Safety Data Sheet

Section 1: Identification

Product identifier

Product Name • **FT-3W and 2605S3A**

Synonyms • Amorphous Metal Ribbon

Relevant identified uses of the substance or mixture and uses advised against

Recommended use • Ferromagnetic electrical or electronic control material

Details of the supplier of the safety data sheet

Manufacturer • Metglas Inc.
440 Allied Drive
Conway, SC 29526
United States
www.metglas.com

Telephone (General) • 843-349-6800

Emergency telephone number

Manufacturer • 800-581-7654

Section 2: Hazard Identification

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 • Not classified

Label elements

OSHA HCS 2012

Hazard statements • No label element(s) required

Other hazards

OSHA HCS 2012 • Under United States Regulations (29 CFR 1910.1200(c) - Hazard Communication Standard), the product(s) listed above are exempt as article(s) under stated normal conditions of use.

Other information

• As an article this material does not legally require an SDS.

Section 3 - Composition/Information on Ingredients

Substances

• Material does not meet the criteria of a substance.

Mixtures

Composition		
Chemical Name	**Identifiers**	**%**
Iron	**CAS:**7439-89-6	69% TO 100%
Silicon	**CAS:**7440-21-3	0% TO 10%
Niobium	**CAS:**7440-03-1	0% TO 7%
Chromium, massive	**CAS:**7440-47-3	0% TO 5%
Boron	**CAS:**7440-42-8	0% TO 5%
Manganese (powder)	**CAS:**7439-96-5	0% TO 2%
Copper	**CAS:**7440-50-8	0% TO 2%

Section 4: First-Aid Measures

Description of first aid measures

Inhalation • Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

Skin • In case of contact with substance, immediately flush skin with running water for at least 20 minutes.

Eye • If contact with material occurs flush eyes with water.

Ingestion • Not a normal route of entry.

Most important symptoms and effects, both acute and delayed

• Under normal conditions of use, no health effects are expected.

Indication of any immediate medical attention and special treatment needed

Notes to Physician • All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5: Fire-Fighting Measures

Extinguishing media

Suitable Extinguishing Media • In case of fire use media as appropriate for surrounding fire.

Unsuitable Extinguishing Media • No data available

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards • Product may burn if involved in a structural fire.

Hazardous Combustion Products • Toxic and irritating vapors may be released if the product melts or burns in a fire.

Advice for firefighters

• Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions • No special precautions expected to be necessary if material is used under ordinary conditions and as recommended. Use caution in handling as edges are very sharp.

Emergency Procedures • No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended. Use normal clean up procedures.

Environmental precautions

• Avoid run off to waterways and sewers.

Methods and material for containment and cleaning up

Containment/Clean-up Measures • Pick up and place into proper storage.

Section 7 - Handling and Storage

Precautions for safe handling

Handling • Use good safety and industrial hygiene practices. Cut hazard. Ribbon must be handled with care and use cut resistant gloves.

Conditions for safe storage, including any incompatibilities

Storage • Store material in a dry place.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines				
	Result	**ACGIH**	**NIOSH**	**OSHA**
Manganese (powder)	Ceilings	Not established	Not established	5 mg/m3 Ceiling (fume)
	TWAs	0.02 mg/m3 TWA (respirable fraction); 0.1 mg/m3 TWA (inhalable fraction)	1 mg/m3 TWA (fume)	Not established
	STELs	Not established	3 mg/m3 STEL	Not established
Copper (7440-50-8)	TWAs	0.2 mg/m3 TWA (fume)	1 mg/m3 TWA (dust and mist); 0.1 mg/m3 TWA (fume)	0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)
Chromium, massive (7440-47-3)	TWAs	0.5 mg/m3 TWA	0.5 mg/m3 TWA	1 mg/m3 TWA
Silicon (7440-21-3)	TWAs	Not established	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Exposure controls

Engineering Measures/Controls • Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values.

Personal Protective Equipment

Respiratory • In case of insufficient ventilation, wear suitable respiratory equipment.

Eye/Face • Wear safety glasses when grinding, sanding, cutting and/or welding product.

Skin/Body • Wear cut-resistant gloves.

Environmental Exposure Controls • Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15-minute exposures
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Shiny gray metallic metal foil with no odor.
Color	Shiny gray.	Odor	No odor.
Odor Threshold	No data available		
General Properties			
Boiling Point	No data available	Melting Point/Freezing Point	1180 °C(2156 °F) Freezing: 1050 C (1920 F)

Decomposition Temperature	No data available	pH	No data available
Specific Gravity/Relative Density	7 to 7.5 Water=1	Water Solubility	Negligible < 0.1 %
Viscosity	No data available		
Volatility			
Vapor Pressure	No data available	Vapor Density	No data available
Evaporation Rate	No data available		
Flammability			
Flash Point	No data available	UEL	No data available
LEL	No data available	Autoignition	No data available
Flammability (solid, gas)	No data available		
Environmental			
Octanol/Water Partition coefficient	No data available		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- Hazardous polymerization will not occur.

Conditions to avoid

- No data available

Incompatible materials

- Product can be attacked by moisture and corrosive materials.

Hazardous decomposition products

- Toxic vapors and metallic fumes may be released if melted in a fire.

Section 11 - Toxicological Information

Information on toxicological effects

GHS Properties	Classification
Acute toxicity	**OSHA HCS 2012**•No data available
Skin corrosion/Irritation	**OSHA HCS 2012**•No data available
Serious eye damage/Irritation	**OSHA HCS 2012**•No data available
Skin sensitization	**OSHA HCS 2012**•No data available
Respiratory sensitization	**OSHA HCS 2012**•No data available
Aspiration Hazard	**OSHA HCS 2012**•No data available
Carcinogenicity	**OSHA HCS 2012**•No data available
Germ Cell Mutagenicity	**OSHA HCS 2012**•No data available
Toxicity for Reproduction	**OSHA HCS 2012**•No data available
STOT-SE	**OSHA HCS 2012**•No data available
STOT-RE	**OSHA HCS 2012**•No data available

Potential Health Effects

Inhalation

Acute (Immediate) • Under normal conditions of use, no health effects are expected.
Chronic (Delayed) • No data available

Skin

Acute (Immediate) • Under normal conditions of use, no health effects are expected.
Chronic (Delayed) • No data available

Eye

Acute (Immediate) • Under normal conditions of use, no health effects are expected.
Chronic (Delayed) • No data available

Ingestion

Acute (Immediate) • Under normal conditions of use, no health effects are expected.
Chronic (Delayed) • No data available

Section 12 - Ecological Information

Toxicity

• Non-mandatory section - information not compiled for this reason.

Persistence and degradability

• Non-mandatory section - information not compiled for this reason.

Bioaccumulative potential

• Non-mandatory section - information not compiled for this reason.

Mobility in Soil

• Non-mandatory section - information not compiled for this reason.

Other adverse effects

• Non-mandatory section - information not compiled for this reason.

Section 13 - Disposal Considerations

Waste treatment methods

Product waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	Not Applicable	Not Regulated	Not Applicable	Not Applicable	NDA

Special precautions for user • None specified.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code • No data available

Section 15 - Regulatory Information

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

SARA Hazard Classifications • None

Inventory		
Component	**CAS**	**TSCA**
Boron	7440-42-8	Yes
Chromium, massive	7440-47-3	Yes
Copper	7440-50-8	Yes
Iron	7439-89-6	Yes
Manganese (powder)	7439-96-5	Yes
Niobium	7440-03-1	Yes
Silicon	7440-21-3	Yes

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

•Copper	7440-50-8	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
•Chromium, massive	7440-47-3	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
•Copper	7440-50-8	1.0 % de minimis concentration
•Chromium, massive	7440-47-3	1.0 % de minimis concentration
•Manganese (powder)	7439-96-5	1.0 % de minimis concentration
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - California - Proposition 65 - Developmental Toxicity		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed

•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
•Copper	7440-50-8	Not Listed
•Chromium, massive	7440-47-3	Not Listed
•Manganese (powder)	7439-96-5	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
•Niobium	7440-03-1	Not Listed
•Boron	7440-42-8	Not Listed

Section 16 - Other Information

Revision Date • 20/December/2016

Last Revision Date • 31/October/2016

Preparation Date • 31/October/2016

Disclaimer/Statement of Liability • All information appearing herein concerning Metglas products are based on data believed to be accurate and reliable. The information is provided as guidance for safe transportation, handling, use, processing, storage, disposal and release. It is not considered a warranty or quality specification. Since the actual use is determined by the user, it is the user's responsibility to determine the suitability of the product for its use and to adopt appropriate safety precautions as necessary.

Key to abbreviations

NDA = No Data Available