



**PACIFIC MACHINERY
& TOOL STEEL CO.**

SAFETY DATA SHEET

SECTION 1:	PRODUCT AND COMPANY IDENTIFICATION
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PRODUCT NAME: CARBON & ALLOY STEEL
Creation Date 1/1/16
CHEMICAL FAMILY: AISI Grades 10xx through 93xx

SECTION 2:	HAZARD IDENTIFICATION
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EMERGENCY OVERVIEW:

There are no chemical exposure hazards associated with uncoated steel products at room temperature. As supplied, this product is not classified as an OSHA hazardous chemical. However, the processing of this product may generate dusts, particulates and or fumes that are hazardous, accordingly:

GHS CLASSIFICATION:

*Carcinogenicity- Category 2
Skin Sensitization- Category 1
Target Organ Systemic Toxicity (Repeated Exposure) Category 1*

LABELLING:



Symbol:

Signal Word: Danger



CARBON,
ALLOY AND
SPECIAL STEELS
FOR THE WEST

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PRECAUTIONARY STATEMENTS:

Avoid breathing dust / fumes.

SECTION 3:	COMPOSITION / INFORMATION ON INGREDIENTS
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<i>Ingredient</i>	<i>CAS Number</i>	<i>% Weight</i>	<i>OSHA PEL Mg/m3</i>	<i>ACHIH TLV MG/m3</i>
<i>Base Metal</i>				
<i>Iron(F e)</i>	7439-89-6	86.5-99.5	10 Oxide Fume	5 Oxide Fume
<i>Alloying Elements</i>				
<i>Aluminum (Al)</i>	7429-90-5	<.1-1.00	Not Established	10 Dust / 5 Fume
<i>Bismuth (Bi)</i>	7440-69-9	<.01-.5	Not Established	Not Established
<i>Boron (B)</i>	7440-42-8	<.01-1.0	15 Oxide Fume	10 Oxide Fume
<i>Carbon (C)</i>	7400-44-0	<.01-1.5	Not Established	Not Established
<i>Chromium(Cr)</i>	7440-47-3	<.01-13.00	1.0 Chrome Metal	0.5 Chrome Metal
<i>Columbium(Cb)</i>	7440-25-7	<.01-25.7	Not Established	Not Established
<i>Copper (Cu)</i>	7440-50-8	<.30-1.9	.01 Fume / 1.0 Dust	0.2 Fume/1.0 Dust
<i>Lead (Pb)</i>	7439-92-1	<.01-.15	.05 Dust & Fumes	.15 Dust & Fumes
<i>Manganese (Mn)</i>	7439-96-5	<.04-2.0	5c Dust/5cFume	5c Dust/1 Fume
<i>Molybdenum (Mo)</i>	7439-98-7	<.01-1.10	15 Insoluble Comp	10 Insoluble Comp
<i>Nickel (Ni)</i>	7440-02-0	<.01-10	1 Nickel Metal	1 Nickel Metal
<i>Phosphorous (P)</i>	7723-14-0	<.035-.12	0.1 Phosphorous	0.1 Phosphorous
<i>Silicon (Si)</i>	7440-21-3	<.15-2.20	Not Established	10 Total Dust
<i>Sulfur (S)</i>	7704-34-9	<.001-.35	13 Sulfur Dioxide	5 Sulfur Dioxide
<i>Vanadium (V)</i>	7440-62-2	<.01-.50	0.5cDust/0.1c Fume	0.05Dust/0.05 Fume
<i>Zinc Coating</i>	7440-66-6	2 oz/ft2	5 Oxide Fume	10 Dust / 5 Fume
<i>Aluminum Coating</i>	7429-90-5	0.5 oz/ft2	Not Established	10 Dust / 5 Fume

Note: The above listing is a summary of elements used in alloying steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts. No permissible exposure limits (PEL) exist for steel. Values are applicable to component elements.

SECTION 4:	FIRST AID MEASURES
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EYES: If overexposure to fumes or dust, flush immediately with large amounts of water for at least 15 minutes. If eye irritation persists, seek medical attention. Thermal burns require immediate medical attention.

SKIN: If overexposed to fumes or dust, wash affected areas thoroughly with soap and water. Flush thermal burns with cold water and seek immediate medical attention.

INGESTION: Not considered an ingestion hazard.

INHALATION: Move to fresh air. Consult a physician if symptoms develop.

NOTE TO PHYSICIANS OR FIRST AID PROVIDERS: Excessive inhalation may result in metal fume fever, characterized by a metallic taste in the mouth and influenza like symptoms including, cough, shortness of breath, dizziness, weakness, fever, chills, vomiting and muscle/joint pain. Treatment is symptomatic and symptoms will normally disappear within 24 to 48 hours.

SECTION 5:	FIRE-FIGHTING MEASURES
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FLAMMABLE LIMITS IN AIR (% BY VOLUME): Not applicable.

FLASH POINT: Not Applicable

AUTO IGNITION TEMPERATURE: Not Applicable

EXTINGUISHING MEDIA: For molten metal, use dry powder or sand.

SPECIAL FIRE FIGHTING PROCEDURES: Do not use water on molten metal. Explosion hazard. Do not use carbon Dioxide (CO₂). Full protective equipment, including self-contained breathing apparatus should be used when entering confined spaces.

UNUSUAL FIRE AND EXPLOSION HAZARDS: High concentrations of metallic fines in the air may be combustible and present an explosion hazard.

SECTION 6:	ACCIDENTAL RELEASE MEASURES
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PERSONAL PRECAUTIONS: Evacuate personnel to safe areas. Spills of molten material should be isolated from flammable materials.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers and open bodies of water.

WASTE DISPOSAL METHODS: Waste should be recycled, if at all possible. If not, dispose of material according to federal, state and local regulations.

SECTION 7:	HANDLING & STORAGE
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Dust may form explosive mixtures with air.

Material should not be stored in areas where strong acids, liquids or mists can contact steel.

SECTION 8:	EXPOSURE CONTROLS / PERSONAL PROTECTION
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VENTILATION: Provide sufficient mechanical ventilation and local exhaust to maintain airborne levels below exposure limits.

RESPIRATORY PROTECTION: If engineering controls do not maintain airborne levels below exposure limits in Section 3, a properly fitted, NIOSH approved (or equivalent) respirator must be worn. Whenever a respirator is used, a respiratory protection program meeting OSHA 1910.134 requirements must be followed.

EYE PROTECTION: Use safety goggles, glasses or faceshield.

SKIN PROTECTION: Use protective gloves.

EXPOSURE GUIDELINES: No permissible exposure limit (PEL) or threshold limit value (TLV) exist for steel. See Section 3 for component materials.

SECTION 9:	PHYSICAL & CHEMICAL PROPERTIES
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APPEARANCE:	Silver Grey
PHYSICAL STATE:	Solid
ODOR:	None
PH AS SUPPLIED:	Not applicable
BOILING POINT	5432* F
MELTING POINT	2400 – 2800* F
VAPOR PRESSURE	Not applicable
VAPOR DENSITY (AIR = 1)	Not applicable
SPECIFIC GRAVITY	7.6 – 7.8
EVAPORATION RATE	Not applicable
UPPER / LOWER	

FLAMMABILITY LIMIT	Not applicable
SOLUBILITY (H2O)	Insoluble
AUTO IGNITION	Not applicable
DECOMPOSITION TEMP	Not applicable

SECTION 10	STABILITY & REACTIVITY
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STABILITY	Stable
CONDITIONS TO AVOID	None
INCOMPATIBILITY	
MATERIAL TO AVOID	Strong acids, Strong oxidizers
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS	Temperature above the melting point may generate Metal oxide fumes.
HAZARDOUS REACTIONS	Contact with strong acids may produce hydrogen Gas.

SECTION 11	TOXICOLOGICAL INFORMATION
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ACUTE HEALTH HAZARDS:

EYES: *Dusts or particulates may cause mechanical irritation including pain, tearing, and redness. Fumes may be irritating. Thermal burns may result from contact with heated material.*

SKIN: *Dusts or particulates may cause mechanical irritation. An allergic reaction including redness, itching and burning may occur. Thermal burns may result from contact with heated material.*

INGESTION: *Not a likely route of exposure. Ingesting dust may cause irritation.*

INHALATION: *Short term exposure to metal fumes and dust may result in discomfort and dryness of the throat. Excessive inhalation may result in metal fume fever, characterized by a metallic taste in the mouth and influenza like symptoms including, cough, shortness of breath, dizziness, weakness, fever, chills, and muscle / joint pain.*

CHRONIC HEALTH HAZARDS: *Long term exposure to metal fumes may contribute to pulmonary irritation. Long term exposure to iron dusts / fumes may produce siderosis, a benign pneumoconiosis.*

CARCINOGENICITY: Welding fumes have been listed by IARC as a carcinogen (Group 2B). This product may contain small amounts of nickel which is listed as a carcinogen by NTP and IARC (Group 1 for nickel compounds and Group 2B for metallic nickel).

OTHER: There is limited evidence that welding fumes may cause adverse reproductive and fetal effects. Manganese, copper, and nickel have been reported to have adverse reproductive effects in experimental animals. Copper and nickel have been shown to be fetotoxic in experimental animals.

SECTION 12: ECOLOGICAL INFORMATION

No ecological data is available for this material.

SECTION 13: DISPOSAL CONSIDERATIONS

Reuse or recycling is the preferred disposition for steel. Dispose of in accordance with local, state and federal regulations.

SECTION 14: TRANSPORT INFORMATION

Not regulated.

SECTION 15: REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCE CONTROL ACT): The components of this product are listed on the TSCA Inventory.

313 REPORTABLE INGREDIENTS:

*Chromium
Manganese
Nickel*

CALIFORNIA PROPOSITION 65:

Warning! This product contains chemical (arsenic, beryllium, cobalt, cadmium, lead, nickel) Known to the state of California to cause cancer.

Warning! This product contains chemical (cadmium, lead) known to the state of California to cause birth defects or other reproductive harm.

SECTION 16:

OTHER INFORMATION

DISCLAIMER:

The information contained in this Safety Data Sheet (SDS) was compiled using the latest and most reliable information available to Pacific Machinery & Tool Steel Co. and is believed to be accurate based upon that information. This SDS covers material as shipped from Pacific Machinery & Tool Steel Co. and is not intended to constitute product performance information. It is solely the responsibility of the user to determine safe conditions for use of this material and to assume liability for any loss, damage, or expense whatsoever arising out of the material's improper use.

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