MATERIAL SAFETY DATA SHEET

107

ADVANCE TURNING & MFG INC

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For additional information, please contact Health, Safety and Asset Protection at (610) 208-2134 or 208-2457.

1. PRODUCT IDENTIFICATION

PROJECT 70+ TYPE 304/304L STAINLESS 4162477

2. HAZARDOUS INGREDIENTS

INGREDIENTS/CAS#		%	PEL (PERMISSIBLE EXPOSURE LIMITS), TLV (THRESHOLD LIMIT VALUES) 8 HOUR TIME WEIGHTED AVERAGES, C (CEILING)	
			PEL	TLV
IRON	1309-37-1 *	67.20	10 mg/m³	5 mg/m³
CHROMIUM	7440-47-3	18.30	0.5 mg/m³	0.5 mg/m³
NICKEL	7440-02-0	10.20	1 mg/m³	1 mg/m³
MANGANESE	7439-96-5	1.80	5 mg/m³ C	0.2 mg/m³
COPPER	7440-50-8	.90	1 mg/m³,0.1 mg/m³(FUME)	1 mg/m³,0.1 mg/m³(FUME)
MOLYBDENUM	7439-98-7	.50	5 mg/m³ (SOL)	10 mg/m³ (INSOL)
COBALT	7440-48-4	.50	0.1 mg/m³	0.02 mg/m³

* - SUBSTANCE REGULATED IN OXIDE FORM.

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

3. HAZARD IDENTIFICATION

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 fume, 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 preceding for a list of those specific elements contained in the particular alloy. It is the users 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 uld represent less than 0.5% of the total material present. Material safety data sheets are available for these ing products at your request.

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 have 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.

EXPOSURE ROUTES:

Inhalation: Primary route of exposure, steel dusts and fume may cause irritation to the respitatory tract. Chronic exposure may aggravate pre-exisiting conditions.

Skin & Eye Contact: May cause irritation or skin sensitivity.

Ingestion: Certain constituents may be harmful if swallowed.

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 respitatory 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 order 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. May cause irritation to eyes and respiratory tract. 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.

11. TOXICOLOGICAL INFORMATION - COVERED UNDER SECTION 3

12. ECOLOGICAL INFORMATION - NO DATA AVAILABLE

13. DISPOSAL CONSIDERATIONS

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.

14. TRANSPORTATION INFORMATION

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

15. REGULATORY INFORMATION

TSCA (Toxic Substances Control Act): Not applicable

CERCLA (Comprehensibe 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

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

16. OTHER INFORMATION

HAZARD RATINGS:

NFPA

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

HMIS

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

While the information set forth on this Material Safety Data Sheet is believed to be accurate as of the revision date, Center Technology makes no warranty with respect thereto and disclaims all liability from reliance thereon. No warranty, either express or implied of merchantability or fitness or of any nature with respect to the material or data herein is made hereunder.

FIRST AID MEASURES

As shipped, the steel is an article. The likelihood for hazardous consequences through eye or skin contact, inhalation or ingestion would be considered minimal.

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.

INGESTION: Seek medical attention.

FIRE FIGHTING MEASURES

Flashpoint and Method:	Not applicable
Flammability Limits:	Not applicable
Autoignition Temperature:	Not available
Melting Point:	2400-2800 degrees F
General Hazard:	In the form shipped, these specialty metals are not combustible
Firefighting Instructions:	No special instructions for product as shipped
Firefighting Equipment:	No special equipment for product as shipped
Hazardous Combustion Products:	In the form shipped, hazardous decomposition products are not expected

6. ACCIDENTAL RELEASE MEASURES

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

7. HANDLING AND STORAGE

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

8: EXPOSURE CONTROL/PERSONAL PROTECTION

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 overexposure 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. PHYSICAL & CHEMICAL PROPERTIES

Vapor Pressure:	Not applicable	Vapor Density:	Not applicable
Specific Gravity:	7.5-8.5	Evaporation Rate:	Not applicable
Solubility in Water:	Insoluble	Freezing Point:	Not applicable
PH:	Not applicable	Odor:	Odorless
Boiling Point:	Not applicable	Appearence:	Gray in color
Viscosity:	Not applicable	Physical State:	Solid

10. STABILITY AND REACTIVITY

General: Product is stable and hazardous polymerization will not occur.
Incompatable Materials and Conditions to Avoid: Acids, bases and oxidizers.
Hazardous Decomposition: None for product as shipped.