SAFETY DATA SHEET

Revision date : 1993/09/14

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : Alloy steel-HR & CR, alloy leaded steel

PRODUCT NUMBER : P6342

SUPPLIER : 0804001
Metal Goods Service Centers
Div. of Alcan Aluminum Corporation
P.O. Box 346
St-Louis, MO, 63166

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SYNONYMS : Alloy steel 4130, 4140, 4340, 8620, alloy leaded steel 86L20

APPEARANCE AND ODOUR : Grey-black odorless solid

USES : Primary metal

2. COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS #	LD_{50}	LC_{50}	EC DIRECTIVE Symbol	R phrases	CONC.
Base metal:						
Iron	7439-89-6	Unknown	Unknown	None	None	86-99 %
Alloying elements:						
Nickel	7440-02-0	9000 mg/kg (oral-rat)	Unknown	Xn	40-43	< 5 %
Chromium	7440-47-3	Unknown	Unknown	Not classified		< 5 %
Silicon	7440-21-3	3160 mg/kg (oral-rat)	Unknown	None	None	< 5 %
Manganese	7439-96-5	9000 mg/kg (oral-rat)	Unknown	None	None	< 2 %
Carbon	7440-44-0	Unknown	Unknown	None	None	< 2 %
Molybdenium	7439-78-7	Unknown	Unknown	None	None	< 2 %
Vanadium	7440-62-2	59 mg/kg (s-cut.-rabbit)		Unknown	None	None< 2 %
Aluminum	7429-90-5	Unknown	Unknown	None	None	< 2 %
Sulfur	7704-34-9	Unknown	Unknown	None	None	< 2 %
Phosphorus	7723-14-0	Unknown	Unknown	None	None	< 1 %
Bismuth	7440-69-9	5 g/kg (oral-rat)	Unknown	None	None	< 1 %
Copper	7440-50-8	Unknown	Unknown	None	None	< 1 %
Leaded alloys:						
Lead	7439-92-1	Unknown	Unknown	Not classified		< 1 %

3. HAZARDS IDENTIFICATION

Dusts present a lead contamination hazard.

4. FIRST AID MEASURES

In case of dust exposure:
Inhalation : In case of discomfort, remove to a ventilated area. Consult a physician.
Skin contact : Wash skin thoroughly with soap and water.
Eye contact : 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 : Not applicable.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA : The product in the solid state presents no fire or explosion hazard.
HAZARDOUS COMBUSTION PRODUCTS : Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Not applicable.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS : Follow the recommendations in ANSI Z49.1, Safety in welding and cutting. (ANSI: American National Standard Institute)

STORAGE CONDITIONS : Not applicable.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Provide general and local ventilation to maintain concentrations of air contaminants below recommended standards.
Use an approved respirator designed for the hazard, where concentrations exceed exposure limits.Wear goggles, as necessary.

EXPOSURE LIMITS :
(ACGIH=American Conference of Governmental Industrial Hygienists; TLV=Threshold Limit Value; OSHA=Occupational Safety and Health Administration [USA]; PEL=Permissible Exposure Limit; TWA=Time-Weighted Average; STEL=Short Term Exposure Limit; Ceiling=Ceiling value)

	ACGIH (TLV)		OSHA (PEL)	
	TWA	STEL	TWA	Ceiling
Iron oxide, fume	5 mg/m^3	None	10 mg/m^3	None
dust	None	None	10 mg/m^3	None
Chromium metal	0.5 mg/m^3	None	1.0 mg/m^3	None
Copper (fume)	0.2 mg/m^3	None	0.1 mg/m^3	None
(dust)	1.0 mg/m^3	None	1.0 mg/m^3	None
Carbon (as nuisance particulates - tot.)		10 mg/m^3	None	15 mg/m^3None
Sulfur	None	None	None	None
Lead inorg. dust & fumes	0.15 mg/m^3	None	0.05 mg/m^3	None
Nickel metal	1.0 mg/m^3	None	1 mg/m^3	None
Manganese (dust)	5 mg/m^3	None	5 mg/m^3	5 mg/m^3-ceil
(fumes)	1 mg/m^3	3 mg/m^3	5 mg/m^3	5 mg/m^3
Molybdenum (tot.dust)	None	None	15 mg/m^3	None
- Soluble compounds	5 mg/m^3	None	5 mg/m^3	None
- Insoluble compounds	10 mg/m^3	None	None	None
Silicon (tot. dust)	10 mg/m^3	None	15 mg/m^3	None
-Resp. dust	None	None	5 mg/m^3	None
Aluminum (tot. dust)	10 mg/m^3	None	15 mg/m^3	None
-Fume, powder, resp. dust	5 mg/m^3	None	5 mg/m^3	None
Phosphorus	0.1 mg/m^3	None	0.1 mg/m^3	None
Vanadium (V_2O_5)- resp. dust	0.05 mg/m^3	None	0.5 mg/m^3	0.5 mg/m^3
fume (as V_2O_5)	0.05 mg/m^3	None	0.1 mg/m^3	0.1 mg/m^3
Bismuth	None	None	None	None

9. PHYSICAL AND CHEMICAL PROPERTIES

pH : Not applicable.
boiling point : Not applicable.
melting point : > 2500°C
vapour pressure : Not applicable.
vapour density (air=1) : Not applicable.
evaporation rate : Not applicable.
relative density (water=1) : App. 7
water solubility : Not applicable.
partition coefficient (n-octanol/water) : Not applicable.
flashpoint : Not applicable.
autoignition temp. : Not applicable.
lower flammable limit : Not applicable.
higher flammable limit : Not applicable.
explosive properties : Not applicable.
NFPA fire code : 0
oxidizing properties : Not applicable.
odour threshold : Not applicable.

10. STABILITY AND REACTIVITY

STABLE (yes/no) : Yes
CONDITIONS AND MATERIAL TO AVOID : Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS : Metallic dust or fumes may be produced during welding, burning, grinding and machining. Reaction with evolution of hydrogen: on contact with acids.

11. TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE : **inhalation : Yes** **ingestion : No**
eye contact : No **skin contact : No** **skin absorption : No**

ACUTE EFFECTS :
In case of dust exposure:
Inhalation : Irritation of respiratory tract and eyes.
High concentrations of freshly-formed copper oxide and fumes can produce symptoms of metal fume fever.
Skin contact : Not applicable.
Eye contact : Not applicable.
Ingestion : Not applicable.

CHRONIC EFFECTS :
This product may contain lead. Following effects may occur:
Lead compounds bioaccumulate. The most frequent chronic effects are anemia, kidneys and central nervous damages. Medical surveillance should be undertaken to prevent high blood lead levels. Inhalation of lead oxide fumes can cause abdominal pains, constipation, headaches, weakness, muscle pain, loss of appetite, nausea ans vomiting. Nickel fumes may cause severe pneumonitis and/or sensitization.

Medical conditions aggravated by exposure to the product : Not determined.

Carcinogenicity / Mutagenicity / Reproductive toxicity : Nickel, chromium and some of their compounds are listed in the current "Annual Report on Carcinogens" prepared by the "National Toxicology Program" (NTP). The International Agency for Research on Cancer (IARC) classifies lead compounds in group 2B: possibly carcinogenic in humans (no evidence in humans but sufficient evidence in animals).

12. ECOLOGICAL INFORMATION

No information available

13. DISPOSAL CONSIDERATIONS

Recycle if possible. Dispose of waste in accordance with federal, state, or local regulations.

14. TRANSPORT INFORMATION

This product is not classified as dangerous under the Transport Regulations, for road, rail, sea or air transport (no UN number).

15. REGULATORY INFORMATION

WHMIS CLASSIFICATION (Canada) : D2 Material causing other toxic effects

EEC CLASSIFICATION (Europe) : Not classified
Warning symbol : None
Warning word : None
Risk phrases : None
Safety phrases : None

USA REGULATIONS:
This product contains lead. Any process resulting exposure to more than 0.5 mg/m^3 of metal dust may result in a daily dose of lead of over 0.5 µg/day, the dose above which the "California Safe Drinking Water and Toxic Enforcement Act" of 1986 requires notification. Refer to the appropriate regulation notification wording guidelines.

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Section 313 Supplier Notification
This product may contain the following toxic chemical(s) subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (Title III of SARA) and of 40 CFR 372. (This information must be included in all MSDSs that are copied and distributed for this material).

Chemical Name	CAS #
Manganese	7439-96-5
Chromium	7440-47-3
Nickel	7440-02-0
Copper	7440-50-8
Cobalt	7440-48-4
Lead	7439-92-1

16. OTHER INFORMATION

Abbreviations :
CAS #=Chemical Abstracts Service Registry Number; EC=European Community
LD_{50}=Lethal dose 50%; LC_{50}=Lethal concentration 50%; LCL_0=lowest published lethal concentration

*** Although the information in this MSDS was obtained from sources which we believe to be reliable, it cannot be guaranteed. In addition, this information may be used in a manner beyond our knowledge or control. The information is therefore provided for advice purposes only, without any representation or warranty express or implied. ***

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Date of the previous revision : 1992/08/01

Reason for modification : Standardization according to ISO 11014 and European Directive 91/155/EEC.
Modification of certain OSHA Permissible Exposure Limits (section 8).

-> According to the U.S. Court of Appeals, the PEL for many substances has reverted to the level listed under Table Z-1, and in Table Z-2 and Table Z-3 of the amended 29 CFR 1910.1000 (58 FR 35338-351 June 30, 1993). However, OSHA continues to believe that controlling employee exposure to this limit is insufficiently protective. OSHA therefore recommends that employees' exposures be limited to the more protective level of either the NIOSH Recommended Exposure Levels (REL) or the ACGIH Threshold Limit Values (TLV).