

COMPANY INFORMATION

COMPANY NAME: ORTHO SPECIALTIES
COMPANY ADDRESS: 3820 OHIO AVE - SUITE 15
 ST. CHARLES, IL 60174
COMPANY PHONE: 630-443-0225
COMPANY FAX: 630-443-0224
COMPANY WEB ADDRESS: www.orthospecialties.com

CARPENTER - STAINLESS STEEL TYPE 304

DOCUMENT NUMBER:	SDS6
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1 – PRODUCT IDENTIFICATION

PRODUCT NAME: CARPENTER - STAINLESS STEEL TYPE 304

2 – HAZARDOUS INGREDIENTS

INGREDIENTS /CAS #	%	PEL #	TLV #
Iron 1309-37-1*	70.00	10 mg/m ³	5 mg/m ³
Chromium 7440-47-3	18.50	0.5 mg/m ³	0.5 mg/m ³
Nickel 7440-02-0	9.00	1 mg/m ³	1 mg/m ³
Manganese 7439-96-5	1.00	5 mg/m ³ C	0.2 mg/m ³
Cobalt 7440-48-4	.20	0.1 mg/m ³	0.02 mg/m ³

* 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, 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 on 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 Would represent less than 0.5% of the total material present. Material safety data sheets are available for these products at your request.

GENERAL:

Welding Fume, fumes freshly generated by 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 respiratory tract. Chronic Exposure may aggravate pre-existing 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 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 rate. 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 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 usually appears when exposure ceases. Cobalt is listed by the National Toxicology Program (NTP) as a 2B carcinogen, anticipated to be carcinogenic from studies in experimental animals.

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3.) HAZARD IDENTIFICATION CONTINUED...

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 headaches, changes in motor activity and psychological disturbances.

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

NICKEL: Known to cause contact dermatitis and is a respiratory tract 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 compound 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 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 the 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 deodorant containing zirconium.

4.) 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

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5.) FIRE FIGHTING MEASURES

Flash Point 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 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 this 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	Appearance:	Gray in color
Viscosity:	Not Applicable	Physical State:	Solid

10.) STABILITY AND REACTIVITY

GENERAL:

Product is stable and hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Acids, bases and oxidizers.

HAZARDOUS DECOMPOSITION:

None for product as shipped.

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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 wastes 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: D O T (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 (Comprehensible Response & Liability Act): Not Applicable

SARA Title III (Superfund Amendments & 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 the 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:

<u>COMPONENT</u>	<u>CAS NUMBER</u>
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

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

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PRODUCT IDENTIFICATION

PRODUCT NAME: "Tefzel" 200, 210, 220, 280, HT 2055, HT 2055NA, "Tefzel" HT 2088na HT 2098, HT 2141, HT 2155

PRODUCT USE: Coating for Orthodontic Wires

COMPONENTS

MATERIAL	C.A.S. NO.	%
Tetrafluoroethylene-Ethylene Copolymer	68258-85-5	100

PHYSICAL DATA

MELTING POINT: 270 Deg. C (518 Deg. F)
% VOLATILES: N/A
WATER SOLUBILITY: Insoluble
ODOR: None
FORM: Pellets
COLOR: Off-white translucent
SPECIFIC GRAVITY: 1.7

HAZARDOUS REACTIVITY

INSTABILITY: Stable at normal temperatures and storage conditions. Reacts with molten alkali metals and interhalogen compounds.

INCOMPATIBILITY: None reasonably foreseeable.

CONDITIONS TO AVOID: Extended overheating of "Tefzel" (e.g., .400 degrees C or 752 degrees F for two hours) can result in autocatalytic degradation with "blow backs" through extruder feed hopper or barrel front.

HAZARDOUS DECOMPOSITION PRODUCTS: Above 270 degrees C (518 degrees F) irritating and toxic gases such as hydrogen fluoride (HF) and perfluoroolefins may be evolved. The OSHA permissible exposure limit HF is 3ppm.

FIRE AND EXPLOSION DATA

FLASH POINT: Does not flash
METHOD: Open Cup

Not a fire and explosion hazard.

"Tefzel" will burn in an atmosphere of 30% oxygen when an ignition source is present.

FIRE AND EXPLOSION HAZARDS: Hazardous gases/vapors produced in fire are hydrogen fluoride (HF), carbonyl fluoride, carbon monoxide and low molecular weight fluorocarbons.

EXTINGUISHING MEDIA: Water. Form. Dry Chemical. CO₂.

SPECIAL FIRE FIGHTING INSTRUCTIONS: Does not burn without an external flame. Wear self-contained breathing apparatus and clothing to protect from hydrogen fluoride fumes which react with water to form hydrofluoric acid. Wear neoprene gloves when handling refuse from a fire involving "Tefzel".

TEFZEL®

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HEALTH HAZARD INFORMATION

Before using read "Tefzel" "Safety" in Handling and Use, Bulletin E-64073.

ACUTE OR IMMEDIATE EFFECTS; ROUTES OF ENTRY AND SYMPTOMS

INGESTION: Not toxic.

SKIN: Not toxic.

EYE: Mechanical irritation.

INHALATION: Toxic and corrosive hydrogen fluoride may be liberated during processing above 2270 degrees C (518 degrees F), or from smoking tobacco or cigarettes contaminated with polymer dust. These vapors can irritate eyes, nose, throat, and lungs. Lung effects may be delayed for several hours.

CHRONIC EFFECTS: None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None Known.

CARCINOGENICITY

None of the components in this material is listed by the IARC, NTP, OSHA, or ACGIH as a carcinogen.

EXPOSURE LIMITS:

"TEFZEL" FLUOROPOLYMERS ALL IN SYNONYM LIST TFZ004

TLV (ACGIH): None Established

PEL (OSHA): Particulates Not Otherwise Regulated
 15 mg/m3 - 8 Hr TWA - Total Dust
 5 mg/m3 - 8 Hr TWA - Respirable Dust

SAFETY PRECAUTIONS:

See FIRST AID and PROTECTION INFORMATION SECTIONS

FIRST AID

INHALATION:

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT:

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment from thermal burn.

EYE CONTACT:

Flush eyes with plenty of water. Consult a physician if symptoms persist.

INGESTION:

No specific interventions indicated as compound is not likely to be hazardous by ingestion. Consult physician if necessary.

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PROTECTION INFORMATION

GENERALLY APPLICABLE CONTROL MEASURES AND PROCEDURES:

VENTILATION: Vapors and fumes liberated during hot processing should be exhausted completely from the work area to maintain hydrogen fluoride (HF) concentration below the OSHA permissible exposure limit of 3ppm.

OTHER: Avoid contamination of cigarettes or tobacco with polymer dust.

PERSONAL PROTECTIVE EQUIPMENT:

EYE: Safety glasses recommended.

SKIN: Gloves and long sleeve shirt are recommended when handling hot polymer.

RESPIRATOR: Use respirator when temperature exceeds 270 degrees C (518 degrees F) if ventilation is inadequate to maintain HF concentration below the permissible exposure limit.

DISPOSAL INFORMATION

AQUATIC TOXICITY:

Not toxic.

SPILL, LEAK OR RELEASE:

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Sweep up to avoid slipping hazard.

WASTE DISPOSAL:

Preferred options for disposal are (1) recycling and (2) landfill. Incinerate only if incinerator is capable of scrubbing out hydrogen fluoride and other acidic combustion products. Treatment, storage, transportation and disposal must be accordance with applicable federal, state/provincial and local regulations.

SHIPPING INFORMATION

DOT

Proper Shipping Name: N/A
 Hazard Class: Not regulated

STORAGE CONDITIONS

Keep containers closed to avoid contamination.

TITLE III HAZARD CLASSIFICATIONS

SECTION 313 SUPPLIER NOTIFICATION

This report contains no known toxic chemical subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

ADDITIONAL INFORMATION AND REFERENCES

NA = NOT APPLICABLE

NE = NOT ESTABLISHED

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE: None Known.

SUBSTANCES ON THE PENNSYLVANIA SPECIAL HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 0.01% OR MORE: None Known.

NONHAZARDOUS INGREDIENTS PRESENT AT A CONCENTRATION OF 3% OR MORE REQUIRED TO BE LISTED BY PENNSYLVANIA: Since this product contains no hazardous substances as defined by the Pennsylvania R-T-K Regulations, a MSDS is not required by law.

WARNING SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: None Known.

WARNING SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None Known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS A CARCINOGENS, MUTAGENS OR TERATOGENS): None Known.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with other material or in any process.

Responsibility for MSDS: W. H. Martin
 PPD M5616
 Wilmington, DE 19898
 302-773-6587

End of MSDS