



MATERIAL SAFETY DATA SHEET

MATERION

1. Chemical product and company identification

A. Product name Gold Tin Targets

Other means of identification

SDS number G17

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 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

C. Supplier information

Company name Materion Advanced Materials

Address 6070 Parkland Boulevard
Mayfield Heights OH 44124
United States

Telephone EH&S 1.216.383.4019

Email ehs@materion.com

Contact person Theodore Knudson

Emergency telephone number See Section 16.

MSDS number G17

2. Hazards identification

A. Hazard category/Classification

Physical hazards Not classified.

Health hazards Specific target organ toxicity, single exposure Category 3 respiratory tract irritation
Specific target organ toxicity, repeated exposure Category 1 (Lung)

Environmental hazards Not classified.

B. Warning label items including precautionary statement

• Pictogram



• Signal word Danger

• Hazard statement

H335 May cause respiratory irritation.

H372 Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

• Precautionary statement

Prevention

P260 Observe good industrial hygiene practices.
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.

Response

Wash hands after handling.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

P403 + P233
P405

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal

P501

Dispose of contents/container (in accordance with related regulations).

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 (%)
Gold		7440-57-5	KE-18083	50 - 95
Tin		7440-31-5	KE-33838	5 - 50

4. First aid measures

A. In case of eye contact

Get medical attention if irritation develops and persists.

B. In case of skin contact

Get medical attention if irritation develops and persists.

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

Get medical advice/attention if you feel unwell.

E. Note to physician

Not available.

Most important symptoms/effects, acute and delayed

Nausea, vomiting. Diarrhea. May cause respiratory irritation. Coughing. Discomfort in the chest. Shortness of breath. Prolonged exposure may cause chronic effects. None known.

General advice

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. Use methods for the surrounding fire.

Unsuitable extinguishing media

None known.

B. Specific hazards arising from the chemical (example: hazardous combustion products)

This product is not flammable.

C. Specific methods of fire-fighting

Special protective equipment for firefighters

Wear suitable protective equipment.

Special fire fighting procedures

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

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. 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 of the MSDS.

B. Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Collect spillage.

C. Methods and materials for containment and cleaning up

Collect spillage. 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. For waste disposal, see section 13 of the MSDS.

7. Handling and storage

- A. Precautions for safe handling** Observe good industrial hygiene practices.
- B. Conditions for safe storage (including any incompatibilities)** Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the MSDS).

8. Exposure controls/personal protection

A. Exposure limit values, biological limit values, etc

Korea. OELs. Standards for Exposure to Chemical Substances and Physically Hazardous Factors

Components	Type	Value
Tin (CAS 7440-31-5)	TWA	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Tin (CAS 7440-31-5)	TWA	2 mg/m3	Inhalable fraction.

- Biological limit values** No biological exposure limits noted for the ingredient(s).
- Exposure guidelines** This material does not have established exposure limits.
- 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.
- C. Personal protective equipment**
- **Respiratory protection** Not available.
 - **Eye protection** Not available.
 - **Hand protection** Wear gloves to prevent metal cuts and skin abrasions during handling.
 - **Body protection** Use personal protective equipment as required.
- 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. Use good industrial hygiene practices in handling this material.

9. Physical and chemical properties

A. Appearance

Physical state	Solid.
Form	Solid.
Color	Yellowish

B. Odor None.

C. Odor threshold Not applicable.

D. pH Not applicable.

E. Melting point/freezing point

Melting point 518 - 1832 °F (270 - 1000 °C)

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

Flammability limit - lower (%) Not applicable.

Flammability limit - upper (%) Not applicable.

Explosive limit - lower (%) Not applicable.

Explosive limit - lower (%) temperature Not applicable.

Explosive limit - upper (%)	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	10.50 - 17.90 g/cm ³
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)	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Contact with incompatible materials.
C. Incompatible materials	Acids. Chlorine.
D. Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

A. Information on likely routes of exposure	
• Respiratory organs	May cause irritation to the respiratory system. Prolonged inhalation may be harmful. Not likely, due to the form of the product.
• Skin	Not likely, due to the form of the product.
• 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	Not a skin sensitizer.
• Carcinogenic properties /Carcinogenicity	Not classified.
• Mutagenic properties /Mutagenicity	Not classified.

- **Reproductive toxicity** Not classified.
- **Specific target organ toxicity - single exposure** May cause respiratory irritation.
- **Specific target organ toxicity - repeated exposure** Causes damage to organs (Lung) through prolonged or repeated exposure.
- **Aspiration hazard** Not an aspiration hazard.

12. Ecological information

A. Ecotoxicity

Hazardous to the aquatic environment, acute hazard 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.

B. Persistence/degradability

No data is available on the degradability of this product.

C. Bioaccumulative potential

No data available.

D. Mobility in soil

The product is immiscible with water and will spread on the water surface. Not relevant, due to the form of the product.

E. 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

A. Method of disposal

Not available.

B. Disposal considerations (including disposal of contaminated containers or packaging)

No special precautions.

Waste code

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

14. Transport information

IATA

A. UN number Not applicable.

B. UN proper shipping name Not applicable.

C. Transport hazard class(es)

Class Not applicable.

Subsidiary risk -

D. Packing group Not applicable.

E. Environmental hazards No.

F. Special precautions for user Not applicable.

IMDG

A. UN number Not applicable.

B. UN proper shipping name Not applicable.

C. Transport hazard class(es)

Class Not applicable.

Subsidiary risk -

D. Packing group Not applicable.

E. Environmental hazards

Marine pollutant No.

EmS Not applicable.

F. Special precautions for user Not applicable.

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

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

Tin (CAS 7440-31-5)

Harmful Substances Requiring Special Medical Examination

Tin (CAS 7440-31-5)

Workplace Environmental Monitoring Harmful Materials

Tin (CAS 7440-31-5)

Occupational Exposure Limit

Tin (CAS 7440-31-5)

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

Tin (CAS 7440-31-5)

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

Not regulated.

Further information

This material safety data sheet was prepared in accordance with Article 41 of the Industrial Safety and Health Law.

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
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
Korea. Accidental Release Prevention Substances (Presidential Decree of Toxic Chemical Control Law, Executive Order No. 19203)
Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1)
Korea. Harmful Substances Prohibited from Manufacturing (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 29)
Korea. Harmful Substances Requiring Permission for Manufacture or Use (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 30)
Korea. OELs. Regulation for Permitted Concentration of Hazardous Substances (Ministry of Labor (MOL) Public Notice No. 1986-45, as amended)
Korea. Prohibited Chemical Substances (TCCL Article 11)
Korea. Regulated volatile organic compounds (VOCs) (MOE Notice No. 2001-36, March 8, 2001, as amended)
Korea. Restricted Chemical Substances (TCCL Article 11)
Korea. Toxic Chemical Control Law (TCCL), Existing Chemicals Inventory (KECI)
Korea. Toxic Chemical Control Law (TCCL), pre-1997 List
Korea. Toxic Chemicals (TCCL Article 10)
Korea. Toxic Release Inventory (TRI) Chemicals (TCCL Article 14)
Korea. Accidental Release Prevention Substances (Pres. Decree of Toxic Chemical Control Law, Ex. Order No. 19203, Tables 2 & 3, Dec 28, 2005)
Korea. OELs (ISHL Article 42; MOL Public Notice No. 1986-45, as amended through MOEL Notice 2013-38, August 14, 2013)
Korea. Prohibited Chemical Substances (AREC "K-REACH" Article 27; Designation of Toxic, Restricted or Banned Chemicals Appendices 4 and 5)
Korea. Restricted Chemical Substances (AREC "K-REACH" Article 27; Designation of Toxic, Restricted or Banned Chemicals Appendices 2 and 3)
KECI, January 27, 2015, amended through MoE 2016-138, July 13, 2016
Korea. Toxic Chemicals (AREC "K-REACH" Article 20; Designation of Toxic, Restricted or Banned Chemicals Appendix 1)
Korea. Toxic Release Inventory (TRI) Chemicals (MOE Public Notice No. 2002-166, Nov. 8, 2002)

B. Issue date

10-17-2019

C. Number of revisions and date of most recent revision

07-13-2021 (02 revision)

Further information

Transportation Emergency
Call Chemtrec at:
International: 703.741.5970
Spain: 900.868.538
Switzerland: 0800.564.402

Disclaimer

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Other information

Revised information in Section 16.