

# MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards. This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard (29 CFR 1910.1200). Other government regulations must be reviewed for applicability to these products.

**WARNING: PRODUCT COMPONENTS PRESENT HEALTH AND SAFETY HAZARDS. READ AND UNDERSTAND THIS MATERIAL SAFETY DATA SHEET (M.S.D.S.). ALSO, FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.** The information contained herein relates only to the specific product. If the product is combined with other materials, all component properties must be considered. **BE SURE TO CONSULT THE LATEST VERSION OF THE MSDS. MATERIAL SAFETY DATA SHEETS ARE AVAILABLE FROM AUFHAUSER CORPORATION.**

## STATEMENT OF LIABILITY-DISCLAIMER

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## PART I What is the material and what do I need to know in an emergency?

### 1. PRODUCT IDENTIFICATION

**TRADE NAME (AS LABELED):** NICKELROD #33 and #42  
**CHEMICAL NAME/CLASS:** Coated Nickel Base Alloy  
**SYNONYMS:** Not Applicable  
**PRODUCT USE:** Metal Welding  
**SUPPLIER/MANUFACTURER'S NAME:** Aufhauser Corporation  
**ADDRESS:** 39 West Mall, Plainview, NY 11803  
**EMERGENCY PHONE:** (516) 694-8696  
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**DATE OF PREPARATION:** July 17, 2007

### 2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH – TLV		OHS – PEL		NIOSH IDLH MG/M <sup>3</sup>	OTHER MG/M <sup>3</sup>
			TWA MG/M <sup>3</sup>	STEL MG/M <sup>3</sup>	TWA MG/M <sup>3</sup>	STEL MG/M <sup>3</sup>		

#### COMPONENT 1: METAL ELECTRODES

NICKEL	7440-02-0	BALANCE	1	NE	1	NE	10	NIOSH REL: TWA = 0.015 CARCINOGEN: EPA-A, IARC-2B, MAK-A1, NIOSH-X, NTP-2B
COPPER (EXPOSURE LIMITS ARE FOR COPPER FUME, AS COPPER)	7440-50-8	38	0.2	NE	0.1	NE	100	NIOSH REL: 0.1 DFG MAK: 0.1 (RESPIRABLE FRACTION)
SILICON	7440-21-3	2	10	NE	15 (TOTAL DUST) 5 (RESPIRABLE DUST) 10 (TOTAL DUST) (VACATED 1989 PEL)	NE	NE	NIOSH REL: TWA = 10 (TOTAL DUST), 5 (RESPIRABLE FRACTION)

## 2. COMPOSITION and INFORMATION ON INGREDIENTS (continued)

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH – TLV		OSHA – PEL		NIOSH IDLH MG/M <sup>3</sup>	OTHER MG/M <sup>3</sup>
			TWA MG/M <sup>3</sup>	STEL MG/M <sup>3</sup>	TWA MG/M <sup>3</sup>	STEL MG/M <sup>3</sup>		

### COMPONENT 1: METAL ELECTRODES (CONTINUED)

TITANIUM DIOXIDE	13463-67-7	15	10, A4 (NOT CLASSIFIABLE AS A HUMAN CARCINOGEN)	NE	15 (TOTAL DUST) 10 (VACATED 1989 PEL)	NE	5000	NIOSH REL: LOWEST FEASIBLE CONCENTRATION (LOQ 0.2 MG/M <sup>3</sup> ) DFG MAK: TWA = 1.5 (RESPIRABLE FRACTION) DFG MAK PREGNANCY RISK CLASSIFICATION: C CARCINOGEN: IARC-3. NIOSH-CA, TLV-A4
NIObIUM	7440-03-1	5	NE	NE	NE	NE	NE	NE
CHROMIUM	7440-47-3	25	0.5, A4 (NOT CLASSIFIABLE AS A HUMAN CARCINOGEN)	NE	0.5	NE	250	NIOSH REL: TWA = 0.5 CARCINOGEN: EPA-D, EPA-CBD. IARC-3, TLV-A4
MOLYBDENUM	7439-98-7	5	10 NIC: 3 (RESPIRABLE FRACTION)	NE	15 (TOTAL DUST) 10 (VACATED 1989 PEL)	NE	5000	DFG MAK: TWA = 4 (INHALABLE FRACTION)
IRON (EXPOSURE LIMITS ARE FOR IRON OXIDE DUST AND FUME, AS FE)	7439-89-6	2	5, A4 (NOT CLASSIFIABLE AS A HUMAN CARCINOGEN)	NE	10	NE	2500	NIOSH REL: TWA = 5 DFG MAK: TWA = 6 (RESPIRABLE FRACTION) CARCINOGEN: IARC-3, TLV-A4
MANGANESE (EXPOSURE LIMITS ARE FOR MANGANESE, ELEMENTAL INORGANIC COMPOUNDS, AND FUME, AS MN)	7439-96-5	4	0.2	NE	1 (VACATED 1989 PEL)	5 (CEILING) 3 (VACATED 1989 PEL)	500	NIOSH REL: TWA = 1 STEL = 3 DFG MAKs: TWA = 0.5 (INHALABLE FRACTION) PEAK = 10•MAK 30MIN., AVERAGE VALUE DFG MAK PREGNANCY RISK CLASSIFICATION: C CARCINOGEN: EPA-D

### COMPONENT 2: FLUX COATING ON ELECTRODES

POTASSIUM COMPOUND SODIUM COMPOUND		20	NE	NE	NE	NE	NE	NE
FLUORIDE COMPOUNDS (EXPOSURE LIMITS ARE FOR FLUORIDES, AS FLUORINE)		5-20	2.5, A4 (NOT CLASSIFIABLE AS A HUMAN CARCINOGEN)	NE	2.5	NE	NE	DFG MAKs: TWA = 2.5 (INHALABLE FRACTION) PEAK = 5•MAK 30MIN., AVERAGE VALUE CARCINOGEN: IARC-3, TLV-A4
CALCIUM OXIDE	1305-78-8	15-20	2	NE	5	NE	25	NIOSH REL: TWA = 2 DFG MAK: TWA = 5 (TOTAL RESPIRABLE DUST FRACTION)

NE = Not Established. See Section 16 for Definitions of Terms Used.

NOTE (1): The ACGIH has an established exposure limit for Welding Fumes, Not Otherwise Classified. The Threshold Limit Value is 5 mg/m<sup>3</sup>. NIOSH classifies welding fumes as carcinogens. Single values shown are maximum, unless otherwise noted.

NOTE (2): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

## 2. COMPOSITION and INFORMATION ON INGREDIENTS (continued)

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH – TLV		OSHA – PEL		NIOSH IDLH MG/M <sup>3</sup>	OTHER  MG/M <sup>3</sup>
			TLV MG/M <sup>3</sup>	STEL MG/M <sup>3</sup>	PEL MG/M <sup>3</sup>	STEL MG/M <sup>3</sup>		

### COMPONENT 2: FLUX COATING ON ELECTRODES (CONTINUED)

DIATOMACEOUS EARTH	61790-53-2	5-15	10 (INHALABLE PARTICULATE) 3 (RESPIRABLE PARTICULATE)	NE	20 MPPCF <u>80 MG/M<sup>3</sup></u> % SiO <sub>2</sub>		3000	NIOSH REL: TWA = 6 DFG MAK: TWA = 4 (INHALABLE FRACTION) DFG MAK PREGNANCY RISK CLASSIFICATION: C CARCINOGEN: IARC-3
IRON	7439-89-6	15	5, A4 (NOT CLASSIFIABLE AS A HUMAN CARCINOGEN)	NE	10	NE	2500	NIOSH REL: TWA = 5 DFG MAK: TWA = 6 (MEASURED AS THE INHALABLE FRACTION OF THE AEROSOL)
TITANIUM DIOXIDE	13463-67-7	15	10, A4 (NOT CLASSIFIABLE AS A HUMAN CARCINOGEN)	NE	15 (TOTAL DUST) 10 (VACATED 1989 PEL)	NE	5000	NIOSH REL: LOWEST FEASIBLE CONCENTRATION (LOQ 0.2 MG/M <sup>3</sup> ) DFG MAK: TWA = 1.5 (RESPIRABLE FRACTION) DFG MAK PREGNANCY RISK CLASSIFICATION: C CARCINOGEN: IARC-3. NIOSH-CA, TLV-A4
ALUMINUM OXIDE	1344-28-1	10	10, A4 (NOT CLASSIFIABLE AS A HUMAN CARCINOGEN)	NE	15 (TOTAL DUST) 10 (VACATED 1989 PEL)	NE	NE	DFG MAK: TWA = 6 (FUME)
MANGANESE TETRAOXIDE (EXPOSURE LIMITS ARE FOR MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, AS MANGANESE)	1317-35-7	5	0.2	NE	NE	5 CEILING	500	NIOSH REL: TWA = 1 STEL = 3 DFG MAK: 0.5 (TOTAL RESPIRABLE DUST FRACTION) DFG MAK PREGNANCY RISK CLASSIFICATION: C CARCINOGEN: EPA-D

NE = Not Established. See Section 16 for Definitions of Terms Used.

NOTE (1): The ACGIH has an established exposure limit for Welding Fumes, Not Otherwise Classified. The Threshold Limit Value is 5 mg/m<sup>3</sup>. NIOSH classifies welding fumes as carcinogens. Single values shown are maximum, unless otherwise noted.

NOTE (2): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

## 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** These products consist of flux coated rods that are odorless electrodes. There are no immediate health hazards associated with the electrode form of these products. The Nickel component of these products is a carcinogen. These products are not flammable nor reactive. If involved in a fire, these products may generate irritating iron fumes, a variety of iron compounds, carbon dioxide, carbon monoxide, and metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** During welding operations, the most significant route of over-exposure is via inhalation of fumes.

**INHALATION:** Inhalation is not anticipated to be a significant route of over-exposure to the coated electrodes. Inhalation of copper oxide fumes, which may be generated by these products during welding operations, can cause metal fume fever. Repeated over-exposures, via inhalation, to the dusts or fumes generated by these products during welding operations may have adverse effects on the lungs with possible asthma and pneumonitis (life-threatening respiratory conditions). Chronic over-exposure to Copper dust may cause tiredness, stuffiness, diarrhea, and vomiting. Refer to Section 10 (Stability and Reactivity) for information on the specific composition of welding fumes and gases.

**CONTACT WITH SKIN or EYES:** Contact of these products with the skin is not anticipated to be irritating. Contact with these products can be physically damaging to the eye (i.e., foreign object). Fumes generated during welding operations can be irritating to the skin and eyes. Symptoms of skin over-exposure may include irritation and redness; prolonged or repeated skin over-exposures may lead to allergic contact dermatitis. Symptoms of eye over-exposure may include irritation, redness, and conjunctivitis. Contact with hot electrodes will burn contaminated skin or eyes.

### 3. HAZARD IDENTIFICATION (continued)

**SKIN ABSORPTION:** Skin absorption is not known to be a significant route of over-exposure for any component of these products.

**INGESTION:** Ingestion is not anticipated to be a route of occupational exposure for these products.

**INJECTION:** Though not a likely route of occupational exposure for these products, injection (via punctures or lacerations in the skin) may cause local reddening, tissue swelling, and discomfort.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.** Symptoms associated with overexposure to these products and the fumes generated during welding operations are as follows:

**ACUTE:** The chief acute health hazard associated with these products would be the potential for irritation of contaminated skin and eyes when exposed to fumes during welding operations. Inhalation of copper oxide fumes can cause metal fume fever. Rare cases of allergic contact dermatitis have been reported in people working with copper dust. Severe ingestion over-exposure to Copper (a component of these products) may be fatal. Contact with the hot electrode will burn contaminated skin or eyes.

**CHRONIC:** Chronic skin over-exposure to the fumes generated during welding operations may produce dermatitis (red, inflamed skin). Repeated over-exposures, via inhalation, to the dusts or fumes generated by these products during welding operations may have adverse effects on the lungs with possible asthma and pneumonitis (life-threatening respiratory conditions). Nickel (a component of these products) is a carcinogen. Hypersensitivity to Nickel can cause allergic contact dermatitis, asthma, conjunctivitis, and inflammatory reactions around nickel-containing medical implants and prostheses. Chronic over-exposure to Copper dust may cause tiredness, stuffiness, diarrhea, vomiting, discoloration of the skin and eyes, and kidney and liver disorder.

**TARGET ORGANS:** For fumes: ACUTE: Skin, eyes, respiratory system. CHRONIC: Skin, Respiratory

## PART II *What should I do if a hazardous situation occurs?*

### 4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

**SKIN EXPOSURE:** If fumes generated by welding operations involving this product contaminate the skin, begin decontamination with running water. If molten material contaminates the skin, immediately begin decontamination with cold, running water. Minimum flushing is for 15 minutes. Victim must seek medical attention if any adverse reaction occurs.

**EYE EXPOSURE:** If fumes generated by welding operations involving this product enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

**INHALATION:** If fumes generated by welding operations involving this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

**INGESTION:** Ingestion is not a likely route of exposure for this product. If swallowed call physician immediately! Do not induce vomiting unless directed by medical personnel. Rinse mouth with water if person is conscious. Never give fluids or induce vomiting if person is unconscious, having convulsions, or not breathing.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Dermatitis, other skin conditions, asthma, and other respiratory disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by these products.

**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** Not flammable.

**AUTOIGNITION TEMPERATURE:** Not flammable.

**FLAMMABLE LIMITS (in air by volume, %):**

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

**FIRE EXTINGUISHING MATERIALS:**

Water Spray: YES Carbon Dioxide: YES

Halon: YES Foam: YES

Dry Chemical: YES Other: Any "ABC" Class

**UNUSUAL FIRE AND EXPLOSION HAZARDS** In the heat of a fire, the product may produce fumes containing copper, manganese, silicon and other metal oxides.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Not applicable.

### 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** Not applicable.

## PART III *How can I prevent hazardous situations from occurring?*

### 7. HANDLING AND STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** Do not eat or drink while handling these products. Use ventilation and other engineering controls to minimize potential exposure to these products.

**STORAGE AND HANDLING PRACTICES:** All employees who handle this material should be trained to handle it safely. Use in a properly ventilated location. Avoid breathing fumes of these products during welding or brazing operations. When these products are used during welding or brazing operations, follow the requirements of the Federal Occupational Safety and Health Welding and Cutting Standard (29 CFR 1910 Subpart Q) and the safety standards of the American National Standards Institute for welding and cutting (ANSI Z49.1). Store packages in a cool, dry location. Storage in an atmosphere that is wet, moist, or highly humid may lead to corrosion of these products. Store away from incompatible materials (see Section 10, Stability and Reactivity). Store packages in a cool, dry location. Storage in an atmosphere that is wet, moist, or highly humid may lead to corrosion of these products. Store away from incompatible materials (see Section 10, Stability and Reactivity).

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Not applicable.

### 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients). Prudent practice is to ensure eyewash/safety shower stations are available near areas where these products are used.

**RESPIRATORY PROTECTION:** Maintain airborne contaminant concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed (i.e. a Weld Fume Respirator, or Air-Line Respirator for welding in confined spaces), U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Respiratory Protection is recommended to be worn during welding operations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). Respiratory protection guidelines for Copper and Nickel are provided as follows:

COPPER

CONCENTRATION	RESPIRATORY PROTECTION
Up to 5 mg/m <sup>3</sup> :	Dust and mist respirator.
Up to 10 mg/m <sup>3</sup> :	Dust and mist respirator except single-use and quarter-mask respirator (if not present as a fume); or Supplied Air Respirator (SAR).
Up to 25 mg/m <sup>3</sup> :	Powered air-purifying respirator with dust and mist filter(s); or SAR operated in a continuous-flow mode.
Up to 50 mg/m <sup>3</sup> :	Full-facepiece respirator with high-efficiency particulate filter(s); or full-facepiece Self-Contained Breathing Apparatus (SCBA); or full-facepiece SAR; or powered air-purifying respirator with tightfitting facepiece and high-efficiency particulate filter.
Up to 100 mg/m <sup>3</sup> :	Positive pressure, full-facepiece SAR. (continued on next page)
Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions:	Positive pressure, full-facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.
Escape:	Full-facepiece respirator with high-efficiency particulate filter(s); or escape-type SCBA.

NICKEL

CONCENTRATION	RESPIRATORY PROTECTION
At Concentrations Above the NIOSH REL or, Where There is no REL, at any Detectable Concentration:	Positive pressure, full-facepiece SCBA or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.
Escape:	Full-facepiece respirator with high-efficiency particulate filter(s) or escape-type SCBA
<b>EYE PROTECTION:</b>	Safety glasses. When these products are used in conjunction with welding or brazing, wear safety glasses, goggles, or face-shield with filter lens of appropriate shade number (per ANSI Z49.1-1988, "Safety in Welding and Cutting").
<b>HAND PROTECTION:</b>	Wear welding gloves for routine industrial use. When these products are used in conjunction with welding or brazing, wear gloves that protect from sparks and flame (per ANSI Z49.1-1988, "Safety in Welding and Cutting").
<b>BODY PROTECTION:</b>	Wear body protection appropriate for task.

### 9. PHYSICAL and CHEMICAL PROPERTIES

The following information is for elemental nickel:

**RELATIVE VAPOR DENSITY (air = 1):** Not Applicable

**SPECIFIC GRAVITY @ 20°C (water = 1):** 8.9

**SOLUBILITY IN WATER:** Insoluble

**VAPOR PRESSURE, mm Hg @ 20°C:** Approximately 0.

**ODOR THRESHOLD:** Not Applicable

**COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT):** Not established

The following information is for these products:

**APPEARANCE AND COLOR:** These products consist of flux coated rods that are odorless, electrodes.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** The appearance is a distinctive characteristic of these products.

**EVAPORATION RATE (nBuAc = 1):** 1.5

**FREEZING/MELTING POINT:** : 1455 °C (2651 °F)

**pH:** Not Applicable

**BOILING POINT:** : 2900 °C (5252°F)









