



# ALLEGHENY LUDLUM STEEL CORPORATION



Dedicated to Quality Specialty Steel

River Road, Brackenridge, PA 15014

## MATERIAL SAFETY DATA

CHEMTREC CHEMICAL TRANSPORTATION EMERGENCY  
TELEPHONE NO: 800-424-9300; DISTRICT OF COLUMBIA: 202-483-7616

EMERGENCY  
TELEPHONE NO.

**412-339-5059**

THIS MSDS APPLIES TO THE FOLLOWING ESTABLISHED STEEL GRADES AND OR ALLEGHENY LUDLUM TRADE NAME PRODUCTS:

**CATEGORY I:** 201, 201L, 301, 302, 302B, 304, 304F, 304LF, 304L, 304N, 304LN, 305, 308, 308L, 309, 309S, 310, 310S, 310CB, 321, 330, 332, 334, 347, 913, 924, 940

### 1. HAZARDOUS INGREDIENTS

MATERIAL	% (RANGE)	ACGIH-TLV	OSHA-PEL
Iron	> 50	5 mg/M3 (oxide fume)	10 mg/M3 (oxide fume)
Chromium	3-29	0.5 mg/M3 (metal) 0.05 mg/M3 (Cr+6) Suspected carcinogen-NTP & IARC See Sections 5 & 7	1 mg/M3 (metal)
Nickel	3.5-42.5	1 mg/M3 (metal) Suspected carcinogen-NTP & IARC See Sections 5 & 7	1 mg/M3 (metal)
Manganese	0.25-7.58	5 mg/M3 (dust) 1 mg/M3 (fume)	5 mg/M3 (dust) 5 mg/M3 (fume)
Silicon	0.13-3.00	10 mg/M3 (total dust) 5 mg/M3 (respirable dust)	15 mg/M3 (total dust) 5 mg/M3 (resp. dust)
Niobium/ Tantalum	0.002-1.10	5 mg/M3 (Ta)	5 mg/M3 (Ta)

### 2. PHYSICAL DATA

NOT APPLICABLE

### 3. FIRE AND EXPLOSION HAZARD DATA

NOT APPLICABLE

### 4. SPECIAL PROTECTION INFORMATION

**VENTILATION:** Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

**RESPIRATORY PROTECTION:** When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

**EYE PROTECTION:** Appropriate protective eye and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

**PROTECTIVE GLOVES:** Appropriate and as needed to protect against exposure to chemical or physical hazards.

**OTHER:** N/A

## 5. PHYSIOLOGICAL EFFECTS

### PRIMARY ROUTE OF EXPOSURE

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

### THRESHOLD LIMIT VALUE (TLV)

N/A

### EFFECTS OF OVEREXPOSURE

**Acute:** Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: **The Basic Science of Poisons**; Hamilton and Hardy: **Industrial Toxicology**) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

**Chronic:** Excessive and repeated inhalation of chromium fumes or dust may cause severe irritation, ulceration or cancer in the respiratory system—nose, throat and lungs. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. It is uncertain whether metallic chromium in dust form can cause the same effects noted above. Until this issue is resolved, engineering controls or personnel protective equipment (i.e. respirators) should be utilized to assure exposures are not excessive. Similarly, excessive inhalation of nickel fumes have been associated with respiratory cancer. Both chromium and nickel are potential sensitizers, and may cause allergic reactions.

Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Niobium is highly toxic once it reaches the blood stream. Because it is poorly absorbed, it is less toxic from the gastrointestinal tract. It has been reasonably concluded from animal studies that small additional amounts of niobium from industrial exposure may have adverse health effects over the long term when added to the niobium consumed in the human diet, particularly when added to the respiratory tract.

Tantalum is inert toward body tissues and fluids and is consequently nontoxic after industrial exposure. Pulmonary fibrosis was presented by some Russian workers, but there was no reference to tantalum concentrations or degree of exposure.

## 6. EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

## 7. ADDITIONAL COMMENTS

**NOTE:** The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially

hazardous exposures be evaluated by a competent industrial hygienist. See section 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

### PREPARED BY

W. D. Edsall

### DATE

22 October 1985

### TELEPHONE NO.

412 - 339-5008

### SUPERSEDES MSDS DATED