



SAFETY DATA SHEET

MATERION

1. Identification

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|--------------------------------------|--|
| Product identifier | Silicon Aluminum Alloy |
| Other means of identification | |
| SDS number | G21 |
| Recommended use | Manufacture of computer, electronic and optical products, electrical equipment Scientific research and development Other: Manufacture of medical and defense equipment |
| Recommended restrictions | Professional uses: Public domain (administration, education, entertainment, services, craftsmen) Consumer uses: Private households (= general public = consumers) |

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

| | | |
|-------------------------------|--|-------------|
| Company name | Materion Advanced Materials Germany GmbH | |
| Address | Borsigstrasse 10 Germany | |
| Telephone | 49.60.23.91.82.0 | H. Schmiing |
| Website | www.materion.com | |
| E-mail | Materion.Germany@materion.com | |
| Contact person | Hermann Schmiing | |
| Emergency phone number | 49.60.23.91.82.0 | H. Schmiing |
| Supplier | See above. | |

2. Hazard identification

| | | |
|------------------------------|---|-------------|
| Physical hazards | Not classified. | |
| Health hazards | Serious eye damage/eye irritation | Category 2B |
| | Specific target organ toxicity, repeated exposure | Category 1 |
| Environmental hazards | Not classified. | |

Label elements



| | | |
|---------------------------------|---|--|
| Signal word | Danger | |
| Hazard statement | Causes eye irritation. Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation. | |
| Precautionary statement | | |
| Prevention | Observe good industrial hygiene practices. | |
| Response | Get medical advice/attention if you feel unwell. | |
| Storage | Store away from incompatible materials. | |
| Disposal | Dispose of contents/container in accordance with local/regional/national/international regulations. | |
| Other hazards | None known. | |
| Supplemental information | For further information, please contact the Product Stewardship Department at +1.800.862.4118. | |

3. Composition/information on ingredients

Mixtures

| Chemical name | Common name and synonyms | CAS number | % |
|---------------|--------------------------|------------|---------|
| Silicon | | 7440-21-3 | 75 - 90 |
| Aluminum | | 7429-90-5 | 10 - 25 |

4. First-aid measures

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| 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 | Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. |
| Ingestion | Rinse mouth. Get medical attention if symptoms occur. |
| Most important symptoms/effects, acute and delayed | Under normal conditions of intended use, this material does not pose a risk to health. |
| Indication of immediate medical attention and special treatment needed | Treat symptomatically. |
| General information | If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. |

5. Fire-fighting measures

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| Suitable extinguishing media | Powder. Dry sand. |
| Unsuitable extinguishing media | Carbon dioxide (CO2). |
| Specific hazards arising from the chemical | Non-combustible, substance itself does not burn. |
| Special protective equipment and precautions for firefighters | Wear suitable protective equipment. |
| Fire fighting equipment/instructions | 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. |
| General fire hazards | No unusual fire or explosion hazards noted. |

6. Accidental release measures

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| Personal precautions, protective equipment and emergency procedures | Keep unnecessary personnel away. For personal protection, see section 8 of the SDS. |
| Methods and materials for containment and cleaning up | The product is immiscible with water and will spread on the water surface. Stop the flow of material, if this is without risk. For waste disposal, see section 13 of the SDS. |
| Environmental precautions | No special environmental precautions required. |

7. Handling and storage

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| Precautions for safe handling | Observe good industrial hygiene practices. |
| Conditions for safe storage, including any incompatibilities | Store away from incompatible materials (see Section 10 of the SDS). |

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|--------------------------|------|---------|----------------------|
| Aluminum (CAS 7429-90-5) | TWA | 1 mg/m3 | Respirable fraction. |

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

| Components | Type | Value | Form |
|--------------------------|------|---------|--------------------|
| Aluminum (CAS 7429-90-5) | TWA | 5 mg/m3 | Pyrophoric powder. |

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

| Components | Type | Value | Form |
|------------|------|----------------------|-------|
| | | 10 mg/m ³ | Dust. |

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

| Components | Type | Value | Form |
|--------------------------|------|---------------------|-------------|
| Aluminum (CAS 7429-90-5) | TWA | 1 mg/m ³ | Respirable. |

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

| Components | Type | Value | Form |
|--------------------------|------|---------------------|----------------------|
| Aluminum (CAS 7429-90-5) | TWA | 1 mg/m ³ | Respirable fraction. |

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

| Components | Type | Value | Form |
|--------------------------|------|---------------------|----------------------|
| Aluminum (CAS 7429-90-5) | TWA | 1 mg/m ³ | Respirable fraction. |

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

| Components | Type | Value | Form |
|--------------------------|------|---|---------------|
| Aluminum (CAS 7429-90-5) | TWA | 5 mg/m ³ 10 mg/m ³ | Welding fume. |
| Silicon (CAS 7440-21-3) | TWA | 10 mg/m ³ | Total dust. |

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

| Components | Type | Value | Form |
|--------------------------|-----------|----------------------|--------------------|
| Aluminum (CAS 7429-90-5) | 15 minute | 20 mg/m ³ | Dust. |
| | | 10 mg/m ³ | Pyrophoric powder. |
| | 8 hour | 5 mg/m ³ | Pyrophoric powder. |
| | | 10 mg/m ³ | Dust. |
| Silicon (CAS 7440-21-3) | 15 minute | 20 mg/m ³ | |
| | 8 hour | 10 mg/m ³ | |

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| Biological limit values | No biological exposure limits noted for the ingredient(s). |
| Appropriate engineering controls | Good general ventilation 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. Provide eyewash station. |
| Individual protection measures, such as personal protective equipment | |
| Eye/face protection | Wear safety glasses with side shields (or goggles). |
| Skin protection | |
| Hand protection | For prolonged or repeated skin contact use suitable protective gloves. Suitable gloves can be recommended by the glove supplier. Wear gloves to prevent metal cuts and skin abrasions during handling. |
| 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. |
| General hygiene considerations | 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. |

9. Physical and chemical properties

Appearance

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| Physical state | Solid. |
|-----------------------|--------|

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| Form | Solid. Particulate. |
| Color | Grey. |
| Odor | None. |
| Odor threshold | Not applicable. |
| pH | Not applicable. |
| Melting point/freezing point | 1076 - 2480 °F (580 - 1360 °C) estimated / Not applicable. |
| Initial boiling point and boiling range | Not applicable |
| Flash point | Not applicable. |
| Evaporation rate | Not applicable. |
| Flammability (solid, gas) | None known. |
| Upper/lower flammability or explosive limits | |
| Explosive limit - lower (%) | Not applicable. |
| Explosive limit - lower (%) temperature | Not applicable. |
| Explosive limit - upper (%) | Not applicable. |
| Explosive limit - upper (%) temperature | Not applicable. |
| Vapor pressure | Not applicable. |
| Vapor density | Not applicable. |
| Relative density | Not applicable. |
| Solubility(ies) | |
| Solubility (water) | Insoluble. |
| Partition coefficient (n-octanol/water) | Not applicable. |
| Auto-ignition temperature | Not applicable. |
| Decomposition temperature | Not applicable. |
| Viscosity | Not applicable. |
| Other information | |
| Density | 2.31 - 2.36 g/cm ³ |
| Explosive properties | Not explosive. |
| Oxidizing properties | Not oxidizing. |

10. Stability and reactivity

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| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Chemical stability | Material is stable under normal conditions. |
| Possibility of hazardous reactions | Hazardous polymerization does not occur. |
| Conditions to avoid | Contact with incompatible materials. |
| Incompatible materials | Acids. Chlorine. Fluorine. Alkalies. |
| Hazardous decomposition products | No hazardous decomposition products are known. |

11. Toxicological information

Information on likely routes of exposure

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|---------------------|---|
| Inhalation | Prolonged inhalation may be harmful. |
| Skin contact | Not likely, due to the form of the product. |
| Eye contact | Causes eye irritation. |
| Ingestion | Expected to be a low ingestion hazard. |

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|---|---|
| Symptoms related to the physical, chemical and toxicological characteristics | None known. |
| Information on toxicological effects | |
| Acute toxicity | Not known. |
| Skin corrosion/irritation | Not likely, due to the form of the product. |
| Serious eye damage/eye irritation | Causes eye irritation. |
| Respiratory or skin sensitization | |
| Canada - Alberta OELs: Irritant | |
| Aluminum (CAS 7429-90-5) | Irritant |
| Respiratory sensitization | Not a respiratory sensitizer. |
| Skin sensitization | Not a skin sensitizer. |
| Germ cell mutagenicity | Not classified. |
| Carcinogenicity | |
| ACGIH Carcinogens | |
| Aluminum (CAS 7429-90-5) | A4 Not classifiable as a human carcinogen. |
| Canada - Manitoba OELs: carcinogenicity | |
| Aluminum (CAS 7429-90-5) | Not classifiable as a human carcinogen. |
| Reproductive toxicity | Not classified. |
| Specific target organ toxicity - single exposure | Not classified. |
| Specific target organ toxicity - repeated exposure | Causes damage to organs through prolonged or repeated exposure. |
| Aspiration hazard | Not an aspiration hazard. |
| Chronic effects | Causes damage to organs through prolonged or repeated exposure. None known. |

12. Ecological information

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|--------------------------------------|--|
| Ecotoxicity | 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. |
| Persistence and degradability | No data is available on the degradability of any ingredients in the mixture. |
| Bioaccumulative potential | No data available. |
| Mobility in soil | No data available. |
| 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. |

13. Disposal considerations

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|--|--|
| Disposal instructions | Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations. |
| Local disposal regulations | Dispose in accordance with all applicable regulations. |
| Hazardous waste code | The waste code should be assigned in discussion between the user, the producer and the waste disposal company. |
| Waste from residues / unused products | 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. |

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

Aluminum (CAS 7429-90-5)

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|----------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | No |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|---|------------------------|
| Taiwan | Taiwan Chemical Substance Inventory (TCSI) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

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Revision information Composition / Information on Ingredients: Disclosure Overrides
Physical & Chemical Properties: Multiple Properties
GHS: Qualifiers