June 2015
(English version)

SAFETY DATA SHEET

INDUSTRIES 3R

SECTION 1. IDENTIFICATION

IDENTITY: Part Number: Identity: Description:	 MESH SS 304L Stainless Steel Stainless Steel Wire Mesh
SUPPLIER :	**Industries 3R Inc.** 55, route 116 Ouest Danville (Québec) J0A 1A0 *Tel: 819-839-2793* *Fax: 819-839-2797*

SECTION 2. HAZARDS IDENTIFICATION

OSHA/HCS status :	Stainless steel is considered an article and not hazardous in its solid form. However, certain process such as cutting, milling, grinding, melting and welding could result in some hazardous materials being emitted. The following classification information is for the hazardous elements which may be emitted during these processes.
Classification of the substance or mixture:	CARCINOGENICITY - Category 1B RESPIRATORY SENTITIZER – Category 1 (STOT) REPEATED EXPOSURE – Category 1 TOXIC TO REPRODUCTION – Category 1B ACUTE ORAL TOXICITY – Category 4 SKIN SENSITIZER – Category 1 (STOT) SINGLE EXPOSURE – Category 3 EYE IRRITATION – Category 2B
GHS label elements **Hazard pictograms:**	
Signal word	Danger
Hazard statements: **If dust is present:**	May cause cancer. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Causes damage to organs through prolonged or repeated exposure. Suspected of damaging the unborn child. Harm full if swallowed. May cause allergic skin reaction. May cause respiratory irritation. Causes eye irritations.
Precautionary statements **Prevention, if dust is present:**	Do not breathe dust, fume, gas, vapor, spray. Use in well-ventilated area. Wash thoroughly after handling. Do not eat, drink or smoke when handling this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Contaminated work clothing should not be allowed out of the workplace.

Response:	If exposed, concerned, or feel unwell: Get medical advice/attention.
Storage:	Store away from acids and incompatible materials. Store in accordance with federal/provincial/state or local regulations.
Disposal:	. Steel scrap should be recycled whenever possible. Otherwise, dispose of in accordance with applicable federal /provincial /state or local regulations.
Supplementary Information:	This material does not present a hazard unless dust is generated from processing operations. None known
Hazards not otherwise Classified	

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or mixture:	Stainless steel
Other means of identification:	Coil, plate, angle, bar, rebar and wire coil
CAS number/other identifiers	65997-19-5

Ingredient name	**CAS number**	**%**
Iron	7439-89-6	45 – 90
Nickel	7440-02-2	0 – 40
Chromium	7440-47-3	10.5 – 30
Manganese	7439-96-5	0 – 15
Molybdenum	7429-98-7	0 – 5
Copper	7440-50-8	0 – 5
Silicon	7440-21-3	0 – 3
Aluminium	7429-90-5	0 – 1
Cobalt	7440-48-4	0 – 1
Titanium	7440-32-6	0 – 1
Vanadium	1314-62-1	Trace
Tungsten	7440-33-7	Trace
Tantalum	7440-25-7	Trace
Lead	7439-92-1	Trace

All values are expressed as weight percent and are approximate. The percent composition reflects the range that is possible within this group of products. These are not the technical specifications for particular product. All grades do not include all hazardous ingredients.

SECTION 4. FIRST AID MEASURES

Description of necessary first aid measures **Eye contact:**	Flush eyes with plenty of water for at least 15 minutes. Seek medical attention if eye irritation persists.

Skin contact:	Wash affected area with mild soap and water. Seek medical attention if skin irritation persists.
Inhalation:	Remove to fresh air. Check for clear airway, breathing and presence of pulse. If necessary administer CPR. Consult a physician immediately.
Ingestion:	Dust may irritate mouth and gastrointestinal tract, if ingested, seek medical attention promptly.
Most important symptoms/ effects, acute and delayed potential acute health effects	Stainless steel as a solid and shipped is not likely to present an acute or chronic health effects. However, during processing (cutting, milling, grinding, melting or welding) emitted by products may cause irritations, difficulty in breathing, coughing or wheezing. May cause allergic skin reactions.
Indication of immediate medical attention and special treatment needed, if necessary	May cause sensitization by skin contact or inhalation. Treat symptomatically.
Notes to physician:	Treat symptomatically.
SECTION 5. FIRE FIGHTING MEASURES	
Suitable extinguishing media:	Non-flammable. Will not support combustion. Not applicable for solid product. Use extinguishers appropriate for surrounding materials. Do not use water on molten metal. A fire involving finely divided alloy should be treated as class D combustible metal fire.
Specific hazards arising from material:	Not applicable for solid product.
Hazardous combustion products	Not applicable for solid formed alloy. Toxic metal and metallic oxide fumes may be evolved from fires involving finely divided alloy.
Special fire fighting instruction	For solid formed alloy, as appropriate for surrounding fire. Firefighters should wear self-contained NIOSH-approved breathing apparatus and full protective clothing.
Explosion data :	Solid formed alloy does not constitute a fire or explosion hazard. However, finely divided suspended particulates may present a fire and explosion hazard in the presence of an ignition source.
SECTION 6. ACCIDENTAL RELEASE MEASURES	
Personal precautions, protective equipment and emergency procedures	Not applicable to stainless steel in solid state. Avoid dust formation. Ensure adequate ventilation. Clean-up personnel should be protected against inhalation and eye and skin contact.

Environmental precautions:	Not applicable to stainless steel in solid state.
Methods and materials for containment and cleaning up	Not applicable to stainless steel in solid state. For spills involving fin dusts, remove by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid inhalation of dusts.

SECTION 7. HANDLING AND STORAGE

Precautions of safe handling:	Not applicable to stainless steel in solid state. Operations with the potential for generating high concentrations of airborne particles should be evaluated and controlled as necessary. Practice good housekeeping. Avoid breathing metal fumes and/or dust.
Conditions for safe storage:	No special storage conditions for stainless steel in solid state.
Incompatible products:	Store away from acids and incompatible materials

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

There are no exposure limits for stainless steel. The exposure limit for iron-containing fumes has been established à 5mg/m^3 with ACGIH's TWA. The individual complex compounds with the fume may have lower exposure limits that then general fume.

COMPONENT	**OSHA PEL (mg/m^3)**	**TLV ACGIH (mg/m^3)**
Iron	10 mg/m^3 iron oxyde-fume	5 mg/m^3 iron oxide-dust/fume
Nickel	1 mg/m^3 metal, soluble Insoluble compounds	1.5 mg/m^3 metal 0.1 mg/m^3 soluble compound 0.2 mg/m^3 insoluble compound
Chromium	1 mg/m^3 metal & insoluble salt 0.5 mg/m^3 , Cr (III) 5 µg/m^3 , Cr (VI) 2.5 µg/m^3 Action level Cr (VI)	0.5 mg/m^3 Metal and Cr (III) 0.05 mg/m^3 , Cr (VI) & water soluble compounds 0.01 mg/m^3 , Cr (VI) insoluble compounds
Manganese	5 mg/m^3 (ceiling)	0.2 mg/m^3
Molybdenum	5 mg/m^3 soluble compounds As MO 15 mg/m^3 total dust	5 mg/m^3 soluble compounds as MO 10mg/m^3 insoluble compounds as MO

Copper	0.1 mg/m^3 fume 1.0 mg/m^3 dust & mist	0.2 mg/m^3 fume 1.0 mg/m^3 dust & mist
COMPONENT	**OSHA PEL (mg/m^3)**	**TLV ACGIH (mg/m^3)**
Silicon	15 mg/m^3 total dust 5 mg/m^3 respirable dust	10 mg/m^3 total dust
Aluminium	15 mg/m^3 metal & total dust 5 mg/m^3 respirable dust	1 mg/m^3 respirable dust 5 mg/m^3 welding fume
Cobalt	0.1 mg/m^3 metal, dust & fume	0.02 mg/m^3 metal dust & fume
Vanadium	0.5 mg/m^3 (ceiling)Vanadium Pentoxide dust 0.1 mg/m^3 (ceiling)Vanadium Pentoxide fume	0.05 mg/m^3 (ceiling)Vanadium Pentoxide
Tungsten	15 mg/m^3 total dust 5 mg/m^3 respirable dust	1.0 mg/m^3, 3 mg/m^3 STEL soluble 5.0 mg/m^3, 10 mg/m^3 STEL insoluble
Tantalum	5 mg/m^3 metal & oxide dust 10 mg/m^3 STEL	5 mg/m^3 metal & oxide dust
Titanium	15 mg/m^3 titanium dioxide total dust	10 mg/m^3 titanium dioxide total dust
Lead	0.05 mg/m^3	$^{0.05}$ mg/m^3
Appropriate Engineering controls:	Local and/or general exhaust ventilation should be used to keep worker exposure below applicable exposure limits during welding, brazing, grinding, machining, and other process which may generate airborne contaminants.	
Individual protection measures:	Dependent upon process being performed on material each operation must be addressed for suitable equipment.	
Respiratory Protection:	If concentrations exceed established limits use NIOSH/MSHA approved particulate respirators (dust & fume or high efficiency dust and fume) when grinding or welding.	
Eye/Face Protection:	Safety glasses or goggles should be worn when there is probability of flying particles or elevated levels of dust or fume.	
Hand Protection:	Glove suitable for protection against physical injury and skin contact during handling and processing.	
Body Protection:	N/A	
	N/A	

Other Skin Protection:	

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid silver-grey metallic
Physical State:	Solid
Color:	silver-grey metallic
Odor:	odorless
Odor Threshold	Not Applicable
pH:	Not Applicable
Melting Point:	2500 – 2800 ºF
Boiling Point:	Not Applicable
Flash Point:	Not Applicable
Burning Time:	Not Applicable
Specific Gravity:	7.65 – 7.94
Burning Rate:	Not Applicable
Evaporation Rate:	Not Applicable
Flammability (solid, gas):	Not Flammable
Lower flammable Limit:	Not Applicable
Upper flammable Limit:	Not Applicable
Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable
Relative Density :	Not Applicable
Solubility:	Not Applicable
Solubility in Water:	Not Applicable
Partition coefficient:	No data
Auto-ignition Temperature:	Not Applicable
Decomposition Temperature:	No data
Viscosity :	Not available
Other information :	Not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity:	Not determined for product in solid form.
Chemical stability:	Stable under normal conditions of transport, storage and use for solid form.
Possibility of Hazardous:	Hazardous polymerization will not occur.
Conditions to Avoid:	Contact with mineral acids will release flammable hydrogen gas. Dust formation.
Incompatible Materials:	Oxidizers, reacts with strong acids to form explosive hydrogen gas.
Hazardous Decomposition Products :	During certain operations such as welding, burning, melting or hot rolling, metal fumes may be generated. Hexavalent chromium which is a suspect carcinogen may result from pickling stainless.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects **Acute toxicity** Product/ingredient name	LD_{50} Oral	LD_{50} Dermal	LD_{50} Inhal.	LD_{50} Other
Iron	30000 mg/kg oral rate	-	-	-
Nickel	> 9000 mg/kg oral rate	-	-	-
Chromium	No data available	-	-	-
Manganese	9000 mg/kg oral rate	-	-	-
Molybdenum	No data available	-	-	-
Copper	No data available	-	-	-
Silicon	3160 mg/kg	-	-	-
Aluminum	No data available	-	-	-
Cobalt	6171 mg/kg oral rate	-	-	-

Sensitization:	Not available
Mutagenicity:	Not available
Carcinogenicity:	Chromium: IARC lists certain hexavalent chromium compounds under its group 1 category "confirmed carcinogenicity to humans." And metallic chromium under it's group 3 category "not classifiable as to their carcinogenicity to humans." Chromium metal is classified as a carcinogenic by NTP. Nickel: IARC lists metallic nickel under its group 2B category "possibly carcinogenic to humans." Cobalt: IARC lists metallic cobalt under it's group 2B category "possibly carcinogenic to humans."
Reproductive toxicity:	Not available
Teratogenicity:	Not available
Specific target organ toxicity (single exposure):	Not available
Specific target organ toxicity(repeated exposure):	Respiratory system. Allergic skin reactions.
Aspiration hazard:	No data
Information on the likely routes of exposure:	None for stainless steel in its natural state
Potential acute health effects	
Skin contact:	Prolonged exposure with dust may cause skin irritation to sensitive individuals
Eye contact:	High concentration of dust may cause irritation to the eyes.
Inhalation:	Inhalation of metal particulate or elemental oxide fumes generated during welding, burning or grinding machining may pose acute or chronic health effects.

Symptoms related to the physical, chemical and toxicological characteristics:	None for stainless steel in its natural solid shape.
Effects of acute exposure Short term exposure :	Manganese & copper : Inhalation overexposure to manganese or copper (or zinc coated products) may cause metal fume fever characterized by fever and chills (flue like symptoms) which appear 4-6 hours after exposure with no long term effects.
Effects of chronic exposure Long term exposure: **IARC (International Agency for Research on Cancer)** **National Toxicology Program (NTP) Report on Carcinogens** **OSHA**	Chromium: IARC lists certain hexavalent chromium compounds under its group 1 category "confirmed carcinogenicity to humans." And metallic chromium under it's group 3 category "not classifiable as to their carcinogenicity to humans." Chromium metal is classified as a carcinogenic by NTP. Dermatis may result from exposure to chromium fumes. Nickel: IARC lists metallic nickel under its group 2B category "possibly carcinogenic to humans." Nickel may cause skin sensitivity. Cobalt: Cobalt dust may result in an asthma-like condition (cough, shortness of breath). IARC lists metallic cobalt under it's group 2B category "possibly carcinogenic to humans." Copper: Copper fumes may result in Wilson's disease (characterized by hepatic cirrhosis, brain damage, demyelination, renal disease, and copper deposition in the cornea. Iron: Inhalation overexposures may cause a benign pneumoconiosis (siderosis) with few or no symptoms. Maganese: Existing studies are inadequate to assess its carcinogenicity. Susceptible to Parkinson's disease, metal fume fever and kidney damage.
Mutagenicity: Teratogenicity: Developmental: Fertility effects: **Numerical measures of toxicity** Acute toxicity estimates:	Not available. Not available. Not available. Not available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Component:	Toxicity to fish	Toxicity to algae	Toxicity to microorganisms
Iron	LC_{50} common carp 96hr. 0.56 mg/l		
Chromium	LC_{50} Fathead minnow 96hr. 10-100 mg/l		
Nickel	LC_{50} common carp 96hr. 1.3 mg/l	EC_{50} Freshwater algae 72hr. 0.18 mg/l	EC_{50} water flea 48hr 1.0 mg/l

Persistence and Degradability:	Not available.
Bioaccumulative Potential:	Not available.
Mobility in soil	No data available for stainless steel in its natural sold state. Individual metal dusts may mitigate into soil and groundwater and be absorbed by plants.
Other adverse effects:	None known.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal methods:	Steel scrap should be recycled whenever possible.
Container cleaning & disposal:	Dispose of in accordance with applicable federal, provincial/state or local regulations.

SECTION 14. TRANSPORT INFORMATION

UN Number	**DOT Classification**	**TDG Classification**	**IMDG**	**IATA**
N/A	Hazardous materials shipping info (title 49 transportation March 2011)	March 2011	Not Regulated	Not Regulated

Special precautions for user:	Stainless steel transported in coiled from is under tension and represents a significant source of potential energy due to the tension induced by coiling; it will uncoil to try to lay flat in a long strip when banding is cut or other forces are released. Uncoiling can be sudden and catastrophic and measures should be taken to ensure that uncoiling will not occur.

SECTION 15. REGULATORY INFORMATION

REGULATORY INFORMATION: The following listing of regulation relating to North American Stainless product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.

ADDITIONAL CANADIAN REGULATIONS:

WHIMS CLASSIFICATION: Class D2A/D28: Materials causing other toxic effects.

DOMESTIC SUBSTANCES LIST: The components of this material are on the federal DSL inventory

OTHER CANADIAN REGULATIONS: N/A

ADDITIONAL US REGUALTIONS: The components of this material are subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA = Oct 2006) as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)	CERCLA Reportable quantities
Aluminum	No	No	Yes	None listed
Chromium	No	No	Yes	5,000 lb.
Cobalt	No	No	Yes	None listed
Copper	No	No	Yes	5,000 lb.
Manganese	No	No	Yes	None listed
Nickel	No	No	Yes	100 lb.

SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of the material. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4.540 kg) therefore applies, per 40 CFR 370.20.

TSCA INVENTORY STATUS: The components for this material are listed on the Toxic Substances Control Act Inventory.

CERCLA REPROTABLE QUANTITY (RQ): RQ'S for Hazardous Substances in the Comprehensive Environmental Response, Compensation, and Liability Act are : Chromium = 5,000 lbs. (2270 kg); Cooper = 5,000 lbs. (2270 kg); Nickel = 500 lb. (45 kg).

CALIFORNIA (PROPOSITION 65) The Chromium (VI) component of this material is known in the State of California to cause cancer.
The Nickel component of this material is known in the State of California to cause cancer.
The Cobalt component of this material is known in the State of California to cause cancer.
Arsenic (inorganic), Cadmium and Lead are possible trace elements known in the State of California to cause cancer.

OTHER FEDERAL REGULATIONS: PENNSYLVANIA R-T-K LIST: Aluminum, Manganese, Molybdenum, Nickel, Silicon, Chromium, Cobalt, Copper and Tantalum.
NEW JERSEY R-T-K LIST: Aluminum, Chromium, Copper, Cobalt, Manganese and Nickel.

SECTION 16. OTHER INFORMATION

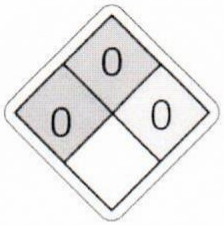
Hazardous Material Information System (U.S.A.)

STAINLESS STEEL

HAZARD LABEL RATING SYSTEMS:

NATIONAL FIRE PROTECTION CODE:

NFPA H=0 F=0 R=0



HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:

HMIS CODE: H=1* F=0 R=0 PPE: SEE SECTION 8

*Denotes possible chronic hazard if airborne dusts or fumes are generated.

HEALTH	1*
FLAMMABILITY	0
REACTIVITY	0
OTHER	

DISCLAIMER – The information provided in this Safety Data Sheet is based on our current knowledge. While the information and recommendations set forth herein are believed to be accurate, Industries 3R takes no warranty with respect thereto and disclaims all liability in reliance thereon. We recommend testing according to local conditions. The specifications are subject to change without notice.