



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 | Si3N4-SiC 95-5 |
| Synonyms | None. |
| Document number | 1SP |
| Materion Code | 1SP |
| Issue date | 25-February-2016 |
| Version number | 03 |
| Revision date | 12-January-2018 |
| Supersedes date | 05-April-2016 |

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 Regulation (EC) No 1272/2008 as amended

This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

| | |
|-----------------------|---|
| Hazard summary | Harmful in contact with eyes. Causes damage to organs through prolonged or repeated exposure. Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects. May cause damage to organs through prolonged or repeated exposure. Cancer hazard. May cause cancer. Irritating to respiratory system. Irritating to eyes and skin. Irritating to skin. Prolonged exposure may cause chronic effects. |
|-----------------------|---|

2.2. Label elements

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

Hazard pictograms



Signal word Danger

Hazard statements

| | |
|------|--|
| | The mixture does not meet the criteria for classification. |
| H350 | May cause cancer. |
| H350 | May cause cancer. |
| H371 | May cause damage to organs (). |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |

H373

May cause damage to organs () through prolonged or repeated exposure.

Precautionary statements**Prevention**

P201 Observe good industrial hygiene practices.
 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe dust/fume/gas/mist/vapors/spray.
 P270 Do not eat, drink or smoke when using this product.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P264 Wash thoroughly after handling.
 P281 Use personal protective equipment as required.

Response

P308 + P313 Wash hands after handling.
 IF exposed or concerned: Get medical advice/attention.

Storage

Store away from incompatible materials.

Disposal

P501 Dispose of waste and residues in accordance with local authority requirements.
 Dispose of contents/container (in accordance with related regulations).

Supplemental label information

For further information, please contact the Product Stewardship Department at +1.800.862.4118.

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 |
|--|---------------------|-----------------------|------------------------|-----------|-------|
| Silicon carbide | 2 - 10 | 409-21-2 206-991-8 | - | - | |
| Classification: | Water-React. 3;H261 | | | | |
| Other components below reportable levels | 90 - < 98 | | | | |

List of abbreviations and symbols that may be used above

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 H-statements 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

Direct contact with eyes may cause temporary irritation.

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**Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

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. For personal protection, see section 8 of the SDS.

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

6.2. Environmental precautions Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up Stop the flow of material, if this is without risk. Following product recovery, flush area with water.

6.4. Reference to other sections For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling Avoid prolonged exposure. Observe good industrial hygiene practices.

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 |
|--------------------------------|------|----------|----------------------|
| Silicon carbide (CAS 409-21-2) | MAK | 5 mg/m3 | Respirable fraction. |
| | STEL | 10 mg/m3 | Respirable fraction. |

Belgium. Exposure Limit Values.

| Components | Type | Value |
|--------------------------------|------|----------|
| Silicon carbide (CAS 409-21-2) | TWA | 10 mg/m3 |

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

| Components | Type | Value | Form |
|--------------------------------|------|---------|---------------------|
| Silicon carbide (CAS 409-21-2) | TWA | 5 mg/m3 | Inhalable fraction. |

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

| Components | Type | Value | Form |
|--------------------------------|------|----------|------------------|
| Silicon carbide (CAS 409-21-2) | STEL | 4 mg/m3 | Respirable dust. |
| | | 10 mg/m3 | Total dust. |

Czech Republic. OELs. Government Decree 361

| Components | Type | Value | Form |
|--------------------------------|------|---------|-------|
| Silicon carbide (CAS 409-21-2) | TWA | 5 mg/m3 | Dust. |

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

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

Finland. Workplace Exposure Limits

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

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

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

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

| Components | Type | Value | Form |
|--------------------------------|------|------------------------|----------------------|
| 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 | Type | Value | Form |
|--------------------------------|------|----------------------|-------------|
| 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 | Type | Value | Form |
|--------------------------------|------|----------------------|-----------------------|
| Silicon carbide (CAS 409-21-2) | TWA | 6 mg/m ³ | Respirable dust. |
| | | 10 mg/m ³ | Total inhalable dust. |

Ireland. Occupational Exposure Limits

| Components | Type | Value | Form |
|--------------------------------|------|----------------------|-----------------------|
| 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 | Type | Value | Form |
|--------------------------------|------|----------------------------|----------------------|
| 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. |

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

| Components | Type | Value |
|--|------|---------------------|
| Silicon carbide (CAS 409-21-2) | TWA | 6 mg/m ³ |
| Silicon Nitride (Si ₃ N ₄) (CAS 12033-89-5) | TWA | 6 mg/m ³ |

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

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

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

| Components | Type | Value | Form |
|--|------|---------------------|------|
| Silicon Nitride (Si ₃ N ₄) (CAS 12033-89-5) | TWA | 6 mg/m ³ | |

Norway. Administrative Norms for Contaminants in the Workplace

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

Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1

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

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

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

Spain. Occupational Exposure Limits

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

Sweden. OELs. Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2015:7)

| Components | Type | Value | Form |
|--------------------------------|------|---------------|------|
| Silicon carbide (CAS 409-21-2) | TWA | 0,2 fibers/mL | |

Switzerland. SUVA Grenzwerte am Arbeitsplatz

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

Biological limit values

No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures

Follow standard monitoring procedures.

Derived no effect levels (DNELs)

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 Environmental manager must be informed of all major 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 available.

Odour threshold Not available.

pH Not available.

Melting point/freezing point 2600 °C (4712 °F) estimated

Initial boiling point and boiling range Not available.

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 13238,9 hPa estimated

Vapour density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) 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.

Oxidising properties Not oxidising.

9.2. Other information

Density 3,23 g/cm³ estimated

Specific gravity 3,23 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 | Strong oxidising agents. |
| 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 Exposure may cause temporary irritation, redness, or discomfort.

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. |

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

IARC Monographs. Overall Evaluation of Carcinogenicity

Silicon carbide (CAS 409-21-2) 2A Probably carcinogenic 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 | This product has no known adverse effect on human health. |

SECTION 12: Ecological information

| | |
|--|--|
| 12.1. Toxicity | The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. |
| 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. |
| Special precautions | Dispose in accordance with all applicable regulations. |

SECTION 14: Transport information

ADR

14.1. - 14.6.: Not regulated as dangerous goods.

RID

14.1. - 14.6.: Not regulated as dangerous goods.

ADN

14.1. - 14.6.: Not regulated as dangerous goods.

IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

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 and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

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.

Restrictions on use

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

Not listed.

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.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, 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, as amended.

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.

Information on evaluation method leading to the classification of mixture

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

Disclaimer

Materion Advanced Chemicals Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. This document has been prepared using data from sources considered to be technically reliable and the information is believed to be correct. Materion makes no warranties, expressed or implied, as to the accuracy of the information contained herein. Materion cannot anticipate all conditions under which this information and its products may be used and the actual conditions of use are beyond its control. The user is responsible to evaluate all available information when using this product for any particular use and to comply with all Federal, State, Provincial and Local laws, statutes and regulations.