



1. Identification

Product identifier Chromium Nickel Aluminum Targets

Other means of identification
SDS number G19

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

Website www.materion.com

E-mail Materion.Germany@materion.com

Contact person Hermann Schmiing

Emergency phone number 49.60.23.91.82.0

Supplier See above.

2. Hazard identification

Physical hazards Not classified.

Health hazards

Sensitization, respiratory	Category 1
Sensitization, skin	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity, single exposure	Category 2
Specific target organ toxicity, repeated exposure	Category 1

Environmental hazards Not classified.

Label elements



Signal word Danger

Hazard statement May cause an allergic skin reaction. Suspected of causing cancer. Causes damage to organs through prolonged or repeated exposure.

Precautionary statement
Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection.

Response	If on skin: Wash with plenty of water. If exposed or concerned: Get medical advice/attention. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Storage	Store locked up.
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 +1.216.383.4019.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Aluminum, Elemental		7429-90-5	58 - 90
Chromium, Elemental		7440-47-3	5 - 30
Nickel, Elemental		7440-02-0	5 - 12

4. First-aid measures

Inhalation	If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a poison center or doctor/physician.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. If eye irritation persists: Get medical advice/attention.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	May cause an allergic skin reaction. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	If exposed or concerned: get medical attention/advice.

5. Fire-fighting measures

Suitable extinguishing media	Water Spray or Fog. Powder. Dry sand.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire. Carbon dioxide (CO ₂).
Specific hazards arising from the chemical	No unusual fire or explosion hazards noted.
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

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. 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	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust/fume/gas/mist/vapors/spray. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. 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, Elemental (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Chromium, Elemental (CAS 7440-47-3)	TWA	0.5 mg/m3	Inhalable fraction.
Nickel, Elemental (CAS 7440-02-0)	TWA	1.5 mg/m3	Inhalable fraction.

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

Components	Type	Value	Form
Aluminum, Elemental (CAS 7429-90-5)	TWA	5 mg/m3	Pyrophoric powder.
		10 mg/m3	Dust.
Chromium, Elemental (CAS 7440-47-3)	TWA	0.5 mg/m3	
Nickel, Elemental (CAS 7440-02-0)	TWA	1.5 mg/m3	

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

Components	Type	Value	Form
Aluminum, Elemental (CAS 7429-90-5)	TWA	1 mg/m3	Respirable.
Chromium, Elemental (CAS 7440-47-3)	TWA	0.5 mg/m3	
Nickel, Elemental (CAS 7440-02-0)	TWA	0.05 mg/m3	

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

Components	Type	Value	Form
Aluminum, Elemental (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Chromium, Elemental (CAS 7440-47-3)	TWA	0.5 mg/m3	Inhalable fraction.
Nickel, Elemental (CAS 7440-02-0)	TWA	1.5 mg/m3	Inhalable fraction.

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

Components	Type	Value	Form
Aluminum, Elemental (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Chromium, Elemental (CAS 7440-47-3)	TWA	0.5 mg/m3	

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

Components	Type	Value	Form
Nickel, Elemental (CAS 7440-02-0)	TWA	1 mg/m ³	Inhalable fraction.

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

Components	Type	Value	Form
Aluminum, Elemental (CAS 7429-90-5)	TWA	5 mg/m ³	Welding fume.
		10 mg/m ³	
Chromium, Elemental (CAS 7440-47-3)	TWA	0.5 mg/m ³	
Nickel, Elemental (CAS 7440-02-0)	TWA	1 mg/m ³	

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

Components	Type	Value	Form
Aluminum, Elemental (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.
Chromium, Elemental (CAS 7440-47-3)	15 minute	1.5 mg/m ³	
	8 hour	0.5 mg/m ³	
Nickel, Elemental (CAS 7440-02-0)	15 minute	3 mg/m ³	Inhalable fraction.
	8 hour	1.5 mg/m ³	Inhalable fraction.

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. General ventilation normally adequate.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Wear safety glasses with side shields (or goggles).

Skin protection**Hand protection**

Suitable gloves can be recommended by the glove supplier. Wear gloves to prevent metal cuts and skin abrasions during handling.

Other

Use personal protective equipment as required.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. In case of inadequate ventilation, use respiratory protection.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. 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. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties**Appearance****Physical state**

Solid.

Form

Solid.

Color	Grey metallic.
Odor	None.
Odor threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	2453 °F (1345 °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	7.30 - 8.50 g/cm ³
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Surface tension	Not applicable.

10. Stability and reactivity

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	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong acids. Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	May cause an allergic skin reaction.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics May cause an allergic skin reaction.

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 Not likely, due to the form of the product.

Respiratory or skin sensitization

Canada - Alberta OELs: Irritant

Aluminum, Elemental (CAS 7429-90-5) Irritant

Chromium, Elemental (CAS 7440-47-3) Irritant

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity Not classified.

Carcinogenicity Suspected of causing cancer.

ACGIH Carcinogens

Aluminum, Elemental (CAS 7429-90-5) A4 Not classifiable as a human carcinogen.

Nickel, Elemental (CAS 7440-02-0) A5 Not suspected as a human carcinogen.

Canada - Manitoba OELs: carcinogenicity

Aluminum, Elemental (CAS 7429-90-5) Not classifiable as a human carcinogen.

Nickel, Elemental (CAS 7440-02-0) Not suspected as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

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

Nickel, Elemental (CAS 7440-02-0) 2B Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Nickel, Elemental (CAS 7440-02-0) Known To Be Human Carcinogen.

Reasonably Anticipated to be 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 Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous.

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

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, Elemental (CAS 7429-90-5)

Chromium, Elemental (CAS 7440-47-3)

Nickel, Elemental (CAS 7440-02-0)

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

Country(s) or region	Inventory name	On inventory (yes/no)*
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
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

The information in the sheet was written based on the best knowledge and experience currently available.

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.

Information for this safety data sheet was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the mandatory requirements of WHMIS. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this form. If user requires independent information on ingredients in this or any other material, we recommend contact with the Canadian Centre for Occupational Health and Safety (CCOHS) in Hamilton, Ontario (1-800-263-8466) or CSST in Montreal, Quebec (514-873-3990).