

Earle M. Jorgensen Company

Material Safety Data Sheet

Company EMJ 10650 Alameda Street Lynwood, CA 90262	Issue Date July 15, 2008	Identification Aluminum
Trade Name (Common Name or Synonym) Aluminum	Emergency Phone Number 323-567-1122 or contact your nearest EMJ Office.	
Chemical Name Aluminum (Examples: 2024, 6061)	Form Bar, Sheet, Plate, Tubing, Structural, and Forgings	

I. INGREDIENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
			OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Base Metal				
Aluminum (Al)	7429-90-5	90.00 – 99.70	10.0 as metal dust & oxide 5.0 as welding fume	Not established Not established
Alloying Elements				
Cobalt (Co)	7440-48-4	< 1.00 – 10.00	0.1 as fume	0.1 as fume
Copper (Cu)	7440-50-8	< 1.00 – 10.00	0.2 as fume	0.1 as fume
Iron (Fe)	7439-89-6	< 1.00 - 10.00	5.0 as fume	10.0 as fume
Lead (Pb)	7430-92-1	< 0.20 - 0.70	0.15 as dust and fume	0.05 as dust and fume
Magnesium (Mg)	1309-48-4	< 1.00 - 10.00	10.0 as fume	15.0 as fume
Manganese (Mn)	7439-96-5	< 1.00 - 10.00	1.0 as fume	5.0 ceiling
Silicon (Si)	7440-21-3	< 1.00 - 10.00	10.0 as total dust	Not established
Tin (Sn)	7440-31-5	< 1.00 - 10.00	2.0 as oxide and metal	2.0 as inorganic compds
Zinc (Zn)	1314-13-2	< 1.00 - 10.00	5.0 as fume	5.0 as 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.

II. PHYSICAL DATA

Material is (At Normal Conditions) <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other		Appearance and Odor Metallic Appearance – No Odor	
Acidity/Alkalinity ph = NA	Melting Point 900-1200°F Approx. Boiling Point NA °F	Specific Gravity (H ₂ O = 1) – 2.5 – 2.9 Solubility in Water (% by weight) - Nil	Vapor Pressure (mm Hg at 20°C) NA

III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection Appropriate respirator depending upon potential airborne contaminants and their concentrations. If exposure limits are reached or exceeded use NIOSH approved respiration equipment.	Hands, Arms and Body Appropriate gloves, especially for sheet and coil.
Eye and Face Safety glasses or shield as appropriate.	Other Clothing and Equipment As needed depending on the operation and safety codes.

IV. EMERGENCY MEDICAL PROCEDURES

Skin Contact: Remove particles thoroughly by washing with soap and water.

Eye Contact: Flush with water thoroughly. Get medical attention if irritation persists.

V. HEALTH/SAFETY INFORMATION

HEALTH			
<p>For standard operations (e.g., melting, cutting, grinding), aluminum alloys present a low health risk by inhalation and are usually considered a nuisance dust. Toxicity by ingestion – none expected. Skin and eyes – not an irritant. Welding and plasma cutting of alloys high in copper (2000 and 7000 Series) may present the potential for overexposure to copper fume which can result in upper respiratory tract irritation, nausea, and metal fume fever. Nickel and Chromium are other alloying elements considered hazardous as fume; however, they do not present a carcinogenic or other health concerns due to their low concentrations of the chemical form in which they are present. Overexposure to lead fumes over an extended period of time can result in such toxic effects as central nervous system disturbances, renal changes, peripheral neuropathy, gastrointestinal disturbances, anemia, and chromosomal changes.</p>			
<p>Medical conditions generally aggravated by exposure would be dermatitis and pulmonary disease or disorders.</p>			
Occupational Exposure Limits See Ingredients Section I.		Chromium and Nickel have been identified by the Internal Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) as potential carcinogens.	
FIRE AND EXPLOSION			
Flash Point	N/A °F	Auto Ignition Temperature	N/A °F
		Flammable Limits in Air	
		Lower	N/A %
		Upper	N/A %
			Extinguishing Media
			Dry power or sand
Fire and Explosion Hazards		Extinguishing Media Not to be Used	
<p>Small chips, fine turnings, and dust may ignite readily. Damp aluminum dust may spontaneously heat with liberation of hydrogen to form explosive air mixtures. Molten aluminum may explode on contact with water or certain metal oxides (e.g., oxides of copper, iron and lead).</p>		<p>Do not use water or halogen on dust fires.</p>	
REACTIVITY			
Stability		Incompatibility (Material to Avoid)	
<input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable		Reacts with strong acids to form hydrogen gas.	
Conditions to Avoid			
<p>Aluminum products under normal conditions are stable during use, storage, and transportation. Halogen acids and sodium hydroxide in contact with aluminum may generate explosive mixtures of hydrogen. Finely divided aluminum, such as small chips and fines, will form explosive mixtures in air. It will also form explosive mixtures in air in the presence of bromates, iodates, or ammonium nitrate. Strong oxidizers cause violent reactions with considerable heat generation.</p>			
Hazardous Decomposition Products			
See Additional Information Section VII.			

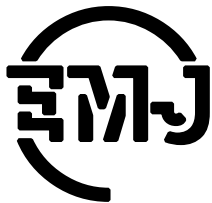
VI. ENVIRONMENTAL

Spill or Leak Procedures	N/A
Waste Disposal Method	Used or unused product should be tested to determine hazard status and disposal requirements under federal, state and local laws and regulations.

VII. ADDITIONAL INFORMATION

Other precautions:
<ol style="list-style-type: none"> 1. Do not touch cast aluminum metal or heated aluminum product without knowing metal temperature. Aluminum experiences no color change during heating. Burns could result. 2. Aluminum powder must be packaged and shipped as a flammable solid. 3. Hard alloy ingots in the 2000 and 7000 Series must be stress relieved to prevent explosion when sawed. 4. The welding of aluminum alloys may generate carbon monoxide, carbon dioxide, ozone, nitrogen oxides, infrared radiation and ultraviolet radiation.

Disclaimer
<p>The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.</p>



Earle M. Jorgensen Company

Material Safety Data Sheet

Company EMJ 10650 Alameda Street Lynwood, CA 90262	Issue Date July 15, 2008	Identification Carbon, Alloy & Tool Steels
Trade Name (Common Name or Synonym) Carbon, Alloy and Tool Steels	Emergency Phone Number 323-567-1122 or contact your nearest EMJ Office.	
Chemical Name Steel (Examples: 1018, 4140, H11, S7)	Form Bar, Sheet, Plate, Tubing, Structural, and Forgings	

I. INGREDIENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
			OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Base Metal				
Iron (Fe)	7439-89-6	Balance	10.0 (Fe ₂ O ₃ Fume)	5.0 (Fe ₂ O ₃ Fume)
Alloying Elements				
Aluminum (Al)	7429-90-5	0.10 - 1.80	None Listed	5.0 as welding fumes
Carbon (C)	7440-44-0	0.01 - 1.50	None Listed	None Listed
Chromium (Cr)	7440-47-3	0.01 - 12.00	1.0 as Chromium	0.5 as Chromium
Cobalt (Co)	7440-48-4	8.00 Max	0.1 as Cobalt and fume	0.05 as fume
Copper (Cu)	7440-50-8	0.04 - 0.70	0.2 as Copper; 1.0 as dust	0.2 as fume; 1.0 as dust
Lead (Pb)	7430-92-1	0.15 - 0.35	0.05 as fume and dust	0.15 as dust and fume
Manganese (Mn)	7439-96-5	0.05 - 2.00	5.0 as Manganese	5.0 as dust; 1 as fume
Molybdenum (Mo)	7439-98-7	0.01 - 1.10	15.0 as Insoluble Compds	10.0 as Insoluble Compds
Nickel (Ni)	7440-02-0	0.01 - 10.00	1.0 as Nickel	1.0 as Nickel
Phosphorous (P)	7723-14-0	0.15 Max	0.1 as Phosphorous	0.1 as Phosphorous
Silicon (Si)	7440-21-3	0.15 - 2.20	None Listed	10.0 total dust
Sulfur (S)	7704-34-9	0.001 - 0.35	13.0 Sulfur Dioxide	5.0 Sulfur Dioxide
Tungsten (W)	7740-33-7	0.00 - 18.00	None Listed	5.0 as Insoluble Compds
Vanadium (V)	7740-62-2	0.01 - 1.00	0.5 dust; 0.1 fume	0.05 dust and fume
Zinc (Zn) coating	1314-13-2	10.00 Max	5.0 as fume	5.0 as 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.

II. PHYSICAL DATA

Material is (At Normal Conditions) <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other		Appearance and Odor Gray-Black With Metallic Lustre - Odorless	
Acidity/Alkalinity ph = NA	Melting Point 2750°F Approx.	Specific Gravity (H ₂ O = 1) - 7	Vapor Pressure (mm Hg at 20°C) NA
	Boiling Point NA °F	Solubility in Water (% by weight) - NA	

III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection NIOSH approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.	Hands, Arms and Body Use appropriate protective clothing such as welders' aprons and gloves when welding or burning. Check local codes.
Eye and Face Safety glasses should always be worn when grinding or cutting; face shields should be worn when welding or burning.	Other Clothing and Equipment As required for protection depending on the operation and safety codes.

IV. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air; if condition continues, consult a physician.
Eye Contact:	Immediately flush well with running water to remove particulate; get medical attention.
Skin Contact:	If irritation develops, remove clothing and wash well with soap and water. If condition persists, seek medical attention.
Ingestion:	If significant amounts of metal are ingested, seek medical attention.

V. HEALTH/SAFETY INFORMATION

HEALTH

Steel products in the natural state do not present an inhalation, ingestion, or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard is inhalation.

Effects of overexposure are as follows:

Acute: Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese, copper, zinc, and lead may result in metal fume fever. Typical symptoms consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, and usually last from 12 to 48 hours.

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Iron (iron-oxide) - Pulmonary effects, siderosis.

Manganese - Bronchitis, pneumonitis, lack of coordination, central nervous system.

Chromium - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces human cancer.

Nickel - SAME AS CHROMIUM.

Copper - Pulmonary effects, nasal and paranasal sinus, skin and liver.

Vanadium - May affect lungs. May affect blood pressure as vanadium pentoxide.

Cobalt - Inhalation of cobalt dust may cause as asthma-like disease with cough and dyspnea.

Molybdenum - Pain in joints, hands, knees and feet.

Tungsten - Some evidence of pulmonary involvement such as cough.

Lead - Prolonged exposures can cause behavioral changes, kidney damage, periphery neuropathy characterized by decreased hand-grip strength and adverse reproductive effects.

Zinc - None reported.

Medical conditions generally aggravated by exposure would be dermatitis and pulmonary disease or disorders.

Occupational Exposure Limits See Ingredients Section I. Chromium and Nickel have been identified by the Internal Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) as potential carcinogens.

FIRE AND EXPLOSION

	Auto Ignition Temperature	Flammable Limits in Air	Extinguishing Media
Flash Point	N/A °F	Lower Upper	N/A
	N/A °F	N/A % N/A %	N/A
Fire and Explosion Hazards	Steel products in their natural state do not present a fire or explosion hazard.		Extinguishing Media Not to be Used N/A

REACTIVITY

Stability	Incompatibility (Material to Avoid)	Stable under normal conditions of use, storage and transport.
<input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable	Reacts with strong acids to form hydrogen gas. At temperatures above melting point, metallic oxide fumes may be liberated.	

Conditions to Avoid **Keep Area Well Ventilated**
Non-ventilated area when cutting, welding, burning or brazing; avoid generation of airborne dusts and fumes.

Hazardous Decomposition Products

Metallic oxides.

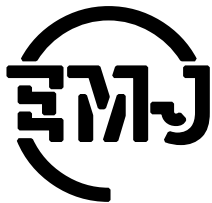
VI. ENVIRONMENTAL

Spill or Leak Procedures	Special Precautions: Use good house keeping practices to prevent accumulation of dust and to keep airborne dust to a minimum. Avoid breathing metal fumes or dust.
Waste Disposal Method	Dust, etc. - follow federal, state and local regulations regarding disposal.

VII. ADDITIONAL INFORMATION

Disclaimer

The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.



Earle M. Jorgensen Company

Material Safety Data Sheet

Company EMJ 10650 Alameda Street Lynwood, CA 90262	Issue Date July 15, 2008	Identification Stainless Steels
Trade Name (Common Name or Synonym) Stainless Steels	Emergency Phone Number 323-567-1122 or contact your nearest EMJ Office.	
Chemical Name Steel (Examples: 304, 347, 17-4, 410)	Form Bar, Sheet, Plate, Tubing, Structural, and Forgings	

I. INGREDIENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
			OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Base Metal				
Iron (Fe)	7439-89-6	39.00 – 81.00	10 (Fe ₂ O ₃ Fume)	5.0 (Fe ₂ O ₃ Fume)
Alloying Elements				
Aluminum (Al)	7429-90-5	0.00 - 2.00	None Listed	5.0 as welding fumes
Carbon (C)	7440-44-0	0.50 Max	None Listed	None Listed
Chromium (Cr)	7440-47-3	10.00 - 27.00	1.0 as Chromium	0.5 as Chromium
Copper (Cu)	7440-50-8	0.04 - 4.00	0.2 as Copper	0.2 as Copper
Manganese (Mn)	7439-96-5	10.00 Max	5.0 as Manganese	1.0 as Manganese
Molybdenum (Mo)	7439-98-7	0.00 - 4.00	5.0 as soluble compds	5.0 as soluble compds
Nickel (Ni)	7440-02-0	0.00 - 22.00	1.0 as Nickel	1.0 as Nickel
Phosphorous (P)	7723-14-0	0.001 - 0.20	0.1 as Phosphorous	0.1 as Phosphorous
Selenium (Se)	7782-49-2	0.00 - 0.35	0.2 as Selenium	0.2 as Selenium
Silicon (Si)	7440-21-3	2.00 Max	None Listed	None Listed
Sulfur (S)	7704-34-9	0.001 - 0.35	13.0 Sulfur Dioxide	5.0 Sulfur Dioxide
Titanium (Ti)	7440-32-6	0.70 Max	15.0 as Ti O ₂	10.0 as total dust
Columbium (Cb)	7440-03-1	10.00 x C % Wt	5.0 as Tantalum	5.0 as Tantalum
Tantalum (Ta)	7440-25-7			

Columbium (Cb) is also reported as Niobium (Nb)

Note: The above listing is a summary of elements used in alloy stainless steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

II. PHYSICAL DATA

Material is (At Normal Conditions) <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other		Appearance and Odor Gray-Black With Metallic Lustre - Odorless	
Acidity/Alkalinity ph = NA	Melting Point 2700°F Approx. Boiling Point NA °F	Specific Gravity (H ₂ O = 1) – Approx 8 Solubility in Water (% by weight) - NA	Vapor Pressure (mm Hg at 20°C) NA

III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection NIOSH approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.	Hands, Arms and Body Use appropriate protective clothing such as welders' aprons and gloves when welding or burning. Check local codes.
Eye and Face Safety glasses should always be worn when grinding or cutting; face shields should be worn when welding or burning.	Other Clothing and Equipment As required for protection depending on the operation and safety codes.

IV. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air; if condition continues, consult a physician.
Eye Contact:	Immediately flush well with running water to remove particulate; get medical attention.
Skin Contact:	If irritation develops, remove clothing and wash well with soap and water. If condition persists, seek medical attention.
Ingestion:	If significant amounts of metal are ingested, seek medical attention.

V. HEALTH/SAFETY INFORMATION

HEALTH

Steel products in the natural state do not present an inhalation, ingestion, or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard is inhalation.

Effects of overexposure are as follows:

Acute: Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese, copper and selenium may result in metal fume fever. Typical symptoms consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, and usually last from 12 to 48 hours.

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Iron (iron-oxide) - Pulmonary effects, siderosis.

Manganese - Bronchitis, pneumonitis, lack of coordination, central nervous system.

Chromium - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces human cancer.

Nickel - SAME AS CHROMIUM.

Selenium - Nasal and bronchial irritation, gastro-intestinal disturbances, garlic odor of breath.

Copper - Pulmonary effects, nasal and paranasal sinus, skin and liver.

Vanadium - May affect lungs. May affect blood pressure as vanadium pentoxide.

Cobalt - Inhalation of cobalt dust may cause as asthma-like disease with cough and dyspnea.

Molybdenum - Pain in joints, hands, knees and feet.

Medical conditions generally aggravated by exposure would be dermatitis and pulmonary disease or disorders.

Occupational Exposure Limits **Chromium and Nickel have been identified by the Internal Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) as potential carcinogens.**
See Ingredients Section I.

FIRE AND EXPLOSION

	Auto Ignition Temperature	Flammable Limits in Air	Extinguishing Media
Flash Point	N/A °F	Lower N/A % Upper N/A %	N/A
Fire and Explosion Hazards	Steel products in their natural state do not present a fire or explosion hazard.		Extinguishing Media Not to be Used N/A

REACTIVITY

Stability	Incompatibility (Material to Avoid)	Stable under normal conditions of use, storage and transport.
<input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable	Reacts with strong acids to form hydrogen gas. At temperatures above melting point, metallic oxide fumes may be liberated.	

Conditions to Avoid **Keep Area Well Ventilated**
Non-ventilated area when cutting, welding, burning or brazing; avoid generation of airborne dusts and fumes.

Hazardous Decomposition Products
Metallic oxides.

VI. ENVIRONMENTAL

Spill or Leak Procedures **Special Precautions: Use good house keeping practices to prevent accumulation of dust and to keep airborne dust to a minimum. Avoid breathing metal fumes or dust.**
N/A

Waste Disposal Method
Dust, etc. - follow federal, state and local regulations regarding disposal.

VII. ADDITIONAL INFORMATION

Disclaimer

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