ingestion | May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure. |

Symptoms Coughing.

11.1. Information on toxicological effects

| | |
|--|---|
| Acute toxicity | No data available. |
| Skin corrosion/irritation | Due to partial or complete lack of data the classification is not possible. |
| Serious eye damage/eye irritation | Due to partial or complete lack of data the classification is not possible. |
| Respiratory sensitisation | Due to partial or complete lack of data the classification is not possible. |
| Skin sensitisation | Due to partial or complete lack of data the classification is not possible. |
| Germ cell mutagenicity | Due to partial or complete lack of data the classification is not possible. |
| Carcinogenicity | Due to partial or complete lack of data the classification is not possible. |

IARC Monographs. Overall Evaluation of Carcinogenicity

Chromium (CAS 7440-47-3) 3 Not classifiable as to carcinogenicity to humans.

| | |
|---|---|
| Reproductive toxicity | Due to partial or complete lack of data the classification is not possible. |
| Specific target organ toxicity - single exposure | Due to partial or complete lack of data the classification is not possible. |
| Specific target organ toxicity - repeated exposure | Due to partial or complete lack of data the classification is not possible. |
| Aspiration hazard | Due to partial or complete lack of data the classification is not possible. |
| Mixture versus substance information | No information available. |
| Other information | Not available. |

SECTION 12: Ecological information

12.1. Toxicity Harmful to aquatic life with long lasting effects.

| Components | Species | | Test results |
|--------------------------|---------|------------------------|---------------------|
| Chromium (CAS 7440-47-3) | | | |
| Aquatic | | | |
| Fish | LC50 | Carp (Cyprinus carpio) | 14,3 mg/l, 96 hours |

* Estimates for product may be based on additional component data not shown.

12.2. Persistence and degradability No data is available on the degradability of this product.

| | |
|--|---|
| 12.3. Bioaccumulative potential | No data available. |
| Partition coefficient n-octanol/water (log Kow) | Not available. |
| Bioconcentration factor (BCF) | Not available. |
| 12.4. Mobility in soil | No data available. |
| 12.5. Results of PBT and vPvB assessment | Not available. |
| 12.6. Other adverse effects | No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component. |

SECTION 13: Disposal considerations

13.1. Waste treatment methods

| | |
|-------------------------------------|--|
| Residual waste | Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). |
| Contaminated packaging | Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. |
| EU waste code | The Waste code should be assigned in discussion between the user, the producer and the waste disposal company. |
| Disposal methods/information | Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. |
| Special precautions | Dispose in accordance with all applicable regulations. |

SECTION 14: Transport information

ADR

| | |
|---|---|
| 14.1. UN number | UN3178 |
| 14.2. UN proper shipping name | Flammable solid, inorganic, n.o.s. (Silicon) |
| 14.3. Transport hazard class(es) | |
| Class | 4.1 |
| Subsidiary risk | - |
| Label(s) | 4.1 |
| Hazard No. (ADR) | 40 |
| Tunnel restriction code | E |
| 14.4. Packing group | III |
| 14.5. Environmental hazards | No. |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

RID

| | |
|---|---|
| 14.1. UN number | UN3178 |
| 14.2. UN proper shipping name | Flammable solid, inorganic, n.o.s. (Silicon) |
| 14.3. Transport hazard class(es) | |
| Class | 4.1 |
| Subsidiary risk | - |
| Label(s) | 4.1 |
| 14.4. Packing group | III |
| 14.5. Environmental hazards | No. |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

ADN

| | |
|---|-----------------------------------|
| 14.1. UN number | UN3178 |
| 14.2. UN proper shipping name | Flammable Solid, N.o.s. (Silicon) |
| 14.3. Transport hazard class(es) | |
| Class | 4.1 |

| | |
|---|---|
| Subsidiary risk | - |
| Label(s) | 4.1 |
| 14.4. Packing group | III |
| 14.5. Environmental hazards | No. |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

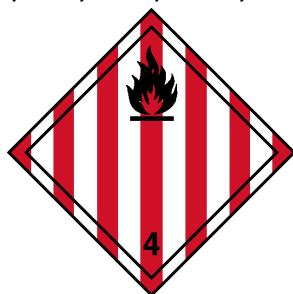
IATA

| | |
|---|---|
| 14.1. UN number | UN3178 |
| 14.2. UN proper shipping name | Flammable solid, inorganic, n.o.s. (Silicon) |
| 14.3. Transport hazard class(es) | |
| Class | 4.1 |
| Subsidiary risk | - |
| 14.4. Packing group | III |
| 14.5. Environmental hazards | No. |
| ERG Code | 3L |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |
| Other information | |
| Passenger and cargo aircraft | Allowed. |
| Cargo aircraft only | Allowed. |

IMDG

| | |
|---|---|
| 14.1. UN number | UN3178 |
| 14.2. UN proper shipping name | FLAMMABLE SOLID, INORGANIC, N.O.S. (Silicon) |
| 14.3. Transport hazard class(es) | |
| Class | 4.1 |
| Subsidiary risk | - |
| 14.4. Packing group | III |
| 14.5. Environmental hazards | |
| Marine pollutant | No. |
| EmS | F-A, S-G |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

ADN; ADR; IATA; IMDG; RID



SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I, as amended
Not listed.

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II, as amended
Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use

Not regulated.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended

Not listed.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances

Not listed.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended

Not listed.

Directive 94/33/EC on the protection of young people at work, as amended

Not listed.

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

National regulations

Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

References

Not available.

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any statements or R-phrases and H-statements under Sections 2 to 15

R11 Highly flammable.

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

H412 Harmful to aquatic life with long lasting effects.

Revision information

None.

Training information

Follow training instructions when handling this material.

Disclaimer

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