SAFETY DATA SHEET

DeepTIG™ Ni-139

DATE REVISED: November 09, 2017

SECTION 1 -- IDENTIFICATION

Product Name/Part number: DeepTIG™ Ni-139
Recommended use: GTA Welding Flux for Nickel Alloys
Manufacturer: Superior Flux & Mfg. Co.
6615 Parkland Blvd
Cleveland OH, 44139

Emergency Contact: CHEMTREC
Emergency Phone: 1-800-424-9300
For other info: (440) 349-3000

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

GHS Classification in accordance with OSHA HCS (29 CFR 1910)
Skin sensitization (Category 1) H317
Carcinogenicity (Category 1A) H350
Specific target organ toxicity, repeated exposure (Category 1) H372
Hazardous to the aquatic environment – Chronic (Category 4) H413

See below for full text of H-Statement

GHS Label Elements, including precautionary statements

Pictogram(s):

Signal Word: Danger

Hazard Statement(s)
H317 May cause an allergic skin reaction
H350 May cause cancer
H372 Causes damage to organs through prolonged or repeated exposure
H413 May cause long lasting harmful effects to aquatic life

Precautionary statement(s)
P260 Do not breathe dust or fumes.
P264 Wash exposed skin thoroughly after handling
P270 Do not eat, drink, or smoke when using this product
P272 Contaminated work clothing must not be allowed out of the workplace
P273 Avoid release to the environment
P280 Wear protective clothing, protective gloves, eye protection, and face protection
P302+P352 IF ON SKIN: Wash with plenty of water
P308+P313 If exposed or concerned: Get medical advice.
P314 Get medical advice or attention if you feel unwell.
P333+P313 If skin irritation or rash occurs: Get medical advice or attention
P362+P364 Take off contaminated clothing and wash it before reuse.
P405 Store locked up
P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations.

Other hazards 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.
SECTION 3 – COMPOSITION INFORMATION

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium oxide mixture</td>
<td>12137-20-1, 1317-80-2, 1344-54-3</td>
<td>0-60</td>
</tr>
<tr>
<td>Nickel oxide</td>
<td>1313-99-1</td>
<td>0-40</td>
</tr>
<tr>
<td>Manganese silicide</td>
<td>12032-86-9</td>
<td>0-10</td>
</tr>
</tbody>
</table>

Unlisted percentages are non-hazardous stabilizers, and water.

SECTION 4 – FIRST AID MEASURES

Description of first aid measures

General advice: If you feel unwell, seek medical advice. Never give anything by mouth to an unconscious person.

Inhalation: If breathed in, move to fresh air. Ventilate suspected area. If not breathing, give artificial respiration. If exposed or concerned: Get medical advice or attention.

Eyes: Rinse cautiously with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing.

Skin: Take off contaminated clothing and shoes. Drench affected area with water for at least 15 minutes. Wash with plenty of soap and water. Get medical advice or attention. Wash contaminated clothing before reuse.

Ingestion: Do NOT induce vomiting. Consult a physician.

Most Important Symptoms and effects, both acute and delayed

Symptoms/Injuries: Causes damage to organs through prolonged or repeated exposure. May cause cancer. May cause an allergic skin reaction.

Symptoms/Injuries After Inhalation: May cause cancer by inhalation. During welding, the most significant route of exposure is by the inhalation (breathing) of welding fumes. If welding fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction.

Symptoms/Injuries After Eye Contact: May cause eye irritation.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. May cause cancer.

If you feel unwell, seek medical advice (show the label where possible).

The most important known symptoms and effects are described in section 2 (labeling)
SECTION 5 – FIREFIGHTING MEASURES

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire. Use of heavy stream of water may spread fire.

Special Hazards: Product is not flammable, nor is it explosive. Hazardous reactions will not occur under normal condition.

Special Advice for Firefighters: Exercise caution when fighting any chemical fire. Do not breathe fumes or vapors from fire. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment and emergency procedures: Avoid all unnecessary exposure. Do not breathe dust or fumes. Evacuate unnecessary personnel. Ventilate area and equip cleanup crew with proper protection.

See section 8 for personal protection.

Environmental Precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter sewers and public waters.

In Case Material is spilled: Clear up spills immediately and dispose of waste safely. Keep and place in suitable, closed containers for disposal according to local regulations. Avoid generation of dust during clean-up.

SECTION 7 - HANDLING AND STORAGE

Specific End Use(s): Penetration enhancing compound for GTA Welding of Nickel Alloys.

For professional use only.

Precautions for safe handling: Do not handle until all safety precautions and any special instructions have been read and understood. Do not breathe dust or fumes.

General Precautions: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

Additional Hazards when Processed: Fumes from welding, or processing of this material can be harmful if inhaled. Risk of electric shock when welding. Arc rays and sparks can burn skin. This product is intended for use in ARC welding. During this process UV rays irritate the superficial corneal epithelium, causing inhibition of mitosis, production of nuclear fragmentation, and loosening of the epithelial layer. Under experimental conditions in animals, phototoxic effects have been demonstrated at all levels of the cornea, including the stroma and endothelium.

For full precaution statements see Section 2

Storage Requirements: Keep container tightly closed in a dry, cool, and well-ventilated area. Keep container closed when not in use. Store locked up.
SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS

OSHA Permissible Exposure Limit (PEL): 1 mg/m³
ACGIH Threshold Limit Value (TLV): 0.2 mg/m³

Engineering Controls: Local exhaust and general ventilation must be adequate to meet exposure standards. Site-specific risk assessments should be conducted to determine the appropriate exposure control measures. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. Ensure all national/local regulations are observed.

Respiratory Protection: During instances of insufficient ventilation or whenever exposure may exceed established Occupational Exposure Limits, use a NIOSH-approved respirator or self-contained breathing apparatus.

Protective Gloves: Wear chemically resistant protective gloves. Use proper glove removal techniques (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good lab practices. Wash and dry hands after handling.

Eye Protection: Wear goggles with suitable filter lenses when use is cutting or welding.

Body Protection: Wear fire/flame resistant/retardant clothing. Protective coveralls and long sleeves is recommended.

Use equipment for protection tested and approved under appropriate government standards such as NIOSH (USA) or EN 166, CEN (EU)

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
SECTION 9 - PHYSICAL AND CHEMICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Grey Powder</td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
</tr>
<tr>
<td>Odor threshold</td>
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</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate (Butyl Acetate = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (Solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor density (Air = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density (Water = 1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Insoluble in water</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: Will not occur under normal conditions
Stability: Product is stable under recommended storage and handling conditions
Possibility of hazardous reactions: Hazardous polymerization will not occur
Conditions to Avoid: No specific data available
Incompatibility: Strong oxidizers
Hazardous Decomposition Products Carbon oxides (CO, CO₂). Metal oxides. When heated, material emits irritation and harmful fumes.

In the event of fire: See Section 5

SECTION 11 - TOXICOLOGICAL INFORMATION

Likely Route(s) of Exposure: Inhalation, ingestion, skin and eye contact
Acute Toxicity: Not classified
Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: Not classified
Respiratory or Skin Sensitization: May cause an allergic skin reaction.
Germ Cell Mutagenicity: Not classified
Carcinogenicity: May cause cancer:
  - Rutile (TiO₂): IARC Group 3
  - Nickel oxide (NiO): IARC Group 1. NTP status: Evidence of Carcinogenicity
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure.

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause cancer by inhalation. During welding, the most significant route of exposure is by the inhalation (breathing) of welding fumes. During welding, the welding fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction.

Symptoms/Injuries After Eye Contact: May cause eye irritation.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful for have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. May cause cancer.

SECTION 12 - ECOLOGICAL INFORMATION
Toxicity May cause long lasting harmful effects to aquatic life (NiO 1313-99-1)
Persistence and degradability No data available
Bioaccumulative potential No data available
Mobility in soil No data available
Other adverse effects Avoid release into the environment.

SECTION 13 - DISPOSAL CONSIDERATIONS
Waste treatment methods
Product Offer surplus and non-recyclable solutions to a licensed professional waste disposal company.
Contaminated packaging Dispose of as unused product.
Avoid release to the environment

SECTION 14- TRANSPORTATION
D.O.T., IMDG and IATA: Not regulated for transport
SECTION 15 - REGULATORY INFORMATION

SARA 311/312 Hazards       Acute health hazard, Chronic health hazard

Substances listed on the U.S. Toxic Substances Control Act (TSCA) inventory:

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium oxide</td>
<td>12137-20-1</td>
</tr>
<tr>
<td>Titanium oxide</td>
<td>1344-54-3</td>
</tr>
<tr>
<td>Rutile</td>
<td>1317-80-2</td>
</tr>
<tr>
<td>Manganese silicide</td>
<td>12032-86-9</td>
</tr>
<tr>
<td>Nickel oxide</td>
<td>1313-99-1</td>
</tr>
</tbody>
</table>

Substances listed on U.S. State Regulation lists:

<table>
<thead>
<tr>
<th>List</th>
<th>Substance</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts – Right to Know</td>
<td>Nickel oxide</td>
<td>1313-99-1</td>
</tr>
<tr>
<td>Pennsylvania – Right to Know (RTK) List</td>
<td>Rutile</td>
<td>1317-80-2</td>
</tr>
<tr>
<td>Pennsylvania – RTK List</td>
<td>Nickel oxide</td>
<td>1313-99-1</td>
</tr>
<tr>
<td>Pennsylvania – RTK Environmental Haz</td>
<td>Nickel oxide</td>
<td>1313-99-1</td>
</tr>
<tr>
<td>Pennsylvania – RTK Special Hazard Subs</td>
<td>Nickel oxide</td>
<td>1313-99-1</td>
</tr>
<tr>
<td>California – Proposition 65</td>
<td>Nickel oxide</td>
<td>1313-99-1</td>
</tr>
</tbody>
</table>

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

SECTION 16 - OTHER INFORMATION

Further information:
Judgments as to the suitability of information herein or the purchaser's purposes are necessarily the purchaser's responsibility. The above information does not represent any guarantee of the properties of the product. It is believed to be correct, but does not purport to be all inclusive and should be used only as a guide. Reasonable care has been taken in the preparation of this material, and is based on the present state of our knowledge.

Superior Flux & Mfg. Co. shall not be held liable for any damage resulting from handling or from contact with the above product. There are NO WARRANTIES, NO REPRESENTATIONS AND NO RESPONSIBILITY AS TO THE ACCURACY OR THE SUITABILITY OF THIS INFORMATION FOR ANY PURCHASER'S USE OR FOR ANY CONSEQUENCE TO USE.

Reference(s):
EWI SDS

Preparation information
Superior Flux & Mfg. Co.
440-349-3000

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