

**MATERION****1. Chemical and company identification**

Name of chemical (Product name)	Iron Manganese Products		
Supplier's company name, address and phone number			
Company name	Materion Electronic Materials		
Address	6070 Parkland Boulevard Mayfield Heights, OH 44124 United States		
Contact person	Theodore Knudson		
Telephone	EH&S	1.216.383.4019	
e-mail address	ehs@materion.com		
Emergency telephone number	See Section 16.		
Reference number	296		

2. Hazards identification**GHS classification**

The product is not classified according to GHS.

GHS label elements

Pictograms None.

Signal words None.

Hazard statement The material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Other hazards which do not result in classification None known.

Supplemental information For further information, please contact the Product Stewardship Department at +1.216.383.4019.

Main symptoms and emergency overview

Main symptoms Not applicable.

Emergency overview The material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

3. Composition/information on ingredients

Substance or mixture Mixture

Components	CAS Number	Gazette notification		Concentration (%)
		ENCS no.	ISHL no.	
Iron	7439-89-6			1 - 99
Manganese	7439-96-5			1 - 99

Chemical formula Fe (7439-89-6), Mn (7439-96-5)

4. First aid measures

If inhaled Move to fresh air. Call a physician if symptoms develop or persist.

If on skin Wash off with soap and water. Get medical attention if irritation develops and persists.

If in eyes Rinse with water. Get medical attention if irritation develops and persists.

If swallowed	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	None known.
Protection of first-aid responders	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
Notes to physician	Treat symptomatically.

5. Fire-fighting measures

Extinguishing media	Powder. Dry sand.
Extinguishing media to avoid	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards	During fire, gases hazardous to health may be formed.
Special fire fighting procedures	Move containers from fire area if you can do so without risk.
Protection of fire-fighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
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

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
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. For waste disposal, see section 13 of the SDS. The product is insoluble in water.

7. Handling and storage

Handling	
Technical measures (e.g. Local and general ventilation)	Provide adequate ventilation.
Safe handling advice	Avoid prolonged exposure. Observe good industrial hygiene practices.
Contact avoidance measures	Strong oxidizing agents. For further information, please refer to section 10 of the SDS.
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.
Storage	
Safe storage conditions	Store away from incompatible materials (see Section 10 of the SDS).
Safe packaging materials	Store in original tightly closed container.

8. Exposure controls/personal protection

Control parameters	Follow standard monitoring procedures.
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Occupational exposure limits

Japan. OELs - ISHL. Working Environment Measurement Standards, Ministry of Labor Notice No. 79 of September 1, 1988, as amended

Components	Type	Value
Manganese (CAS 7439-96-5)	TLV	0.05 mg/m ³

Japan. OELs - JSOH (Japan Society of Occupational Health) Recommendation of Occupational Exposure Limits

Components	Type	Value	Form
Manganese (CAS 7439-96-5)	TWA	0.1 mg/m ³	Total particulate.
		0.02 mg/m ³	Respirable particles.

US. ACGIH Threshold Limit Values (TLV)

Components	Type	Value	Form
Manganese (CAS 7439-96-5)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.

Engineering measures 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.

Personal protective equipment

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.
Hand protection Wear gloves to prevent metal cuts and skin abrasions during handling.
Eye protection Wear safety glasses with side shields (or goggles).
Skin and body protection Wear suitable protective clothing.

9. Physical and chemical properties

Physical state Solid.
Form Solid.
Color Not available.
Odor None.
Odor threshold Not applicable.
Melting point/freezing point 2274.8 °F (1246 °C) estimated
Boiling point, initial boiling point, and boiling range 3741.8 °F (2061 °C) estimated
Combustibility Not applicable.
Lower and upper explosion limit / flammability limit
Explosive limit - lower (%) Not applicable.
Explosive limit - lower (%) temperature Not applicable.
Explosive limit - upper (%) Not applicable.
Explosive limit - upper (%) temperature Not applicable.
Flash point Not applicable.
Auto-ignition temperature 842 °F (450 °C) estimated
Decomposition temperature Not applicable.
pH Not applicable.
Kinematic viscosity Not applicable.
Solubility(ies)
Solubility (water) Insoluble
Partition coefficient (n-octanol/water) (log value) Not applicable.
Vapor pressure -0.01 hPa estimated
Density and/or relative density
Density 7.30 g/cm³ estimated
Relative density Not applicable.
Vapor density Not applicable.
Particle characteristics Not available.
Other information
Evaporation rate Not applicable.
Explosive properties Not explosive.
Oxidizing properties Not oxidizing.

Relative density temperature	Not applicable.
Specific gravity	7.3 estimated
Viscosity (Coefficient of viscosity)	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 oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Acute toxicity	100% of the mixture consists of component(s) of unknown acute dermal toxicity. 99% of the mixture consists of component(s) of unknown acute oral toxicity.
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	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	
ACGIH Carcinogens	
Manganese (CAS 7439-96-5)	A4 Not classifiable as a human carcinogen.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

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.
Bioaccumulation	No data available.
Mobility in soil	The product is immiscible with water and will spread on the water surface.
Hazardous to the ozone layer	No data available.
Other hazardous 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

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.

Local disposal regulations Contract with a disposal operator licensed by the Law on Disposal and Cleaning. Collect and reclaim or dispose in sealed containers at licensed waste disposal site. When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

14. Transport information

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.

National regulations Follow regulation in section 15 for domestic transportation.

15. Regulatory information

Industrial Safety and Health Act

Specified substances regulation

Class 2 designated chemical substances

Manganese and its compounds

Notifiable substances

Manganese (powder)

Table 9 Ordinance No. 550 1.0 - 99 %

Labeling substances

Manganese (powder)

1.0 - 99 %

SDS and Risk Assessment

Manganese (powder)

Poisonous and Deleterious Substances Control Act

Specified poisonous substances

Not regulated.

Poisonous substances

Not regulated.

Deleterious substances

Not regulated.

Act on the Regulation of Manufacture and Evaluation of Chemical Substances

Class I specified chemical substances

Not regulated.

Class II specified chemical substances

Not regulated.

Monitoring chemical substances

Not regulated.

Priority Assessment Chemical Substances (PACs)

Not regulated.

Reporting Exempted Substances

Not regulated.

Law concerning Pollutant Release and Transfer Register until March 31, 2023

Specified class 1 substances (substance name, ordinance number and content)

Not regulated.

Class 1 substances (substance name, ordinance number and content)

Manganese and its compounds (As Mn) Ordinance No. 412 99 % (Manganese)

Class 2 substances (substance name, ordinance number and content)

Not regulated.

Law concerning Pollutant Release and Transfer Register from April 1, 2023

Specified class 1 substances (substance name, control number and content)

Not regulated.

Class 1 substances (substance name, control number and content)

Manganese and its compounds Control No. 412 99 % (Manganese)

Class 2 substances (substance name, control number and content)

Not regulated.

Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule Not regulated.

Air Law, Enforcement Rule Not regulated.

Explosives Control Act
Not regulated.

Sewage Act

Iron and its soluble compounds (as Fe)	10 MG/L
Manganese and its soluble compounds (as Mn)	10 MG/L

16. Other information

Bibliography

- ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
- HSDB® - Hazardous Substances Data Bank
- IARC Monographs. Overall Evaluation of Carcinogenicity
- Japan Chemical Industry Association (JCIA) GHS Guideline, June 2019
- Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits
- JIS Z 7252:2019 Classification of chemicals based on “Globally Harmonized System of Classification and Labelling of Chemicals (GHS)”
- JIS Z 7253:2019 Hazard communication of chemicals based on GHS - Labelling and Safety Data Sheet (SDS)
- National Toxicology Program (NTP) Report on Carcinogens

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