

ThyssenKrupp Materials NA, Inc.
MATERIAL SAFETY DATA SHEET
 Carbon Steel

SECTION I. MATERIAL IDENTIFICATION

COMPANY ThyssenKrupp Materials NA, Inc. 22355 West Eleven Mile Road Southfield, Michigan 48033	RE-ISSUE DATE 5-Dec-08	IDENTIFICATION NUMBER N/A
TRADE NAME Carbon Steel/Alloy Steel	EMERGENCY PHONE NUMBER (248) 233-5681	PREPARED BY: J. VanValkenburg
CHEMICAL NAME Cold Drawn Steel Bars	FORMULA DOT N/A	IDENTIFICATION NO. N/A

SECTION II HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	% COMPOSITION		OSHA-mg/m3
BASE METAL	CAS NUMBER	BY WEIGHT	OSHA-PEL
			8-HR. - TWA
IRON	7439-89-6	97-99	IRON OXIDE FUME 10
NOT ALL OF THE ELEMENTS LISTED BELOW ARE PRESENT IN ALL ALLOYS OF STAINLESS STEEL.			
ALLOYING	% COMPOSITION		OSHA-mg/m3
ELEMENTS	CAS NUMBER	BY WEIGHT (1)	OSHA-PEL
			8-HR. - TWA
CARBON	7440-44-0	.01-1.10	AS CARBON 15.0
MANGANESE	7439-96-5	.25-1.65	AS MANGANESE 5.0
PHOSPHORUS	7723-14-0	.04 MAX.	AS PHOSPHORUS 0.1
SULFUR	7446-09-5	.001-.35	AS SULFUR DIOXIDE 15.0
SILICON	7440-21-3	.01-0.5	AS SILICON DUST/FUME 5.0
LEAD	7439-92-1	.15-.35	AS LEAD DUST/FUME 0.05
VANADIUM	1314-62-1	.01-.25	AS VANADIUM PENTOXIDE 15.0
TELLURIUM	13494-80-9	.50 MAX.	AS TELLURIUM 0.1
NICKEL	7440-02-0	.01-3.75	AS NICKEL 1.0
CHROMIUM	7440-47-3	.01-2.50	SOLUBLE CHROMIC/SALTS 0.5
MOLYBDENUM	7439-98-7	.01-1.10	SOLUBLE MOLY. COMPOUNDS 15.0
BISMUTH	7440-69-9	.15 MAX.	AS BISMUTH 15.0
COPPER	7440-50-8	.50 MAX.	AS COPPER DUST 1.0
			AS COPPER FUME 0.1
ALUMINUM	7429-90-5	.10 MAX.	AS ALUMINUM 15.0

PEL=Permissible Exposure Limit (1) % of Alloying Material Vanes with Grade of Material. Other trace elements of <1% May be in Present.

SECTION III. PHYSICAL DATA

MATERIAL (At Normal Conditions) SOLID	APPEARANCE AND ODOR Metallic appearance; No Odor
MELTING POINT >2400 Deg. F (1300 Deg. C)	SPECIFIC GRAVITY About 7.8

SECTION IV. FIRE AND EXPLOSIVE

SPECIAL FIRE FIGHTING PROCEDURES: Damp dust with hydrogen may form explosive air mixtures. Small chips, fine turnings and dust may ignite readily. Explosion potential may exist when dust and fines are dispensed in the air. Avoid contact with metal oxides, molten aluminum and moisture. Carbon Steel Products in their solid state present no fire or explosive hazard.
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SECTION V. REACTIVITY DATA

STABILITY Stable	CONDITIONS TO AVOID Be Aware Of Unsecured Loads
HAZARDOUS DECOMPOSITION PRODUCTS Metallic Dust Or Fumes May Be Produced During Welding, Burning, Grinding And Possibly Machining. Refer To ANSI Z49.1	

SECTION VI. Environmental

SPILL OR LEAK PROCEDURES	N/A
WASTE DISPOSAL METHODS	Disposal must comply with applicable Federal, State and Local disposal and discharge laws.

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SECTION VII. HEALTH HAZARD DATA

NOTE:	STEEL PRODUCTS IN THEIR NATURAL STATE DO NOT PRESENT AN INHALATION OR CONTACT HAZARD, HOWEVER OPERATIONS SUCH AS BURNING, WELDING, SAWING, BRAZING AND GRINDING MAY RELEASE FUMES AND/OR DUST WHICH MAY PRESENT HEALTH HAZARDS. THERE IS NO AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH) THRESHOLD LIMIT VALUE (TLV) OR OSHA EXPOSURE LIMIT, PEL, FOR STEEL.
EFFECTS OF OVEREXPOSURE:	
Acute -	Dust or fume may cause irritation to the eyes, nose, or throat and may leave a metallic taste in the mouth. Inhalation of oxides of Manganese, or Copper may be manifested as flu-like symptoms commonly known as "metal fume fever". Phosphorous dust is considered a nuisance dust.
Chronic -	Tantalum dust and fume can be toxic when inhaled.
Aluminum:	Inhalation of Aluminum Oxide fume or an accumulation of Silicon in the lungs may result in benign pneumoconiosis
Bismuth:	Chronic ingestion or inhalation may lead to flu-like symptoms and/or damage to the central nervous system, liver, or kidneys.
Chromium:	May enter and affect the body through inhalation, ingestion, or skin contact. The National Toxicology Program (NTP) and the Internal Agency for Research on Cancer (IARC) report they possess sufficient evidence to establish a causal relationship for human cancer from Chromium
Cobalt:	Lung inflammation and damage, and diffuse pulmonary fibrosis from inhalation. Classified as a carcinogen by IARC.
Copper:	Inhalation may cause nose and throat irritation and metal fume fever and prolonged contact may cause dermatitis, discoloration of skin, hair and teeth.
Iron:	Inhalation of Iron Oxide fume or dust may result in a condition known as siderosis.
Lead:	Lead compounds can be toxic when ingested or inhaled. Lead is a cumulative poison and excessive exposure can have an adverse effect on human reproduction. Acute exposure to lead can be manifested as abdominal pain, nausea, constipation, anorexia, or vomiting, and in severe cases death
Manganese:	Inhalation may result in symptoms such as headache, restlessness, neurological dysfunction, or muscular weakness.
Nickel:	Inhalation may result in inflammation of the respiratory tract and fever. The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) report they possess limited evidence for human cancer from Nickel and Nickel Compounds.
Sulfur:	Inhalation of Sulfur Dioxide gas can cause irritation of the respiratory tract, causing bronchial irritation, difficulty in breathing and pulmonary edema
Molybdenum:	Slight irritation of senses. Animal studies suggest digestive disturbances and development of pneumoconiosis, anemia, and gout.
Vanadium:	Inhalation of Vanadium oxides may result in metallic taste, throat irritation, cough and/or bronchitis. Contact may cause local irritation.
Welding Fume:	Is listed as a possible carcinogen to humans.
Coatings:	If coated with oil, contact may cause skin irritation/dermatitis

SECTION VIII. EMERGENCY AND FIRST AID PROCEDURES

Inhalation:	In the event of excessive exposure to dust or fume, remove the employee to fresh air. If breathing is difficult administer artificial respiration or oxygen. Obtain immediate medical assistance.
Skin:	Abrasions and cuts should be washed and closed by a clean compress and be immediately medically treated. Should skin irritation occur, wash affected area with mild soap and rinse with clean warm water. Obtain medical assistance.
Eyes:	Depending on the type and nature of exposure, relief may be obtained by fresh air or rinsing the eyes with clean water. Obtain medical assistance.
Medical Conditions Aggravated by Exposure:	Persons with a predisposition to respiratory disorders may be adversely affected by particulates or respiratory irritants generated during the mfg. process.

SECTION IX. SPECIAL PROTECTION INFORMATION & CONTROL MEASURES

Note:	Consult your regional codes or Code of Federal Regulations, Title 29, Part 1910. Subpart G-Occupational Health and Environmental Control, Subpart I Personal Protective Equipment. Subpart P-Welding, Cutting, and Brazing, and Subpart Z-Toxic and Hazardous Substances. Certain welding type activities may produce hazardous substances such as carbon monoxide, ozone, phosgene in the presence of certain chemicals, or produce inert suffocating atmospheres in addition to the production of ultraviolet radiation and/or noise.
Ventilation:	Additional air make up systems may be required if, local exhaust or ventilation systems are not sufficient to maintain exposure levels to contaminants below prescribed limits. When inhalation controls are not sufficient to reduce the exposure below the applicable exposure limit then use OSHA/NIOSH approved respiratory protection within the use limitations of the respirator.
Personal Protection:	To avoid contact use appropriate protective gloves or clothing to protect against cutting edges. Appropriate heat shielding garments should be used for activities using or generating heat. Eyes should be protected by using safety glasses, goggles, helmet, face shield as appropriate to the operation
Precautions to be taken in handling and storage:	Be alert to sharp edges and unsecured lifts.

SECTION X. OTHER INFORMATION

SARA Section 313 Toxic Chemical List, de minimis Concentrations	> 1.0%: Copper, Aluminum, and Manganese > 0.1%: Chromium, and Nickel
California Proposition 65	The state of California lists cadmium and cadmium compounds, lead, nickel, cobalt, and chromium (Hexavalent compounds), as chemicals known to cause cancer and reproductive toxicity. Cadmium, cadmium compounds, and lead may be present as impurities of the manufacturing process. Chromium (Hexavalent compounds) may be generated during certain manufacturing processes

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