Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 05/18/2015 Reviewed on 05/18/2015

1 Identification

· **Product identifier**

· **Trade name: Nickel 40-50-60 Alloy Cast Rods**
· **Product size:** Variable

· **Article number:** Alloy 40, 50, 50M, 56, 60 Cast Rods

· **Other means of identification**
· **SDS Number** No other identifiers

· **Recommended use and restriction on use**
· **Recommended use:** Gas Tungsten Arc Welding (GTAW)
· **Restrictions on use:** No further relevant information available.

· **Manufacturer/Importer/Supplier/Distributor information**
· **Manufacturer/Supplier:**
Weartech International Inc.
1177 N. Grove St.
Anaheim, CA 92806
(714) 683-2430

· **Safety Data Sheet Questions:** weartech_sales@weartech.net
· **Arc Welding Safety Information:** www.lincolnelectric.com/safety

· **24-Hour Emergency Response Telephone Numbers:**

· **Area**	**Telephone**
USA/Canada/Mexico	+1 (888) 609-1762
Americas/Europe	+1 (216) 383-8962
Asia Pacific	+1 (216) 383-8966
Middle East/Africa	+1 (216) 383-8969

· **3E Company Access Code:** 333988

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

· **Classification of the substance or mixture**
The product is not classified as hazardous according to the Globally Harmonized System (GHS).
· **Additional information:** 0 percent of the mixture consists of ingredient(s) of unknown toxicity.

· **Label elements**
· **GHS label elements**
This product does not have a classification according to the CLP regulation.
The product is not classified as hazardous according to OSHA GHS regulations within the United States.

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· **Hazard pictograms** Not Regulated
· **Signal word** Not Regulated

· **Hazard-determining components of labeling:** None.
· **Hazard statements** Not Regulated
· **Precautionary statements** Not Regulated
· **Additional information:**
· **Other hazards which do not result in GHS classification:**
Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting , kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.
· **Hazard description:**
· **WHMIS-symbols:** Not hazardous under WHMIS.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**		
7440-02-0	nickel	65-85%
7440-47-3	chromium	3-20%
7439-89-6	iron	2-5%
7440-21-3	silicon	1-5%
7440-48-4	cobalt	0-2%
7440-44-0	carbon	0-1%

· **Substance(s) formed under the conditions of use:**
The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below:

630-08-0	carbon monoxide
10028-15-6	ozone
	hexavalent chromium

· **Additional information:** For the wording of the listed risk phrases refer to section 16.
· **Composition comments:**
The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional nonhazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

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4 First-aid measures

· **Description of first aid measures**
· **General information:** No special measures required.
· **After inhalation:**
Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.
· **After skin contact:**
Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.
· **After eye contact:**
Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.
· **After swallowing:**
Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed**
Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.
· **Danger**
Welding hazards are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to welding fume or dust. Refer to Section 11 for more information.
· **Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
As shipped, the product will not burn. In case of fire in the surroundings :use appropriate extinguishing agent.
For metal fires: Use specific agents only.
· **For safety reasons unsuitable extinguishing agents:** For metal fires: Use specific agents only.
· **Special hazards arising from the substance or mixture**
Welding arc and sparks can ignite combustibles and flammable products.

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· **Advice for firefighters**
· **Special fire fighting procedures:**
Use standard firefighting procedures and consider the hazards of other involved materials.
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
· **Additional information**
Read and understand American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" and National Fire rotection Association NFPA 51B, "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" before using this product.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.
· **Environmental precautions:**
Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
· **Methods and material for containment and cleaning up:**
Clean up spills immediately, observing precautions in the personal protective equipment in Section 8.
Avoid generating dust. Prevent product from entering any drains, sewers or water sources.
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose contaminated material as waste according to item 13.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Prevent formation of dust.
Ensure good ventilation/exhaustion at the workplace.
Any deposit of dust which cannot be avoided must be regularly removed.
Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, http://pubs.aws.org and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.

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· **Information about storage in one common storage facility:** No special requirements.
· **Further information about storage conditions:** No special requirements.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**
· **Exposure Guidelines:**
Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Sections 2,3, 8 10, and 11 for information on potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.
· **Components with limit values that require monitoring at the workplace:**
These components may be present

Calcium Fluoride	
ACGIH TWA (USA)	Long-term value: 2.5 mg/m³
OSHA PEL (USA)	Long-term value: 2.5 mg/m³
STEL (Canada)	Short-term value: 5 mg/m³ Provinces: NT, NU, SK
TWA (Canada)	Long-term value: 2.5 mg/m³ Provinces: AB, BC, MB, NB, NL, NT, NU, ON, PE, QC,
TWA (Canada)	Short-term value: 2.5 mg/m³ Provinces: YT
CPT (Mexico)	Long-term value: 2.5 mg/m³
Carbon (as Carbon Black)	
ACGIH TWA (USA)	Long-term value: 3 mg/m³
STEL (Canada)	Short-term value: 7 mg/m³ Provinces: NT, NU, SK, YT
TWA (Canada)	Long-term value: 3.5 mg/m³ Provinces: All except BC, ON
TWA (Canada)	Long-term value: 3 mg/m³ Provinces: BC, ON
CPT (Mexico)	Long-term value: 2 mg/m³
Chromium	
ACGIH TWA (USA)	Long-term value: 0.5 mg/m³
NIOSH REL (USA)	Long-term value: 0.5 mg/m³
OSHA PEL (USA)	Long-term value: 1 mg/m³
US IDLH (USA)	Ceiling limit value: 250 mg/m³ IDLH - Immediately Dangerous to Life or Health

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STEL (Canada)	Short-term value: 1.5 mg/m³ Provinces: AB, BC, NL, NU, ON, PE, QC, SK
STEL (Canada)	Short-term value: 0.3 mg/m³ Provinces: YT
TWA (Canada)	Long-term value: 0.5 mg/m³ Provinces: AB, BC, NL, NU, ON, PE, QC, SK
TWA (Canada)	Long-term value: 0.1 mg/m³ Provinces: YT
CPT (Mexico)	Long-term value: 0.5 mg/m³
Cobalt	
ACGIH TWA (USA)	Long-term value: 0.02 mg/m³
NIOSH REL (USA)	Long-term value: 0.05 mg/m³ Dust and Fume
OSHA PEL (USA)	Long-term value: 1 mg/m³ Dust and Fume
STEL (Canada)	Short-term value: 0.15 mg/m³ Provinces: YT
STEL- (Canada)	Short-term value: 0.3 mg/m³ Provinces: NT, NU
STEL (Canada)	Short-term value: 0.06 mg/m³ Provinces: SK
TWA (Canada)	Long-term value: 0.02 mg/m³ Provinces: AB, BC, MB, NB, NL, NS, ON, PE, QC, SK
TWA- (Canada)	Long-term value: 0.1 mg/m³ Provinces: NT, NU
TWA (Canada)	Long-term value: 0.05 mg/m³ Provinces: YT
CPT (Mexico)	Long-term value: 0.1 mg/m³
Iron	
ACGIH TWA (USA)	Short-term value: 10 mg/m³ Long-term value: 10 mg/m³
STEL (Canada)	Short-term value: 10 mg/m³ Provinces: YT
STEL (Canada)	Short-term value: 10 (iron oxide fume) mg/m³ Provinces: NT, NU
TWA (Canada)	Long-term value: 5 (respirable iron oxide) mg/m³ Provinces: AB, BC, ON, QC, SK, YT
TWA- (Canada)	Long-term value: 10 mg/m³ Provinces: NL, NS, PE
TWA (Canada)	Long-term value: 5 (iron oxide fune) mg/m³ Provinces: NT, NU
CTT / CPT (Mexico)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as iron oxide

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Magnesium Oxide	
ACGIH TWA (USA)	Long-term value: 4 / 1.5 mg/m³ inhalable fraction / respirable fraction
OSHA PEL (USA)	Long-term value: 15 mg/m³ vacated
US UDLH (USA)	Long-term value: 4 / 1.5 mg/m³ Ceiling limit value: 500 mg/m³ IDLH - Immediately Dagnerous to Life or Health
STEL (Canada)	Short-term value: 20 mg/m³ Provinces: NT, NU, SK
TWA (Canada)	Long-term value: 10 (inhalable fraction) mg/m³ Provinces: AB, BC, NU, ON, QC, SK
TWA (Canada)	Long-term value: 3 (respirable) mg/m³ Provinces: BC
CPT (Mexico)	Long-term value: 10 mg/m³
Manganese	
ACGIH TWA (USA)	Long-term value: 0.02 / 0.1 mg/m³ repirable / inhalable fractions
NIOSH REL (USA)	Short-term value: 3 (STEL) mg/m³ Long-term value: 1 (TWA) mg/m³ Ceiling limit value: 500 (IDLH) mg/m³ IDLH - Immediately Dagnerous to Life or Health
OSHA PEL (CEILING) (USA)	Ceiling limit value: 5 mg/m³
STEL (Canada)	Short-term value: 0.6 mg/m³ Provinces: SK
STEL (Canada)	Short-term value: 0.6 mg/m³ Long-term value: 1 / 3 (fume/total) mg/m³ Provinces: NT, NU
TWA (Canada)	Long-term value: 0.2 mg/m³ Provinces: AB, SK
TWA- (Canada)	Long-term value: 0.02 (respirable) mg/m³ Provinces: NL, PE
TWA= (Canada)	Long-term value: 0.1 (inhalable) mg/m³ Provinces: NL, PE
TWA (Canada)	Long-term value: 0.2 (inhalable fraction) mg/m³ Provinces: BC, ON, QC
CPT / CTT (Mexico)	Short-term value: 3 (CTT) mg/m³ Long-term value: 1 (CPT) mg/m³
Nickel	
ACGIH TWA (USA)	Long-term value: 1.5 mg/m³
NIOSH REL (USA)	Long-term value: 0.015 mg/m³ Ceiling limit value: 10* mg/m³ * IDLH - Immediately Dagnerous to Life or Health

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OSHA PEL (USA)	Long-term value: 1 mg/m³
STEL (Canada)	Long-term value: 2 (elemental) mg/m³ Provinces: NT, NU
STEL- (Canada)	Long-term value: 0.6 / 3 * mg/m³ Provinces: SK. (* - insoluble / elemental)
TWA (Canada)	Long-term value: 1.5 (elemental) mg/m³ Provinces: AB, MB, NB, NL, NS, PE, SK
TWA- (Canada)	Long-term value: 0.05 (elemental) mg/m³ Provinces: BC. Also valid for insoluble Co.
TWA= (Canada)	Long-term value: 0.2 (insoluble) mg/m³ Provines: AB, MB, NB, NL, NS, ON, PE, SK
TWA (Canada)	Long-term value: 1 (elemental) mg/m³ Provinces: NU, NT, ON, QC*, YT* (*-insoluble also)
CPT (Mexico)	Long-term value: 1 mg/m³
Silicon	
NIOSH REL (USA)	Long-term value: 10 / 5 mg/m³ total / respirable dusts
OSHA PEL (USA)	Long-term value: 15 / 5 mg/m³ total / respirable dusts
STEL (Canada)	Short-term value: 20 mg/m³ Provinces: SK
TWA (Canada)	Long-term value: 10 mg/m³ Provinces: ON, QC, SK - total dust / BC - PNOC.
CPT / CTT (Mexico)	Short-term value: 20 (CTT) mg/m³ Long-term value: 10 (CPT) mg/m³
Titanium Dioxide	
ACGIH TWA (USA)	Long-term value: 10 mg/m³
NIOSH REL (USA)	Ceiling limit value: 5000* mg/m³ * IDLH - Immediately Dagnerous to Life or Health
OSHA PEL (USA)	Long-term value: 15 mg/m³ Vacated
STEL (Canada)	Short-term value: 20 mg/m³ Long-term value: 10 mg/m³ Provinces: SK, YT
TWA (Canada)	Short-term value: 20 (CTT) mg/m³ Long-term value: 10 mg/m³ Provinces: AB, BC, MB, NB, NL, NS, ON, PE, QC, SK,
TWA (Canada)	Long-term value: 5 (respirable) mg/m³ Provinces: NT, NU
CPT / CTT (Mexico)	Short-term value: 20 (CTT) mg/m³ Long-term value: 10 (CPT) mg/m³

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· **Ingredients with biological limit values:**	
7440-48-4 cobalt	
BEI (USA)	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background) 1 µg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)
7789-75-5 calcium fluoride	
BEI (USA)	2 mg/L Medium: urine Time: prior to shift Parameter: Fluoride (background, nonspecific) 3 mg/L Medium: urine Time: end of shift Parameter: Fluoride (background, nonspecific)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.
Keep away from foodstuffs, beverages and feed.
· **Engineering controls:** No further relevant information available.
· **Ventilation**
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 . Keep exposure as low as possible.
· **Breathing equipment:**
Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

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· **Protection of hands:**

Thermally-protective gloves.

Suitable gloves can be recommended by the glove supplier.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes. No specific lens shade recommendation for submerged arc processes. Shield others by providing screens and flash goggles.

Safety glasses

· **Body protection:**

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See 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. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact skin or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

· **Limitation and supervision of exposure into the environment** No special requirements.
· **Risk management measures** No special requirements.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

Form:	Solid material
Color:	According to product specification

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· **Odor:**	Odorless
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not determined.
· **Auto-ignition temperature:**	Not determined.
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not self-igniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapour density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Insoluble.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** The product is non-reactive under normal conditions of use, storage and transport.
· **Chemical stability** Stable under normal temperatures and pressures.
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **Possibility of hazardous reactions** Reacts with strong acids and alkali.
· **Conditions to avoid** Avoid heat or contamination.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Hazardous decomposition Welding fumes and gases cannot be classified simply. The composition and products: 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

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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 the worker 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 and 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. 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. Reasonably expected fume constituents produced during arc welding include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the welding fume of consumables which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

11 Toxicological information

· **Information on likely routes of exposure**
· **Ingestion:**
Unlikely route of exposure.
Health injuries from ingestion are not known or expected under normal use.
· **Inhalation:**
Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure.
· **Skin Contact:** Arc rays can burn skin. Skin cancer has been reported.
· **Eye Contact:** Arc rays can injure eyes.
· **Information on toxicological effects**
· **Inhalation**
Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans.
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
7439-96-5 manganese		
Oral	LD50	9000 mg/kg (rat)

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **in the respiratory system:** No irritating effect.
· **Sensitization:** No sensitizing effects known.

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· **Additional toxicological information:**
Overexposure to manganese fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.

Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.
· **NTP (National Toxicology Program)**
None of the ingredients is listed.
· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

· **Other information relevant to carcinogenicity**
Cancerous lesions have been reported in persons exposed to arc rays.
· **Germ cell mutagenicity**
· **In vitro:** Not classified
· **In vivo** Not classified
· **Reproductive toxicity** Not classified
· **Specific target organ toxicity - single exposure** Not classified
· **Specific target organ toxicity - repeated exposure** Not classified
· **Aspiration hazard** Not classified

12 Ecological information

· **Persistence and degradability**
Inorganic product, is not eliminable from water by means of biological cleaning processes.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Negative ecological effects are, according to the current state of knowledge, not expected.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**	
· **DOT, ADR, ADN, IMDG, IATA**	Not Regulated
· **UN proper shipping name**	
· **DOT, ADR, ADN, IMDG, IATA**	Not Regulated
· **Transport hazard class(es)**	
· **DOT, ADR, ADN, IMDG, IATA**	
· **Class**	Not Regulated
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	Not Regulated
· **Environmental hazards:**	
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **US Federal Regulations**
None of the ingredients is listed.

· **US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**
None present or none present in regulated quantities.

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· **SARA**
· **Hazard categories**
Acute (Immediate): Y Chronic (Delayed): Y Fire: N
Reactive: N Pressure Generating: N

· **Section 302 (extremely hazardous substances)**
None of the ingredients is listed.

· **Section 304 (emergency release notification)**	
7439-96-5	manganese
7440-48-4	cobalt
7440-02-0	nickel

· **Sections 311/312 (hazardous chemical threshold planning quantity in pounds)**	
nickel	100
chromium	5,000

· **Section 313 (TRI reporting)**
TRI reporting thresholds: Manufacturing and Processing (lbs.) / Other Users (lbs.)

7439-96-5	manganese	25,000 / 10,000
7440-48-4	cobalt	25,000 / 10,000
7440-02-0	nickel	25,000 / 10,000
7440-47-3	chromium	25,000 / 10,000

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **CERCLA Hazardous Substance List (40 CFR 302.4):**	
7439-96-5	manganese
7440-02-0	nickel
7440-48-4	cobalt
7440-47-3	chromium

· **TSCA (Toxic Substances Control Act):**
On or in compliance with the inventory.

· **Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**
None present or none present in regulated quantities.
· **Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**
None present or none present in regulated quantities.
· **Proposition 65 (California)**
WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)
· **Chemicals known to cause cancer:**
References to chemical components listed below are based on unbound respirable particles and are not generally applicable to product as supplied.

13463-67-7	titanium dioxide
7440-48-4	cobalt

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· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients are listed.
· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.
· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**		
7439-96-5	manganese	D

· **TLV (Threshold Limit Value established by ACGIH)**		
7789-75-5	calcium fluoride	A4
13463-67-7	titanium dioxide	A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
13463-67-7	titanium dioxide

· **State Right to Know Listings**

· **US. New Jersey Worker and Community Right-to-Know Act**
nickel
calcium fluoride
titanium dioxide
manganese
cobalt

· **US. Massachusetts RTK - Substance List**
Cobalt
titanium dioxide
manganese
quartz
nickel

· **US. Pennsylvania RTK - Hazardous Substances**
cobalt
calcium fluoride
titanium dioxide
manganese
nickel

· **US. Rhode Island RTK**
cobalt
manganese
nickel

· **Canada**
· **Canadian Controlled Products Regulations:** Not hazardous under WHMIS.

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· **Canadian substance listings:**

· **Canadian Domestic Substances List (DSL)**	
One or more components are not listed or are exempt from listing.	
· **Canada Non-Domestic Substances List (NDSL)**	
One or more components are not listed or are exempt from listing.	
· **Canadian Ingredient Disclosure list (limit 0.1%)**	
None of the ingredients is listed.	
· **Canadian Ingredient Disclosure list (limit 1%)**	
7440-02-0	nickel
7440-48-4	cobalt

· **Inventory Status**
Australia AICS: On or in compliance with the inventory

EINECS, ELINCS or NLP: On or in compliance with the inventory

Japan (ENCS) List: One or more components are not listed or are exempt from listing.
Japan ISHL Listing: One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing: One or more components are not listed or are exempt from listing.

China Inv. Existing Chemical Substances: One or more components are not listed or are exempt from listing.

Korea Existing Chemicals Inv. (KECI): On or in compliance with the inventory.

Philippines PICCS: One or more components are not listed or are exempt from listing.

New Zealand Inventory of Chemicals: On or in compliance with the inventory

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

· **Date of preparation / last revision** 05/18/2015 / -

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

· **Definitions:**
The Maximum Fume Exposure Guideline™ (MFEG)™ is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The MFEG™ is an estimate of the level of total welding fume

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exposure for a given product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. The MFEG™ never exceeds 5.0 mg/m3 which is the maximum recommended exposure limit for total welding fume. The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents.

The Maximum Dust Exposure Guideline™ (MDEG)™ is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. The MDEG™ is never greater than 10.0 mg/m³ as this is the airborne exposure guideline for total particulate (total dust). The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents.

· **Sources**

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· **Disclaimer:**

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