SUPPLIER

MATERION

MATERIAL SAFETY DATA SHEET

GENERATED 03/15/2011, **REVISION** 10/17/2005, **SUPERCEDES REVISION** 03/23/2004, **DATE CREATED** 03/03/1993

SECTION I - PRODUCT IDENTIFICATION
Manganese metal, powder and pieces

PRODUCT NAME:	Manganese metal, powder and pieces
PRODUCT CODE:	M-MSDS0032
REFERENCE #:	7439-96-5
MANUFACTURER INFORMATION	
COMPANY NAME:	Materion Advanced Chemicals Inc. 1316 W. St. Paul Avenue Milwaukee, WI 53233
EMERGENCY CONTACT:	CHEMTREC (800)424-9300
ALTERNATE EMERGENCY CONTACT:	Materion Advanced Chemicals Inc. (414)289-9800
CHEMICAL FAMILY:	Metal
CAS NUMBER:	7439-96-5
RTECS #:	OO9275000
FORMULA:	Mn
MOLECULAR WEIGHT:	54.94
UPC/EAN:	231-105-1

SYNONYMS

Manganese metal; colloidal manganese; magnacat; tronmang.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION
Manganese metal, powder and pieces

Hazardous Components (Chemical Name)	CAS #	Concentration	OSHA TWA	ACGIH TLV	Other Limits

Manganese	7439-96-5	0.0 -100.0 %		0.2 mg/m3	
See SECTION IX-ADDITIONAL COMMENTS FOR COSHH Regulations	NA	0.0 -100.0 %			
Hazardous Components (Chemical Name)	**CAS #**	**OSHA STEL**	**OSHA CEIL**	**ACGIH STEL**	**ACGIH CEIL**
Manganese	7439-96-5		5 mg/m3		
See SECTION IX-ADDITIONAL COMMENTS FOR COSHH Regulations	NA				

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS
Manganese metal, powder and pieces

PHYSICAL STATES: [ ] Gas [ ] Liquid [X] Solid

MELTING POINT: 1241.00 C - 1247.00 C

BOILING POINT: 1962.00 C

SPECIFIC GRAVITY (WATER = 1): 7.20

VAPOR PRESSURE (VS. AIR OR MM HG): 1 mm at 1292.0 C

VAPOR DENSITY (VS. AIR = 1):

EVAPORATION RATE (VS BUTYL ACETATE=1):

SOLUBILITY IN WATER: insoluble

SOLUBILITY NOTES

soluble in aqueous solutions of sodium or potassium bicarbonate

PERCENT VOLATILE: N.A.

APPEARANCE AND ODOR

Grey-pink or silvery, brittle, metallic powder and pieces, no odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
Manganese metal, powder and pieces

FLASH PT: N.A.

EXPLOSIVE LIMITS: LEL: NA UEL: NA

EXTINGUISHING MEDIA

USE: Not applicable. Use suitable extinguishing media for surrounding materials and type of fire.

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Violent reaction with NO2 + oxidants.
Incandescent reaction with phosphorus, nitryl fluoride, nitric acid.
Will react with water (at 212F) or steam to produce hydrogen.
May react with oxidizing agents.

HAZARDOUS COMBUSTION PRODUCTS

SECTION V - REACTIVITY DATA
Manganese metal, powder and pieces

STABILITY: Unstable [ ] Stable [X]

CONDITIONS TO AVOID - INSTABILITY

None

INCOMPATIBILITY - MATERIALS TO AVOID

Carbon dioxide, aluminum dust, ammonium nitrate, fluorine, chlorine + heat, hydrogen peroxide, bromine pentafluoride, sulfur dioxide + heat, NO2 + oxidants, phosphorus, potassium and sodium hydroxides, nitryl fluoride, nitric acid, oxidizing agents, water and steam.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

Hydrogen gas and manganese oxide

HAZARDOUS POLYMERIZATION: Will occur [ ] Will not occur [X]

CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION

None

SECTION VI - HEALTH HAZARD DATA
Manganese metal, powder and pieces

HEALTH HAZARDS (ACUTE AND CHRONIC)

Some manganese compounds are experimental tumorigens. They can cause central nervous and pulmonary system damage by inhalation of fumes and dust. Very few poisonings have occurred from ingestion. Chronic manganese poisoning is a clearly characterized disease which results from inhalation of fumes or dusts of manganese. The central nervous system is the chief site of damage. Exposure to dusts and fumes can possibly increase the incidence of upper respiratory infections and pneumonia. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

INHALATION:
Acute: Inhalation of manganese compounds is considered the primary route of exposure, they may cause irritation of the respiratory tract and mucous membranes. Inhalation of manganese compounds' fine dusts and fumes may cause metal fume fever.
Chronic: Chronic inhalation of manganese compounds' dust particles, approximately 3 um in size, for a period of a few months may cause pulmonary pneumonitis. However, dust particles approximately 5 um in size, inhaled for about 4 hours daily for three months did not produce pneumonitis, but may cause fibrotic changes in the lungs, decrease in hemoglobin and a change in erythrocyte levels. Manganese compounds may also cause manganism, psychic and neurological disorders effecting the central nervous system, to develop (manganism is not fatal but, can cause permanent disability).

INGESTION:
Acute: Absorption of manganese compounds from the gastrointestinal tract is poor under normal conditions.
Chronic: No chronic health effects recorded.

SKIN:
Acute: May cause irritation. Moderately toxic by subcutaneous route.
Chronic: May cause dermatitis.

EYE:
Acute: May cause irritation.
Chronic: Irritant dusts may cause conjunctivitis damage.

TARGET ORGANS: May affect the central nervous system, kidneys, respiratory system, eyes, skin and blood.

CARCINOGENICITY: NTP? No IARC Monographs? No OSHA Regulated? No

CARCINOGENICITY/OTHER INFORMATION

orl-rat LD50: 9 gm/kg
skn-rbt 500 mg/24H MLD eye-rbt 500 mg/24H MLD
mrc-smc 8 mmol/L/18H ims-rat TDLO: 400 mg/kg/1Y-I:ETA
ihl-man TCLO: 2300 ug/m3:BRN,CNS
orl-rat LD50: 9000 mg/kg

RECOMMENDED EXPOSURE LIMITS

See "Section II"

LD 50 / LC 50

See "Carcinogenicity/Other Information"

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: May cause red, dry throat. Metal fume fever may cause: chills, fever, muscle aches, headache, dry throat, sleepiness, weakness in the legs, muscular twitching, nocturnal leg cramps and slowness of speech. Manganism may cause: a slapping gait, cramps, tremors, slurred speech, hallucinations, insomia and mental confusion. These symptoms resemble Parkinson's disease. Other symptoms of manganism include: inflammation of the kidneys, cirrhosis of the liver, anorexia, muscular fatigue, sexual impotence, reduction of the white blood cells and anemia.

INGESTION: No acute or chronic health effects recorded.

SKIN: May cause redness, itching.

EYE: May cause redness, itching, and watering.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

It has been recorded that when exposed to manganese dust and fumes, there is a higher incidence of upper respiratory infection and pneumonia compared to the general population.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention immediately.

INGESTION: Not applicable

SKIN: Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention if symptoms persist.

EYE: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE
Manganese metal, powder and pieces

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear appropriate respiratory and protective equipment specified in section VIII-control measures. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust. Use non-sparking tools.

WASTE DISPOSAL METHOD

Dispose of in accordance with local, state and federal regulations.

HAZARD LABEL INFORMATION:

Store in cool, dry area Store in tightly sealed container Wash thoroughly after handling

PRECAUTIONS TO BE TAKEN IN HANDLING

None

PRECAUTIONS TO BE TAKEN IN STORING

None

OTHER PRECAUTIONS

Avoid breathing dust.

SECTION VIII- CONTROL MEASURES
Manganese metal, powder and pieces

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION:

NIOSH approved respirator Impervious gloves Safety glasses Clothes to prevent skin contact

RESPIRATORY EQUIPMENT (SPECIFY TYPE)

NIOSH - approved respirator

EYE PROTECTION

Safety glasses

PROTECTIVE GLOVES

Rubber gloves

OTHER PROTECTIVE CLOTHING

Protective gear suitable to prevent contamination

VENTILATION

Local Exhaust: Local exhaust ventilation may be necessary to control any air contaminants to within their PELs or TLVs during the use of this product.
Special: Handle in a controlled environment
Mechanical (Gen): Not recommended
Other: Handle in an inert gas such as argon

WORK/HYGIENIC/MAINTENANCE PRACTICES

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

SECTION IX - ADDITIONAL COMMENTS
Manganese metal, powder and pieces

Control of Substances Hazardous to Health Regulations
EH40 Occupational Exposure Limits

MANGANESE AND COMPOUNDS
Maximum Exposure Limit: NE
Occupational Exposure Standard: 5 mg/m3

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