1. Identification

1.1. Product identifier

Product Identity: Nickel Flux-Cored Wire

Alternate Names: MASTERCOR ENiFeT3-CI, ENiCr3T1-1/4, ENiCrFe2T1-1/4, ENiCrFe3T1-1/4, ENiCrMo3T1-1/4, ENiCrMo4T1-1/4, ENiCrMo10T1-1/4

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use: Flux-cored wire for gas shielded welding

Application Method: See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name: Midalloy

630 Axminster Drive

St. Louis, MO 63026

Emergency

24 hour Emergency Telephone No.: (636) 349-6000

Customer Service: Midalloy

(800) 776-3300

2. Hazard(s) identification

2.1. Classification of the substance or mixture

Acute Tox. 5; H303 May be harmful if swallowed. (Not adopted by US OSHA)

Eye Irrit. 2; H319 Causes serious eye irritation.

Skin Sens. 1; H317 May cause an allergic skin reaction.

Resp. Sens. 1; H334 May cause allergy or asthma symptoms of breathing difficulties if inhaled.

Carc. 2; H351 Suspected of causing cancer.

STOT RE 1; H372 Causes damage to organs through prolonged or repeated exposure. Specific Target Organs: (lungs )

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

Danger
Safety Data Sheet
Nickel Flux-Cored Wire

SDS Revision Date: 09/11/2015

H303 May be harmful if swallowed.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.
H351 Suspected of causing cancer.
H372 Causes damage to organs through prolonged or repeated exposure.

[Prevention]:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing dust / fume / gas / mist / vapors / spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves / eye protection / face protection.
P285 In case of inadequate ventilation wear respiratory protection.

[Response]:
P302+352 IF ON SKIN: Wash with plenty of soap and water.
P304+312 IF INHALED: Call a POISON CENTER or doctor / physician if you feel unwell.
P305+313+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.
P308+313 IF exposed or concerned: Get medical advice / attention.
P314 Get Medical advice / attention if you feel unwell.
P321 Specific treatment (see information on this label).
P333+313 If skin irritation or a rash occurs: Get medical advice / attention.
P337+313 If eye irritation persists: Get medical advice / attention.
P341 If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P342+311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor / physician.
P363 Wash contaminated clothing before reuse.

[Storage]:
P405 Store locked up.

[Disposal]:
P501 Dispose of contents / container in accordance with local / national regulations.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

<table>
<thead>
<tr>
<th>Ingredient/Chemical Designations</th>
<th>Weight %</th>
<th>GHS Classification</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>50 - 75</td>
<td>Carc. 2;H351 STOT RE 1;H372 Skin Sens. 1;H317 Aquatic Chronic 3;H412</td>
<td>[1][2]</td>
</tr>
</tbody>
</table>
Safety Data Sheet
Nickel Flux-Cored Wire

SDS Revision Date: 09/11/2015

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
<th>10 - 25</th>
<th>Skin Sens. 1;H317</th>
<th>Resp. Sens. 1;H334</th>
<th>Eye Irrit. 2;H319</th>
<th>Aquatic Chronic 4;H413</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium compounds (as Cr (III))</td>
<td>0007440-47-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>0013463-67-7</td>
<td>10 - 25</td>
<td>Not Classified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>0007439-98-7</td>
<td>5 - 10</td>
<td>Not Classified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manganese compounds (as Mn)</td>
<td>0007439-96-5</td>
<td>1 - 5</td>
<td>Not Classified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Niobium</td>
<td>0007440-03-1</td>
<td>1 - 5</td>
<td>Not Classified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zirconium</td>
<td>0007440-67-7</td>
<td>1 - 5</td>
<td>WaterReact. 1;H260</td>
<td>Pyr. Sol. 1;H250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron oxide</td>
<td>0001309-37-1</td>
<td>1 - 5</td>
<td>Not Classified</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

[1] Substance classified with a health or environmental hazard.

*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General
In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation
Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.

Eyes
Immediately flush the eyes with large amounts of water for at least 15 minutes, alternately lifting the upper and lower eyelids. After 5 minutes, if appropriate, remove contact lenses and continue flushing the eyes for an additional 15 minutes. Call a physician at once.

Skin
Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.

Ingestion
Do not induce vomiting. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Overview
Inhalation: Inhalation of dust may cause respiratory irritation. Chromium and certain compounds of chromium have been reported to cause damage to the lungs, resulting in cumulative damage.

Ingestion: May cause gastric disturbances.

Skin: May cause sensitization on repeated contact. Dermatitis has been reported from repeated contact with chromium compounds.

Eyes: Contact may cause irritation.

Possible cancer hazard. Contains an ingredient which may cause cancer based on animal data (See Section 3 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure.

Electric arc welding or oxyfuel welding may create one or more of the following health
hazards:
ARC RAYS can injure eyes and burn skin.
HEAT RAYS (infrared radiation) from flame or hot metal can injure eyes.
ELECTRICAL SHOCK can kill you.
NOISE can damage hearing.
SHIELDING GASES such as argon, helium and carbon dioxide are asphyxiants and adequate ventilation must be provided.
FUMES AND GASES can be dangerous to your health.

See section 2 for further details.

Inhalation
May cause allergy or asthma symptoms of breathing difficulties if inhaled.

Eyes
Causes serious eye irritation.

Skin
May cause an allergic skin reaction.

Ingestion
May be harmful if swallowed.

Chronic effects
SHORT TERM (ACUTE) overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. Chromates present in the fume can cause irritation of the respiratory system, damage to lungs and asthma like symptoms. Nickel compounds in the fume can cause a metallic taste, nausea, and tightness in the chest, fever and allergic reactions. Manganese fume may cause flu like symptoms (metal fume fever.) Fluorides can cause pulmonary edema bronchitis.

LONG TERM (CHRONIC) overexposure to welding fumes can lead to siderosis (iron deposits in the lung) and affect pulmonary function. Long term overexposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioral changes and changes in handwriting may also appear. Chromium VI compounds are required by OSHA to be considered carcinogenic. Long term exposure to Chromium and Chromium III Oxide dust can cause scaling, redness, itchiness, and a burning sensation on the skin. Long term overexposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Soreness and itchiness of the nose and change in skin color and/or appearance may also result. Nickel and its compounds are required to be considered as carcinogenic by OSHA.

5. Fire-fighting measures

5.1. Extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture
Hazardous decomposition: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of work area, the quality and amount of ventilation, the position of the welder’s head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning the degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and gas decomposition products and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form.
Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above.

Reasonable expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 3, as well as carbon monoxide, carbon dioxide, ozone and nitrogen oxides. The fume limit for chromium, nickel, manganese and cobalt may be reached before the general limit for welding fumes (5mg/m³) is reached.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder’s helmet if worn or in the worker’s breathing zone. See ANSI/AWS F1.1, Method for Sampling Airborne Particles Generated by Welding and Allied Processes, and Characterization of Arc Welding Fume, available from the American Welding Society, 550 NW LeJeune Rd., Miami, FL 33126.

Avoid breathing dust / fume / gas / mist / vapors / spray.

5.3. Advice for fire-fighters
Welding arc and sparks can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions
Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up
Prevent waste from contaminating surrounding environment. Discard any product residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

7. Handling and storage

7.1. Precautions for safe handling
See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities
Handle containers carefully to prevent damage and spillage.
Incompatible materials: No data available.
See section 2 for further details. - [Storage]:

7.3. Specific end use(s)
No data available.

8. Exposure controls and personal protection
### 8.1. Control parameters

#### Exposure

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Ingredient</th>
<th>Source</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001309-37-1</td>
<td>Iron oxide</td>
<td>OSHA</td>
<td>TWA 15 mg/m³ (total) TWA 5 mg/m³ (resp)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TWA: 5 mg/m³ (dust or fume) STEL 10 mg/m³ (as fume)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSHD</td>
<td>TWA 5 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
<tr>
<td>0007439-96-5</td>
<td>Manganese compounds (as Mn)</td>
<td>OSHA</td>
<td>C 5 mg/m³ *See specific listings for specific compounds.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TWA: 0.2 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH</td>
<td>TWA 1 mg/m³ ST 3 mg/m³ *See specific listings for specific compounds.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
<tr>
<td>0007439-98-7</td>
<td>Molybdenum</td>
<td>OSHA</td>
<td>TWA 15 mg/m³ *Note: The PEL also applies to other insoluble molybdenum compounds (as Mo).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TWA: 0.5 mg/m³ (soluble) TWA: 3 mg/m³ (insoluble respirable) 10 mg/m³ (insoluble inhalable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH</td>
<td>No established RELs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
<tr>
<td>0007440-02-0</td>
<td>Nickel</td>
<td>OSHA</td>
<td>TWA 1 mg/m³ *Note: The PEL does not apply to Nickel carbonyl.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>Insoluble TWA: 0.05 mg/m³ A1, 1, (I)Soluble TWA: 0.05 mg/m³ A1, 1, 2B, (I)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH</td>
<td>Ca TWA 0.015 mg/m³ *Note: The REL does not apply to Nickel carbonyl.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
<tr>
<td>0007440-03-1</td>
<td>Niobium</td>
<td>OSHA</td>
<td>No Established Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>No Established Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH</td>
<td>No Established Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
<tr>
<td>0007440-47-3</td>
<td>Chromium compounds (as Cr (III))</td>
<td>OSHA</td>
<td>TWA 1 mg/m³ *Note: The PEL also applies to insoluble chromium salts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TWA: 0.5 mg/m³ (III)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH</td>
<td>TWA 0.5 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
<tr>
<td>0007440-67-7</td>
<td>Zirconium</td>
<td>OSHA</td>
<td>TWA 5 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TWA: 5 mg/m³ STEL: 10 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH</td>
<td>TWA 5 mg/m³ ST 10 mg/m³ *Applies to all zirconium compounds (as Zr) except Zirconium tetrachloride.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
<tr>
<td>0013463-67-7</td>
<td>Titanium dioxide</td>
<td>OSHA</td>
<td>TWA 15 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TWA: 10 mg/m³²2B, Revised 2006,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH</td>
<td>Footnote ca</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier</td>
<td>No Established Limit</td>
</tr>
</tbody>
</table>

### Carcinogen Data

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Ingredient</th>
<th>Source</th>
<th>Value</th>
</tr>
</thead>
</table>

Page 6 of 13
8.2. Exposure controls

**Respiratory**

Use respirable fume respiratory or air supplied respirator when welding in a confined space or where local exhaust or ventilation does not keep exposure below the recommended exposure limit.

**Eyes**

Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade, which gives sufficient view of the weld zone.

**Skin**

Wear hand, head, and body protection, which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum this includes welder’s gloves and a protective face shield, and may include arm protectors, aprons hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

**Engineering Controls**

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker’s breathing zone and the general area. Train the welder to keep his head out of the fumes.

**Other Work Practices**

Read and understand the manufacturer’s instructions and the precautionary label on the product.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

---

**Safety Data Sheet**

**Nickel Flux-Cored Wire**

**SDS Revision Date:** 09/11/2015

<table>
<thead>
<tr>
<th>Material Code</th>
<th>Material Name</th>
<th>OSHA Select Carcinogen</th>
<th>NTP Known</th>
<th>NTP Suspected</th>
<th>IARC Group 1</th>
<th>IARC Group 2a</th>
<th>IARC Group 2b</th>
<th>IARC Group 3</th>
<th>IARC Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001309-37-1</td>
<td>Iron oxide</td>
<td>No</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>Yes;</td>
<td>No;</td>
</tr>
<tr>
<td>0007439-96-5</td>
<td>Manganese compounds (as Mn)</td>
<td>No</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
</tr>
<tr>
<td>0007439-98-7</td>
<td>Molybdenum</td>
<td>No</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
</tr>
<tr>
<td>0007440-02-0</td>
<td>Nickel</td>
<td>Yes</td>
<td>Yes;</td>
<td>Yes;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
</tr>
<tr>
<td>0007440-03-1</td>
<td>Niobium</td>
<td>No</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
</tr>
<tr>
<td>0007440-47-3</td>
<td>Chromium compounds (as Cr (III))</td>
<td>No</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>Yes;</td>
<td>No;</td>
</tr>
<tr>
<td>0007440-67-7</td>
<td>Zirconium</td>
<td>No</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>Yes;</td>
<td>No;</td>
</tr>
<tr>
<td>0013463-67-7</td>
<td>Titanium dioxide</td>
<td>No</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
<td>No;</td>
</tr>
</tbody>
</table>
9. Physical and chemical properties

- **Appearance**: Solid Tubular Wire containing alloys and minerals
- **Odor**: Not Specified
- **Odor threshold**: Not determined
- **pH**: Not Measured
- **Melting point / freezing point**: Not Measured
- **Initial boiling point and boiling range**: Not Measured
- **Flash Point**: Non-Flammable
- **Evaporation rate (Ether = 1)**: Not Measured
- **Flammability (solid, gas)**: Not Applicable
- **Upper/lower flammability or explosive limits**: Lower Explosive Limit: Not Measured, Upper Explosive Limit: Not Measured
- **Vapor pressure (Pa)**: Not Measured
- **Vapor Density**: Not Measured
- **Specific Gravity**: Not Measured
- **Solubility in Water**: Not Measured
- **Partition coefficient n-octanol/water (Log Kow)**: Not Measured
- **Auto-ignition temperature**: Not Measured
- **Decomposition temperature**: Not Measured
- **Viscosity (cSt)**: Not Measured

9.2. Other information
No other relevant information.

10. Stability and reactivity

10.1. Reactivity
Hazardous Polymerization will not occur.

10.2. Chemical stability
Stable under normal circumstances.

10.3. Possibility of hazardous reactions
No data available.

10.4. Conditions to avoid
No data available.

10.5. Incompatible materials
No data available.

10.6. Hazardous decomposition products
Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions which also influence the
composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of work area, the quality and amount of ventilation, the position of the welder’s head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning the degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and gas decomposition products and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonable expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 3, as well as carbon monoxide, carbon dioxide, ozone and nitrogen oxides. The fume limit for chromium, nickel, manganese and cobalt may be reached before the general limit for welding fumes (5mg/m3) is reached.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder’s helmet if worn or in the worker’s breathing zone. See ANSI/AWS F1.1, Method for Sampling Airborne Particles Generated by Welding and Allied Processes, and Characterization of Arc Welding Fume, available from the American Welding Society, 550 NW LeJeune Rd., Miami, FL 33126.

### 11. Toxicological information

#### Acute toxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Oral LD50, mg/kg</th>
<th>Skin LD50, mg/kg</th>
<th>Inhalation Vapor LC50, mg/L/4hr</th>
<th>Inhalation Dust/Mist LC50, mg/L/4hr</th>
<th>Inhalation Gas LC50, ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel - (7440-02-0)</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Chromium compounds (as Cr (III)) - (7440-47-3)</td>
<td>422.00, Rat - Category: 4</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Titanium dioxide - (13463-67-7)</td>
<td>10,000.00, Rat - Category: NA</td>
<td>10,000.00, Rabbit - Category: NA</td>
<td>No data available</td>
<td>6.82, Rat - Category: NA</td>
<td>No data available</td>
</tr>
<tr>
<td>Molybdenum - (7439-98-7)</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Manganese compounds (as Mn) - (7439-96-5)</td>
<td>9,000.00, Rat - Category: NA</td>
<td>500.00, Rabbit - Category: 3</td>
<td>19.00, Rat - Category: 4</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Nioibium - (7440-03-1)</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Zirconium - (7440-67-7)</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Iron oxide - (1309-37-1)</td>
<td>10,000.00, Rat - Category: NA</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).
Safety Data Sheet  
Nickel Flux-Cored Wire

SDS Revision Date: 09/11/2015

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
<th>Hazard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (oral)</td>
<td>5</td>
<td>May be harmful if swallowed. (Not adopted by US OSHA)</td>
</tr>
<tr>
<td>Acute toxicity (dermal)</td>
<td>---</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Acute toxicity (inhalation)</td>
<td>---</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>---</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>2</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>Respiratory sensitization</td>
<td>1</td>
<td>May cause allergy or asthma symptoms of breathing difficulties if inhaled.</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>1</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>---</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>2</td>
<td>Suspected of causing cancer.</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>---</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>STOT-single exposure</td>
<td>---</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>STOT-repeated exposure</td>
<td>1</td>
<td>Causes damage to organs through prolonged or repeated exposure.</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>---</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

12. Ecological information

12.1. Toxicity
The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and GHS and is not classified as dangerous for the environment, but contains substance(s) dangerous for the environment. See section 3 for details

Aquatic Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>96 hr LC50 fish, mg/l</th>
<th>48 hr EC50 crustacea, mg/l</th>
<th>ErC50 algae, mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel - (7440-02-0)</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Chromium compounds (as Cr (III)) - (7440-47-3)</td>
<td>77.50, Pimephales promelas</td>
<td>1.20, Daphnia magna</td>
<td>580.00 (72 hr), Chlorella pyrenoidosa</td>
</tr>
<tr>
<td>Titanium dioxide - (13463-67-7)</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Molybdenum - (7439-98-7)</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Manganese compounds (as Mn) - (7439-96-5)</td>
<td>40.00, Daphnia magna</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Niobium - (7440-03-1)</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Zirconium - (7440-67-7)</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Iron oxide - (1309-37-1)</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
There is no data available on the preparation itself.

12.3. Bioaccumulative potential
Not Measured

12.4. Mobility in soil
No data available.

12.5. Results of PBT and vPvB assessment
This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects
No data available.

### 13. Disposal considerations

#### 13.1. Waste treatment methods
Observe all federal, state and local regulations when disposing of this substance.

### 14. Transport information

<table>
<thead>
<tr>
<th>DOT (Domestic Surface Transportation)</th>
<th>IMO / IMDG (Ocean Transportation)</th>
<th>ICAO/IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Applicable</td>
<td>Not Regulated</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Not Regulated</td>
<td>Not Regulated</td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.3. Transport hazard class(es)</th>
<th>IMDG: Not Applicable</th>
<th>Air Class: Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Hazard Class: Not Applicable</td>
<td>IMDG: Not Applicable</td>
<td>Air Class: Not Applicable</td>
</tr>
<tr>
<td></td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

### 15. Regulatory information

#### Regulatory Overview
The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

#### Toxic Substance Control Act (TSCA)
All components of this material are either listed or exempt from listing on the TSCA Inventory.

#### WHMIS Classification
D2A

#### US EPA Tier II Hazards

- **Fire:** No
- **Sudden Release of Pressure:** No
- **Reactive:** No
Safety Data Sheet
Nickel Flux-Cored Wire

SDS Revision Date: 09/11/2015

Immediate (Acute): Yes
Delayed (Chronic): Yes

EPCRA 311/312 Chemicals and RQs (lbs):
- Chromium compounds (as Cr (III)) (5,000.00)
- Nickel (100.00)

EPCRA 302 Extremely Hazardous:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:
- Chromium compounds (as Cr (III))
- Manganese compounds (as Mn)
- Nickel

Proposition 65 - Carcinogens (>0.0%):
- Nickel
- Titanium dioxide

Proposition 65 - Developmental Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):
- Chromium compounds (as Cr (III))
- Iron oxide
- Manganese compounds (as Mn)
- Molybdenum
- Nickel
- Titanium dioxide
- Zirconium

Pennsylvania RTK Substances (>1%):
- Chromium compounds (as Cr (III))
- Iron oxide
- Manganese compounds (as Mn)
Molybdenum
Nickel
Titanium dioxide
Zirconium

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H250 Catches fire spontaneously if exposed to air.
H260 In contact with water releases flammable gases which may ignite spontaneously.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.
H351 Suspected of causing cancer.
H372 Causes damage to organs through prolonged or repeated exposure.
H412 Harmful to aquatic life with long lasting effects.
H413 May cause long lasting harmful effects to aquatic life.

Midalloy believes that the information contained in this SDS is accurate. However, Midalloy does not express or imply any warranty with respect to this information.

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