

Nickel, Chromium, and Phosphorus

Safety Data Sheet

### 1. Product and Company Identification

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Supplier and Manufacturer

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Lucas Milhaupt, Inc.  
5656 South Pennsylvania Avenue  
Cudahy, WI 53110 USA  
Telephone: 414-769-6000  
www.lucasmilhaupt.com

Emergency Phone Number

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Chemtrec: 800-424-9300

SDS Number: 304

Product Code: 40-001 (BLA 01), 40-096, 77-933, 77-934

Product Use(s): Alloys for brazing and other metallurgical processes

### 2. Hazards Identification

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Classification(s)

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Skin Sensitization: Hazard Category 1B  
Carcinogenicity: Hazard Category 2

Label Symbol(s): Health Hazard, Exclamation Point

Label Signal Word(s): Warning

Label Hazard Statement(s)

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May cause an allergic skin reaction.  
Suspected of causing cancer by inhalation.

Label Precautionary Statement(s)

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Do not handle until all safety precautions have been read and understood.  
Obtain special instructions before use. Store locked up.  
Avoid breathing dust or fumes.  
Wear protective gloves and eye/face protection.  
If skin irritation or rash occurs, get medical advice or attention.  
If exposed or concerned, get medical advice/attention.

IF ON SKIN: Wash with plenty of water. Wash contaminated clothing before reuse. Contaminated work clothing must not be allowed out of the workplace.

Dispose of contents/container in accordance with applicable regulations.  
The acute toxicity of 7-15% of ingredients is unknown.

WARNING: These products contain a chemical(s) known to the State of California to cause cancer.

### 3. Composition/Information on Ingredients



Ingredient	CAS Number	%	Impurities
Chromium	7440-47-3	7-15	None known
Cobalt	7440-48-8	<0.1	None known
Nickel	7440-02-2	73-78	None known
Phosphorus	7723-14-0	9-11	None known

#### 4. First Aid Measures

##### Eye

Flush affected areas with water for at least fifteen minutes. Seek medical assistance if necessary.

##### Skin

Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes. Seek medical attention if necessary. Launder or dry-clean clothing before reuse.

##### Ingestion

If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical assistance. Do not give anything by mouth to an unconscious or convulsive person.

##### Inhalation

If signs and symptoms of toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

##### Note to Physician

None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Skin exposure may cause contact or allergic dermatitis.

#### 5. Fire Fighting Measures

##### Fire and Explosion Hazards

These products are non-flammable and non-explosive. If present in a fire or explosion, they may emit fumes of the constituent metals, their oxides, and/or phosphorus pentoxide.

##### Extinguishing Media

Use dry chemical. Do not use water.

##### Fire Fighting Instructions

If fighting a fire in which these products are present, wear a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

#### 6. Accidental Release Measures

##### Methods and Materials

If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Either wet sweeping or vacuuming using HEPA filtration is recommended.

Personal Precautions  
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Avoid contact with skin, eyes, and mucous membranes.

Environmental Precautions  
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Prevent spills from entering sewers or contaminating soil.

7. Handling and Storage  
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Handling Precautions  
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No special handling precautions are required.

Work and Hygiene Practices  
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To prevent ingestion following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing or protective equipment before entering eating/drinking areas.

Storage Precautions  
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Do not store in proximity to incompatible materials (see Section #10).

8. Exposure Controls and Personal Protection  
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Ingredients - Exposure Limits  
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Chromium	ACGIH TLV: 0.5 mg/m <sup>3</sup> TWA	OSHA PEL: 1 mg/m <sup>3</sup> TWA
Cobalt	ACGIH TLV: 0.02 mg/m <sup>3</sup> TWA	OSHA PEL: 0.1 mg/m <sup>3</sup> TWA
Nickel	ACGIH TLV: 1.5 mg/m <sup>3</sup> TWA	OSHA PEL: 1 mg/m <sup>3</sup> TWA
Phosphorus	No applicable ACGIH TLV(s)	No applicable OSHA PEL(s)

Ingredients - Biological Limits  
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Chromium	No ACGIH BEI(s) or other biological limit(s)
Cobalt	ACGIH BEIs: 15 mcg/l. in urine (end of last shift of work week) 1 mcg/l. in blood (end of last shift of work week)
Nickel	No ACGIH BEI(s) or other biological limit(s)
Phosphorus	No ACGIH BEI(s) or other biological limit(s)

Engineering Controls  
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Use dilution or local exhaust ventilation adequate to maintain concentrations of all components and their byproducts to within their applicable standards.

Eye/Face Protection  
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Wear eye protection adequate to prevent eye contact with the product and injury if the products are used with a flame. Plastic-frame spectacles with side shields and filter lenses (shade #3/#4) are recommended.

#### Skin Protection

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Wear protective gloves and clothing to prevent skin injuries if the products are used with a flame. Avoid flammable fabrics.

#### Respiratory Protection

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If an exposure level to a component(s) exceeds an applicable standard, use a NIOSH-approved respirator having a configuration (facepiece, filter media, assigned protection factor, etc.) effective for the concentration of the component(s) generated. For guidance on selection and use of respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036, USA).

### 9. Physical and Chemical Properties

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Appearance: white metal, various forms  
Odor: none  
Odor threshold: not applicable  
pH: not applicable  
Melting Point: not determined  
Freezing point: not applicable  
Boiling point/boiling range: not determined  
Flash Point: not applicable  
Evaporation Rate: not applicable  
Flammability Class: not applicable  
Lower Explosive Limit: not applicable  
Upper Explosive Limit: not applicable  
Vapor pressure: not applicable  
Vapor density: not applicable  
Relative density (H<sub>2</sub>O): approx. 8.0  
Solubility (H<sub>2</sub>O): insoluble  
Oil-water partition coefficient: not applicable  
Autoignition Point: not applicable  
Decomposition temperature: not applicable  
Viscosity: not applicable

### 10. Stability and Reactivity

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Reactivity: none reasonably foreseeable  
Stability: stable  
Hazardous Polymerization: will not occur  
Risk of Dangerous Reactions: none reasonably foreseeable  
Conditions to Avoid: contact with incompatible materials

#### Incompatible Materials

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Acetylene; ammonium nitrate; peroxides; lithium; nitric oxide; chlorates; sulfur dioxide; halogens; hydrazine; hydrazoic acid; dioxane; performic acid; phosphorus; selenium; sulfur; titanium plus potassium perchlorate.

#### Hazardous Decomposition Products

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Heating to elevated temperatures may liberate fumes of the constituent metals and/or phosphorus pentoxide.

### 11. Toxicological Information

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This product has not been subject to toxicological testing by the supplier/  
manufacturer.

#### Ingredients - Toxicological Data

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##### Chromium

LD50: no data available LC50: No data available

##### Cobalt

LD50: >6,170 mg/m3 (oral/rat) LC50: 10,000 mg/m3/1h. (rat)

##### Nickel

LD50: 5,000 mg/kg (oral/rat) LC50: No data available

##### Phosphorus

LD50: >15,000 mg/kg (oral/rat) LC50: 4,300 mg/m3/1h. (rat)

#### Primary Routes(s) of Entry

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Ingestion; inhalation.

#### Eye Hazards

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Eye contact with these products in finely-divided forms may cause irritation  
or conjunctivitis.

#### Skin Hazards

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Skin contact with these products, particularly in finely-divided forms, may  
cause irritation and contact or allergic dermatitis.

#### Ingestion Hazards

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Ingestion of these products in finely-divided forms may cause nausea,  
vomiting, and gastrointestinal irritation.

#### Inhalation Hazards

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Inhalation of toxicologically-significant quantities of the components is  
unlikely when the product is used in accordance with instructions and  
specified protective measures (see Section #8). When phosphorus is  
overheated in air, it is converted to phosphorus pentoxide, which is  
corrosive and irritating to eyes, nose, throat, and mucous membranes.

#### Symptoms Related to Overexposure

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Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated  
by inhalation overexposure, particularly as fume.

#### Delayed Effects from Long Term Overexposure

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Chronic overexposure by inhalation may aggravate pre-existing diseases of the  
respiratory system.

#### Carcinogenicity

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Nickel is classified as a potential human carcinogen by IARC ("2b", possibly  
carcinogenic to humans) and NTP ("K", known to be a human carcinogen).  
Exposure to some compounds of nickel has been shown to increase the risk of  
various cancers, although these effects have not been demonstrated among  
individuals occupationally exposed only to nickel metal. ACGIH classifies  
nickel metal as "A5" (not suspected as a human carcinogen).

Cobalt is classified as a potential human carcinogen by IARC (2b). ACGIH classifies cobalt as "A3" (confirmed animal carcinogen with unknown relevance to humans).

#### Germ Cell Mutagenicity

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The product contains no chemicals determined to be germ cell mutagens.

#### Reproductive Effects

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The product contains no chemicals determined to be damaging to fertility of the unborn child.

#### Acute Toxicity Estimates

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LD50 (oral): >5,000 mg/kg  
LD50 (dermal): no data available  
LC50: >4,300 mg/m<sup>3</sup>/1h.

Interactive Effects of Components: no data available

### 12. Ecological Information

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No ecological data is available for the product. Available ecological data for the components is as follows:

#### Chromium

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No data available for Aquatic Toxicity to Fish and Invertebrates, Aquatic Toxicity to Plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, Mobility in Soil.

#### Cobalt

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Aquatic Toxicity: LC50 >100 mg/liter for 4 d. (Freshwater fish)  
Aquatic Toxicity: NOEC = 3.2 mg/liter for 48 hrs. (Daphnia)  
Aquatic Toxicity: NOEC = 0.015 mg/liter for 3 d. (Algae)  
No data available for Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, or Mobility in Soil.

#### Nickel

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Aquatic Toxicity: LC50 >100 mg/liter for 4 d. (Freshwater fish)  
Aquatic Toxicity: EC50 >100 mg/liter for 48 hrs. (Daphnia)  
Aquatic Toxicity: EC50 = 0.18 mg/liter for 3 d. (Algae)  
No data available for Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, or Mobility in Soil.

#### Phosphorus

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No data available for Aquatic Toxicity to Fish and Invertebrates, Aquatic Toxicity to Plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, Mobility in Soil.

Ozone Depletion Potential: This product contains no ingredients listed in the Annexes to the Montréal Protocol on Substances that Deplete the Ozone Layer.

### 13. Disposal Considerations

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Do not discharge waste product into sanitary or storm sewers or allow it to contaminate soil. Consult applicable Federal, State/ Provincial, and local regulations.

#### 14. Transport Information

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Transport is not regulated by USDOT, TDG (Canada), IATA, or IMO.

#### 15. Regulatory Information

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##### United States Regulatory Information

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All components of this product are listed on the EPA's TSCA inventory.

SARA Hazard Classes: Chronic Health Hazard

##### SARA Section 313 Notification

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These products contain these components at concentrations >1% (for carcinogens >0.1%) subject to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and of 40CFR, Part 372:

1. Chromium (CASRN 7440-47-3)
2. Nickel (CASRN 7440-02-0)
3. Phosphorus (CASRN 7723-14-0)

##### Ingredients - State Regulations

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Cobalt: California Proposition 65 listed chemical

Nickel: California Proposition 65 listed chemical

##### Canadian Regulatory Information

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All components of these products are listed on either the Domestic Substances List (DSL) or the Nondomestic Substances List (NDSL).

WHMIS Class(es) and Division(s): D2A, D2B

Components on Ingredients Disclosure List:

1. Chromium, elemental (CASRN 7440-47-3)
2. Cobalt, elemental (CASRN 7440-48-4)
3. Nickel, elemental (CASRN 7440-02-0)
4. Phosphorus (CASRN 7723-14-0)

This product has been classified according to the hazard criteria of the CPR and this SDS contains all of the information required by the CPR.

#### 16. Other Information

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##### HMIS Ratings

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Health - 2\* (moderate chronic hazard)

Flammability - 0 (minimal hazard)

Physical Hazard - 0 (minimal hazard)

PPE - see Note

Note: Lucas-Milhaupt, Inc. recommends use of protective eyewear and gloves (Personal Protection Index "B") as standard PPE. HMIS recommends that its ratings be used only in conjunction with a fully implemented HMIS program, and that specific PPE codes be created by the user, who is familiar with the actual conditions under which the product is used. We cannot anticipate every condition of the product's use, and it is the user's responsibility to

evaluate the hazards pertinent to its specific operations, and to determine the specific PPE required.

NFPA Ratings

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Health - 2      Flammability - 0      Reactivity - 0

Preparation Information

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Date of Preparation: 12 December 2014

Date of Prior SDS: 16 December 2008

Disclaimer

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Lucas-Milhaupt, Inc.