

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT IDENTIFICATION

Product Name : Fasteners Made of Carbon and Alloy Steels

SECTION 2 - HAZARDOUS INGREDIENTS

Note: These products under normal conditions do not represent an inhalation, ingestion or contact health hazard except when cadmium plated.

Base Metal: Iron (Fe)

* Alloying elements that may be present in the unplated and uncoated parts are: carbon (C), Manganese (Mn), Phosphorus (P), Sulfur (S), Silicon (Si), Chromium (Cr), Molybdenum (Mo), Nickel (Ni), Vanadium (V), Boron (B).

Metallic platings and coatings on the parts, when and as ordered, may be: Zinc (Zn) or Cadmium (Cd) platings and Phosphate of zinc oxide base (ZnO₂) coating.

* Percent of composition varies with grade of material.

SECTION 3 - PHYSICAL DATA

Material is a solid in normal condition.

Melting Point: Steel 2800° F
Zinc 787° F
Cadmium 610° F

Appearance: Plain Finish - Gray - Black Metallic
Plated - Silvery

Odor: None

SECTION 4 - FIRE AND EXPLOSION

Iron and steel parts in the solid state present no fire or explosion hazard.

Extinguishing Media: N/A

Special Fire Fighting Instructions: N/A

Unusual Fire and Explosion Hazards: N/A

SECTION 5 - REACTIVITY DATA

Stability: Stable

Conditions to Avoid: N/A

Incompatibility: Reacts with acids to produce hydrogen gas.

Hazardous Decomposition Product: Metallic dust or fumes may be produced during welding, burning and grinding.

SECTION 6 - HEALTH HAZARD DATA

Steel and Zinc: Primary Route(s) of Entry: Inhalation

Effects of Exposure: No toxic effects would be expected from the inert solid product or under normal usage. Prolonged, repeated exposure to fumes generated during burning, grinding, or welding may affect health as follows:

1. Short term exposure to Fumes/Dust may irritate eyes and respiratory system. Inhalation of freshly formed oxides of Iron, Manganese, and Copper may cause dryness and irritation of the mouth and throat and influenza-like symptoms.
2. Iron Oxide Fumes and Dust (inhaled in high concentration) may lead to siderosis - no fibrosis.
3. Chromium Fumes may cause skin ulcers, usually on hands, or perforated nasal septum, some insoluble chromates and dichromates are suspect carcinogens. (See Note).
4. Nickel Fumes or Dust can produce respiratory irritation and pneumonitis; several nickel compounds, including the oxide, are suspect carcinogens. (See Note).

NOTE: Chromium and Nickel and their compounds are listed in the 3rd Annual Report on carcinogens, prepared by the National Toxicology Program. Exposure to high concentrations of Fumes or Dusts can cause sensation dermititus, inflammation or ulceration of upper respiratory tract, and possible lung or nasal cancer. Recent studies of workers melting and working alloys containing Nickel/Chromium have NOT found increased risk of cancer.

Cadmium: Highly toxic if ingested. Toxic irritant to eyes and skin abrasions.

SECTION 7 - EMERGENCY AND FIRST AID PROCEDURES

Inhalation -

Steel and Zinc: If exposed to excessive levels of metal fumes caused by burning, grinding, or welding, immediately move person from area to fresh air. Obtain medical attention immediately.

Skin: If irritation develops, remove contaminated clothing. Wash skin with soap and water. If irritation persists, obtain medical attention.

Eyes: In case of irritation flush with water.

Cadmium: If ingested, seek immediate medical attention.

Skin: Wash thoroughly with soap and water.

Eye Irritation: Wash with water for 15 minutes.

SECTION 8 - SPECIAL HANDLING

Respiratory Protection: An approved dust-fume respirator should be worn during welding or burning.

Eye Protection: Use safety glasses or goggles as required when grinding, burning, or welding.

Use appropriate clothing when welding or burning.

Gloves should be worn when handling cadmium plated parts.

SECTION 9 - SPECIAL INSTRUCTIONS

No special precautions are needed when handling or disposing of iron and steel parts.

MSDS for Thread Rolling Lubricant attached