Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

1 Identification

· **Product identifier**

· **Trade name:** **Alloy Steel - HR&CR**
Alloy Leaded Steel

· **Other Product Identifiers:**
Alloy Steel - 4130, 4140, 4340, 8620
Alloy Leaded - 86L20

· **Recommended use and restriction on use**
· **Recommended use:** Raw materials.
· **Restrictions on use:** Contact manufacturer.

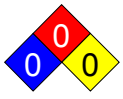
· **Details of the supplier of the Safety Data Sheet**
· **Manufacturer/Supplier:**
Castle Metals
1420 Kensington Road Suite 220
Oak Brook IL 60523
(847) 349-3000

· **Emergency telephone number:** (847)-349-3000

2 Hazard(s) identification

· **Classification of the substance or mixture**
The product is not classified as hazardous according to the Globally Harmonized System (GHS).
· **Additional information:**
There are no other hazards not otherwise classified that have been identified.
0 percent of the mixture consists of ingredient(s) of unknown toxicity.
Not hazardous as delivered. Long term inhalation of product dusts formed during use is harmful.

· **Label elements**
· **GHS label elements**
The product is not classified as hazardous according to OSHA GHS regulations within the United States.
· **Hazard pictograms** Not Regulated
· **Signal word** Not Regulated
· **Hazard statements** Not Regulated
· **Precautionary statements** Not Regulated
· **Hazard description:**
· **WHMIS-symbols:** Not hazardous under WHMIS.
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**



Health = 0
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = *0
Fire = 0
Reactivity = 0

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 1)

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

7439-89-6	iron	86-99%
7440-02-0	nickel Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	<5%
7440-47-3	chromium	<5%
7440-21-3	silicon Flam. Sol. 2, H228	<5%
7439-96-5	manganese, powdered Flam. Sol. 1, H228	<2%
7440-44-0	carbon	<2%
7439-98-7	molybdenum	<2%
7440-62-2	vanadium	<2%
7429-90-5	aluminum	<2%
7704-34-9	sulfur Skin Irrit. 2, H315	<2%
7723-14-0	phosphorus Flam. Liq. 2, H225; Flam. Sol. 1, H228	<1%
7440-69-9	bismuth	<1%
7440-50-8	copper	<1%

· **Additional information:**
For the listed ingredients, the identity and exact percentages are being withheld as a trade secret.

4 First-aid measures

· **Description of first aid measures**
· **General information:** No special measures required.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:**
Brush off loose particles from skin.
Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Remove contact lenses if worn, if possible.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 2)

· **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **Danger** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
Special powder for metal fires. Do not use water.
Dry sand
Graphite powder.
Dry sodium chloride
· **For safety reasons unsuitable extinguishing agents:** Water
· **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
· **Advice for firefighters**
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
· **Additional information** No further relevant information available.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation.
Do not breathe dust.
Avoid formation of dust.
Use personal protective equipment as required.
For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Pick up mechanically.
Dispose of the collected material according to regulations.
Send for recovery or disposal in suitable receptacles.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 3)

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Use only in well ventilated areas.
Prevent formation of dust.
Any deposit of dust which cannot be avoided must be regularly removed.
Use proper precautions around molten material.
· **Information about protection against explosions and fires:**
Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Do not store together with acids.
Do not store together with alkalis (caustic solutions).
Store away from oxidizing agents.
· **Further information about storage conditions:** None.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
7439-89-6 iron	
EV (Canada)	Long-term value: 1* 5** mg/m³ as iron;*salts, water-soluble;**welding fume
LMPE (Mexico)	Long-term value: 1 mg/m³
7440-47-3 chromium	
PEL (USA)	Long-term value: 1* 0.5** mg/m³ *metal;**inorganic compds., as Cr
REL (USA)	Long-term value: 0.5* mg/m³ *metal+inorg.compds.as Cr;See Pocket Guide App. C
TLV (USA)	Long-term value: 0.5 mg/m³
EL (Canada)	Long-term value: 0.5 mg/m³ as metal
EV (Canada)	Long-term value: 0.05 mg/m³
LMPE (Mexico)	Long-term value: 0.5 mg/m³ A4

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 4)

7440-21-3 silicon	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust;**respirable fraction
EV (Canada)	Long-term value: 10 mg/m³ total dust
LMPE (Mexico)	Short-term value: 20 mg/m³ Long-term value: 10 mg/m³ (e)
7429-90-5 aluminum	
PEL (USA)	Long-term value: 15*; 15** mg/m³ *Total dust; ** Respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV (USA)	Long-term value: 1* mg/m³ as Al; *as respirable fraction
EL (Canada)	Long-term value: 1.0 mg/m³ respirable, as Al
EV (Canada)	Long-term value: 5 mg/m³ aluminium-containing (as aluminium)
LMPE (Mexico)	Long-term value: 1* mg/m³ A4, *fracciòn respirable
7439-96-5 manganese, powdered	
PEL (USA)	Ceiling limit value: 5 mg/m³ as Mn
REL (USA)	Short-term value: 3 mg/m³ Long-term value: 1 mg/m³ fume, as Mn
TLV (USA)	Long-term value: 0.02* 0.1* mg/m³ as Mn; *respirable **inhalable fraction
EL (Canada)	Long-term value: 0.2 mg/m³ as Mn; R
EV (Canada)	Long-term value: 0.2 mg/m³ as manganese
LMPE (Mexico)	Long-term value: 0.2 mg/m³ como Mn

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 5)

7439-98-7 molybdenum	
PEL (USA)	Long-term value: 15* mg/m³ *Total dust
TLV (USA)	Long-term value: 10* 3** mg/m³ as Mo; *inhalable fraction ** respirable fraction
EL (Canada)	Long-term value: 3* 10** mg/m³ as Mo; *respirable **inhalable
EV (Canada)	Long-term value: 10* 3** 0.5*** mg/m³ metal,insol.compd.:*inh;**resp;sol.compd.:***resp
LMPE (Mexico)	Long-term value: 10* 3** mg/m³ *fracción inhalable **respirable; como Mo
7723-14-0 phosphorus	
REL (USA)	Long-term value: 0.1 mg/m³
LMPE (Mexico)	Short-term value: 0.3 mg/m³ Long-term value: 0.1 mg/m³
7440-50-8 copper	
PEL (USA)	Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
REL (USA)	Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
TLV (USA)	Long-term value: 1* 0.2** mg/m³ *dusts and mists; **fume; as Cu
EL (Canada)	Long-term value: 1* 0.2** mg/m³ *dusts and mists; **fume, as Cu
EV (Canada)	Long-term value: 0.2* 1** mg/m³ as copper, *fume;**dust and mists
LMPE (Mexico)	Long-term value: 0.2* 1** mg/m³ *humo (como Cu);**polvo y niebla (como Cu)

· **Additional information:** No further relevant information available.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Store protective clothing separately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid close or long term contact with the skin.
· **Engineering controls:** No further relevant information available.
· **Breathing equipment:**
Use respiratory protection when grinding or cutting material.
For spills, respiratory protection may be advisable.
Particulate mask should filter at least 99% of airborne particles.

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 6)

· **Protection of hands:**
Wear gloves for the protection against mechanical hazards according to OSHA and NIOSH rules.
· **Eye protection:**


Safety glasses

· **Body protection:** Protective work clothing
· **Limitation and supervision of exposure into the environment** Avoid release to the environment.
· **Risk management measures** See Section 7 for additional information.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

Form:	Solid material
Color:	Grey to Black.
· **Odor:**	Odorless
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not determined.
· **Auto-ignition temperature:**	Not determined.
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not self-igniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	7 g/cm³ (58.415 lbs/gal)
· **Relative density**	Not determined.
· **Vapour density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Insoluble.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 7)

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**
Dynamic: Not applicable.
Kinematic: Not applicable.
· **Other information** No further relevant information available.

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** Heating may cause release of toxic fumes.
· **Possibility of hazardous reactions**
Reacts with strong acids and alkali.
Reacts with strong oxidizing agents.
Reacts with halogenated compounds.
As the product is supplied it is not capable of dust explosion; however enrichment with fine dust causes risk of dust explosion.
· **Conditions to avoid** Avoid acids.
· **Incompatible materials:** Oxidizers, strong bases, strong acids
· **Hazardous decomposition products:**
Possible in traces:
Toxic metal oxide smoke
Leadoxide vapor

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **LD/LC50 values that are relevant for classification:** None.
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 8)

· **Probable Routes of Exposure**
Eye contact.
Skin contact.
· **Repeated Dose Toxicity:**
May cause metal fume disease.
Repeated or long-term inhalation of product dusts may cause pulmonary disease.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):**
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** May be accumulated in organisms.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Contact manufacturer for recycling information.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**
· **DOT, ADR, ADN, IMDG, IATA** Not Regulated
· **UN proper shipping name**
· **DOT, ADR, ADN, IMDG, IATA** Not Regulated

(Contd. on page 10)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 9)

· **Transport hazard class(es)**

· **DOT, ADR, IMDG, IATA**

· **Class**	Not Regulated
· **Label**	-
· **ADN/R Class:**	Not Regulated
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	Not Regulated
· **Environmental hazards:**	
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **United States (USA)**
· **SARA**

· **Section 355 (extremely hazardous substances):**	
7723-14-0	phosphorus

· **Section 313 (Specific toxic chemical listings):**	
7440-47-3	chromium
7429-90-5	aluminum

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65 (California)**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**		
7440-47-3	chromium	D
7439-96-5	manganese, powdered	D
7723-14-0	phosphorus	D
7440-50-8	copper	D

(Contd. on page 11)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 10)

· **IARC (International Agency for Research on Cancer)**

7440-47-3	chromium	3

· **TLV (Threshold Limit Value established by ACGIH)**

7440-47-3	chromium	A4
7429-90-5	aluminum	A4
7439-98-7	molybdenum	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **State Right to Know Listings**

None of the ingredients is listed.

· **Canadian substance listings:**

· **Canadian Domestic Substances List (DSL)**

All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

7440-47-3	chromium

· **Canadian Ingredient Disclosure list (limit 1%)**

7429-90-5	aluminum

· **Other regulations, limitations and prohibitive regulations**
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Date of preparation / last revision** 07/01/2015 / -

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Flam. Liq. 2: Flammable liquids, Hazard Category 2
Flam. Sol. 1: Flammable solids, Hazard Category 1
Flam. Sol. 2: Flammable solids, Hazard Category 2

(Contd. on page 12)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015 Reviewed on 07/01/2015

Trade name: Alloy Steel - HR&CR
Alloy Leaded Steel

(Contd. of page 11)

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 2: Carcinogenicity, Hazard Category 2
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1

· **Sources**

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com