

SAFETY DATA SHEET

1. Identification

Product identifier	Medium Carbon Ferromanganese
Other means of identification	
Synonyms	HCFeMn - Temco • HCFeMn - Metalloys • MCFeMn - Metalloys
Recommended use of the chemical and restrictions on use	
Recommended use	Metal Alloys Steel Manufacture
Restrictions on use	Use in accordance with supplier's recommendations.
Details of manufacturer or importer	
Manufacturer	
Supplier	Stanford Advanced Materials 23661 Birtcher Dr. Lake Forest, CA 92630 USA

Website	www.samaterials.com
e-mail	sales@samaterials.com
1.4. Emergency telephone number	+1 (949) 407-8904

2. Hazard(s) identification

Classification of the hazardous chemical

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Not classified.

Label elements, including precautionary statements

Hazard symbol(s)	None.
Signal word	None.
Hazard Statement(s)	Not assigned.
Precautionary Statement(s)	
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	Not a PBT or vPvB substance or mixture.
--	---

3. Composition/information on ingredients

Substance

Identity of chemical ingredients	CAS number and other unique identifiers	Concentration of ingredients
Ferromanganese HCFeMn - Temco • HCFeMn - Metalloys • MCFeMn - Metalloys	Not applicable	100

Constituents

Identity of chemical ingredients	CAS number and other unique identifiers	Concentration of ingredients
Manganese	7439-96-5	> 60
Iron	7439-89-6	< 20
Carbon	7440-44-0	< 10
Silicon	7440-21-3	< 3
Phosphorus	7723-14-0	< 1

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Description of necessary first aid measures

Inhalation	In case of exposure to fumes or particulates: Move to fresh air. Get medical attention if discomfort persists.
Skin contact	Contact with dust: Wash with soap and water. Get medical attention if irritation develops or persists.
Eye contact	Do not rub eyes. Remove any contact lenses. Flush eyes thoroughly with water, taking care to rinse under eyelids. If irritation persists, continue flushing for 15 minutes, rinsing from time to time under eyelids. If discomfort continues, consult a physician.
Ingestion	Rinse mouth thoroughly if dust is ingested. Do not induce vomiting. Get medical attention if any discomfort continues.
Personal protection for first-aid responders	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
Symptoms caused by exposure	Irritation of nose and throat. Irritation of eyes and mucous membranes.
Medical attention and special treatment	Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Special powder against metal fires. Dry sand.
Unsuitable extinguishing media	Do not use water or halogenated extinguishing media.

Specific hazards arising from the chemical Fire or high temperatures create: Manganese, carbon, silicon and iron oxides.

Special protective equipment and precautions for fire fighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Move containers from fire area if you can do it without risk. Cool containers with flooding quantities of water until well after fire is out.

Hazchem Code Not available.

General fire hazards Fine dust may form explosive mixtures with air but the powder is not combustible.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in section 8 of this safety data sheet.
For emergency responders	Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

Environmental precautions Avoid release to the environment. Do not allow to enter drains, sewers or watercourses.

Methods and materials for containment and cleaning up Avoid the generation of dusts during clean-up. Sweep up or vacuum up spillage and collect in suitable container for disposal. Vacuums used for this purpose should be equipped with HEPA filters.

7. Handling and storage

Precautions for safe handling Avoid inhalation of dust and contact with skin and eyes. Avoid generation and spreading of dust. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Avoid feeding dusty or wet alloy to steelmaking / alloymaking furnaces.

Conditions for safe storage, including any incompatibilities Store away from incompatible materials.

8. Exposure controls and personal protection

Control parameters Follow standard monitoring procedures.

Occupational exposure limits

Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)

Constituents	Type	Value	Form
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Carbon (CAS 7440-44-0)	TWA	3 mg/m ³	Respirable dust.
Silicon (CAS 7440-21-3)	TWA	10 mg/m ³	Inhalable dust.
Manganese (CAS 7439-96-5)	STEL	3 mg/m ³	Fume.
	TWA	1 mg/m ³	Dust.
		1 mg/m ³	Fume.

Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)

Constituents	Type	Value	Form
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Carbon (CAS 7440-44-0)	TWA	3 mg/m ³	Respirable dust.
Silicon (CAS 7440-21-3)	TWA	10 mg/m ³	Inspirable dust.
Manganese (CAS 7439-96-5)	STEL	3 mg/m ³	Fume.
	TWA	1 mg/m ³	Fume.
		1 mg/m ³	Dust.

US. ACGIH Threshold Limit Values

Constituents	Type	Value	Form
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m ³	
Carbon (CAS 7440-44-0)	TWA	2 mg/m ³	Respirable fraction.
Manganese (CAS 7439-96-5)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.

UK. EH40 Workplace Exposure Limits (WELs)

Constituents	Type	Value	Form
Phosphorus (CAS 7723-14-0)	STEL	0.3 mg/m ³	
	TWA	0.1 mg/m ³	
Carbon (CAS 7440-44-0)	TWA	4 mg/m ³	Respirable dust.
		10 mg/m ³	Inhalable dust.
Silicon (CAS 7440-21-3)	TWA	4 mg/m ³	Respirable dust.
		10 mg/m ³	Inhalable dust.
Manganese (CAS 7439-96-5)	TWA	0.5 mg/m ³	

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Constituents	Type	Value	Form
Phosphorus (CAS 7723-14-0)	TWA	0.01 mg/m ³	Inhalable fraction.
Carbon (CAS 7440-44-0)	TWA	4 mg/m ³	Inhalable fraction.
Manganese (CAS 7439-96-5)	TWA	1.5 mg/m ³	Respirable fraction.
		0.2 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.

Biological limit values

Germany. TRGS 903, BAT List (Biological Limit Values)

Constituents	Value	Determinant	Specimen	Sampling time
Manganese (CAS 7439-96-5)	20 µg/l	Mangan	Blood	*

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

Appropriate engineering controls Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment if high dust/air concentrations are possible.

Individual protection measures, for example personal protective equipment (PPE)

Eye/face protection Wear dust-resistant safety goggles where there is danger of eye contact.

Skin protection

Hand protection

Wear suitable protective gloves to prevent cuts and abrasions. Suitable gloves can be recommended by the glove supplier.

Other

Wear suitable protective clothing.

Respiratory protection

In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. Seek advice from local supervisor.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

Hygiene measures

Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practices. Observe any medical surveillance requirements.

9. Physical and chemical properties

Appearance

Physical state

Solid.

Form

Solid.

Colour

Not available.

Odour

Odourless.

Odour threshold

Not applicable.

pH

Not applicable.

Melting point/freezing point

> 450 °C (> 842 °F)

Initial boiling point and boiling range

Not applicable.

Flash point

Not applicable.

Evaporation rate

Not applicable.

Flammability (solid, gas)

Non flammable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not flammable.

Flammability limit - upper (%)

Not flammable.

Vapour density

Not available.

Relative density

5.87 (21 °C)

Solubility(ies)	
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	Not applicable for inorganic substances.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not applicable.
Other physical and chemical parameters	
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.
Chemical stability	Massive metal is stable and non reactive under normal conditions of use, storage and transport.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Dust generation. Avoid heat, sparks, open flames and other ignition sources.
Incompatible materials	Oxidizing agents. Peroxides. Acids.
Hazardous decomposition products	Manganese oxides.

11. Toxicological information

Information on possible routes of exposure

Ingestion	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.
Inhalation	High concentrations of dust and fumes may irritate the throat and respiratory system and cause coughing.
Skin contact	Dust may irritate skin.
Eye contact	Dust may irritate the eyes.
Symptoms related to exposure	Irritation of nose and throat. Irritation of eyes and mucous membranes.

Acute toxicity No test data available for the product. Expected to be a low hazard for usual industrial or commercial handling by trained personnel.

Toxicological data

Constituents	Species	Test results
Carbon (CAS 7440-44-0)		
Acute		
<i>Oral</i>		
LD50	Rat	> 10000 mg/kg
Iron (CAS 7439-89-6)		
Acute		
<i>Oral</i>		
LD50	Rat	30 g/kg
Silicon (CAS 7440-21-3)		
Acute		
<i>Oral</i>		
LD50	Rat	3160 mg/kg
Manganese (CAS 7439-96-5)		
Acute		
<i>Oral</i>		
LD50	Rat	9000 mg/kg

Skin corrosion/irritation May cause irritation through mechanical abrasion.

Serious eye damage/irritation May cause irritation through mechanical abrasion.

Respiratory or skin sensitisation

Respiratory sensitisation No information available on the mixture. However, none of the components are classified in respect at a level below the concentration threshold for classification).

Skin sensitisation No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification).

Germ cell mutagenicity No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification).

Carcinogenicity No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification).

ACGIH Carcinogens

Manganese (CAS 7439-96-5)

A4 Not classifiable as a human carcinogen.

Reproductive toxicity No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification).

Specific target organ toxicity - single exposure No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification).

Specific target organ toxicity - repeated exposure No Concerns: An evaluation of possible chronic health effects from the constituents concluded that there were no concerns. Therefore, chronic health effects from the alloy are predicted to be negative.

Aspiration hazard Not applicable for solids.

Other information Chronic exposure to some manganese compounds has been reported to affect the central nervous system. Symptoms can include hand tremors, behavioral changes and slower reaction times.

12. Ecological information

Ecotoxicity

Constituents	Species	Test results
Iron (CAS 7439-89-6)		
Aquatic		
Fish	LC50 Channel catfish (<i>Ictalurus punctatus</i>)	> 500 mg/l, 96 hours
Persistence and degradability	Not applicable to inorganic substances.	
Bioaccumulative potential	The product is not bioaccumulating.	
Partition coefficient n-octanol / water (log Kow)	Not applicable for inorganic substances.	
Mobility in soil	This product has very low solubility in water and low mobility in the environment.	
Mobility in general	This product has a very low solubility in water and will sediment in water systems.	
Other adverse effects	None known.	

13. Disposal considerations

Disposal methods Dispose of in accordance with all applicable regulations.

Residual waste Recover and recycle, if practical. Dispose of in accordance with local regulations.

Contaminated packaging Dispose in accordance with all applicable regulations.

14. Transport information

ADG

Not regulated as dangerous goods.

RID

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 MARPOL73/78 and the IBC Code

Not applicable. This product is a solid. Therefore, bulk transport is governed by IMSBC code.

The material is covered under the Appendix I as Bulk Cargo Shipping Name: Ferromanganese. IMSBC Class: Not applicable. Group C.

MARPOL Annex V: This product is not considered harmful to the marine environment (HME).

15. Regulatory information

Safety, health and environmental regulations

National regulations

This Safety Data Sheet was prepared in accordance with the Code of Practice on Preparation of Safety Data Sheets for Hazardous Chemicals.

Australia Medicines & Poisons Appendix A

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix B

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix C

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix D

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix E

Phosphorus (CAS 7723-14-0)

For advice, contact a Poisons information Centre (Phone eg Australia 131 - 126; New Zealand 03 - 4747 - 000) or a doctor (at once)., Urgent hospital treatment is likely to be needed. (Note - the words 'at once' to be added to instruction A)., If swallowed, do NOT induce vomiting., If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes., If swallowed or inhaled, remove from c

Australia Medicines & Poisons Appendix F

Phosphorus (CAS 7723-14-0)

applies to all preparations in any concentration Corrosive. Avoid contact with eyes., Avoid contact with skin.

Australia Medicines & Poisons Appendix G

Phosphorus (CAS 7723-14-0)

Phosphorus

Australia Medicines & Poisons Appendix H

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix I

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix J

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix K

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 2

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 3

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 4

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 5

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 6

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 7

Phosphorus (CAS 7723-14-0)

applies to all preparations in any concentration

Australia Medicines & Poisons Schedule 8

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 9

Poisons schedule number not allocated.

Australia National Pollutant Inventory (NPI): Threshold quantity

Manganese (CAS 7439-96-5) 10 tonnes/yr Threshold Category: 1

High Volume Industrial Chemicals (HVIC)

Carbon (CAS 7440-44-0) 10000 - 99999 tonnes See the regulation for additional information.
Iron (CAS 7439-89-6) 1000 - 9999 tonnes See the regulation for additional information.
Phosphorus (CAS 7723-14-0) 1000 - 9999 tonnes See the regulation for additional information.
Silicon (CAS 7440-21-3) 1000 - 9999 tonnes See the regulation for additional information.

Importation of Ozone Depleting Substances (Customs(Prohibited imports) Regulations 1956, Schedule 10)

Not listed.

National Pollutant Inventory (NPI) substance reporting list

Not listed.

Prohibited Carcinogenic Substances

Not regulated.

Prohibited Substances (National Model Regulation for the control of Workplace Hazardous Substances, Schedule 2 NOHSC:1005 (1994) as amended)

Not listed.

Restricted Importation of Organochlorine Chemicals (Customs(Prohibited Imports) Regulations 1956, Schedule 9)

Not listed.

Restricted Carcinogenic Substances

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

16. Other information

Issue date	28-May-2024
Revision date	-
Key abbreviations or acronyms used	LD50: Lethal Dose, 50%. CEN: European Committee for Standardisation. HEPA: High efficiency particulate air.
References	ECHA CHEM ECOTOX HSDB® - Hazardous Substances Data Bank IUCLID
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available.