

EA109 SS-5

Stainless Steel Products

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**Material Safety Data Sheet
Stainless Steel Wire**

I. PRODUCT: Stainless Steel Wire

Chemical Formula: An alloy of Iron, Chromium and Nickel with various alloying elements such as Manganese, Silicon, Molybdenum, Titanium, Copper etc.

II. HAZARDOUS INGREDIENTS:

Ingredient	CAS#	From	OSHA/PEL (mg/m ³)	ACGIH/TLV (mg/m ³)
Aluminum	7429-90-5	Dust, fumes	--	10.00, 5.00
Carbon	1333-86-4	As Carbon black	3.50	3.50
Chromium	7440-47-3		1.00	0.50
Cobalt	7440-48-4		0.10	0.10
Copper	7440-50-8	Dust, fumes	1.00, 0.10	1.00, 0.20
Iron	1309-37-1	PEL-Iron, oxide fumes, TLV-as Fe	10.00	5.00
Manganese	7439-96-5	Dust, fumes	5.00, --	5.00, 1.00
Molybdenum	7439-98-7	Insoluble compound	15.00	10.00
Nickel	7440-02-0		1.00	1.00
Niobium	7440-03-1		5.00	5.00
Phosphor	7723-14-0	Yellow	0.10	0.10
Silicon	7440-21-3	Respirable dust	--	5.00
Sulfur	7446-09-5	As sulfur dioxide	--	5.00
Tin	7440-31-5		2.00	2.00
Titanium	13463-67-7	As Titanium dioxide	15.00	5.00
Tungsten	7440-33-7	Insoluble compound	--	5.00
Vanadium	1314-62-1	Dust, fumes (as vanadium pentoxide)	0.50, 0.10	0.05, 0.05

Coatings: Certain residuals may remain on the surface; those are alkaline salts, oils or wire drawing lubricant residuals (<0.5% of weight of product).

III. PHYSICAL DATA:

The stainless steel wire are metal alloys in solid solution are Non hazardous, Non flammable and Non reactive.

Specific Gravity = 7.5 – 8.5

Boiling Point : very high

Melting Point : 2400 –2800°C

Appearance : Solid metal have bright or matt finish, odorless

Solubility : Insoluble

Flash Point : N/A

Flammable upper and lower limit, N/A

Fire and Explosion hazards – Nil

IV. REACTIVITY DATA:

Material to avoid : Strong acids

Hazardous decomposition products : Metallic dust from grinding / machining, Fumes produced during welding.

V. HEALTH HAZARD INFORMATION:

No toxic effects would be expected from its inert solid form.

Prolonged exposure to dust, fumes and gases generated during cutting, grinding welding may cause adverse health effects such as irritability, respiratory irritation cough, headache or fever.

Emergency First aid Producer

Incase of fume inhalation move away from exposure to fresh air and consult physician.

Incase of eye contact flush with large amount of water, seek mediçal attention.

Incase of Ingestion, seek immediate medical attention.

Carcinogenicity : Chromium and Nickel, Chromium-Cobalt alloys have been identified by international agency for research or cancer as potential cancer causing agent.

VI. SPILL, LEAK, DISPOSAL:

No potential for spill or leak as delivered Gather dust, residue, scrap from cutting grinding, annealing operation into a suitable container.

VII. SPECIAL PROTECTION INFORMATION:

RESPIRATORY PROTECTION:

Use air supplied respirators in confined spaces, this is necessary in such cases when permissible limits may exceed during cutting, grinding, welding operations.

VENTILATION:

In confined spaces it requires provision for adequate ventilation.

EYE PROTECTION AND PROTECTIVE CLOTHING:

Wearing of gloves face protection, flameretardant clothing are required during cutting, grinding, or welding.

The information and suggestions made in this data sheet are believed to be accurate as on present date Venus wire makes no warranty shall be used only as a guide and shall not be held liable for any damage resulting from handling or from contact with above product.

Issued by Ralph Rosenbaum
Date : November 2002

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RECEIVED JUL 17 1993

MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT INFORMATION

PRODUCT: STEEL *GALV. WIRE*
USE: Manufacture of steel products
SUPPLIER: DELIGH INDUSTRIES, INC.
 255 CONOVER STREET
 BROOKLYN, NY 11231

EMERGENCY TELEPHONE NO.: 718-875-1511
FAX NUMBER: 718-237-4257

SECTION 2. PREPARATION INFORMATION

PREPARED BY: Health and Safety Department **TELEPHONE NO.:** 718-875-1511
DATE: January 22, 1993

SECTION 3. HAZARDOUS INGREDIENTS

3.1 Steel

HAZARDOUS INGREDIENT	CAS NUMBER	MAXIMUM CONCENTRATION % (weight/weight)	LD ₅₀ /LC ₅₀ (Species and route)	EXPOSURE LIMITS TLV ACGIH (mg/m ³)
Iron (Fe)	7439-89-6	91-99	LD ₅₀ rat-oral: 30 g/kg; guinea pig-oral: 20 g/kg LC ₅₀ n/av	TWA: 5 (iron oxide fume, as Fe) STEL: n/av
Manganese (Mn)	7439-96-5	1.0-5.0	LD ₅₀ rat-oral: 9 g/kg LC ₅₀ n/av	TWA: 5 (dust) 1 (fume) STEL: n/av (dust); 3 (fume)
Chrome (Cr)	7440-47-3	1.0-5.0	n/av	TWA: 0.5 (as metal, CrII, CrIII); 0.05 (as CrVI) STEL: n/av

n/ap = not applicable
 n/av = not available

SECTION 3. HAZARDOUS INGREDIENTS (cont'd)

HAZARDOUS INGREDIENT	CAS NUMBER	MAXIMUM CONCENTRATION % (weight/weight)	LD ₅₀ /LC ₅₀ (Species and route)	EXPOSURE LIMITS TLV ACGIH (mg/m ³)
Silicon (Si)	7440-21-3	0.5-1.5	LD ₅₀ rat-oral: 3160 mg/kg LC ₅₀ n/av	TWA: 10 STEL: n/av
Carbon (C)	7440-44-0	0.1-1.0	LD ₅₀ mouse-iv: 440 mg/kg LC ₅₀ n/av	TWA: n/av STEL: n/av
Nickel (Ni)	7440-02-0	0.1-1.0	n/av	TWA: 1 STEL: n/av
Molybdenum (Mo)	7439-98-7	0.1-1.0	n/av	TWA: 5 (soluble) 10 (insoluble) STEL: n/av
Sulphur (S)	7704-34-9	0.1-1.0	n/av	TWA: n/av STEL: n/av
Tin (Sn)	7440-31-5	0.1-1.0	n/av	TWA: 2 STEL: n/av
Phosphorous (P)	7723-14-0	0.1-1.0	n/av	TWA: 0.1 STEL: n/av
Copper (Cu)	7440-50-8	0.1-1.0	LD ₅₀ mouse-ip: 3500 µg/kg LC ₅₀ n/av	TWA: 0.2 (fume) 1 (dusts & mists, as Cu) STEL: n/av
Aluminum (Al)	7429-90-5	<0.10	n/av	TWA: 10 (dust) 5 (welding fume) STEL: n/av
Titanium (Ti)	7440-32-6	<0.10	n/av	TWA: n/av STEL: n/av
Vanadium (V)	7440-62-2	<0.10	LD ₅₀ rabbit-sub-cutaneous: 59 mg/kg LC ₅₀ n/av	TWA: 0.05 (respirable dust/fume, as V ₂ O ₅) STEL: n/av

SECTION 3. HAZARDOUS INGREDIENTS (cont'd)

HAZARDOUS INGREDIENT	CAS NUMBER	MAXIMUM CON-CENTRATION % (weight/weight)	LD ₅₀ /LC ₅₀ (Species and route)	EXPOSURE LIMITS TLV ACGIH (mg/m ³)
Boron (B)	7440-42-8	<0.10	LD ₅₀ rat-oral: 650 mg/kg; mouse-oral: 560 mg/kg; rabbit & guinea pig-oral: 310 mg/kg LC ₅₀ n/av	TWA: n/av STEL: n/av

3.2 Coatings: Wires can be coated with a great variety of metal or nonmetal products. See attached supplementary notes.

SECTION 4. PHYSICAL DATA

<u>PHYSICAL STATE:</u>	Solid	<u>EVAPORATION RATE:</u>	n/ap
<u>COLOUR AND APPEARANCE:</u>	No odour, metallic luster	<u>BOILING POINT:</u>	2750°C (approx.)
<u>ODOUR THRESHOLD:</u>	n/ap	<u>FREEZING POINT:</u>	1530°C (approx.)
<u>SPECIFIC GRAVITY:</u>	7.86	<u>pH:</u>	n/ap
<u>VAPOUR PRESSURE:</u>	n/ap	<u>COEFFICIENT OF WATER/OIL DISTRIBUTION:</u>	n/ap
<u>VAPOUR DENSITY:</u>	n/ap		

SECTION 5. FIRE OR EXPLOSION HAZARD

Not applicable

SECTION 6. REACTIVITY DATA

CONDITIONS UNDER WHICH THE PRODUCT IS CHEMICALLY UNSTABLE: Stable

NAME OF ANY SUBSTANCE OR CLASS OF SUBSTANCE WITH WHICH THE PRODUCT IS INCOMPATIBLE : Acids

CONDITIONS OF REACTIVITY: When in molten state, contact with water or ice can result in violent splashes (release of flammable hydrogen gas).

SECTION 6. REACTIVITY DATA (cont'd)

HAZARDOUS DECOMPOSITION PRODUCTS: Metal oxides of hazardous ingredients listed in Section 3, carbon monoxide

SECTION 7. TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

Skin contact:	Yes	Inhalation:	Yes
Skin absorption:	No	Ingestion:	No
Eye contact:	Yes		

Fumes and/or dusts may be generated from further processing of the product by the user, such as welding, burning, cutting, grinding, machining, melting, crushing, screening or handling activities.

EFFECTS OF ACUTE EXPOSURE TO PRODUCT:

Overexposure to dust or fume formed when further processing the product may be an irritant to eyes, skin and respiratory tract. An overexposure by inhalation to decomposition products may cause metal fume fever characterized by fever and chills.

EFFECTS OF CHRONIC EXPOSURE TO PRODUCT:

Iron:	Siderosis
Manganese:	May adversely affect central nervous system (CNS) and respiratory system (e.g., asthma)
Chrome:	Dermatitis, skin ulcerations, allergic reactions, respiratory symptoms (e.g., asthma), lung cancer
Silicon:	Considered a nuisance particulate
Carbon:	Eye and respiratory tract irritant
Nickel:	Allergic dermatitis ("nickel itch"), lung inflammation, asthma, cancer of the respiratory system
Molybdenum:	Weight loss, diarrhea, loss of coordination, pneumoconiosis, breathing difficulties
Sulphur:	Mucous membranes irritation
Tin:	Stannosis
Phosphorous:	Cough, bronchitis, pneumonia
Copper:	Skin and hair discoloration, metallic or sweet taste
Aluminum:	Shaver's disease (fibrotic lung)
Titanium:	Mucous membranes irritation
Vanadium:	Inflammation of respiratory passages, asthma, cardiac palpitations, gastrointestinal discomfort, renal damage, nervous depression
Boron:	Conjunctivitis

SECTION 7. TOXICOLOGICAL PROPERTIES (cont'd)

EXPOSURE LIMITS: Refer to Section 3.

IRRITANCY OF PRODUCT: n/ap

SENSITIZATION TO PRODUCT: n/ap

CARCINOGENICITY:

The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) list certain hexavalent chromium compounds under the category "confirmed human carcinogen" and certain nickel compounds under the category "suspected human carcinogen".

REPRODUCTIVE TOXICITY: n/av

TERATOGENICITY: n/av

MUTAGENICITY: n/av

NAME OF TOXICOLOGICALLY SYNERGISTIC PRODUCTS: n/av

SECTION 8. PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT TO BE USED:

- Eye Protection: Use safety glasses and/or other protective eyewear when exposure to eye or face hazards exists, such as flying objects, molten metal and injurious light radiation (e.g., welding and burning).
- Skin Protection: Use protective gloves and/or other personal protective equipment when welding, burning or handling.
- Respiratory Protection: When engineering controls are not feasible or sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH-approved respirator which protects against dusts and metal fume in accordance with manufacturers' instructions and use limitations.

SPECIFIC ENGINEERING CONTROLS TO BE USED:

Avoid creating dust/fumes. General or local exhaust ventilation is recommended near source when fumes or dusts are emitted.

PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL: n/ap

WASTE DISPOSAL:

Product can be recycled for further use, disposed in an appropriately permitted waste landfill or by other methods in accordance with local, state, provincial and federal regulations.

SECTION 8. PREVENTIVE MEASURES (cont'd)

HANDLING PROCEDURES AND EQUIPMENT:

Use lifting and work devices with rated capacities and in accordance with manufacturers' instructions.

STORAGE REQUIREMENTS: n/ap

SPECIAL SHIPPING INFORMATION: n/ap

SECTION 9. FIRST AID MEASURES

SPECIFIC FIRST AID MEASURES:

Skin: Wash with mild soap and maintain good personal hygiene. Seek medical attention if conditions persist.

Eyes: Treat for foreign body in the eye. Seek medical attention.

Inhalation: For overexposure to dust/fumes, remove to fresh air. Seek medical attention if necessary.

SECTION 10. ADDITIONAL GENERAL INFORMATION

Disclaimer

The information contained in this material safety data sheet is based on information available to the Company and is believed to be accurate. Where this information is based on data developed by third parties, the Company expressly denies liability. The Company makes no warranty, expressed or implied, regarding the accuracy of this information or data or the results obtained from its use. All recommendations are made without guarantee, since the conditions of use of this product are beyond the Company's control. The Company assumes no responsibility for any damages resulting from the use of this product described herein.

STEEL COATINGS

Wires can be coated with a great variety of metal or non-metal products. Concentrations used for these products are such that they do not need to be disclosed in the material safety data sheet of this product. Following is a general description of effects on health and preventive measures concerning metal and non-metal coatings.

NON-METAL COATINGS

1) Dry Lubricants

This class of coatings includes products made of lime, borates and carbonates that may irritate the skin, eyes and respiratory system. The risk of inhalation caused by the quantity of product that could remain on the steel is very small. Preventive measures for the skin and eyes must be taken.

2) Coatings and Petroleum-based Lubricants

This class of coatings includes oils of different viscosities with or without minor additive elements. These elements include:

- corrosion inhibitors (phosphate)
- emulsifiers (fatty acids)
- detergents (sulphonates)

These products may irritate the skin, eyes and respiratory system. Contact with skin is the main element concerning this class of coatings. Lighter oils, like kerosene, can affect fatty tissues and cause redness and dermatosis after prolonged contact. Heavier oils can clog up skin pores and cause an inflammation resembling acne.

Preventive measures for the skin and eyes must be taken. It is necessary to maintain a good personal hygiene, that is to wash with water and mild soap the hands and other body parts that are exposed.

METAL COATINGS

This class of coatings can present health hazards only if the welding, cutting, heating or grinding operations are not done properly.

ZINC Certain types of wires can be zinc-coated (CAS No. 7440-66-6). The weight of the coating varies between 60 and 200 g/m², according to a sampling done on wires of different diameters.

Overexposure to zinc fumes generated as a result of welding, heating or cutting operations can cause an acute affection called metal fume fever. This illness presents flu-like symptoms, such as fever, chills, nausea and vomiting. Symptoms appear from 4 to 6 hours after exposure to fumes and can last from 12 to 18 hours. No case of health hazards resulting from a chronic exposure of zinc dusts or fumes has been reported.

Make sure that there is appropriate ventilation.

DELIGH INDUSTRIES, INC.

STEEL

RISKS

- May cause health effects during dust/fume generating activities.
- May cause respiratory system effects when dust/fumes are inhaled.
- May cause skin irritation when in prolonged contact with surface.

PRECAUTIONARY MEASURES

- Limit skin contact. Wear protective gloves.
- Avoid creating dust/fumes.
- During dust/fumes generating activities, provide mechanical ventilation or wear personal protective equipment (i.e., eye protection, protective clothing and appropriate NIOSH-approved respirator).

FIRST AID

Inhalation: For overexposure to dust/fumes, remove to fresh air.
Skin: Wash with mild soap and maintain good personal hygiene.
Eyes: Treat for foreign body in the eye.

In all cases, seek medical attention if necessary.

Refer to material safety data sheet for further information.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME

Galvanized Steel Wire and Galvanized Steel Wire Products

INGREDIENTS

Iron	Balance	10.0	5
Manganese	.25-2.0	5.0	1.0
Chromium	.01-2.0	1.0	0.5
Nickel	.01-1.0	1.0	1.0
Copper	.01-1.0	0.1	0.2
Trace Elements	Less than 2.0	N/A	N/A
Metallic Coating:			
Zinc	99.0 (Min)	5.0	5.0
Trace Elements	Less than 1.0	N/A	N/A

PHYSICAL DATA

Appearance and Odor	:	Solid odorless shiny metal
Boiling Point	:	N/A
Melting Point	:	2800° F
Solubility in Water	:	N/A
Specific Gravity	:	7.6-7.8
Vapor Pressure	:	N/A
Vapor Density	:	N/A
Evaporation Rate	:	N/A
% Volatile	:	N/A

COATING DESCRIPTION

May be coated with calcium soaps and/or metalworking compounds, which should be recognized and considered when evaluating potential employee health hazards and exposures during welding and/or other dust/fume generating activities. (see attached MSDS relating to these types of coatings)

HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

INHALATION	- ACUTE EFFECTS	High concentrations of fume may cause respiratory irritation.
	- CHRONIC EFFECTS	Prolonged exposure to fume may cause respiratory difficulty and also a flu-like illness.
SKIN CONTACT		Dermatitis may result from prolonged or repeated contact with coating.
SKIN ABSORPTION		N/A

EYE CONTACT Irritation may result from contact with coating

INGESTION N/A

EMERGENCY AND FIRST AID PROCEDURES

EYE Flush with plenty of water.

SKIN Wash contaminated area with soap and water.

INHALATION Move to fresh air if fume exposure causes irritation.

INGESTION N/A

REACTIVITY DATA

STABILITY Stable

REACTIVITY May react with acids to release hydrogen.

HAZARDOUS DECOMPOSITION PRODUCTS Fumes and/or gases produced from welding or burning operations.

SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS Torch cutting and welding should be performed with adequate ventilation.

RESPIRATORY PROTECTION NIOSH approved fume respiration if torch cutting or welding in poorly ventilated area.

EYE PROTECTION Required for grinding, welding, etc.

SKIN PROTECTION Use protective gloves if prolonged contact required.

SPECIAL PRECAUTIONS

Effective fume control necessary

DISCLAIMER

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Also, this MSDS is intended for use solely in safety education and health training and not for specification purposes.

EYE CONTACT

Irritation may result from contact with coating

INGESTION

N/A

EMERGENCY AND FIRST AID PROCEDURES

EYE

Flush with plenty of water.

SKIN

Wash contaminated area with soap and water.

INHALATION

Move to fresh air if fume exposure causes irritation

INGESTION

N/A

REACTIVITY DATA

STABILITY

Stable.

REACTIVITY

May react with acids to release hydrogen.

HAZARDOUS DECOMPOSITION PRODUCTS

Welding and burning on this product may cause the generation of a variety of noxious fumes and gases (e.g., carbon monoxide, zinc oxide fume, etc)

SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS

Torch cutting and welding should be performed with adequate ventilation.

RESPIRATORY PROTECTION

NIOSH approved fume respirator if torch cutting or welding in poorly ventilated area.

EYE PROTECTION

Required for grinding, welding, etc.

SKIN PROTECTION

Use protective gloves if prolonged contact required.

SPECIAL PRECAUTIONS

Chromium and nickel have been included on LARC's list of carcinogens. Subjecting zinc to high temperatures (Such as occurs in welding) will result in the formation of zinc oxide. Exposure to zinc oxide fumes and dust can result in a flu-like illness.

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WARNING LABEL

CARBON STEEL, STEEL WIRE, AND STEEL WIRE PRODUCTS

GALVANIZED STEEL WIRE, AND GALVANIZED STEEL WIRE PRODUCTS.

WARNING: Normally non-hazardous
Heating, cutting, grinding, welding may produce metal fumes, dusts, or noxious gases.
Prolonged, repeated exposure to these may cause adverse health effects.

FIRST AID: In case of over exposure remove to fresh air.
If not breathing give mouth to mouth resuscitation or oxygen.

HANDLING: When burning, cutting, grinding, welding precautions should be taken including use of dust-fume respirator and eye protection.
Gloves are recommended for abrasion.
Protective footwear is also recommended.