



TYFO TI NSM BARS

Section 1. Product and Company Identification

Product Name: Tyfo Ti NSM Bars
Supplier: FyfeFRP LLC | 15341 Vantage Parkway East. Houston, TX 77073 | +1 855.708.3617
Emergency Phone Number: 800.424.9300 (CHEMTREC)
+1 703.741.5970 (Outside the US)
Product Description: Metal
Product Use: Aerospace, Medical and Industrial Applications
Chemical Name or Synonym: N/A

Section 2. Hazards Identification

Classification of the substance or mixture: Not classified

Label Elements: No label elements

Hazard Statements: No known significant effects or critical hazard.

Signal Word: No signal word

Precautionary Statements: Not Applicable

Other hazards: Solid metallic products are generally classified as “articles” and do not constitute a hazardous material in their solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Any articles manufactured from these solid products would generally be classified as non-hazardous; however some hazardous elements contained in these products could be emitted under certain processes such as burning, melting, welding, sawing, brazing, grinding and machining. Products in the solid state present no fire or explosion hazard. Small chips, fines, and dust may ignite.

Section 3. Composition/ Information on Ingredients

Chemical Components	CAS-No	Weight %
Aluminum, Al	7429-90-5	0-6
Chromium, Cr	7440-47-3	0-18
Molybdenum, Mo	7439-98-7	0-37
Niobium, Nb	7440-03-1	0-15
Silicon, Si	7440-21-3	0-3
Tin, Sn	7440-31-5	0-8
Titanium, Ti	7440-32-6	50-99
Vanadium, V	7440-62-2	0-37
Zirconium, Zr	7440-67-7	0-15



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Section 4. First Aid Measures**First Aid Measures for Accidental:**

Inhalation: Not applicable due to the solid form of the product; however, if large amounts of dust, fumes, or particulates are generated during processing, move person to fresh air. If symptoms develop, seek medical attention.

Eye contact: Contact with dust or particulate generated during processing Immediately flush with running water to remove particulates for 15 minutes, seek medical attention.

Skin contact: Contact with dust or powders during processing; wash immediately with soap and water. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area, consult a physician.

Ingestion: Consult physician.

Most important symptoms/effects, acute and delayed:

Acute Effects: Excessive exposure to welding fumes, gases or dust may cause irritation of eyes, nose or throat. Inhalation of dusts / fumes may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, chills and fever).

Chronic Effects: Prolonged inhalation of welding fumes, gases or dusts may cause a variety of adverse health effects. These effects may include skin sensitization, neurological damage and respiratory disease such as bronchial asthma, lung fibrosis or pneumoconiosis.

Over-exposure signs/symptoms:

Potential Health Effects/Medical Conditions Aggravated by Exposure: Any pre-existing chronic respiratory condition (asthma, chronic bronchitis, emphysema) may be aggravated in some workers.

Indication of immediate medical attention and special treatment needed: No information available.

Section 5. Fire Fighting Measures

Suitable Extinguishing Media: Use Firebane™ or Class "D" type fire extinguisher. Dry sand, dry graphite, or inert gas to smother the fire. Use extinguishers appropriate for surrounding materials.

Unsuitable Extinguishing Media: DO NOT USE WATER or CO₂ EXTINGUISHERS! These extinguishing agents may cause an explosion.

Special Fire Fighting Procedures: Non-flammable. Will not support combustion. Not applicable for solid product.

Special Protective Equipment for Fire-fighters: Positive pressure SCBA and structural firefighter's protective clothing should be used at a minimum for surrounding fire.

Hazardous Thermal Decomposition Products: Extreme heat from fire or processing (e.g. welding, brazing, machining, etc.) may produce toxic or irritating airborne particulate, including metal and metallic oxide fumes. Reaction with water, steam, acids, etc. can evolve hydrogen, which is highly dangerous fire and explosion hazard.

Specific Hazards Arising from the substance or mixture: This solid formed product does not constitute a fire or explosion hazard. Finely divided chips may present a fire and explosion hazard in the presence of an ignition source.



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Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: No special procedures needed.
Environmental Precautions: Avoid dispersal of material and runoff and contact with soil, waterways, drains and sewers.

Methods and Materials for Containment and Cleaning Up: No special procedures needed.

Section 7. Handling and Storage

Precautions for safe handling: Avoid breathing of and contact with fumes and dust during processing. No specific requirements for solid form product.

Conditions for safe storage including any incompatibilities: Keep away from incompatible materials (see section 10). No specific requirements for solid form product.

Section 8. Exposure Controls / Personal Protection**Exposure Guidelines:**

Chemical Name	OSHA (PEL) - mg/m ³	ACGIH (TLV) - mg/m ³
Aluminum, Al	15 – Metal, total dust 5 – respirable fraction	10 – Metal dust 5 – welding fumes
Chromium, Cr	1 – Metal	0.5 – Metal
Molybdenum, Mo	5 – Soluble 15 – Insoluble	5 – Soluble 10 – Insoluble
Niobium, Nb	None established	None established
Silicon, Si	15 – Total dust 5 – respirable fraction	10 – Total dust 5 – respirable fraction
Tin, Sn	2 – Metal	2 – Metal
Titanium, Ti	15 – TiO ₂ form, total dust	10 – TiO ₂ form, total dust
Vanadium, V	0.5 – Oxide dust 0.1 – Oxide fume	5 – respirable dust or fume
Zirconium, Zr	5 – Metal	5 – Metal

Appropriate Engineering Control: Provide general or local exhaust to minimize airborne concentrations during milling, grinding, melting and welding operations to avoid overexposure.

Personal Protective Equipment:

Respiratory Protection: Wear NIOSH approved dust / mist / fume respirator when welding or burning this metal.

Eye / Face Protection: Face shields (welding or burning), Safety glasses (cutting or grinding).

Skin Protection: Use appropriate protective clothing such as welding aprons and gloves when welding or burning.

Section 9. Physical and Chemical Properties

Physical State: Solid
Colour: Silver-gray metal



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Odor:	Odorless
Melting Point/ Freezing Point:	3,020°F (1,660°C)
Boiling point:	No data available
Flammability (solid, gas):	No data available
Lower and Upper Explosion limits/	
Flammability Limits:	No data available
Flash Point:	No data available
Auto-ignition Temperature:	No data available
Decomposition Temperature:	No data available
pH:	No data available
Kinematic Viscosity:	No data available
Solubility in water:	Insoluble
Evaporation rate (ether=1):	No data available
Flammability Limits in Air:	No data available
Solubility in other solvents:	No data available
Partition coefficient (n-octanol/water):	No data available
Vapour Pressure:	No data available
Density and/or Relative Density:	0.160 lb/in ³ (4.47 g/cm ³)
Relative Vapour Density:	No data available
Specific Gravity:	No data available
Particle Characteristics:	No data available

Section 10. Stability and Reactivity

Reactivity: Stable under normal conditions of use, storage and transport for solid product

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous reactions: Under normal storage conditions, hazardous reaction will not occur.

Conditions to Avoid: Contact with incompatible materials. Avoid creating finely divided, concentrated airborne particulates in the presence of ignition sources.

Incompatible Materials / Chemicals: Acids, Oxidizing Agents, Halogens.

Hazardous Decomposition Products: Extreme heat from fire or processing (e.g. welding, brazing, machining, etc.) may produce toxic or irritating airborne particulate, including metal and metallic oxide fumes. Reaction with water, steam, acids, etc. can evolve hydrogen, which is highly dangerous fire and explosion hazard.

Section 11. Toxicological Information

Information in the likely route of exposure:

Routes of Entry:

Inhalation: dusts / fumes / mists

Contact with Skin and Eyes: dusts / mists

Ingestion: dusts

Symptoms related to the physical, chemical and toxicological characteristics:

Lethal Concentration (LC50): None established.

Target organs: No data available

Mutagenicity: No data available

Carcinogenicity: No (Note: Fumes / dusts / mists from this material may be carcinogenic if inhaled over



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long periods of time).

Reproductive Toxicity: No data available

Tetratogenicity: No data available

Specific Target Organ Toxicity - single exposure (STOT-se): No Data Available

Specific Target Organ Toxicity - repeated exposure (STOT-re): Crystalline Silica – Category 1

Over-exposure signs / symptoms: No data available

Delayed and immediate effects and also chronic effects from short and long-term exposure:

Short term exposure: No data available.

Long term exposure: No data available

Numerical measures of toxicity: No data available

Section 12. Ecological Information

Ecotoxicity: No data available for the material as a whole. However, individual components of the material have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife.

Persistence and degradability: No determined

Bioaccumulative potential: No determined

Mobility in soil: No determined

Other adverse effects: No determined

Section 13. Disposal Considerations

Waste treatment methods: : Titanium scrap or solid waste should be recycled or reclaimed whenever possible. Dispose of in accordance with applicable federal, provincial/state or local regulations.

Uncleaned packaging: Do not re-use empty containers for food, clothing, or products for human or animal consumption.

Section 14. Transport Information

DOT: Not Regulated

IATA: Not Regulated

Section 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

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.

Section 16. Other Information

Key Legend Information:

CAS – Chemical Abstracts Service

ACGIH – American Conference of Governmental Industrial Hygienists



SAFETY DATA SHEET

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OSHA – Occupational Safety and Health Administration

PEL – Permissible Exposure Limit

TLV – Threshold Limit Value (ACGIH)

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