MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT

Product Name:	Manganese (Mn)
Formula:	Mn, FeMn, Mn_4N
Synonyms:	Medium and Low Carbon Ferromanganese, Standard Ferromanganese
Manufacturer's Name:	Miller and Company LLC
Address:	9700 W. Higgins Road Suite 1000 Rosemont, IL 60018
Phone:	874-696-2400
Emergency Phone:	Chemtrec 800-262-8200
Prepared by:	H. F. Linebarger
Date:	January 13, 2009

SECTION 2 – PHYSICAL DATA

Appearance and Odor:	Silvery metallic, brown or black when surface oxidized. No odor.
Solubility:	Product is insoluble in water
Reactivity:	Manganese metal and alloys may react slightly with water (Section 6).
Specific Gravity:	(Approx): 3.9 to 7.4 (Mn_4N Sp. gr. is 2.9)
Melting Point-Range:	1070°C to 1245°C
Other:	Manganese metal and alloys may nitride at temperatures above 400

SECTION 3 – TLV DATA ON PRINCIPAL ALLOY INGREDIENTS

Typical Analysis (Wt % Range)	
Manganese	75 – 100%
Iron	1 – 15%

TLV (mg/m^3): No TLV's exist for Manganese alloys; TLV's may be applicable to constituent elements.
Ceiling 5 mg/m^3 as Manganese (OSHA)
10 mg/m^3 as Fe_2O_2 (OSHA)

SECTION 4 – FIRE AND EXPLOSION HAZARD DATA

Combustibility: Based on combustibility tests, these alloys are classified as active. When suspended in air, they can readily ignite, propagate flame, and generate some pressure or a mild explosion. Lump material is not combustible.

Extinguishing Media: Class D fire: Use dry chemicals, dry sand, or CO_2 to smother fire. Fire may also be isolated and allowed to burn itself out. Do not disturb burning metal while extinguishing the fire. Nitrogen blanket will not extinguish a Mn metal and alloys fire.

SECTION 5 – HEALTH – HAZARD DATA

First Aid Procedures:

Inhalation:	Remove from dusty area to fresh air.
Skin Contact:	No hazard associated with skin contact.
Eye Contact:	Flush with water to be sure that no particles remain in the eye.

Effects of Overexposure:

Acute: Dusts in high concentrations can cause irritation of the eyes and throat. Manganese fume fever is characterized by cold-like symptoms. No residual injury is expected from acuate overexposure.

Chronic: Central nervous system disorders may develop in isolated cases. No physical disorders are expected. Chronic effects usually require three years of overexposure to develop. No residual injury is expected from handling lump or coarse material.

SECTION 6 – REACTIVITY DATA

Stability: Stable in all sizes.
Materials to Avoid: Moisture, acids.
Conditions to Avoid: Exposure to moisture during extended storage. Ventilation should be supplied for areas of extended storage. Avoid generation of airborne dusts.

Hazardous Reaction/Decomposition Products: Small amounts of phosphine, arsine and hydrogen may occasionally evolve after contact with moisture.

SECTION 7 – SPILL, LEAK, OR DISPOSAL INFORMATION

Steps to be Taken in Case of Spills: Avoid the use of compressed air to maneuver spills or leaks of fine material associated with spills or leaks of coarse or lump material. Keep wet material separated from dry material.

Waste Disposal or Repack Information: Avoid repacking wet material in sealed container. Dispose of in accordance with applicable federal, state, and local regulations.

SECTION 8 – EMPLOYEE PROTECTION INFORMATION

Respiratory Protection:
In dusty areas, use NIOSH- approved Schedule 21C respirator.

Eye Protection:
Subject to safety rules. Recommended wearing Safety goggles.

Ventilation:
To control exposure to below ceiling of 5 mg/m^3 as Mn.

Other Clothing and Equipment:
Protective gloves are recommended during handling. Lump material may have sharp edges. As with other dusts, avoid contamination of clothing.

SECTION 9 – ADDITIONAL INFORMATION

Handling/Storage:
Minimize and control operations producing dust.

Milling:
Use of special precautions, such as inert atmosphere, is recommended when sizing to minus 100 mesh with more than 50% minus 200 mesh. Grinding wet material may be hazardous due to the possible of hydrogen evolution.

Labeling:
No special labels are required: