



MATERION

MATERIAL SAFETY DATA SHEET

1. Chemical product and company identification

A. Product name Nickel Aluminum Targets

Other means of identification

SDS number G36

B. Recommended use and Limitations on use

Recommended use Industrial uses: Uses of substances as such or in preparations at industrial sites

Limitations on use Consumer uses: Private households (= general public = consumers)

C. Supplier information

Company name Materion Electronic Materials

Address 6070 Parkland Boulevard

Mayfield Heights Ohio 44124

United States

Telephone 1.216.383.4019

Email Materion-PS@materion.com

Contact person Product Stewardship Director

Emergency telephone number See Section 16.

Importer

Company name See above.

Contact person Product Stewardship Director

2. Hazards identification

A. Hazard category/Classification

Physical hazards Not classified.

Health hazards Sensitization, skin Category 1

Carcinogenicity Category 2

Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Specific target organ toxicity, repeated exposure (inhalation) Category 1 (Lung, Respiratory system)

Environmental hazards Not classified.

B. Warning label items including precautionary statement

- Pictogram



- Signal word Danger

- Hazard statement

H317 May cause an allergic skin reaction.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

H370 Causes damage to organs.

- Precautionary statement

Prevention

P201 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.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
Response	
P302 + P350	If on skin: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P313	If exposed or concerned: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
Storage	
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
Disposal	
P501	Dispose of contents/container according to waste-related laws.
C. Other hazards not included in the hazard category criteria (e.g. dust explosion hazard)	None known.
Supplemental information	For further information, please contact the Product Stewardship Department at +1.216.383.4019.

3. Composition/information on ingredients

Chemical identity	Common and alternative names	CAS number	ID number	Content in percent (%)
Nickel		7440-02-0	KE-25818	80 - 98
Aluminum		7429-90-5	KE-00881	1 - 20

4. First aid measures

A. In case of eye contact	Rinse with water. Get medical attention if irritation develops and persists.
B. In case of skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.
C. In case of inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
D. In case of swallowing	Rinse mouth. Get medical attention if symptoms occur.
E. Note to physician	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
Most important symptoms/effects, acute and delayed	May cause respiratory irritation. Coughing. Discomfort in the chest. Shortness of breath. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.
General advice	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

A. Suitable (and unsuitable) 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.
B. Specific hazards arising from the chemical (example: hazardous combustion products)	None known.
C. Specific methods of fire-fighting	
Special protective equipment for firefighters	Wear suitable protective equipment.
Special fire fighting procedures	Move containers from fire area if you can do so without risk.

General fire hazards	No unusual fire or explosion hazards noted.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
6. Accidental release measures	
A. Personal precautions, protective equipment and emergency measures	Keep unnecessary personnel away.
B. Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
C. 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. Following product recovery, flush area with water. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the MSDS. The product is insoluble in water.

7. Handling and storage	
A. Precautions for safe handling	Do not handle until all safety precautions have been read and understood. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
B. Conditions for safe storage (including any incompatibilities)	Store locked up. Keep container tightly closed.

8. Exposure controls/personal protection

A. Exposure limit values, biological limit values, etc

Korea. Exposure Limits for Chemicals and Physical Agents, Occupational Safety and Health Act "K-OSHA" Article 106

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	5 mg/m ³	Fume.
		2 mg/m ³	
		10 mg/m ³	Dust.
Nickel (CAS 7440-02-0)	TWA	1 mg/m ³	

US. ACGIH Threshold Limit Values (TLV)

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	1 mg/m ³	Respirable fraction.
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m ³	Inhalable fraction.

Biological limit values

ACGIH Biological Exposure Indices (BEI)

Components	Value	Determinant	Specimen	Sampling Time
Nickel (CAS 7440-02-0)	5 µg/l	Nickel	Urine	*

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

B. 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.
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C. Personal protective equipment

- **Respiratory protection** Not available.
- **Eye protection** If contact is likely, safety glasses with side shields are recommended.
- **Hand protection** Wear gloves to prevent metal cuts and skin abrasions during handling.
- **Body protection** Wear suitable protective clothing.

Hygiene measures

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

A. Appearance

Physical state	Solid.
Form	Solid.
Color	Light grey.

B. Odor	None.
C. Odor threshold	Not applicable.
D. pH	Not applicable.
E. Melting point/freezing point	
Melting point	1220 °F (660 °C) estimated
Freezing point	Not applicable.
F. Boiling point, initial boiling point, and boiling range	Not applicable.
G. Flash point	Not applicable.
H. Evaporation rate	Not applicable.
I. Flammability (solid, gas)	None known.
J. Upper/lower limit on flammability or explosive limits	
Explosive limit - lower (%)	Not applicable. Not applicable.
Explosive limit - lower (%) temperature	Not applicable.
Explosive limit - upper (%)	Not applicable. Not applicable.
Explosive limit - upper (%) temperature	Not applicable.
K. Vapor pressure	Not applicable.
L. Solubility	
Solubility (water)	Insoluble.
M. Vapor density	Not applicable.
N. Specific gravity	Not applicable.
O. n-octanol/water partition coefficient	Not applicable.
P. Auto-ignition temperature	Not applicable.
Q. Decomposition temperature	Not applicable.
R. Viscosity	Not applicable.
S. Molecular weight	Not available.
Other data	
Density	7.85 g/cm ³ estimated
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
A. Stability and hazardous reaction potential	
Stability	Material is stable under normal conditions.
Hazardous reaction potential	No dangerous reaction known under conditions of normal use.
B. Conditions to avoid (e.g. static discharge, shock or vibration, etc)	
	Contact with incompatible materials.
C. Incompatible materials	
	Strong acids.
D. Hazardous decomposition products	
	No hazardous decomposition products are known.

11. Toxicological information

A. Information on likely routes of exposure

• Respiratory organs	Causes damage to organs through prolonged or repeated exposure by inhalation. May cause irritation to the respiratory system.
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- Skin May cause an allergic skin reaction.
- Eyes Not likely, due to the form of the product.
- Mouth Expected to be a low ingestion hazard.

B. Information on health hazards

- Acute toxicity (list all possible routes of exposure) Not known.
- Corrosivity or irritation to the skin Not relevant, due to the form of the product.
- Serious eye damage/eye irritation Not likely, due to the form of the product.
- Respiratory sensitization Not a respiratory sensitizer.
- Skin sensitization May cause an allergic skin reaction.
- Carcinogenic properties /Carcinogenicity Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

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

- Mutagenic properties /Mutagenicity Not classified.
- Reproductive toxicity This product is not expected to cause reproductive or developmental effects.
- Specific target organ toxicity - single exposure May cause respiratory irritation.
- Specific target organ toxicity - repeated exposure Causes damage to organs (Lung, Respiratory system) through prolonged or repeated exposure by inhalation.
- Aspiration hazard Not an aspiration hazard.

12. Ecological information

A. 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.

Product	Species	Test Results
Nickel Aluminum Targets		
Aquatic		
Acute		
Fish	LC50	Fish 0.0612 mg/l, 4 days estimated
Components	Species	Test Results
Aluminum (CAS 7429-90-5)		
Aquatic		
Acute		
Fish	LC50	Grass carp, white amur (Ctenopharyngodon idella) 0.21 - 0.31 mg/l, 96 hours
Nickel (CAS 7440-02-0)		
Aquatic		
Acute		
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 0.06 mg/l, 4 days
Hazardous to the aquatic environment, acute hazard		
B. Persistence/degradability		
C. Bioaccumulative potential		
D. Mobility in soil		
E. Other adverse effects		
		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.
		No data is available on the degradability of any ingredients in the mixture.
		No data available.
		The product is immiscible with water and will spread on the water surface.
		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

A. Method of disposal	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container (in accordance with related regulations).
B. Disposal considerations (including disposal of contaminated containers or 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.
Waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

14. Transport information

National regulations

KSSTDG

A. UN number	Not regulated as dangerous goods.
B. UN proper shipping name	Not regulated as dangerous goods.
C. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
D. Packing group	-
E. Environmental hazards	
Marine pollutant	No.
EmS	Not assigned.
F. Special precautions for user	Not assigned.

International regulations

IATA

A. UN number	Not regulated as dangerous goods.
B. UN proper shipping name	Not regulated as dangerous goods.
C. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
D. Packing group	-
E. Environmental hazards	No.
F. Special precautions for user	Not assigned.

IMDG

A. UN number	Not regulated as dangerous goods.
B. UN proper shipping name	Not regulated as dangerous goods.
C. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
D. Packing group	-
E. Environmental hazards	
Marine pollutant	No.
EmS	Not assigned.
F. Special precautions for user	Not assigned.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

A. Restrictions under the Industrial Safety and Health Law

Harmful Substances Prohibited from Manufacturing

Not regulated.

Harmful Substances Requiring Permission for Manufacture or Use

Not regulated.

Controlled Hazardous Substances

Aluminum (CAS 7429-90-5)
Nickel (CAS 7440-02-0)

Harmful Substances Requiring Special Medical Examination

Aluminum (CAS 7429-90-5)
Nickel (CAS 7440-02-0)

Workplace Environmental Monitoring Harmful Materials

Aluminum (CAS 7429-90-5)
Nickel (CAS 7440-02-0)

Occupational Exposure Limit

Aluminum (CAS 7429-90-5)
Nickel (CAS 7440-02-0)

B. Restrictions under the Chemicals Control Law (Previously Toxic Chemicals Control Law)**Accidental Release Prevention Substances**

Not regulated.

Act on the Registration and Evaluation of Chemicals**Banned Toxic Chemicals**

Not regulated.

Designated Existing Chemicals Subject to Registration (PEC) (MoE No. 2015-92)

Not listed.

Restricted Chemical Substances

Not regulated.

Toxic Chemicals

Not regulated.

C. Restrictions under the Dangerous Substance Safety Management Act**D. Restrictions under the Wastes Control Act****Halogenated Materials in Waste Organic Solvents**

Not regulated.

Hazardous Substances

Not regulated.

E. Restrictions under other foreign or domestic laws**Clean Air Conservation Act****Air Pollutants**

Aluminum (CAS 7429-90-5)
Nickel (CAS 7440-02-0)

Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides (Rules on PIC, MoE No. 2014-252, Dec. 31, 2014; Standards for Pesticides, RDA No. 2014-26), as amended

Not listed.

Specific Air Pollutants

Nickel (CAS 7440-02-0)

Further information

This material safety data sheet was prepared in accordance with Ministry of Employment and Labor Notice No 2020-130.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Korea	Existing Chemicals List (ECL)	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

A. Source of information

ACGIH
EPA: AQUIRE database
Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1)
Korea. Regulated volatile organic compounds (VOCs) (MOE Notice No. 2001-36, March 8, 2001, as amended)
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
Korea. GHS Labeling Requirements. Standards for Classification and Labeling of Chemical Substances and Material Safety Data Sheets (MSDS), as amended
Korea. KOSHA GHS Classifications List (Korea Occupational Safety & Health Agency)
Korea. NEMA GHS Classification List (National Emergency Management Agency GHS Guidance for Classification and Labeling for Dangerous Goods)
Toxic Release Inventory (TRI) Chemicals (MOE Public Notice No. 2002-166, Nov. 8, 2002), as amended

B. Issue date

10-29-2019

C. Number of revisions and date of most recent revision

08-13-2024 (03 revision)

D. Other

Revised information in Section 16.

Further information

Transportation Emergency

Call Chemtrec at:

US: 800.424.9300

International: 703.741.5970

Spain: 900.868.538

Switzerland: 0800.564.402

Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059

South Korea Toll-free Number – 080-880-0468

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Revision information

This document has undergone significant changes and should be reviewed in its entirety.