



Kenwal-Dearborn
8223 W. Warren Avenue
Dearborn Mi. 48126-0359
(313) 739-1000

Kenwal-Burns Harbor
307 Tech Drive
Burn Harbor In. 46304
(800) 356-0785

Kenwal-Lebanon
3116 Highway 109 N
Lebanon, TN 37090
(615) 444-1963

Kenwal

Material Safety Data Sheet

Trade Name (Common Name or Synonym) Carbon and High Strength Low Alloy Steels	Issue Date Jan 1, 2013	Identification Number Carbon and Alloy
Emergency Phone Numbers Dearborn, Mi. Plant 313 739-1000 - Burns Harbor, In. Plant 800 356-0785 - Lebanon Tn. 615-444-1963		
Chemical Name Steel	Form Sheet and Plate	

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	10mg (Fe ₂ O ₃ Fume)	5.0 (Fe ₂ O ₃ Fume)
Alloying Elements				
Aluminum (Al)	7429-90-5	0.10 – 1.8	None Listed	5.0 as welding fume
Carbon (C)	7440-44-0	0.01 – 1.5	None Listed	None Listed
Chromium (Cr)	7440-47-3	0.01 – 1	1.0 as chrome	0.5 as chrome
Copper (Cu)	7440-50-8	0.004 – 0.2	0.2 as copper; 1.0 as dust	0.2 as copper; 1.0 as dust
Lead (Pb)	7439-92-1	0.0002 Max	0.05 as fume	0.05 as fume
Manganese (Mn)	7439-96-5	0.05 – 2.0	5as manganese	5 as dust; 1 as fume
Molybdenum (Mo)	7439-98-7	0.01 – 1.10	15 as insoluble compds	10 as insoluble compds
Nickel (Ni)	7440-02-0	0.01 – .5	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 total dust
Sulfur (S)	7704-34-9	0.01 – 0.35	13 sulfur dioxide	5 sulfur dioxide
Tungsten (W)	7440-33-7	.01 – .05	None Listed	5 insoluble compds
Vanadium (V)	74420-62-2	0.01 – 1.0	0.5 dust; 0.1 fume	0.05 dust and fume
Zinc (Zn) coating	1314-13-2	10 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	Approx Melting Point 2750 °F Boiling Point NA °F	Specific Gravity (H ₂ O =1)- 7 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 & gloves when welding or burning. Check local codes
Eyes 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

IV. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air, if condition continues, consult 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, & 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

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 evidence that exposure to welding fume induce human cancer.

Nickel - Same as chromium

Copper - Pulmonary effects

Vanadium – No reported cases of exposure to vanadium.

Cobalt – Inhalation of cobalt dust may cause 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 exposure can cause behavioral changes, kidney damage, periphery neuropathy characterized by decreased hand grip strength and adverse reproductive effects.

Zinc – None reported

Occupational Exposure Limits

See Section I.

FIRE AND EXPLOSION

Flash point NA °F	Auto Ignition Temperature NA °F	Flammable Limits in Air Lower NA % Upper NA %	Extinguishing Media NA
Fire and Explosion Hazards NONE			Extinguishing Media Not to be Used NA

REACTIVITY

Stability <input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable	Incompatibility (Materials to Avoid) Reacts with strong acids to form hydrogen gas
Conditions to Avoid Keep Area Well Ventilated	
Non- ventilated areas 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 housekeeping practices to prevent accumulation of dust and to keep airborne dust to a minimum.

Waste Disposal Method

Dust, etc. – follow federal, state, and local regulations regarding disposal

VII. ADDITIONAL INFORMATION

Disclaimer

The information in the 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.