Safety Data Sheet

Revised Date: 08-12-2015 FAWSDS-10

1. Identification

Product identifier	Steel, Low Carbon Steel.
Other means of identification	
SDS number	FAWSDS-10
Synonyms	-
Recommended use	Wiring.
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier	Fisk Alloy, Inc. PO Box 26, 10 Thomas Road, Hawthorne, NJ 07507, USA.
General Assistance	Call Fisk Alloy at: 973 825 8500.
E-Mail	Fiskalloy.com.
Contact Person	None known.
Emergency Telephone	FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

2. Hazard(s) Identification

Classification of the substance or mixture Not classified.

Label elements

GHS-US Labeling No labeling applicable.

Hazard(s) not otherwise classified (HNOC)

This product is present in a massive form as an alloy. It does not present the same hazards when the individual components are in their powdered forms. The materials present in this product in their powdered forms present aquatic toxicity to the environment, pyrophoricity, flammability, self-heating capabilities, carcinogenicity, water reactivity, and acute toxicity. When processed or where dust is generated a combustible dust hazard may be present. Avoid generating dust, generating sparks, ignition sources, and take all precautions.

Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.
Under normal use and handling of the solid form of this material there are few health hazards. Cutting, welding, melting, grinding etc. of these materials will produce dust, fume or particulate containing the component elements of these materials. Exposure to the dust, fume or particulate of these materials

may present significant health hazards. Exposure to dust or fume may cause irritation of the eyes, skin and respiratory tract. Fine particulates dispersed in air may present an explosion hazard.

3. Composition/information on ingredients

Substances:

Name	CAS number	%
Iron	7439-89-6	90-99.9
Nickel	7440-02-0	0.0-8
Manganese	7439-96-5	0.0-0.5
Carbon	7440-44-0	0.0-0.12

4. First-aid measures

Inhalation

When symptoms occur: go into open air and ventilate suspected area. Keep at rest and in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin contact

Cool skin rapidly with cold water after contact with molten product. Removal of solidified molten material from skin requires medical assistance. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Wash with plenty of soap and water. Wash contaminated clothing before reuse. Obtain medical attention if irritation persists.

Eye contact

Removal of solidified molten material from the eyes requires medical assistance. Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion

Ingestion is unlikely due to physical state. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

Most important symptoms/effects, acute and delayed

Inhalation: Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Skin Contact: May cause an allergic skin reaction. Dust from

	physical alteration of this product causes skin irritation. Causes severe skin burns. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible. **Eye Contact:** Dust may cause mechanical irritation to eyes, nose, throat, and lungs. **Ingestion:** Ingestion is likely to be harmful or have adverse effects. **Chronic Symptoms:** In massive form, no hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Iron: Inhalation of iron oxide fumes undergoing decomposition may cause irritation and flu-like symptoms, otherwise iron oxide is not hazardous. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis).
Indication of immediate medical attention and special treatment needed	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Never give anything by mouth to an unconscious person.

5. Fire-fighting measures

Suitable extinguishing media	For localized powder fires, smother with dry sand, dry dolomite, sodium chloride or soda ash. Use fire-extinguishing media appropriate to fight surrounding fire.
Unsuitable extinguishing media	Do not use a heavy water stream. Use of heavy stream of water may spread fire. Do not use water when molten material is involved, may react violently or explosively on contact with water.
Specific hazards arising from the chemical	In molten state: reacts violently with water (moisture). Dust may cause an ignitable and/or an explosive atmosphere.
Special protective equipment and precautions for firefighters	**Precautionary Measures Fire:** Under fire conditions, hazardous fumes will be present. **Firefighting Instructions:** Exercise caution when fighting any

chemical fire.
Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	**General measures:** Do not handle until all safety precautions have been read and understood. Do not breathe vapors from molten product. Avoid all eye and skin contact and do not breathe dust, fumes, and vapors. **For non-emergency personnel:** Use appropriate personal protection equipment (PPE). Evacuate unnecessary personnel. **For emergency personnel:** Equip cleanup crew with proper protection. Ventilate area
Environmental precautions	Prevent entry to sewers and public waters.
Methods and materials for containment and cleaning up	Contain and collect as any solid. Clear up spills immediately and dispose of waste safely. For particulates and dust: Avoid actions that cause dust to become airborne during clean-up such as dry sweeping or using compressed air. Use PPE described in Section 8. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up.

7. Handling and storage

Precautions for safe handling	May generate flammable/explosive dusts or turnings when brushed, machined or ground. Use care during processing to minimize generation of dust. Where excessive dust may result, use approved respiratory protection equipment. Heating of product can release toxic or irritating fumes; ensure proper ventilation is employed, proper precautions are enforced, and applicable regulations are followed. Inhalation of fumes may cause metal fume fever.
Conditions for safe storage, including any incompatibilities	**Storage conditions:** Store in a dry, cool and well-ventilated place. **Incompatible Materials:** Strong acids, strong bases and strong oxidizers. Alkalis. Metal oxides. Water, humidity. Corrosive substances in contact with metals may produce flammable hydrogen gas.

8. Exposure controls/personal protection

Occupational exposure limits

International Occupational Exposure Limits						
Country	**Nickel**		**Manganese**		**Carbon**	
	Type	**Value (mg/m^3)**	**Type**	**Value (mg/m^3)**	**Type**	**Value (mg/m^3)**
Belgium	TWA	1	-	-	-	-
Brazil	-	-	-	-	-	-
Canada-Alberta	TWA STEL	1 2	TWA STEL	1(a) 3(a)	-	-
Canada-British Columbia	TWA	0.05	TWA	0.2	-	-
Canada-Ontario	TWA	0.1	TWA	0.2	-	-
Canada-Quebec	TWA	1	TWA	0.2(a,b)	TWA	10
China	TWA	1	TWA	0.15	-	-
Denmark	TWA	0.05	-	-	-	-
France	TWA	1	TWA	1(a)	-	-
Germany	-	-	TWA STEL	0.1 0.2	-	-
Hong Kong	TWA	1.5	TWA	0.2	-	
India	-	-	TWA STEL	1(a) 0.03(a)	-	-
Italy	-	-	-	-	-	-
Japan	-	-	TWA	0.2	-	-
Korea	TWA	1 (c)	TWA STEL	1 3	-	-
Malaysia	TWA	1.5 (d)	TWA	0.2	-	-
Mexico	TWA	1	TWA STEL	1 3	-	-
Poland	TWA	0.25	TWA	0.3	TWA	6
Portugal	-	-	-	-	-	-
Russia	-	-	TWA	0.6/0.2	-	-
Singapore	TWA	1	TWA	1(a,b)	-	-
Sweden	LLV	0.5 (c)	LLV	0.2(c), 0.1(f)	-	-
Taiwan, R. O. C.	TWA	1	TWA	1	-	-
United Kingdom	TWA	0.1	TWA	0.5	TWA	10(e), 4(f)
USA ACGIH	TWA	1.5	TWA	0.02(h), 0.1(g)	-	-
USA OSHA	TWA	1	Ceiling	5	TWA	15(c), 5 (f)

International Occupational Exposure Limits						
Country	Nickel		Manganese		Carbon	
	Type	Value (mg/m^3)	Type	Value (mg/m^3)	Type	Value (mg/m^3)
USA NIOSH	TWA	0.015	TWA STEL	1 3	-	-

NOTE: a- fume, b-dust, c-total dust, d-inhalable fraction, e-inhalable dust, f-respirable dust, g-inhalable fume, h-respirable fume.

Appropriate engineering controls

Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices. Ensure all national/local regulations are observed.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical goggles or safety glasses.

Skin protection

Hand protection

Wear chemically resistant protective gloves. If material is hot, wear thermally resistant protective gloves.

Other

Chemically resistant materials and fabrics. With molten material wear thermally protective clothing. If generating a dust, wash thoroughly after handling, especially before eating, drinking, or smoking. Wash contaminated clothing before reuse.

Respiratory protection

Respiratory protection not normally needed. If dusting occurs or fumes are generated above the established occupational exposure limits, use a NIOSH-approved half-face or full-face respirator equipped with High Efficiency Particulate (HEPA) filters cartridges.

General hygiene considerations

Do not eat, drink, or smoke while using this product in dust form.

9. Physical and chemical properties

Appearance Silver Metallic.

Physical state Solid.

Form Solid.

Color	Not available.
Odor	None.
Odor threshold	Not available.
pH	Not applicable.
Melting point/freezing point	Iron: 2797 °F (Melting point)
Initial boiling point and boiling range	Not available.
Flash point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit –lower (%)	Not available.
Flammability limit –upper (%)	Not available.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density (Specific gravity)	7.85
Solubility(ies)	
Solubility (water)	Negligible.
Partition coefficient (n-octanol/water)	Unknown.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
Viscosity	Not applicable.

10. Stability and reactivity

Reactivity	Hazardous reactions will not occur under normal conditions.
Chemical stability	Stable under recommended storage conditions and stable in solid form.
Possibility of hazardous reactions	Hazardous polymerization will not occur.
Conditions to avoid	Avoid contact with carbon monoxide, particularly at temperatures between 50°C and 300°C, to prevent formation of nickel carbonyl which is toxic and a carcinogen.
Incompatible materials	Acetylene, chlorine.
Hazardous decomposition Products	Inhalation of fumes may cause metal fume fever. Oxides of iron and carbon.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Ingestion is likely to be harmful or have adverse effects.

Inhalation	Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.
Skin contact	May cause an allergic skin reaction. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible.
Eye contact	Dust may cause mechanical irritation to eyes.
Chronic symptoms	In massive form, no hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Iron: Inhalation of iron oxide fumes undergoing decomposition may cause irritation and flu-like symptoms, otherwise iron oxide is not hazardous. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis).

Numerical measures of toxicity – Ingredients:

Components	Test	Species	Test Results
Iron (CAS#7439-89-6)	Oral LD_{50}	Rat	30 g/kg
Nickel(CAS#7440-02-0)	Oral LD_{50}	Rat	>9 g/kg
Manganese(CAS# 7439-96-5)	Oral LD_{50}	Rat	9 g/kg
	Inhalation LC_{50}	Rat	> 5.14 mg/l
Carbon (CAS#7440-44-0)	Oral LD_{50}	Rat	10 g/kg

Skin corrosion/irritation	Not Classified.
Serious eye damage/eye irritation	Not Classified.
Respiratory or skin sensitization	
Respiratory sensitization	Not Classified.
Skin sensitization	Not Classified.
Germ cell mutagenicity	Not Classified. This product is not known or reported to be mutagenic. Nickel has been shown to be mutagenic in *in-vitro* studies.
Carcinogenicity	Not Classified. In laboratory animal studies, chronic exposure to high concentrations of nickel has caused an increase in lung and nasal tumors. The International Agency for Research on Cancer (IARC) has classified nickel as possibly carcinogenic to humans, group 2B. The National Toxicology Program (NTP) classifies

	nickel as a known human carcinogen.
Reproductive toxicity	Not Classified. This product is not known or reported to cause reproductive or developmental effects. Exposure of male rats to high concentrations of nickel caused testicular degeneration. However, symptoms of systemic toxicity, including severe weight loss, were also observed at the same concentrations indicating that the testicular effects were secondary to the frank toxicity. Exposure at these levels is highly unlikely under normal working conditions.
Specific target organ toxicity - single exposure	Not Classified.
Specific target organ toxicity - repeated exposure	Not Classified.
Aspiration hazard	Not Classified.

12. Ecological information

Numerical measures of toxicity

Components	Test	Species	Test Results
Iron (CAS#7439-89-6)	Fish LC_{50}	Zebrafish (*Danio rerio*)	> 10000 mg/l, 96 Hours
	Crustacea LC_{50}	*Water Flea (Daphnia magna)*	9.6 mg/l, 48 Hours
Nickel (CAS#7440-02-0)	Fish LC_{50}	Rock bass (*Ambloplites rupestris)*	2.48 mg/l, 96 Hours
	Crustacea LC_{50}	*Water Flea (Daphnia magna)*	0.51 mg/l, 48 Hours
Manganese (CAS#7439-96-5)	Fish LC_{50}	Rainbow trout (*Oncorhynchus mykiss)*	> 3.6 mg/l, 96 Hours
	Crustacea EC_{50}	*Water Flea (Daphnia magna)*	> 1.6 mg/l, 48 Hours
	Algae EC_{50}	Pond scum (*Desmodesmus subspicatus*)	2.8 mg/l, 72 Hours

Persistence and degradability	No data available.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No known significant effects or critical hazards.

13. Disposal considerations

Disposal instructions	Dispose of in accordance with local regulations. Do not contaminate ponds, waterways or ditches with chemical or used containers.

Contaminated packaging None known.

14.Transport information

In Accordance with DOT	Not regulated for transport.
In Accordance with IMDG	Not regulated for transport.
In Accordance with IATA	Not regulated for transport.

15. Regulatory information

US federal regulations Substance is on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None of the components in this product is listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Nickel(CAS#7440-02-0)	Listed
Manganese(CAS# 7439-96-5)	Listed
Carbon (CAS#7440-44-0)	Listed

CERCLA Hazardous Substance List (40 CFR 302.4)

Nickel(CAS#7440-02-0)	Listed

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard	-	No
	Delayed Hazard	-	No
	Fire Hazard	-	No
	Pressure Hazard	-	No
	Reactivity Hazard	-	No

SARA 302 Extremely hazardous substance

Not listed

SARA 311/312 Hazardous chemical No

None of the components in this product is listed

SARA 313 (TRI reporting)

Name	**CAS number**	**% by wt.**
Nickel	7440-02-0	0-8
Manganese	7439-96-5	0.0-0.5

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

None of the components in this product is listed.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

None of the components in this product is listed.

Safe Drinking Water Act (SDWA)

Manganese(CAS# 7439-96-5)

US State regulations WARNING: This product contains chemicals known to the State of California to cause cancer.

US. Massachusetts RTK – Substance List
Nickel(CAS#7440-02-0)
Manganese(CAS# 7439-96-5)

US. New Jersey Worker and Community Right-to-Know Act
Nickel(CAS#7440-02-0)
Manganese(CAS# 7439-96-5)

US. Pennsylvania Worker and Community Right-to-Know Law
Nickel(CAS#7440-02-0)
Manganese(CAS# 7439-96-5)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Nickel(CAS#7440-02-0)

Canada regulations

This substance has not been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR).

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non- Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemical List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control ACT (TSCA) Inventory	Yes

*A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s).
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	-
Revision date	08-04-2015
Version #	-
References	ACGIH: Documentation of the Threshold Limit Values and Biological Exposure indices ECHA: European Chemicals Agency HSDB: Hazardous Substances Data Bank GESTIS : Information system on hazardous substances of the German Social Accident Insurance IARC: International Agency for Research on Cancer NIOSH: The National Institute for Occupational Safety and Health NTP: National Toxicology Program NLM: Hazardous Substances Data Base OECD : Organization for Economic Co-operation and Development OSHA: Occupational Safety and Health Administration

Disclaimer: The information, recommendations, and suggestions presented in this SDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.