

## Material Safety Data Sheet (MSDS)

### 1. PRODUCT AND COMPANY IDENTIFICATION

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#### 1.1 Product Identifiers

Product Name: **Alumel® Wire**  
Purity: 99.95% Nickel  
Product Number: N-RSAll01  
Source: asdf  
CAS-No.: Primary - 7440-02-0 (Ni); 7440-48-4 (Co); Add'l See Below

#### 1.2 Relevant Identified Uses

Identified Uses: Equipment Calibration, Thermocouple Wire  
Advised Against: None suggested

#### 1.3 Company Identification (MSDS Supplier)

Company: Engineering Analytics Laboratories  
Address: PO Box 500146, Malabar, FL 32950, USA  
Telephone: +1 321-720-6578  
E-mail: EngAnLab@gmail.com

#### 1.4 Emergency Telephone Number

Emergencies: **Dial 911 first!**  
Emergency Phone #: +1-703-527-3887 (CHEMTREC)

### 2. HAZARDS IDENTIFICATION

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#### 2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

#### 2.2 GHS Label elements, including precautionary statements

Pictogram:



Signal Word: **Danger**

Hazard Statement(s): **H334** - Respiratory Sens. 1 May cause Allergy or Asthma symptoms or breathing difficulties if inhaled. The form sold by EA Labs will not cause this.

**H317** - Skin Sens. 1 May cause allergic skin reaction.

Precautionary Statement(s): **P261** Avoid breathing dust/fume/gas/mist/vapors/spray.  
**P272** Contaminated work clothing must not be allowed out of the workplace.

**P280** Wear protective gloves.

**P284** Wear respiratory protection in the event of inadequate ventilation.

**P302;P352** For skin irritation: wash with plenty of water.

P304;P341 If inhaled or difficulty breathing, move to fresh air.

P321 Specific treatment (read entire MSDS)

P342;P311 Call a poison center (number on page 1) or call a doctor.

P363 Wash contaminated clothing before use.

P501 Dispose of contents/ container to an approved waste disposal plant.

### 2.3 Hazards Not Otherwise Classified (HNOC) or Not Covered by GHS

None known at this time.

In the form provided by EA Labs, this product is considered safe due to the form and small quantity. Use as directed and in accordance with safe laboratory and materials handling practices.

## 3. COMPOSITION (INFORMATION ON INGREDIENTS)

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### 3.1 Substances

Formula: Nickel (Primary)  
Density: 8.289 g/cm<sup>3</sup> at 20 °C  
CAS-No.: 7440-02-0 (Primary)  
EC-No.: 231-114-4 (Primary)

Hazardous and Non-hazardous Components with approximate concentrations

CAS #	Component	Classification	Concentration
7440-02-0	<b>Nickel</b>	Carcinogen 2, H351; H372 Skin Irritant 1, H317	~95%
7439-96-5	<b>Manganese</b>		~2%
7429-90-5	<b>Aluminum</b>		~1.3%
7440-48-4	<b>Cobalt</b>	Respiratory 1, H334 Carcinogen 2, H351 Skin Irritant 1, H317	<1%
7439-95-4	<b>Magnesium</b>	Pyrolysis Solvent 1, H250 Water Reactant 1, H260	<0.1%
7439-89-6	<b>Iron</b>		<0.1%
7440-50-8	<b>Copper</b>		<0.01%
7440-67-7	<b>Zirconium</b>	Pyrolysis Solvent 1, H250 Water Reactant 1, H260	<0.01%

For the full text of the H-Statements mentioned in this Section, see Section 16.

See individual Spectral Analysis form provided with the product to determine actual concentrations.

## 4. FIRST AID MEASURES

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### 4.1 Description of First Aid Measures

In supplied form, this material is not expected to cause the following first aide measures.

#### General Advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Consult a physician if any irritation.

**In case of eye contact**

Flush open eyes with water for several minutes.

**If swallowed**

Never give anything by mouth to an unconscious person. Turn the individual's head and/or body to one side, and rinse the mouth with water (if safe and possible to do so). Consult a physician.

**If unconscious**

Turn body to one side for transportation; call emergency services.

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

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

**4.3 Indication of any immediate medical attention and special treatment needed**

No data available

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## 5. FIREFIGHTING MEASURES

**5.1 Extinguishing media**

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Material is non-flammable when used for the stated purposes.

**5.2 Special hazards arising from the substance or mixture**

No data available

**5.3 Advice for Firefighters**

Wear self-contained breathing apparatus for firefighting, if necessary.

**5.4 Further information**

No data available

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## 6. ACCIDENTAL RELEASE MEASURES

**6.1 Personal Precautions, Protective Equipment (PPE), and Emergency Procedures**

Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

For personal protection see section 8.

**6.2 Environmental Precautions**

Prevent further leakage or spillage. Do not let product enter drains. Discharge into the environment must be avoided.

**6.3 Clean-up and Containment Methods**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

**6.4 Disposal**

For disposal see section 13.

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## 7. HANDLING AND STORAGE

### 7.1 Precautions for Safe Handling

Processing of solid materials may result in the formation of irritable dusts. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

### 7.2 Conditions for Safe Storage, including incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Storage class (TRGS 510): Non Combustible Solids.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 8.1 Control Parameters

Components with workplace control parameters:

Component	CAS #	Value	Control Parameters	Basis
<b>Nickel</b>	7440-02-0	PEL	1 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		REL	0.015 mg/m <sup>3</sup>	
		TLV	1.5 mg/m <sup>3</sup>	Inhalable Fraction
<b>Manganese</b>	7439-96-5	PEL	5 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		REL	Short Term: 3 mg/m <sup>3</sup> Long Term: 1 mg/m <sup>3</sup>	
		TLV	0.1 mg/m <sup>3</sup>	Inhalable Fraction
<b>Aluminum</b>	7429-90-5	PEL	5 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		REL	5 mg/m <sup>3</sup>	Respiration
		TLV	1 mg/m <sup>3</sup>	Inhalable Fraction
<b>Cobalt</b>	7440-48-4	PEL	01 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		REL	0.05 mg/m <sup>3</sup>	
		TLV	0.2 mg/m <sup>3</sup>	Inhalable Fraction

### 8.2 Exposure controls

#### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

#### Personal Protective Equipment (PPE)

##### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

##### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (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 laboratory practices. Wash and dry hands.

##### Full contact

Material: Nitrile rubber  
Minimum layer thickness: 0.11 mm  
Break through time: 480 min

#### *Body Protection*

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### *Respiratory protection*

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Control environmental exposure to prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Basic Physical and Chemical Properties

- a) Appearance Form: Wire
- b) Odor: *No data available*
- c) Odor Threshold: *No data available*
- d) pH: *No data available*
- e) Melting/freezing point:  
Melting point (**Literature Verified**): 1,453 °C (2,647.4 °F)<sup>1asdf</sup>.
- f) Initial boiling point and boiling range:  
2,730 °C (4,946 °F)
- g) Curie Point: 152.6 ± 2.0 °C<sup>1</sup>
- h) Flash point: *Not applicable*
- i) Evaporation rate: *No data available*
- j) Flammability (solid, gas): Not Determined
- k) Upper/lower flammability or explosive limits: *No data available*
- l) Vapor pressure: *No data available*
- m) Vapor density: *No data available*
- n) Relative density: 8.289 g/cm<sup>3</sup> at 20 °C (68 °F)
- o) Water Solubility: *Insoluble in supplied form.*
- p) Partition coefficient: *No data available*
- q) Auto-ignition Temperature: 400 °C (752 °F)
- r) Decomposition Temperature: *No data available*
- s) Viscosity: *No data available*
- t) Explosive Properties: *No data available*
- u) Oxidizing Properties: *No data available*

### 9.2 Other safety information

No data available

## 10. STABILITY AND REACTIVITY

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### 10.1 Reactivity

*No data available*

#### **10.2 Chemical Stability**

Stable under recommended storage conditions.

#### **10.3 Possibility of Hazardous Reactions**

*No data available*

#### **10.4 Conditions to avoid**

*No data available*

#### **10.5 Incompatible Materials**

Oxidizing agents at temperature and specific conditions not applicable to its intended use.

#### **10.6 Hazardous Decomposition Products**

Hazardous decomposition products formed under fire conditions: **Nickel Oxides**

Conditions to avoid: Acids, Oxidizing Agents, Sulfur

In the event of fire: see section 5

### **11. TOXICOLOGICAL INFORMATION**

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#### **11.1 Toxicological Effects**

Acute Toxicity: 7440-48-4 Cobalt – Oral | LD50 | 6,170 mg/kg (rat)

Inhalation: *No data available*

Dermal: *No data available*

Skin Corrosion/Irritation: Irritation possible through contact.

Serious Eye Damage/Eye Irritation: *No data available*

Respiratory or Skin Sensitization: Irritation possible through contact.

Germ Cell Mutagenicity: *No data available*

Carcinogenicity:

IARC: 7440-02-0 Nickel (2B)

7440-48-4 Cobalt (2B)

NTP: 7440-02-0 Nickel (R)

7440-48-4 Cobalt (R)

California: Known Carcinogen: Nickel

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive Toxicity: Nickel is known to California as causing significant reproductive harm. Avoid ingestion.

Specific Target Organ Toxicity - Single Exposure: *No data available*

Specific Target Organ Toxicity - Repeated Exposure: *No data available*

Aspiration Hazard: *No data available*

Additional Information

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Information provided is based on available data.

### **12. ECOLOGICAL INFORMATION**

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#### **12.1 Toxicity**

Toxicity to Fish: *No data available*

#### **12.2 Persistence and Degradability**

*No data available*

#### **12.3 Bioaccumulative Potential**

*No data available*

#### 12.4 Mobility in Soil

*No data available*

#### 12.5 Results of PBT and vPvB Assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

#### 12.6 Other Adverse Effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

### 13. DISPOSAL CONSIDERATIONS

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#### 13.1 Waste Treatment Methods

##### *Product*

Offer surplus and non-recyclable solutions to a licensed disposal company. The EPA does not classify the unused product as hazardous waste.

##### *Packaging*

Dispose of as unused product.

### 14. TRANSPORT INFORMATION

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#### DOT (US)

Not dangerous goods

#### IMDG

Not Regulated

#### IATA

Not Regulated

#### Canada

This SDS meets the requirements for CPR

### 15. REGULATORY INFORMATION

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See Section 2 for Safety, Health, and Environmental data specific to this material. Individual Lots may not contain all items listed herein.

#### SARA 335 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 335.

#### SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

Nickel	Revision Date
CAS-No.: 7440-02-0	1994-04-01
Manganese	Revision Date
CAS-No.: 7439-96-5	1994-04-01
Aluminum	Revision Date
CAS-No.: 7429-90-5	1994-04-01
Cobalt	Revision Date
CAS-No.: 7440-48-4	1994-04-01
Copper	Revision Date
CAS-No.: 7440-50-8	1994-04-01

SARA 311/312 Hazards

No SARA 311/312 Hazards

TSCA (Toxic Substance Control Act)

Nickel	CAS-No.: 7440-02-0
Manganese	CAS-No.: 7439-96-5
Aluminum	CAS-No.: 7429-90-5
Cobalt	CAS-No.: 7440-48-4
Copper	CAS-No.: 7440-50-8
Iron	CAS-No.: 7439-89-6
Magnesium	CAS-No.: 7439-95-4
Zirconium	CAS-No.: 7440-48-4
Cobalt	CAS-No.: 7440-48-4
Copper	CAS-No.: 7440-50-8

Massachusetts Right To Know Components

Aluminum	Revision Date
CAS-No.: 7429-90-5	1994-04-01

Pennsylvania Right To Know Components

Aluminum	Revision Date
CAS-No.: 7429-90-5	1994-04-01

New Jersey Right To Know Components

Aluminum	Revision Date
CAS-No.: 7429-90-5	1994-04-01

California Prop. 65 Components

Nickel	CAS-No.: 7440-02-0
Cobalt	CAS-No.: 7440-48-4

EPA (Environmental Protection Agency)

Manganese (D)	CAS-No.: 7439-96-5
Copper (D)	CAS-No.: 7440-50-8

TLV Established by ACGIH

Nickel (A5)	CAS-No.: 7440-02-0
Aluminum (A4)	CAS-No.: 7429-90-5
Cobalt (A3)	CAS-No.: 7440-48-4
Zirconium (A4)	CAS-No.: 7440-48-4

NIOSH-CA

Nickel	CAS-No.: 7440-02-0
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## 16. OTHER INFORMATION

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### Full text of H-Statements referred to under sections 2 and 3.

No additional data available.

#### HMIS Rating

Health hazard:	0
Chronic Health Hazard:	
Flammability:	0
Physical Hazard:	0

#### NFPA Rating

Health hazard:	0
Fire Hazard:	0
Reactivity Hazard:	0



### **Further Information**

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### **17. Literature Sources**

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1. P. K. Gallagher, R. Blaine+, E. L. Charsley, N. Koga, R. Ozao, H. Sato, S. Sauerbrunn++, D. Schultze and H. Yoshida (2003), "Magnetic Temperature Standards for TG". Journal of Thermal Analysis and Calorimetry, Vol. 72 (2003) pp. 1109-1116

#### Preparation Information

Engineering Analytics Laboratories

+1-321-720-6578

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