MATERIAL SAFETY DATA SHEET – BLUE NICKEL COBALT ARCHWIRES

Document Number: MSDS-021	**Revision Date**: June 22, 2010	**Material Type**: Carpenter Conichrome Alloy
Revision: 0	**Number of Pages**: 3	

1–PRODUCT IDENTIFICATION

Product Name: Blue Nickel Cobalt Archwires

2–HAZARDOUS INGREDIENTS/ IDENTITYINFORMATION

Hazardous Components	CAS #	OSHA PEL	ACGIH TLV	%
Cobalt	7440-48-4	0.1mg/m^3	0.02.1mg/m^3	40.00
Chromium	7440-47-3	0.5mg/m^3	0.5 mg/m^3	20.00
Iron	1309-37-1*	10mg/m^3	5 mg/m^3	16.00
Nickel	7440-02-0	1mg/m^3	1 mg/m^3	15.10
Molybdenum	7439-98-7	5mg/m^3 (SOL)	10 mg/m^3	7.00
Manganese	7439-96-5	0.1mg/m^3 C	0.2 mg/m^3	2.00

*=substance regulated in oxide form.

The above percentage concentrations are presented for industrial hygiene purposes. They do not represent a certification of content.

3–PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: N/A
Vapor Pressure (mm Hg): N/A
Vapor Density (Air = 1): N/A
Specific Gravity (H_2O=1): 7.5-8.5
Melting Point: 2400-2800 Degrees F
Evaporation Rate (Butyl Acetate=1): N/A
Solubility in Water: Insoluble.
Appearance and Odor: Solid gray in color, and odorless.
Freezing Point: N/A
pH: N/A
Viscosity: N/A

4–FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A
Flammable Limits: N/A
LEL: N/A
UEL: N/A
Extinguishing Media: No special equipment for product as shipped.
Special Fire Fighting Procedures: No special instructions for product as shipped.
Unusual Fire and Explosion Hazards: In the form shipped, these specialty metals are not combustible.

5–REACTIVITY DATA

Stability: Product is stable, and hazardous polymerization will not occur.
Incompatible Materials and Conditions to Avoid: Bases and oxidizers.
Hazardous Decomposition: None for product as shipped.
General: Recycling of all metallic byproducts as scrap is strongly encouraged. If byproducts need to be treated and/or disposed of as wastes, hazardous waste characterizations must be performed prior to treating and/or disposing. Contact appropriate parties to ensure compliance with all federal, state and local rules and regulations related to waste treatment and disposal.

6–HEALTH HAZARD DATA

Health Hazard Overview: Specialty steel alloys are generally not considered hazardous in the form shipped (solid bar, wire, strip, or billets). However, if your process involves grinding, melting, welding, cutting or any other process that causes release of dust or fumes, hazardous levels of dust or fumes of the constituents of these alloys could be generated. The following is a list of potential health effects for the hazardous elements that may be contained in any of the alloys. Please refer to the hazardous ingredients proceeding for a list of those specific elements contained in the particular alloy. It is the user's responsibility to assess potential exposures based on their processing of the product.
Additionally, protective coatings may have been applied to the steel at the request of the customer. The coating would represent less than 0.5% of the total material present. As shipped, the steel is an article. The likelihood for hazardous consequences through eye or skin contact, inhalation or ingestion would be considered minimal.

Exposure Routes:

Inhalation: Primary route of exposure, steel dusts and fume may cause irritation to the respiratory tract. Chronic exposure may aggravate pre-existing conditions. Skin and eye contact: may cause irritation or skin sensitivity.

First Aid Procedures:

Ingestion: Certain constituents may be harmful is swallowed. Seek medical attention.
Inhalation: Remove person from exposure to fresh air. If breathing difficulty occurs, get prompt medical attention.
Skin/Eye Contact: Flush eye with plenty of water for 15 minutes, seek medical attention if irritation persists. Wash skin with soap and water. If rash develops, seek medical attention.

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7–PRECAUTIONS FOR SAFE HANDLING AND USE

Storage:
Storage Temperature: Not applicable.
Storage Pressure: Not applicable.
General: Store away from acids and oxidizers.

Spill or Leak Procedures:
For Hazardous Wastes: DOT (Department of Transportation)
Proper Shipping Name: Hazardous Waste Solid, n.o.s. (Component A, Component B)
Hazard Class: 9
Identification Number: NA3077
Packing Group: III
Emergency Response Guide Number: 171
TSCA (Toxic Substances Control Act): Not applicable.
CERCLA (Comprehensible Response Compensation and Liability Act): Not applicable.

SARA Title III (Superfund Amendments and Reauthorization Act):
311/312 Hazardous Categories: Not applicable for storage of items as shipped, however if processed, end product may require reporting.
313: Product ingredients subject to reporting requirements may include chromium, nickel, manganese, cobalt, copper, vanadium, titanium, or aluminum. Regulations such as Clean Air Act, Clean Water Act, Resource Conservation & Recovery Act may apply to the handling of steel grindings and particulates from processing.

California Safe Drinking Water Act (Prop 65) Listing:

COMPONENT	CAS NUMBER
NICKEL	7440-02-0
COBALT	7440-48-4

Governor's list of chemicals known to cause cancer and reproductive toxicity includes hexavalent compounds of chromium and nickel dust from pyrometallurgical processing.

Land/Water Spill
General: As shipped, this product does not pose a hazard to the environment.

Disposal
General: Recycling of all metallic by products as scrap is strongly encouraged. If by products need to be treated and/or disposed of as wastes, hazardous waste characterizations must be performed prior to treating and/or disposing. Contact appropriate parties to ensure compliance with all federal, state, and local rules and regulations related to waste treatment and disposal.

8–CONTROL MEASURES

Engineering Controls:
The use of local exhaust ventilation is recommended to control emissions near the source of metal being cut, ground, welded, or melted.

Personal Protection:
When handling the steel product, leather gloves are recommended. Additional personal protective equipment is dependent on the operation performed, for example safety glasses and a face shield when grinding the product. If industrial hygiene monitoring reveals an over exposure during the processing of the product, engineering controls are required to be installed to reduce exposures below OSHA permissible exposure limits. In the absence of feasible engineering controls, wear a NIOSH approved respirator for protection for the type of particulate generated.

9–NOTES/ADDITIONAL INFORMATION

Hazard Rating NFPA:
Health: 0 (as shipped) 2 (if ground, welded, or melted)
Flammability: 0
Reactivity: 0

Hazard Rating HMIS
Health: 0 (as shipped) 2 (if ground, welded, or melted)
Flammability: 0
Reactivity: 0

General: Welding fume, fumes freshly generated by the welding of zinc, magnesium and copper, are known to cause metal fume fever. Inhalation of aluminum, iron, nickel, manganese, selenium and tin has also been reported to cause metal fume fever. Symptoms are flu-like including: shortness of breath, coughing, muscle pain, fever, and chills. Generally symptoms resolve with rest in a few days.

Specific Health Effects
Aluminum: Metal dust and oxide is generally considered a nuisance particulate. May irritate the eyes and mucous membranes. Excessive

concentrations have been known to cause fibrosis.

Boron Oxide: An eye and respiratory irritant may cause eye irritation, dryness of mouth, nose and throat or a productive cough.

Chromium: The toxicity of chromium is dependent on its oxidation state. Chromium metal is relatively non-toxic. If metal is heated to high temperatures, as in welding, fumes produced may be toxic to the lungs. Under high temperatures, hexavalent chromium may be produced if in the insoluble form it is designated a confirmed human carcinogen. Other health effects include nasal irritation and possible kidney and liver damage. Chromite dust may also cause skin ulceration, dermatitis and allergic skin reactions.

Cobalt: May cause interstitial fibrosis, pneumonitis, and sensitization of the respiratory tract and skin. Cobalt liberation during tungsten carbide machining is also associated with the development of hypersensitivity asthma. Hypersensitivity pneumonitis generally disappears when the exposure ceases. Cobalt is listed by the National Toxicological Program (NTP) as a 2B carcinogen, anticipated to be carcinogenic from studies in experimental animals.

Columbium (NIOBIUM): Eye or skin irritant may cause kidney damage.

Copper: May irritate the upper respiratory tract, may include a metallic or sweet taste. May also cause metal fume fever.

Iron Oxide: Repeated inhalation of iron oxide fume or dust causes benign pneumoconiosis (siderosis), but generally does not cause symptoms in the exposed person.

Manganese: Acute effects include skin and eye irritation and metal fume fever. Chronic exposure may lead to central nervous system symptoms of headache, changes in motor activity, and psychological disturbances.

Molybdenum: Insoluble compounds of molybdenum have a low order of toxicity. Molybdenum trioxide is an irritant to the eyes and mucous membranes.

Nickel: Known to cause contact dermatitis and a respiratory irritant. Nickel refining and specific compounds are considered respiratory carcinogens to humans. The International Agency for Research on Cancer lists elemental nickel as a 2B, possibly carcinogenic to humans. The National Toxicological Program (NTP) lists nickel as reasonably anticipated to be carcinogenic from studies in experimental animals. The American Conference on Governmental Industrial Hygienists recommends that nickel compounds be differentiated according to solubility for their carcinogenic effects.

Selenium: Selenium dust vapors and fumes are irritants of the eyes, mucous membranes, and skin. Chronic exposure may cause central nervous system effects and gastrointestinal disturbances. Selenium is listed by the National Toxicological Program (NTP) as a 2B, anticipated to be carcinogenic from studies in experimental animals.

Tantalum: Considered to have a low level of toxicity. As surgical implant material, it has demonstrated its physiological inertness.

Titanium: A mild pulmonary irritant generally regarded as a nuisance dust.

Tungsten: Both tungsten and tungsten carbide pose an extremely low order of toxicity. Tungsten is considered an inert dust.

Vanadium: The oxides of vanadium are toxic, and may cause irritation to eyes and the respiratory tract. Also may cause bronchitis with wheezing and chest pain. A sensitizer, with repeated exposure, may cause more severe respiratory symptoms.

Zirconium: Considered to have a low order of toxicity. Skin rash has been associated with exposure to deodorants containing zirconium.

10-NOTE

While the information and recommendations set forth on this data sheet are believed to be accurate as received from our suppliers, White Oak Orthodontic Products, LLC makes no warranty with respect thereto and disclaims all liability from reliance thereon.