

MATERIAL SAFETY DATA SHEET

DATE PREPARED: August 3, 1995

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Identification: CARBON STEEL GRATING

Manufacturer's Name: IKG Industries (Division of Harsco Corporation)  
Address:

SECTION 2 - COMPOSITION; INFORMATION ON INGREDIENTS

Ingredient (2)	CAS No.	Wt. %	Permissible Air Level	
			OSHA 8 HR. PEL(DUST) TWA(MS/M3) STEL(MG/M3)	(FUME) TWA STEL
Base Metal:				
Iron	1309-37-1	Balance		
Manganese	7439-96-5	0.25-1.50		
Phosphorus	7723-14-0	0.00-0.15		
Aluminum	7429-90-5	0.00-0.08		
Silicone	7440-21-3	0.00-0.50		
Carbon	7440-44-0	0.01-0.50		
Nickel	7440-02-0	0.01-1.0		
Chromium	7440-47-3	0.01-2.0		
Lead	7439-92-1	0.00-0.01		
Copper	7440-50-8	0.00-0.50		
Other Trace Elements		<0.1		

Consult the latest OSHA/NIOSH regulations for PEL's & TLV's

SECTION 3 - HAZARDS IDENTIFICATION

Health Effects Signs and Symptoms:

NOTE: Steel products in their usual physical form do not pose any health hazards. However, when subjected to welding, burning, grinding, cutting, abrasive blasting, heat treatment, pickling, or similar operations, potentially hazardous fumes or dusts may be emitted. Despite the fact that the welding, burning, etc. of steel products in this particular category may produce fumes containing manganese, chromium, nickel and copper. The air concentrations generated of these components are expected to be extremely low. Special attention should be directed to the zinc coating which could be a significant source of zinc oxide fumes or dusts during welding or similar activities. The possible presence of nonmetallic surface coatings should also be considered when evaluating potential employee exposures. The following is a list of fumes or dusts that may be generated from this steel product category and health effects associated with over-exposure to them.

Brown-Campbell

### Iron (Fe)

Subjecting iron and alloys containing iron to high temperatures (such as during welding) will cause the formation of iron oxide. Long term exposure to iron oxide fumes or dusts has been associated with benign lung condition known as siderosis which is observable as an x-ray change. No physical impairment of lung function has been linked to siderosis.

### Manganese (Mn)

Mn intoxication is usually due to the oxide or salts of Mn., elemental Mn. exhibits very low toxicity. The dusts and fumes can act as minor irritants to the eyes and respiratory tract. Both acute and chronic exposures may adversely affect the central nervous system (CNS), but symptoms are more likely to occur after at least 1 or 2 years of prolonged or repeated exposures. Early symptoms may include weakness, in the lower extremities, sleepiness, salivation, nervousness, and apathy. In more advanced stages, severe muscular incoordination, impaired speech, spastic walking, mask-like facial expressions and uncontrollable laughter may occur. Manganese fumes have also been reported to result in metal fume fever, a flu-like syndrome with symptoms such as dizziness, chills, fever, headache and nausea. An increased incidence of pneumonia, bronchitis and pneumonitis has been reported in some worker populations exposed to manganese. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections.

### Chromium (Cr)

The toxicity and health hazards of chromium are heavily dependent upon its oxidation state. The elemental (as in the metal) divalent and trivalent forms are very low toxicity. The hexavalent form (such as occurs in chromates and chromic acid) is very toxic and can produce both acute and chronic effects. Adverse effects on the skin may include ulcerations, irritative dermatitis, and allergic skin reactions. Adverse effects on the respiratory system may include bronchospasms, edema, hypersecretion, bronchitis, irritation, allergic asthmatic reactions, and ulceration and perforation of the nasal septum. Respiratory symptoms may include coughing and wheezing, shortness of breath, and nasal itch. Eye irritation or inflammation can also be produced. Exposure to some hexavalent chromium compounds have also been shown to be associated with increased risk of lung cancer.

### Nickel (Ni)

Ni fumes and dusts are respiratory irritants and may cause a severe pneumonitis. Skin contact with nickel and its compounds may cause an allergic dermatitis. The resulting skin rash is often referred to as "nickel itch". Nickel and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids (i.e. conjunctiva). Animal and/or epidemiology studies have linked nickel and certain nickel compounds to an increased incidence of cancer of the lung and nasal passages.

Copper (Cu)

Inhalation of Cu fumes may cause irritation of the eyes, nose and throat and a flu-like illness called metal fume fever. Signs and symptoms of metal fume fever include fever, muscle aches, nausea, chills, dry throat, cough, and weakness. Cu fumes may also cause discoloration of the skin and hair.

SECTION 4 - FIRST AID MEASURES

Remove from exposure area to fresh air.

SECTION 5 - FIRE FIGHTING MEASURES

Use fire fighting techniques appropriate to surrounding media.

SECTION 6 - ACCIDENTAL RELEASE

No special precautions.

SECTION 7 - HANDLING AND STORAGE

STEPS TO BE TAKEN IN CASE OF SPILL: No special instructions.

WASTE DISPOSAL METHOD: For disposal of this material as a waste, act in accordance with all applicable federal, state, and local waste management regulations. Recycle.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

RESPIRATORY: If needed, use NIOSH approved particulate respirator. But, under normal conditions proper ventilation/local exhaust is sufficient.

PROTECTIVE GLOVES; as needed

EYE PROTECTION: as needed

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: none

WORK/HYGIENIC PRACTICES: standard

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:	N/A	SPECIFIC GRAVITY:	7.6-7.8
VAPOR PRESSURE:	N/A	MELTING POINT:	2800 F
VAPOR DENSITY:	N/A	EVAPORATION RATE:	N/A
SOLUBILITY IN WATER:	N/A	APPEARANCE & ODOR:	SHINY METAL, ODORLESS

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: stable

INCOMPATIBILITY: (materials to avoid) acids

HAZARDOUS DECOMPOSITION OF BYPRODUCTS: Welding and burning of this product may cause the generation of a variety of noxious fumes and gases (e.g. copper, zinc, carbon monoxide, etc.)  
HAZARDOUS POLYMERIZATION: will not occur

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The opinions expressed herein are those of qualified experts within Harsco Corporation. Harsco believes that the information contained herein is current and accurate for the normal and intended use of this product as of the date of this Material Safety Data Sheet. Since the use of this information and of those opinions on the conditions of use of the product are not within the control of Harsco Corporation, it is the users obligation to determine and observe the conditions of safe use and disposal of the product by their operations.