

SAFETY DATA SHEET

Alloy Steel Wire Hamilton East



ArcelorMittal

Section 1. Identification

GHS product identifier	: Alloy Steel Wire Hamilton East
Other means of identification	: Not available.
Product code	: Not available.
Product type	: Solid.
Identified uses	: Fabrication of various steel products and appliances.
Supplier/Manufacturer	: ArcelorMittal Long Products Canada 3900, Aciéries Street Contrecoeur (Québec) Canada J0L 1C0
Emergency telephone number (with hours of operation)	: 1(450) 392-3200 ext.2000

Section 2. Hazards identification

OSHA/HCS status	: While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
Classification of the substance or mixture	: Not classified.
<u>GHS label elements</u>	
Signal word	: No signal word.
Hazard statements	: No known significant effects or critical hazards.
<u>Precautionary statements</u>	
Prevention	: Not applicable.
Response	: Not applicable.
Storage	: Not applicable.
Disposal	: Not applicable.
<u>Hazards not otherwise classified (HNOC)</u>	
Physical hazards not otherwise classified (PHNOC)	: None known.
Health hazards not otherwise classified (HHNOC)	: None known.



Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Other means of identification : Not available.

CAS number/other identifiers

CAS number : Not applicable.
Product code : Not available.

Ingredient name	%	CAS number
Iron	≥90	7439-89-6
Manganese	≥1 - <3	7439-96-5
Nickel	≥1 - <3	7440-02-0
Silicon	≥1 - <3	7440-21-3
Chromium	≥1 - <3	7440-47-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Not applicable.
Inhalation : Not applicable.
Skin contact : Not applicable.
Ingestion : Not applicable.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Welding or burning of material will generate metal fumes. Overexposure to fumes may cause a flu-like condition (chills, nausea) called metal fume fever. Eye irritation may result from contact with coating.

Eye contact : No known significant effects or critical hazards.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No known significant effects or critical hazards.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments : No specific treatment.
Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Not applicable.

Special protective actions for fire-fighters : No special measures are required.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Not applicable.

Methods and materials for containment and cleaning up

- Small spill** : Not applicable.
- Large spill** : Not applicable.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8).
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Do not store in unlabeled containers.

Section 8. Exposure controls/personal protection

Above OEL values are only applicable when the product becomes dusty in a given process.

Control parameters

United States

Occupational exposure limits

Ingredient name	Exposure limits
Manganese	<p>OSHA PEL (United States, 2/2013). CEIL: 5 mg/m³, (as Mn) Form: Fume</p> <p>NIOSH REL (United States, 10/2013). TWA: 1 mg/m³, (as Mn) 10 hours. Form: Fume STEL: 3 mg/m³, (as Mn) 15 minutes. Form: Fume</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1 mg/m³, (as Mn) 8 hours. Form: Fume STEL: 3 mg/m³, (as Mn) 15 minutes. Form: Fume</p> <p>ACGIH TLV (United States, 3/2015). TWA: 0.1 mg/m³, (as Mn) 8 hours. Form: Inhalable fraction TWA: 0.02 mg/m³, (as Mn) 8 hours. Form: Respirable fraction</p>
Nickel	<p>ACGIH TLV (United States, 3/2015). TWA: 1.5 mg/m³ 8 hours. Form: Inhalable fraction</p> <p>NIOSH REL (United States, 10/2013). TWA: 0.015 mg/m³, (as Ni) 10 hours.</p> <p>OSHA PEL (United States, 2/2013). TWA: 1 mg/m³, (as Ni) 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1 mg/m³, (as Ni) 8 hours.</p>
Silicon	<p>OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>NIOSH REL (United States, 10/2013). TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p>
Chromium	<p>ACGIH TLV (United States, 3/2015). TWA: 0.5 mg/m³, (measured as Cr) 8 hours. Form: Inorganic</p> <p>NIOSH REL (United States, 10/2013). TWA: 0.5 mg/m³ 8 hours.</p> <p>OSHA PEL (United States, 2/2013). TWA: 1 mg/m³, (as Cr) 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1 mg/m³ 8 hours.</p>

Canada

<u>Occupational exposure limits</u>		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	Notations
Manganese, as Mn	US ACGIH 3/2015	-	0.1	-	-	-	-	-	-	-	[a]
		-	0.02	-	-	-	-	-	-	-	[b]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	
	BC 2/2015	-	0.2	-	-	-	-	-	-	-	
	ON 7/2015	-	0.1	-	-	-	-	-	-	-	[a]
Nickel		-	0.02	-	-	-	-	-	-	-	[b]
	QC 1/2014	-	0.2	-	-	-	-	-	-	-	[c]
	US ACGIH 3/2015	-	1.5	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	1.5	-	-	-	-	-	-	-	
	Nickel, as Ni	BC 2/2015	-	0.05	-	-	-	-	-	-	-
Nickel		-	1	-	-	-	-	-	-	-	[d]
ON 7/2015		-	1	-	-	-	-	-	-	-	
Silicon	QC 1/2014	-	1	-	-	-	-	-	-	-	
	BC 2/2015	-	3	-	-	-	-	-	-	-	[e]
	BC 2/2015	-	10	-	-	-	-	-	-	-	[c]
	ON 7/2015	-	10	-	-	-	-	-	-	-	[c]
	QC 1/2014	-	10	-	-	-	-	-	-	-	[c]
Chromium, measured as Cr	US ACGIH 3/2015	-	0.5	-	-	-	-	-	-	-	[f]
	Chromium, as Cr	-	0.5	-	-	-	-	-	-	-	[3]
	Chromium	-	0.5	-	-	-	-	-	-	-	
	ON 7/2015	-	0.5	-	-	-	-	-	-	-	[f]

Section 8. Exposure controls/personal protection

Chromium,	QC 1/2014	-	0.5	-	-	-	-	-	-	-	-	-
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[3]Skin sensitization

Form: [a]Inhalable fraction [b]Respirable fraction [c]Total dust [d]Inhalable fraction: means that size fraction of the airborne particulate deposited anywhere in the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 100 µm at 50 per cent collection efficiency. [e]Respirable dust [f]Inorganic

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Solid.
- Color** : Silver/Grey metallic.
- Odor** : Odorless.
- Odor threshold** : Not applicable.
- pH** : Not applicable.
- Melting point** : 1530°C (2786°F)
- Boiling point** : 2860°C (5180°F)
- Flash point** : Not applicable.
- Evaporation rate** : Not applicable.

Section 9. Physical and chemical properties

Flammability (solid, gas)	: Not applicable.
Lower and upper explosive (flammable) limits	: Not applicable.
Vapor pressure	: Not applicable.
Vapor density	: Not applicable.
Relative density	: 7.5 to 8
Solubility in water	: Insoluble in water.
Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not applicable.
Viscosity	: Not applicable.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-
Nickel	LC50 Inhalation Dusts and mists	Rat	10.2 mg/L	1 hours
	LD50 Oral	Rat	>9000 mg/kg	-
Silicon	LD50 Oral	Rat	3160 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Manganese	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Silicon	Eyes - Mild irritant	Rabbit	-	3 mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

Section 11. Toxicological information

Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH	EPA	NIOSH
Manganese	-	-	-	A4	-	-
Nickel	-	2B	Reasonably anticipated to be a human carcinogen.	A5	-	+
Chromium	-	3	-	A4	-	None.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Nickel	Category 1	Not determined	Not determined

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Fumes inhaled during welding, burning or cutting, repetitive contact with skin or eyes.

Potential acute health effects

Welding or burning of material will generate metal fumes. Overexposure to fumes may cause a flu-like condition (chills, neausea) called metal fume fever. Eye irritation may result from contact with coating.

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

Section 11. Toxicological information

Welding, burning or grinding of metal will generate metal fume or dust. Prolonged inhalation overexposure to dust or fume may result in the accumulation of iron oxide in the lung, a condition (siderosis) with few or no symptoms. Coating materials may cause skin irritation and/or dermatitis upon prolonged contact.

General	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

There is no data available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Iron	Acute EC50 3700 µg/L Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 33000 to 100000 µg/L Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 6.48 µg/L Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
Manganese	Chronic NOEC 100 mg/L Marine water	Algae - Glenodinium halli	72 hours
	Acute EC50 31000 µg/L Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/L	Daphnia - Daphnia magna	48 hours
Nickel	Acute LC50 28 mg/L Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 2 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
	Acute EC50 450 µg/L Fresh water	Aquatic plants - Lemna minor	4 days
Chromium	Acute EC50 1000 µg/L Marine water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2.3 ppm Fresh water	Fish - Cyprinus carpio - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 100 mg/L Marine water	Algae - Glenodinium halli	72 hours
Chromium	Chronic NOEC 3.5 µg/L Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute EC50 0.2 ppm Marine water	Algae - Bacillariophyta	72 hours
	Acute EC50 5 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
	Acute EC50 35000 µg/L Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 45 µg/L Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 22 µg/L Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 13.9 ppm Fresh water	Fish - Anguilla rostrata	96 hours
	Chronic NOEC 50 mg/L Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 0.19 µg/L Fresh water	Fish - Cyprinus carpio	4 weeks

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Silicon	57 to 77	-	high

Mobility in soil

Soil/water partition coefficient (K_{oc})	: Not available.
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Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Incineration or landfill should only be considered when recycling is not feasible.

Section 14. Transport information

	DOT	TDG	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

AERG : Not applicable.

DOT-RQ Details : Manganese 1 lbs / 0.454 kg
 Nickel 100 lbs / 45.4 kg

Special precautions for user : Not applicable.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Nickel; Chromium

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

Section 15. Regulatory information

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Manganese	≥1 - <3	No.	No.	No.	Yes.	No.
Nickel	≥1 - <3	No.	No.	No.	Yes.	Yes.
Silicon	≥1 - <3	Yes.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Manganese	7439-96-5	≥1 - <3
	Nickel	7440-02-0	≥1 - <3
	Chromium	7440-47-3	≥1 - <3
Supplier notification	Manganese	7439-96-5	≥1 - <3
	Nickel	7440-02-0	≥1 - <3
	Chromium	7440-47-3	≥1 - <3

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Manganese; Nickel; Silicon; Chromium

New York : The following components are listed: Nickel; Chromium

New Jersey : The following components are listed: Manganese; Nickel; Silicon; Chromium

Pennsylvania : The following components are listed: Manganese; Nickel; Silicon; Chromium

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Nickel	Yes.	No.	No.	No.
Chromium	Yes.	No.	No.	No.

Canada

Canadian lists

Canadian NPRI : The following components are listed: Manganese; Nickel; Chromium

CEPA Toxic substances : None of the components are listed.

Canada inventory : All components are listed or exempted.

Section 16. Other information

History

Date of issue mm/dd/yyyy : 11/15/2015

Version : 1

Prepared by : KMK Regulatory Services Inc.

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

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