



# Material Safety Data Sheet

## Carbon and Alloy Steel

### Kentucky Electric Steel Company

2704 South Big Run Road

Ashland, KY 41102

(606) 929-1200

24-Hour Emergency Phone Number

#### 1. PRODUCT IDENTIFICATION

MSDS Number: KESLLC-004  
 Identity: Carbon and Alloy Steels  
 Issued: January 31, 2006

\*HMIS Rating: Health - 0      Flammability - 0      Reactivity - 0      PPE - X

#### 2. CHEMICAL COMPOSITION / HAZARDOUS INGREDIENTS

Component	OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)	Weight (%)	CAS #
Iron	10 (c)	5 (c)	Balance	7439-89-6
Aluminum	15 (d) , 5 (g)	10 (d) , 5 (a)	0-0.01	7429-90-5
Boron	15 (d)	10 (d)	<0.90	7440-42-8
Cadmium	0.005 (e)	0.01 (e), 0.002 (g)	<0.09	7440-43-9
Calcium	5 (b)	2 (b)	<0.90	1305-78-8
Carbon	Not Established	Not Established	0.08-1.100	7440-44-0
Chromium	1 (e)	0.5 (e)	0-1.00	7440-47-3
Copper	1 (b) , 0.1 (a)	0.2 (a), 1 (d)	<0.90	7440-50-8
Lead	0.05 (c)	0.05 (c)	<0.09	7439-92-1
Manganese	5 (a)	0.2 elemental Mn	0.15-2.00	7439-96-5
Molybdenum	15 (f), (d)	10 (f)	<0.90	7439-98-7
Nickel	1 (e), (f)	1.5 (e)	0-0.10	7440-02-0
Phosphorus	0.1	0.1	<0.90	7723-14-0
Silicon	15 (d) / 5 (g)	10 (d)	<0.90	7440-21-3
Sulfur	13 (h)	5.2 (h)	<0.90	7446-09-5
Vanadium	0.5 (d) / 0.1 (a)	0.05 (c)	<0.90	7440-62-2
Zinc	5 (a) / 10 (b)	5 (a) / 10 (b)	0-0.01	7440-66-6

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|----------------------|-------------------------|
| (a) Oxide, Fume      | (e) Metal               |
| (b) Oxide, Dust      | (f) Insoluble Compounds |
| (c) Oxide, Dust/Fume | (g) Respirable Fraction |
| (d) Dust             | (h) Sulphur Dioxide     |

NOTE: The above listing is a summary of elements used in alloying KES, LLC. products. Various steel grades will contain different combinations of these elements. Trace elements may be present in minute amounts. No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steel. The exposure limit values shown are applicable to component elements and are current to June 1994.

#### 3. PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point:	+5,000 degrees F	Melting Point:	3,000 degrees C
Vapor Pressure:	NA	Specific Gravity:	7.0
Vapor Density:	NA	Evaporation Rate:	NA
Solubility in Water:	Insoluble		
Appearance/Odor:	Gray Solid, Odorless.		

#### 4. FIRE AND EXPLOSION HAZARDS

Flash Point:	Not Flammable
Extinguishing Media:	For molten metal, use Class D Chemical or Sand.
Special Fire Fighting Instructions/Procedures:	Fine metal particles can burn when contaminated with flammables.
Unusual Fire and Explosion Hazards:	High concentrations of metallic fines in the air could present an explosion hazard.
LEL:	NA
UEL:	NA

#### 5. REACTIVITY DATA

Stability:	Stable	Conditions to Avoid:	NA
Hazardous Decomposition or By-Products: Metallic oxides or metal fumes may be produced during melting operations.			

#### 6. HEALTH HAZARD DATA

Routes of Entry:	Inhalation	Yes	(fine particles)
	Skin:	No	
	Ingestion:	Yes	

#### Effects of Overexposure:

Acute: Inhalation of fumes may result in chills and fever for 12 to 48 hours. Metal fume fever includes a metallic taste in the mouth, throat irritation, and flu-like symptoms.

Chronic: (Chronic and prolonged inhalation of high concentrations of fumes/dust may lead to the following conditions):

*Aluminum - Inhalation of aluminum oxide fume may initiate fibroid changes to lung tissue.*

*Chromium- Lesions of the skin and mucous membranes. Possibly cancer of the nose or lungs.*

*Copper- Inhalation may result in nose and throat irritation, nasal ulceration, and metallic taste. Prolonged exposure may cause dermatitis. Individuals with Wilson's Disease are susceptible to elevated rates of copper metabolism and storage.*

*Iron- Inhalation of iron oxide fume or dust may result lung tissue deposits that causes the condition siderosis.*

*Lead- Lead compounds can be toxic when ingested or inhaled. Lead is a cumulative poison. The predominant effects of excessive exposure are anemia, nervous system disorders, and kidney damage. Nervous system disorders may be displayed as irritability, headaches, insomnia, convulsions, muscular tremors, or palsy of the extremities. Excessive exposure can have adverse effects on human reproduction. The IARC concludes that there is inadequate evidence to list lead and lead compounds as a human carcinogen. Acute exposure to lead can be manifested as abdominal pain, nausea, constipation, anorexia, or vomiting; and, in severe cases, coma and/or death.*

*Manganese- Bronchitis, pneumonitis, inhalation may result in symptoms such as headache, restless sleep patterns restlessness, personality changes, neurological dysfunction, or muscular weakness.*

*Nickel- Lesions of the skin and mucous membranes. Inhalation may result in inflammation of the respiratory tract that may be accompanied by fever. Nickel compounds are known sensitizers. The NTP and the IARC report they possess limited evidence for human cancer for nickel and certain nickel compounds.*

*Sulfur- Inhalation of sulfur dioxide gas can cause nose and throat irritation resulting in sneezing or coughing with possible lacrimation. Sulfur Dioxide affects the respiratory tract, causing bronchial irritation, difficulty in breathing, and pulmonary edema.*

*Vanadium- Inhalation of vanadium oxides may result in metallic taste, throat irritation, cough and/or bronchitis. Contact may cause local irritation.*

Emergency and First Aid Procedures: Dust and Fumes- Remove to fresh air immediately.  
Eye and/or Skin contact- Flush with water, Seek medical attention.  
Ingestion- Seek medical attention.

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## **7. PRECAUTIONS FOR SAFE HANDLING AND USE**

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Steps to be Taken in Case of Release or Spill: Chips and dust must be swept and placed in a suitable container. Steps must be taken to prevent release into sinks, drains, sewers, and/or water runoff. Scrap metal can be recycled.

Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

SARA 313: Some alloying elements may be in concentrations that are reportable-quantities.

Precautions to be Taken while Handling and Stc Use good housekeeping to minimize particle accumulation.

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## **8. Control Measures**

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Exposure Guidelines: Refer to Section 2.

Engineering Controls: Required for welding, cutting, and/or grinding operations.

Respiratory Protection: Dust/Mist/Fume Mask.

Skin Protection: Use protective gloves and clothing when welding, cutting, and/or grinding.

Eye Protection: Use safety glasses, goggles, helmet, face shield as appropriate.

### **Disclaimer**

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