SAFETY DATA SHEET

1: IDENTIFICATION OF SUBSTANCE

TRADE NAME (AS LABELED):	Carbon & Alloy Steel Tubing
OTHER MEANS OF IDENTIFICATION/SYNONYMS:	Drawn Over Mandrel Welded Mechanical Tubing is produced in carbon grades 1010, 1020, 1035 and Seamless tubes in 1010, 1018 and 4130 by Crossroads Seamless USA to ASTM A513 Type 5, AISI, ASTM, ASME, API, MILT, SAE J525, AMS and Other Specifications
CHEMICAL NAME/CLASS:	Steels
RELEVANT USE of the SUBSTANCE:	Various
USES ADVISED AGAINST:	None Identified
MANUFACTURE'S NAME:	**Crossroads Seamless USA**
ADDRESS:	572 W State Road 14 Winamac, IN 46996
BUSINESS PHONE:	574-946-2072
EMERGENCY PHONE:	United States/Canada: 1-800/704-9215 (ChemTel) International: +1-360-256-7365 (ChemTel)
EMAIL:	infor@xseamless.com
DATE OF PREPARATION: DATE OF REVISION:	September 1, 2020 November 7, 2024

2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW STEEL PRODUCTS AS SOLD BY CROSSROADS SEAMLESS USE ARE NOT HAZARDOUS PER OSHA GHS 29 CFR 1910, 1915, 1926.
However, individual customer processes, (such as welding, sawing, brazing, grinding, abrasive blasting, and machining) may result in the formation of fumes, dust (combustible or otherwise), and/or particulate that may present the following hazards:

OSHA Hazards:	Carcinogen Skin Sensitizer Target Organ Effect – Lungs
GHS Classification:	Carcinogenicity (Category 2) Skin Sensitization (Category 1) Specific Target Organ Toxicity - Repeated Exposure Category 1)
Pictogram(s):	
Signal Word:	**Danger**

Hazard Statement(s)
H317: Dust/fumes may cause an allergic skin reaction.
H351: Dust/fumes suspected of causing cancer via inhalation.
H372: Inhalation of dust/fumes causes damage to respiratory tract through prolonged or repeated exposure

Precautionary Statement(s)
P202: Do not handle until all safety precautions have been read and understood.
P261: Avoid breathing dust/fumes.
P281: Use personal protective equipment as required.

P308+P313: If exposed or concerned: Get medical advice/attention.

Potential Health Effects

Eye Contact

Dusts or particulates may cause mechanical irritation including pain, tearing, and redness. Scratching of the cornea can occur if eye is rubbed. Fumes may be irritating. Contact with the heated material may cause thermal burns.

Skin Contact

Dusts or particulates may cause mechanical irritation due to abrasion. Coated steel may cause skin irritation in sensitive individuals (see Section 16 for additional information.) Some components in this product are capable of causing an allergic reaction, possibly resulting in burning, itching and skin eruptions. Contact with heated material may cause thermal burns.

Inhalation

Dusts may cause irritation of the nose, throat, and lungs. Excessive inhalation of metallic fumes and dusts may result in metal fume fever, an influenza-like illness. It is characterized by a sweet or metallic taste in the mouth, accompanied by dryness and irritation of the throat, cough, shortness of breath, pulmonary edema, general malaise, weakness, fatigue, muscle and joint pains, blurred vision, fever and chills. Typical symptoms last from 12 to 48 hours.

Ingestion

Not expected to be acutely toxic via ingestion based on the physical and chemical properties of the product. Swallowing of excessive amounts of the dust may cause irritation, nausea, and diarrhea.

Chronic or Special Toxic Effects

Repeated exposure to fine dusts may inflame the nasal mucosa and cause changes to the lung. In addition, a red-brown pigmentation of the eye and/or skin may occur. Welding fumes have been associated with adverse health effects.

Contains components that may cause cancer or reproductive effects. The following components are listed by NTP, OSHA, or IARC as carcinogens: Nickel and Chromium.

Target Organs

Overexposure to specific components of this product that are generated in dusts or fumes may cause adverse effects to the following organs or systems: eyes, skin, liver, kidney, central nervous system, cardiovascular system, respiratory system.

Medical Conditions Aggravated by Exposure

Diseases of the skin such as eczema may be aggravated by exposure. Also, disorders of the respiratory system including asthma, bronchitis, and emphysema. Long-term inhalation exposure to agents that cause pneumoconiosis (e.g. dust) may act synergistically with inhalation of oxide fumes or dusts of this product.

3: COMPOSITION / INFORMATION ON INGREDIENTS

Crossroads Seamless USA - cold drawn welded and seamless carbon steel tubing for hydraulic, mechanical and aerospace applications uses a broad range of Standard published chemistry grades. Formulation of a particular grade is referenced in the Test Report prepared and made part of the actual shipment. Steel tube products, per se, under normal conditions do not present an inhalation, ingestion or contact health hazard. The base metal iron (Fe) and alloying ingredients' percentages by weight vary from grade to grade, by exposure limits for specific elements are as follows:

			EXPOSURE LIMITS	
ELEMENTS	CAS NUMBER	% WEIGHT	OSHA PEL	ACGIH TLV
IRON (Fe)	7439-89-6	65.0/99.4	10.0mg/m³ iron oxide fume	5.0 mg/m³ iron oxide fume
ALUMINUM (Al)	7429-90-5	.001/1.30	15.0 mg/m³ dust	10.0 mg/m³-Metal Dust
			5.0 mg/m³ respirable fraction	5.0 mg/m³ - Welding Fume
BORON	7440-42-8	.006 max	15.0 mg/m³ total dust	10.0 mg/m³-Boron Oxide
CALCIUM	7440-70-2	.001 max	5.0 mg/m³-Calcium oxide	
CARBON (C)	7440-44-0	.01/1.10	15mg/m³-Total dust	10.0mg/m³-Inhalable fraction
			5 mg/m³-respirable fraction	3 mg/m³-respirable fraction
CHROMIUM (Cr)	7440-47-3	<1.1	Metal	Metal
COPPER (Cu)	7440-50-8	.01/.60	0.1 fume/1.0 dust	0.2 fume/1.0 fume dust/mist
MANGANESE (Mn)	*7439-96-5	.25/2.00	Dust 5.0 mg/m³	Steel 2.0 mg/m³
MOLYBDENUM (Mo)	7439-98-7	<0.9	Insoluble Compounds	Insoluble Compounds
NICKEL (Ni)	7440-02-0	<.25	Metal	Metal and Insoluble Compounds
PHOSPHORUS (P)	*8049-19-2	.15 max	15mg/m³-Total dust	10.0mg/m³-Inhalable fraction
			5 mg/m³-respirable fraction	3 mg/m³-respirable fraction
SILICON (Si)	7440-21-3	.15/2.20	15mg/m³-Total dust	10.0mg/m³
			5 mg/m³-respirable fraction	
SULFUR (S)	7704-34-9	.001/3.5	15mg/m³-Total dust	10.0mg/m³-Inhalable fraction
			5 mg/m³-respirable fraction	3 mg/m³-respirable fraction
VANADIUM (V)	7440-62-2	<.15	Oxide Dust/Fume	Oxide Dust (Ceiling) / Oxide Fume Celing

NOTE:

All commercial metals contain small amounts of elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are less than 0.1% weight.

4: FIRST AID MEASURES

Eye Contact - In case of overexposure to dusts or fumes, immediately flush eyes with plenty of water for at least 15 minutes occasionally lifting the eye lids. Get medical attention if irritation persists. Thermal burns should be treated as medical emergencies.
Skin Contact - In case of overexposure to dusts or particulates, wash with soap and plenty of water. Get medical attention if irritation develops or persists. If thermal burn occurs, flush area with cold water and get immediate medical attention.
Inhalation - In case of overexposure to dusts or fumes, remove to fresh air. Get immediate medical attention if symptoms described in this SDS develop.
Ingestion - Not considered an ingestion hazard. However, if excessive amounts of dust or particulates are swallowed, treat symptomatically and supportively. Get medical attention.
Potential Fire and Explosion Hazards - Under normal conditions, steel products do not present fire or explosion hazards, and dust generated by handling steel products is oxidized and not combustible.
Notes to Physician - Inhalation of metal fume or metal oxides may produce an acute febrile state, with cough, chills, weakness, and general malaise, nausea, vomiting, muscle cramps, and remarkable leukocytosis. Treatment is symptomatic, and condition is self-limited in 24-48 hours. Chronic exposure to dusts may result in pneumoconiosis of mixed type.

5: FIREFIGHTING MEASURES

Flash Point (Method) - Not applicable
Flammable Limits (% volume in air) - Not applicable
Autoignition Temperature - Not applicable
Extinguishing Media - For molten metal, use dry powder or sand. For steel dust use or dry sand, water, foam, argon or nitrogen.
Special Fire Fighting Procedures - Do not use water on molten metal. Do not use Carbon Dioxide (CO_2). Firefighters should not enter confined spaces without wearing NIOSH/MSHA approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.
Unusual Fire or Explosion Hazards - Steel products do not present fire or explosion hazards under normal conditions. Any non-oxidized fine metal particles/ dust generated by grinding, sawing, abrasive blasting, or individual customer processes may produce materials that the customer should test for combustibility and other hazards in accordance with applicable regulations. High concentrations of combustible metallic fines in the air may present an explosion hazard.

6: ACCIDENTAL RELEASE MEASURES

Precautions if Material is Spilled or Released - Emergency response is unlikely unless in the form of combustible dust. Avoid inhalation, eye, or skin contact of dusts by using appropriate precautions outlined in this SDS (see section 8). Fine turnings and small chips should be swept or vacuumed and placed into appropriate disposable containers. Keep fine dust or powder away from sources of ignition. Scrap should be reclaimed for recycling. Prevent materials from entering drains, sewers, or waterways. Specific standards and regulations may be applicable to materials generated by individual customer processes. As appropriate, these standards and regulations should be consulted for applicability.

Fire and Explosion Hazards
Some customer processes may generate combustible dust that may require specific precautions when cleaning spills or releases of dust.
Environmental Precautions - Some grades of steel may contain reportable quantities of alloying elements. See Section 15 for additional information.
Waste Disposal Methods - Dispose used or unused product in accordance with applicable Federal, State, and Local regulations. Please recycle.

7: HANDLING AND STORAGE

Storage Temperatures - Stable under normal temperatures and pressures.
Precautions to be taken in Handling and Storing - Store away from strong oxidizers. Dusts and/or powders, alone, or combined with process specific fluids, may form explosive mixtures with air. Avoid breathing dusts or fumes. Applicable Federal, state and local laws and regulations may require testing dust generated from processing of steel products to determine if it represents a fire or explosion hazard and to determine appropriate protection methods.

8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Operations with potential for generating high concentrations of airborne particulates or fumes should be evaluated and controlled as necessary.
Eye Protection - Use safety glasses. Dust resistant safety goggles are recommended under circumstances where particles could cause mechanical injury such as grinding or cutting. Face shield should be used when welding or cutting.
Skin - Appropriate protective gloves should be worn as necessary. Good personal hygiene practices should be followed including cleansing exposed skin several times daily with soap and water, and laundering or dry cleaning soiled work clothing.
Respiratory Protection - NIOSH/MSHA approved dust/fume/mist respirator should be used to avoid excessive exposure. See Section 3 for component material information exposure limits.
If such concentrations are sufficiently high that this respirator is inadequate, or high enough to cause oxygen deficiency, use a positive pressure self-contained breathing apparatus (SCBA). Follow all applicable respirator use, fitting, and training standards and regulations.
Ventilation - Provide general and/or local exhaust ventilation to control airborne levels of dust or fumes below exposure limits.
Exposure Guidelines - No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steel.
See Section 3 for component materials. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor - Silver grey to grey black with metallic luster.
Boiling Point - Not applicable
Melting Point - Approximately 2800°F
pH -Not applicable
Specific Gravity (at 15.6°C) - Not applicable
Density (at 15.6°C) 7.85 g/cm3 ±10%
Vapor Pressure - Not applicable
Vapor Density (air = 1) – Not applicable
% Volatile, by Volume - Not applicable
Solubility in Water - Insoluble
Evaporation Rate (Butyl Acetate = 1) - Not applicable
Other Physical and Chemical Data - None

10: STABILITY AND REACTIVITY

Stability - Steel tube products are stable under normal conditions or use, storage and transport.
Conditions to Avoid - At temperatures above the melting point, fumes containing oxides of iron or alloying elements may be emitted NFPA Code “O” applies. Avoid generation of airborne fume.
Incompatibility (Materials to Avoid) - Reacts with strong acids to form hydrogen gas. Do not store near strong oxidizers.
Hazardous Decomposition Products - Metallic fumes may be produced during welding, burning, grinding, and possibly machining or any situation with the potential for thermal decomposition. Refer to ANSI Z49.1
Hazardous Polymerization: Will not occur.

11: TOXICOLOGICAL INFORMATION

The primary component of this product is iron. Long-term exposure to iron dusts or fumes can result in a condition called siderosis which is considered to be a benign pneumoconiosis. Symptoms may include chronic bronchitis, emphysema, and shortness of breath upon exertion. Penetration of iron particles in the skin or eye may cause an exogenous or ocular siderosis which may be characterized by a red-brown pigmentation of the affected area. Ingestion overexposures to iron may affect the gastrointestinal, nervous, and hematopoietic system and the liver. Iron and steel founding, but not iron or iron oxide, has been listed as carcinogenic (Group 1) by IARC.

When this product is welded, fumes are generated. Welding fumes may be different in composition from the original welding product, with the chief component being ordinary oxides of the metal being welded. Chronic health effects (including cancer) have been associated with the fumes and dusts of individual component metals (see above), and welding fumes as a general category have been listed by IARC as a carcinogen (Group 2B). There is also limited

evidence that welding fumes may cause adverse reproductive and fetal effects. Evidence is stronger where welding materials contain known reproductive toxins, e.g., lead which may be present in the coating material of this product.

Breathing fumes or dusts of this product may result in metal fume fever, which is an illness produced by inhaling metal oxides. These oxides are produced by heating various metals including copper, nickel, manganese, chromium, aluminum, and iron.

This product may contain small amounts of manganese. Prolonged exposure to manganese dusts or fumes is associated with "manganism", a Parkinson-like syndrome characterized by a variety of neurological symptoms including muscle spasms, gait disturbances, tremors, and psychoses.

This product may contain small amounts of chromium. Prolonged and repeated overexposure to chromium dusts or fumes may cause skin ulcers, nasal irritation and ulceration, kidney damage and cancer of the respiratory system. Chromium is skin sensitizer. Cancer is generally attributed to the hexavalent (+6) form of chromium which is listed as a carcinogen by NTP and IARC (Group 1).

This product may contain small amounts of nickel. Prolonged and repeated contact with nickel may cause sensitization dermatitis. Inhalation of nickel compounds has caused lung damage as well as sinus, nasal and lung cancer in laboratory animals. Nickel is a listed carcinogen by NTP and IARC (Group 1).

This product may contain small amounts of vanadium. Adverse effects from dermal, inhalation or parenteral exposure to various vanadium compounds have been reported. The major target for vanadium pentoxide toxicity is the respiratory tract. Fumes or dust can cause severe eye and respiratory irritation, and systemic effects. Chronic bronchitis, green tongue, conjunctivitis, pharyngitis, rhinitis, rales, chronic productive cough, and tightness of the chest have been reported following overexposure. Allergic reactions resulting from skin and inhalation exposures have also been reported. A statistical association between vanadium air levels and lung cancer has been suggested, but vanadium currently is not regarded as a human carcinogen.

The product may contain small amounts of copper. Copper dust and fumes can irritate the eyes, nose and throat causing coughing, wheezing, nosebleeds, ulcers and metal fume fever. Other effects from repeated inhalation of copper fumes include a metallic or sweet taste, and discoloration of skin, teeth or hair. Copper also may cause an allergic skin reaction. Overexposure to copper can affect the liver.

12: ECOLOGICAL INFORMATION

Aquatic Ecotoxicological Data - No specific information available on this product.
Environmental Fate Data - No specific information available on this product.

13: DISPOSAL CONSIDERATIONS

Recovery and reuse, rather than disposal, should be the ultimate goal of handling efforts. Dispose in accordance with federal, state, and local health and environmental regulations. Prevent materials from entering drains, sewers, or waterways.

14: TRANSPORT INFORMATION

DOT Proper Shipping Name - Not regulated
DOT Hazard Classification - Not regulated
UN/NA Number - Not applicable
DOT Packing Group - Not applicable
Labeling Requirements - Not applicable
Placards - Not applicable
DOT Hazardous Substance - Not applicable
DOT Marine Pollutant - Not applicable

15: REGULATORY INFORMATION

This product is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, dusts and fumes from this product may be combustible or hazardous and require protection to comply with applicable Federal, state and local laws and regulations.

California Proposition 65: This product contains chemicals chromium, and nickel) known to the State of California to cause cancer.
Massachusetts Substance List: Aluminum, Chromium, Copper, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Silicon, Sulfur, Vanadium
Pennsylvania Hazardous Substance List: Aluminum, Chromium, Copper, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Silicon, Sulfur, Vanadium
New Jersey Hazardous Substance List: Aluminum, Chromium, Copper, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Silicon, Sulfur, Vanadium

Toxic Substances Control Act (TSCA)
Components of this product are listed on the TSCA Inventory.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
Steel is not reportable, however, it contains hazardous substances that may be reportable if released in pieces with diameters less than or equal to 0.004 inches (RQ marked with an "*").

Chemical Name	Reportable Quantity (in lb)
Antimony	5000*
Arsenic	1*
Beryllium	10*
Cadmium	10*
Chromium	5000*
Copper	5000*
Lead	10*
Nickel	100*
Phosphorus	1
Selenium	100*
Zinc	1000*

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III

SECTION 311/312 HAZARD CATEGORIES: Immediate Health Effect, Delayed Health Effect

This product contains the following EPCRA Section 313 chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right – To – Know Act of 1986 (40 CFR 372):

SECTION 313 REPORTABLE INGREDIENTS:

Chemical Name	CAS Number	Concentration (% by weight)	Reportable
Aluminum	7429-90-5	<.06	No - Less than 1%
Chromium	7440-47-3	0-1.1	Yes - Greater than 0.1%
Copper	7440-50-8	<.35	No - Less than 1%
Manganese	7439-96-5	<1.0	No - Less than 1%
Molybdenum	7439-98-7	<.25	No - Less than 1%
Nickel	7440-02-0	<.25	Yes - Greater than 0.1%
Phosphorus	7723-14-0	<.040	No - Less than 1%
Vanadium	7440-66-6	<.15	No - Less than 1%

Concentrations based on analytical data and process knowledge of typical products distributed by the facility.

As part of the cold drawn tube manufacturing process, various lubricants and/or drawing compounds are used to reduce friction. Generally, such coatings are removed during the drawing or annealing operations and, in some cases, a surface residue may remain.
Coatings, oils, and the like, can be applied to protect the finished product surface during shipment and storage. Protective gloves are recommended to minimize minor skin irritation, if any, resulting from contact with such coatings. A list of residual chemicals and suppliers is available upon request. Wash hands after handling oiled material.

16: OTHER INFORMATION

DATE OF PREPARATION: September 1, 2020
DATE OF REVISION: November 7, 2024
PREPARED BY: EHS Manager

This SDS covers Plymouth product as delivered from the Plymouth Tube facilities but does not include chemicals that may be applied by subsequent handlers and/or distribution of this product. SDSs for any Plymouth-applied chemicals will be provided separately. The information in this SDS was obtained from sources or based upon data believed to be reliable and is intended for use solely in safety education and environmental health training and not for specification purposes.
However, Plymouth Tube Company makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.