1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Wrought Aluminum Products, 1XXX Series Alloys
Revision Date: 5/21/2015
Version: 1
SDS Number: PI-SDS-M100
Product Code: PI-SDS-M100
Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Health effects from mechanical processing (cutting, grinding): Dust: can cause irritation of the upper respiratory tract.

Additional health effects from elevated temperature processing (welding, melting): Dust and fumes from processing: Acute overexposure: Can cause metal fume fever (nausea, chills, fever, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin), and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease, reproductive harm in males, asthma, respiratory sensitization and lung cancer.

Skin Contact: Skin contact with hot metal can cause burns. Dust or fume from processing can cause mechanical irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Eye Contact: Dust or fume from processing can cause mechanical irritation.

Ingestion: Not revelant, due to the form of the product.

GHS Signal Word:
WARNING

GHS Hazard Pictograms:

GHS Classifications:
Physical, Flammable Solids, 2

GHS Phrases:
H228 - Flammable solid

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P308+313 - IF exposed or concerned: Get medical advice/attention.

Solid. Silvery. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
Explosion/fire hazards may be present when:
• Dust or fines are dispersed in air.
• Chips, dust or fines are in contact with water.
• Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).
Dust and fume from processing can cause irritation of the eyes, skin and upper respiratory tract.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
7429-90-5	>98.9%	Aluminum
7439-92-1	<.03%	Lead
7440-02-0	<.06%	Nickel

4 FIRST AID MEASURES

Inhalation: Solid aluminum does not present an inhalation hazard. Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. If breathing is difficult, provide oxygen. Loosen any tight clothing on neck or chest. Provide

cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.

Skin Contact: Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists. Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Consult a physician.

Ingestion: Not relevant, due to the form of the product.

5 FIRE FIGHTING MEASURES

Flammability: NA
Flash Point: N/A
Flash Point Method: N/A
Burning Rate: Negligible as a solid, rapid as a dust.

Suitable extinguishing media:
Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.
Unsuitable extinguishing media:
DO NOT USE halogenated extinguishing agents on small chips/fines. DO NOT USE water in fighting fires around molten metal.
These fire extinguishing agents will react with the burning material.
Specific hazards arising from the chemical:
May be a potential hazard under the following conditions:
• Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
• Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
• Dust and fines in contact with certain metal oxides (e.g., rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.
Special protective equipment and precautions for firefighters:
Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.
Fire-fighting equipment/instructions:
Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material. Apply extinguishing media carefully to avoid creating airborne dust. If impossible to extinguish, protect surroundings and allow fire to burn itself out.

General fire hazards: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot Aluminum does not necessarily glow red. Use personal protection recommended in Section 8 of the SDS.

Molten metal: Keep unnecessary personnel away.

Collect scrap for recycling. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap.

No special environmental precautions required.

7 HANDLING AND STORAGE

Handling Precautions: Keep material dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.

Storage Requirements: If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) codes and standards listed in Section 16.

Use non-sparking handling equipment, tools and natural bristle brush. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15).

Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts (Aluminum). Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

Do not allow small chunks, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained.

Do not use compressed air to remove settled material from floors, beams or equipment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Dust and fumes from processing - use with adequate explosion-proof ventilation

Personal Protective Equip: Wear safety glasses with side shields.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Silver to gray wire
Physical State:	Solid
Odor:	Odorless
Solubility:	Insoluble in water
Spec Grav./Density:	2.7-2.71 g/cubic cm
Freezing/Melting Pt.:	1189.4-1214.6°F

10 STABILITY AND REACTIVITY

Stability: Stable under normal conditions of use, storage, and transportation as shipped.

Chips, fines, dust and molten metal are considerably more reactive with the following:
• Water: Slowly generates flammable and explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Water/aluminum mixtures may be hazardous when confined.
• Heat: Oxidizes at a rate dependent upon temperature and particle size.
• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation.
• Iron powder and water: Explosive reaction forming hydrogen gas when

heated above 1470°F (800°C).

Conditions to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:
• Water: Slowly generates flammable and explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Water/aluminum mixtures may be hazardous when confined.
• Heat: Oxidizes at a rate dependent upon temperature and particle size. Explosions can occur with coils of foil that have been submerged or partially submerged in water for an extended period of time. Water can penetrate between the layers of foil, react with the aluminum surface and generate heat and hydrogen gas. When the coils are removed from the cooling effects of the water, rapid temperature increases can occur causing steam explosions which result in the rupture of the coils and discharge of debris.
Coils of foil may be a potential hazard under the following conditions:
• Coil has been annealed (annealing removes residual oil that could prevent penetration of water
• Foil is very thin gauge (5-9 mcm thickness which increases surface area)
• Coil has been immersed for an extended period of time (several hours or more)
• Wetted coil has recently been removed from the cooling effects of the water
In such situations, the coils should be isolated (30 meters from any personnel) for at least 72 hours as soon as possible after removal from the water. Coils making crackling sounds or emitting steam should not be approached or transported in commerce. Wetted coils should not be charged into a furnace for remelting until completely dry.

Materials to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:
• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
• Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

Hazardous Decomposition: No hazardous decomposition products are known.

Hazardous Polymerization: Will not occur.

11 TOXICOLOGICAL INFORMATION

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Some products are supplied with an oil coating or have residual oil from the manufacturing process. Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.
Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.
Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B). Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting of aluminum can generate oxides of nitrogen.
Oxides of nitrogen (NO and NO2): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemaglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.
Nitrogen dioxide (NO2): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on likely routes of exposure

Eye contact Dust and fumes from processing: Can cause irritation.

Inhalation Additional health effects from elevated temperature processing (e.g., welding, plasma arc cutting):

	Can cause. Acute overexposures: Can cause the accumulation of fluid in the lungs (pulmonary edema) and reduced ability of the blood to carry oxygen (methemaglobin).
Ingestion	Not available.
Skin contact	Dust and fumes from processing: Can cause irritation. Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause dermatitis.

Symptoms related to the physical, chemical and toxicological characteristics

Dust and fume from processing: Can cause mechanical irritation.
Contact with residual oil/oil coating: Prolonged skin contact may cause skin irritation and/or dermatitis.

Information on toxicological effects

Acute toxicity	Not applicable.
Skin corrosion/irritation	Non-corrosive.
Serious eye damage/eye irritation	Dust and fume from processing: May irritate eyes.
Respiratory or skin sensitization	Not a skin sensitizer.
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	Contact with residual oil/oil coating: Prolonged contact may cause redness and irritation.
Germ cell mutagenicity	Contains no ingredient listed as a mutagen.
Neurological effects	Not classified. Based on available data, the classification criteria are not met.
Pre-existing conditions aggravated by exposure	Dust and fume from processing: Asthma, chronic lung disease, and skin rashes.
Carcinogenicity	Contains no ingredient listed as a carcinogen
ACGIH Carcinogens	
Aluminum - CAS 7429-90-5	A4 Not classifiable as a human carcinogen.
Reproductive toxicity	Contains no ingredient listed as toxic to reproduction.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Teratogenicity	Not applicable.
Specific target organ toxicity - single exposure	Not classified. Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Not classified. Based on available data, the classification criteria are not met.

Aspiration hazard	Not applicable.
Chronic effects	Not applicable.

12 ECOLOGICAL INFORMATION

Ecotoxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product contains inorganic compounds which are not biodegradable.
Bioaccumulative potential	Will not bio-accumulate.
Mobility in soil	Not available.
Other adverse effects	Not available.

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.
7429-90-5 | >98.9% | Aluminum
CERCLA (Comprehensive Response Compensation, and Liability Act)
NOT listed
SARA TITLE III (Superfund Amendments and Reauthorization Act)
313/312 Hazard categories:
None.
313 Reportable Ingredients:
7429-90-5 | >98.9% | Aluminum

***Aluminum (7429905 >98.9%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR**

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CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens
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16 OTHER INFORMATION

OTHER INFORMATION: THIS SDS IS A COMPILATION OF INFORMATION FOUND IN THE SAFETY DATA SHEET(S) SUPPLIED BY RAW MATERIAL SUPPLIERS.

THE INFORMATION IN THIS SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. PHIFER INCORPORATED BELIEVES THIS INFORMATION TO BE RELIABLE AND UP-TO-DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT PHIFER INCORPORATED AT THE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

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1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Wrought Aluminum Products, 2XXX Series Alloys
Revision Date: 5/26/2015
Version: 1
SDS Number: PI-SDS-M110
Product Code: PI-SDS-M110
Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Health effects from mechanical processing (cutting, grinding): Dust: can cause irritation of the upper respiratory tract.

Additional health effects from elevated temperature processing (welding, melting): Dust and fumes from processing: Acute overexposure: Can cause metal fume fever (nausea, chills, fever, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin), and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease, reproductive harm in males, asthma, respiratory sensitization and lung cancer.

Skin Contact: Skin contact with hot metal can cause burns. Dust or fume from processing can cause mechanical irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Eye Contact: Dust or fume from processing can cause mechanical irritation.

Ingestion: Not revelant, due to the form of the product.

GHS Signal Word:
WARNING

GHS Hazard Pictograms:

GHS Classifications:
Physical, Flammable Solids, 2

GHS Phrases:
H228 - Flammable solid

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P308+313 - IF exposed or concerned: Get medical advice/attention.

Solid. Silvery. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
Explosion/fire hazards may be present when:
• Dust or fines are dispersed in air.
• Chips, dust or fines are in contact with water.
• Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).
Dust and fume from processing can cause irritation of the eyes, skin and upper respiratory tract.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
7429-90-5	85-97%	Aluminum
7440-50-8	<6.9%	Copper
7440-66-6	<4.0%	Zinc
7439-95-4	<2%	Magnesium
7439-89-6	<1.6%	Iron
7440-21-3	<1.4%	Silicon
7439-96-5	<1.3%	Manganese
7440-22-4	<0.8%	Silver
7440-47-3	<0.6%	Chromium

4 FIRST AID MEASURES

Inhalation:	Solid aluminum does not present an inhalation hazard. Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. If breathing is difficult, provide oxygen. Loosen any tight clothing on neck or chest. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.
Skin Contact:	Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists. Skin contact with hot metal can cause burns.
Eye Contact:	Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Consult a physician.
Ingestion:	Not relevant, due to the form of the product.

5 FIRE FIGHTING MEASURES

Flammability:	NA
Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible as a solid, rapid as a dust.

Suitable extinguishing media:
Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.
Unsuitable extinguishing media:
DO NOT USE halogenated extinguishing agents on small chips/fines. DO NOT USE water in fighting fires around molten metal.
These fire extinguishing agents will react with the burning material.
Specific hazards arising from the chemical:
May be a potential hazard under the following conditions:
• Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
• Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
• Dust and fines in contact with certain metal oxides (e.g., rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.
Special protective equipment and precautions for firefighters:
Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full

protective clothing when appropriate.
Fire-fighting equipment/instructions:
Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material. Apply extinguishing media carefully to avoid creating airborne dust. If impossible to extinguish, protect surroundings and allow fire to burn itself out.
General fire hazards: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot Aluminum does not necessarily glow red. Use personal protection recommended in Section 8 of the SDS.

Molten metal: Keep unnecessary personnel away.

Collect scrap for recycling. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap.

No special environmental precautions required.

7 HANDLING AND STORAGE

Handling Precautions:	Keep material dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.
Storage Requirements:	If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) codes and standards listed in Section 16. Use non-sparking handling equipment, tools and natural bristle brush. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15). Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts (Aluminum). Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

Do not allow small chunks, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained. Do not use compressed air to remove settled material from floors, beams or equipment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Dust and fumes from processing, use with adequate explosion-proof ventilation
Personal Protective Equip:	Wear safety glasses with side shields.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Silver to gray wire
Physical State:	Solid
Odor:	Odorless
Solubility:	Insoluble in water
Spec Grav./Density:	2.72-2.84 g/cubic cm
Freezing/Melting Pt.:	900-1200°F

10 STABILITY AND REACTIVITY

Stability: Stable under normal conditions of use, storage, and transportation as shipped.

Conditions to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:

• Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particulary when the water is entrapped.

• Heat: Oxidizes at a rate dependent upon temperature and particle size. Explosions can occur with coils of foil that have been submerged or partially submerged in water for an extended period of time. Water can penetrate between the layers of foil, react with the aluminum surface and generate heat and hydrogen gas. When the coils are removed from the cooling effects of the water, rapid temperature increases can occur causing steam explosions which result in the rupture of the coils and discharge of debris.

Coils of foil may be a potential hazard under the following conditions:

• Coil has been annealed (annealing removes residual oil that could prevent penetration of water

• Foil is very thin gauge (5-9 mcm thickness which increases surface area)
• Coil has been immersed for an extended period of time (several hours or more)
• Wetted coil has recently been removed from the cooling effects of the water
In such situations, the coils should be isolated (30 meters from any personnel) for at least 72 hours as soon as possible after removal from the water. Coils making crackling sounds or emitting steam should not be approached or transported in commerce. Wetted coils should not be charged into a furnace for remelting until completely dry.

Materials to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:
• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
• Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

Hazardous Decomposition: No hazardous decomposition products are known.

Hazardous Polymerization: Will not occur.

11 TOXICOLOGICAL INFORMATION

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Some products are supplied with an oil coating or have residual oil from the manufacturing process. Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically

inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.
Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.
Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B). Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting of aluminum can generate oxides of nitrogen.
Oxides of nitrogen (NO and NO2): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemaglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.
Nitrogen dioxide (NO2): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on likely routes of exposure

Eye contact	Dust and fumes from processing: Can cause irritation.
Inhalation	Additional health effects from elevated temperature processing (e.g., welding, plasma arc cutting): Can cause. Acute overexposures: Can cause the accumulation of fluid in the lungs (pulmonary edema) and reduced ability of the blood to carry oxygen (methemaglobin).
Ingestion	Not available.
Skin contact	Dust and fumes from processing: Can cause irritation. Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause dermatitis.

Symptoms related to the physical, chemical and toxicological characteristics

Dust and fume from processing: Can cause mechanical irritation.
Contact with residual oil/oil coating: Prolonged skin contact may cause skin irritation and/or dermatitis.

Information on toxicological effects

Acute toxicity Not applicable.

Skin corrosion/irritation	Non-corrosive.
Serious eye damage/eye irritation	Dust and fume from processing: May irritate eyes.
Respiratory or skin sensitization	Not a skin sensitizer.
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	Contact with residual oil/oil coating: Prolonged contact may cause redness and irritation.
Germ cell mutagenicity	Contains no ingredient listed as a mutagen.
Neurological effects	Not classified. Based on available data, the classification criteria are not met.
Pre-existing conditions aggravated by exposure	Dust and fume from processing: Asthma, chronic lung disease, and skin rashes.
Carcinogenicity	Contains no ingredient listed as a carcinogen
ACGIH Carcinogens	
Aluminum - CAS 7429-90-5	A4 Not classifiable as a human carcinogen.
Reproductive toxicity	Contains no ingredient listed as toxic to reproduction.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Teratogenicity	Not applicable.
Specific target organ toxicity - single exposure	Not classified. Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Not classified. Based on available data, the classification criteria are not met.
Aspiration hazard	Not applicable.
Chronic effects	Not applicable.

12 ECOLOGICAL INFORMATION

Ecotoxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product contains inorganic compounds which are not biodegradable.
Bioaccumulative potential	Will not bio-accumulate.
Mobility in soil	Not available.
Other adverse effects	Not available.

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7429-90-5	85-97%	Aluminum
7440-50-8	<6.9%	Copper
7440-66-6	<4%	Zinc
7439-95-4	<2%	Magnesium
7439-89-6	<1.6%	Iron
7440-21-3	<1.4%	Silicon
7439-96-5	<1.3%	Manganese
7440-47-3	<0.6%	Chromium

CERCLA (Comprehensive Response Compensation, and Liability Act)

7440-50-8	<6.9%	Copper
7440-66-6	<4%	Zinc
7440-47-3	<0.6%	Chromium

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7429-90-5	85-97%	Aluminum
7440-50-8	<6.9%	Copper
7440-66-6	<4%	Zinc
7439-96-5	<1.3%	Manganese
7440-47-3	<0.6%	Chromium

*Aluminum (7429905 85-97%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Copper (7440508 <6.9%) CERCLA, EPCRAWPC, MASS, NJHS, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

*Zinc (7440666 <4.0%) CERCLA, EPCRAWPC, MASS, NJHS, PA, PRIPOL, SARA313, TOXICPOL, TSCA

*Magnesium (7439954 <2%) MASS, PA, TSCA

*Iron (7439896 <1.6%) TSCA

*Silicon (7440213 <1.4%) MASS, OSHAWAC, PA, TSCA, TXAIR

*Manganese (7439965 <1.3%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 <0.6%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

```
CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens
```

16 OTHER INFORMATION

OTHER INFORMATION: THIS SDS IS A COMPILATION OF INFORMATION FOUND IN THE SAFETY DATA SHEET(S) SUPPLIED BY RAW MATERIAL SUPPLIERS.

THE INFORMATION IN THIS SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. PHIFER INCORPORATED BELIEVES THIS INFORMATION TO BE RELIABLE AND UP-TO-DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT PHIFER INCORPORATED AT THE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

PHIFER INCORPORATED
P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Wrought Aluminum Products, 5XXX Series Alloys
Revision Date: 5/26/2015
Version: 1
SDS Number: PI-SDS-M120
Product Code: PI-SDS-M120
Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Health effects from mechanical processing (cutting, grinding): Dust: can cause irritation of the upper respiratory tract.

Additional health effects from elevated temperature processing (welding, melting): Dust and fumes from processing: Acute overexposure: Can cause metal fume fever (nausea, chills, fever, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin), and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease, reproductive harm in males, asthma, respiratory sensitization and lung cancer.

Skin Contact: Skin contact with hot metal can cause burns. Dust or fume from processing can cause mechanical irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Eye Contact: Dust or fume from processing can cause mechanical irritation.

Ingestion: Not revelant, due to the form of the product.

GHS Signal Word:
WARNING

GHS Hazard Pictograms:

GHS Classifications:
Physical, Flammable Solids, 2

GHS Phrases:
H228 - Flammable solid

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P308+313 - IF exposed or concerned: Get medical advice/attention.

Solid. Silvery. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
Explosion/fire hazards may be present when:
• Dust or fines are dispersed in air.
• Chips, dust or fines are in contact with water.
• Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).
Dust and fume from processing can cause irritation of the eyes, skin and upper respiratory tract.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
7429-90-5	>84.9%	Aluminum
7440-66-6	<4.0%	Zinc
7439-95-4	<6.6%	Magnesium
7439-89-6	<1.3%	Iron
7440-21-3	<1.5%	Silicon
7439-96-5	<1.9%	Manganese
7440-47-3	<1.1%	Chromium
7440-02-0	0-.1%	Nickel
7439-92-1	0-.02%	Lead

4 FIRST AID MEASURES

Inhalation:	Solid aluminum does not present an inhalation hazard. Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. If breathing is difficult, provide oxygen. Loosen any tight clothing on neck or chest. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.
Skin Contact:	Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists. Skin contact with hot metal can cause burns.
Eye Contact:	Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Consult a physician.
Ingestion:	Not relevant, due to the form of the product.

5 FIRE FIGHTING MEASURES

Flammability:	NA
Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible as a solid, rapid as a dust.

Suitable extinguishing media:
Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.
Unsuitable extinguishing media:
DO NOT USE halogenated extinguishing agents on small chips/fines. DO NOT USE water in fighting fires around molten metal.
These fire extinguishing agents will react with the burning material.
Specific hazards arising from the chemical:
May be a potential hazard under the following conditions:
• Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
• Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
• Dust and fines in contact with certain metal oxides (e.g., rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.
Special protective equipment and precautions for firefighters:
Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full

protective clothing when appropriate.
Fire-fighting equipment/instructions:
Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material. Apply extinguishing media carefully to avoid creating airborne dust. If impossible to extinguish, protect surroundings and allow fire to burn itself out.
General fire hazards: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot Aluminum does not necessarily glow red. Use personal protection recommended in Section 8 of the SDS.

Molten metal: Keep unnecessary personnel away.

Collect scrap for recycling. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap.

No special environmental precautions required.

7 HANDLING AND STORAGE

Handling Precautions:	Keep material dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.
Storage Requirements:	If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) codes and standards listed in Section 16. Use non-sparking handling equipment, tools and natural bristle brush. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15). Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts (Aluminum). Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

Do not allow small chunks, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained. Do not use compressed air to remove settled material from floors, beams or equipment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Dust and fumes from processing, use with adequate explosion-proof ventilation
Personal Protective Equip:	Wear safety glasses with side shields.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Silver to gray wire
Physical State:	Solid
Odor:	Odorless
Solubility:	Insoluble in water
Spec Grav./Density:	2.64-2.72 g/cubic cm
Freezing/Melting Pt.:	1050-1220°F

10 STABILITY AND REACTIVITY

Stability: Stable under normal conditions of use, storage, and transportation as shipped.

Conditions to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:

• Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particulary when the water is entrapped.

• Heat: Oxidizes at a rate dependent upon temperature and particle size. Explosions can occur with coils of foil that have been submerged or partially submerged in water for an extended period of time. Water can penetrate between the layers of foil, react with the aluminum surface and generate heat and hydrogen gas. When the coils are removed from the cooling effects of the water, rapid temperature increases can occur causing steam explosions which result in the rupture of the coils and discharge of debris.

Coils of foil may be a potential hazard under the following conditions:

• Coil has been annealed (annealing removes residual oil that could prevent penetration of water

• Foil is very thin gauge (5-9 mcm thickness which increases surface area)
• Coil has been immersed for an extended period of time (several hours or more)
• Wetted coil has recently been removed from the cooling effects of the water
In such situations, the coils should be isolated (30 meters from any personnel) for at least 72 hours as soon as possible after removal from the water. Coils making crackling sounds or emitting steam should not be approached or transported in commerce. Wetted coils should not be charged into a furnace for remelting until completely dry.

Materials to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:
• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
• Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

Hazardous Decomposition: No hazardous decomposition products are known.

Hazardous Polymerization: Will not occur.

11 TOXICOLOGICAL INFORMATION

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Some products are supplied with an oil coating or have residual oil from the manufacturing process. Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically

inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.
Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.
Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B). Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting of aluminum can generate oxides of nitrogen.
Oxides of nitrogen (NO and NO2): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemaglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.
Nitrogen dioxide (NO2): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on likely routes of exposure

Eye contact	Dust and fumes from processing: Can cause irritation.
Inhalation	Additional health effects from elevated temperature processing (e.g., welding, plasma arc cutting): Can cause. Acute overexposures: Can cause the accumulation of fluid in the lungs (pulmonary edema) and reduced ability of the blood to carry oxygen (methemaglobin).
Ingestion	Not available.
Skin contact	Dust and fumes from processing: Can cause irritation. Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause dermatitis.

Symptoms related to the physical, chemical and toxicological characteristics

Dust and fume from processing: Can cause mechanical irritation.
Contact with residual oil/oil coating: Prolonged skin contact may cause skin irritation and/or dermatitis.

Information on toxicological effects

Acute toxicity Not applicable.

Skin corrosion/irritation	Non-corrosive.
Serious eye damage/eye irritation	Dust and fume from processing: May irritate eyes.
Respiratory or skin sensitization	Not a skin sensitizer.
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	Contact with residual oil/oil coating: Prolonged contact may cause redness and irritation.
Germ cell mutagenicity	Contains no ingredient listed as a mutagen.
Neurological effects	Not classified. Based on available data, the classification criteria are not met.
Pre-existing conditions aggravated by exposure	Dust and fume from processing: Asthma, chronic lung disease, and skin rashes.
Carcinogenicity	Contains no ingredient listed as a carcinogen
ACGIH Carcinogens	
Aluminum - CAS 7429-90-5	A4 Not classifiable as a human carcinogen.
Reproductive toxicity	Contains no ingredient listed as toxic to reproduction.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Teratogenicity	Not applicable.
Specific target organ toxicity - single exposure	Not classified. Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Not classified. Based on available data, the classification criteria are not met.
Aspiration hazard	Not applicable.
Chronic effects	Not applicable.

12 ECOLOGICAL INFORMATION

Ecotoxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product contains inorganic compounds which are not biodegradable.
Bioaccumulative potential	Will not bio-accumulate.
Mobility in soil	Not available.
Other adverse effects	Not available.

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7429-90-5	>84.9%	Aluminum
7440-66-6	<4%	Zinc
7439-95-4	<6.6%	Magnesium
7439-89-6	<1.3%	Iron
7440-21-3	<1.5%	Silicon
7439-96-5	<1.9%	Manganese
7440-47-3	<1.1%	Chromium
7440-02-0	0 - 0.1%	Nickel

CERCLA (Comprehensive Response Compensation, and Liability Act)

7440-66-6	<4%	Zinc
7440-47-3	<1.1%	Chromium

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7429-90-5	>84.9%	Aluminum
7440-66-6	<4%	Zinc
7439-96-5	<1.9%	Manganese
7440-47-3	<1.1%	Chromium
7440-02-0	0 - 0.1%	Nickel

*Aluminum (7429905 >84.9%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Zinc (7440666 <4.0%) CERCLA, EPCRAWPC, MASS, NJHS, PA, PRIPOL, SARA313, TOXICPOL, TSCA

*Magnesium (7439954 <6.6%) MASS, PA, TSCA

*Iron (7439896 <1.3%) TSCA

*Silicon (7440213 <1.4%) MASS, OSHAWAC, PA, TSCA, TXAIR

*Manganese (7439965 <1.3%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 <1.1%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

*Nickel (7440020 0-.1%) CERCLA, EPCRAWPC, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA

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EPCRAWPC = EPCRA Water Priority Chemicals
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OSHAWAC = OSHA Workplace Air Contaminants
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SARA313 = SARA 313 Title III Toxic Chemicals
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P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Wrought Aluminum Products, 6XXX Series Alloys
Revision Date: 5/26/2015
Version: 1
SDS Number: PI-SDS-M130
Product Code: PI-SDS-M130
Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Health effects from mechanical processing (cutting, grinding): Dust: can cause irritation of the upper respiratory tract.

Additional health effects from elevated temperature processing (welding, melting): Dust and fumes from processing: Acute overexposure: Can cause metal fume fever (nausea, chills, fever, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin), and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease, reproductive harm in males, asthma, respiratory sensitization and lung cancer.

Skin Contact: Skin contact with hot metal can cause burns. Dust or fume from processing can cause mechanical irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Eye Contact: Dust or fume from processing can cause mechanical irritation.

Ingestion: Not revelant, due to the form of the product.

GHS Signal Word:
WARNING

GHS Hazard Pictograms:

GHS Classifications:
Physical, Flammable Solids, 2

GHS Phrases:
H228 - Flammable solid

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P308+313 - IF exposed or concerned: Get medical advice/attention.

Solid. Silvery. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
Explosion/fire hazards may be present when:
• Dust or fines are dispersed in air.
• Chips, dust or fines are in contact with water.
• Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).
Dust and fume from processing can cause irritation of the eyes, skin and upper respiratory tract.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
7429-90-5	>90%	Aluminum
7440-66-6	<4.0%	Zinc
7439-95-4	<4.1%	Magnesium
7439-89-6	<1.2%	Iron
7440-21-3	<1.9%	Silicon
7439-96-5	<1.5%	Manganese
7440-47-3	<0.5%	Chromium
7440-02-0	0-.2%	Nickel
7439-92-1	0-.4%	Lead
7440-50-8	<1.4%	Copper

4 FIRST AID MEASURES

Inhalation:	Solid aluminum does not present an inhalation hazard. Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. If breathing is difficult, provide oxygen. Loosen any tight clothing on neck or chest. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.
Skin Contact:	Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists. Skin contact with hot metal can cause burns.
Eye Contact:	Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Consult a physician.
Ingestion:	Not relevant, due to the form of the product.

5 FIRE FIGHTING MEASURES

Flammability:	NA
Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible as a solid, rapid as a dust.

Suitable extinguishing media:
Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.
Unsuitable extinguishing media:
DO NOT USE halogenated extinguishing agents on small chips/fines. DO NOT USE water in fighting fires around molten metal.
These fire extinguishing agents will react with the burning material.
Specific hazards arising from the chemical:
May be a potential hazard under the following conditions:
• Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
• Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
• Dust and fines in contact with certain metal oxides (e.g., rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.
Special protective equipment and precautions for firefighters:

Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.
Fire-fighting equipment/instructions:
Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material. Apply extinguishing media carefully to avoid creating airborne dust. If impossible to extinguish, protect surroundings and allow fire to burn itself out.
General fire hazards: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot Aluminum does not necessarily glow red. Use personal protection recommended in Section 8 of the SDS.

Molten metal: Keep unnecessary personnel away.

Collect scrap for recycling. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap.

No special environmental precautions required.

7 HANDLING AND STORAGE

Handling Precautions:	Keep material dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.
Storage Requirements:	If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) codes and standards listed in Section 16. Use non-sparking handling equipment, tools and natural bristle brush. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15). Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts (Aluminum). Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron,

iron oxide (rust) or other metal oxides.

Do not allow small chunks, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained. Do not use compressed air to remove settled material from floors, beams or equipment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Dust and fumes from processing, use with adequate explosion-proof ventilation
Personal Protective Equip:	Wear safety glasses with side shields.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Silver to gray wire
Physical State:	Solid
Odor:	Odorless
Solubility:	Insoluble in water
Spec Grav./Density:	2.69-2.74 g/cubic cm
Freezing/Melting Pt.:	1029.9-1209.9°F

10 STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of use, storage, and transportation as shipped.
Conditions to Avoid:	Chips, fines, dust and molten metal are considerably more reactive with the following: • Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particulary when the water is entrapped. • Heat: Oxidizes at a rate dependent upon temperature and particle size. Explosions can occur with coils of foil that have been submerged or partially submerged in water for an extended period of time. Water can penetrate between the layers of foil, react with the aluminum surface and generate heat and hydrogen gas. When the coils are removed from the cooling effects of the water, rapid temperature increases can occur causing steam explosions which result in the rupture of the coils and discharge of debris. Coils of foil may be a potential hazard under the following conditions: • Coil has been annealed (annealing removes residual oil that could prevent

penetration of water
• Foil is very thin gauge (5-9 mcm thickness which increases surface area)
• Coil has been immersed for an extended period of time (several hours or more)
• Wetted coil has recently been removed from the cooling effects of the water
In such situations, the coils should be isolated (30 meters from any personnel) for at least 72 hours as soon as possible after removal from the water. Coils making crackling sounds or emitting steam should not be approached or transported in commerce. Wetted coils should not be charged into a furnace for remelting until completely dry.

Materials to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:
• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
• Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

Hazardous Decomposition: No hazardous decomposition products are known.

Hazardous Polymerization: Will not occur.

11 TOXICOLOGICAL INFORMATION

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Some products are supplied with an oil coating or have residual oil from the manufacturing process. Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.
Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.
Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B). Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting of aluminum can generate oxides of nitrogen.
Oxides of nitrogen (NO and NO2): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemaglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.
Nitrogen dioxide (NO2): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on likely routes of exposure

Eye contact	Dust and fumes from processing: Can cause irritation.
Inhalation	Additional health effects from elevated temperature processing (e.g., welding, plasma arc cutting): Can cause. Acute overexposures: Can cause the accumulation of fluid in the lungs (pulmonary edema) and reduced ability of the blood to carry oxygen (methemaglobin).
Ingestion	Not available.
Skin contact	Dust and fumes from processing: Can cause irritation. Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause dermatitis.

Symptoms related to the physical, chemical and toxicological characteristics

Dust and fume from processing: Can cause mechanical irritation.
Contact with residual oil/oil coating: Prolonged skin contact may cause skin irritation and/or dermatitis.

Information on toxicological effects

Acute toxicity	Not applicable.
Skin corrosion/irritation	Non-corrosive.
Serious eye damage/eye irritation	Dust and fume from processing: May irritate eyes.
Respiratory or skin sensitization	Not a skin sensitizer.
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	Contact with residual oil/oil coating: Prolonged contact may cause redness and irritation.
Germ cell mutagenicity	Contains no ingredient listed as a mutagen.
Neurological effects	Not classified. Based on available data, the classification criteria are not met.
Pre-existing conditions aggravated by exposure	Dust and fume from processing: Asthma, chronic lung disease, and skin rashes.
Carcinogenicity	Contains no ingredient listed as a carcinogen
ACGIH Carcinogens	
Aluminum - CAS 7429-90-5	A4 Not classifiable as a human carcinogen.
Reproductive toxicity	Contains no ingredient listed as toxic to reproduction.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Teratogenicity	Not applicable.
Specific target organ toxicity - single exposure	Not classified. Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Not classified. Based on available data, the classification criteria are not met.
Aspiration hazard	Not applicable.
Chronic effects	Not applicable.

12 ECOLOGICAL INFORMATION

Ecotoxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product contains inorganic compounds which are not biodegradable.
Bioaccumulative potential	Will not bio-accumulate.
Mobility in soil	Not available.
Other adverse effects	Not available.

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7429-90-5	>90%	Aluminum
7440-66-6	<4%	Zinc
7439-95-4	<4.1%	Magnesium
7439-89-6	<1.2%	Iron
7440-21-3	<1.9%	Silicon
7439-96-5	<1.5%	Manganese
7440-47-3	<0.5%	Chromium
7440-02-0	0 - 0.2%	Nickel
7440-50-8	<1.4%	Copper

CERCLA (Comprehensive Response Compensation, and Liability Act)

7440-66-6	<4%	Zinc
7440-47-3	<0.5%	Chromium

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7429-90-5	>90%	Aluminum
7440-66-6	<4%	Zinc
7439-96-5	<1.5%	Manganese
7440-47-3	<0.5%	Chromium
7440-02-0	0 - 0.2%	Nickel
7440-50-8	<1.4%	Copper

*Aluminum (7429905 >90%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Zinc (7440666 <4.0%) CERCLA, EPCRAWPC, MASS, NJHS, PA, PRIPOL, SARA313, TOXICPOL, TSCA

*Magnesium (7439954 <4.1%) MASS, PA, TSCA

*Iron (7439896 <1.2%) TSCA

*Silicon (7440213 <1.9%) MASS, OSHAWAC, PA, TSCA, TXAIR

*Manganese (7439965 <1.5%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 <1.1%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

*Nickel (7440020 0-.2%) CERCLA, EPCRAWPC, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA

*Copper (7440508 <1.4%) CERCLA, EPCRAWPC, MASS, NJHS, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

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CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens
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16 OTHER INFORMATION

OTHER INFORMATION: THIS SDS IS A COMPILATION OF INFORMATION FOUND IN THE SAFETY DATA SHEET(S) SUPPLIED BY RAW MATERIAL SUPPLIERS.

THE INFORMATION IN THIS SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. PHIFER INCORPORATED BELIEVES THIS INFORMATION TO BE RELIABLE AND UP-TO-DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD,

YOU SHOULD CONTACT PHIFER INCORPORATED AT THE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

PHIFER INCORPORATED
P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Wrought Aluminum Products, 8XXX Series Alloys
Revision Date: 5/27/2015
Version: 1
SDS Number: PI-SDS-M140
Product Code: PI-SDS-M140
Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Health effects from mechanical processing (cutting, grinding): Dust: can cause irritation of the upper respiratory tract.

Additional health effects from elevated temperature processing (welding, melting): Dust and fumes from processing: Acute overexposure: Can cause metal fume fever (nausea, chills, fever, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin), and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease, reproductive harm in males, asthma, respiratory sensitization and lung cancer.

Skin Contact: Skin contact with hot metal can cause burns. Dust or fume from processing can cause mechanical irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Eye Contact: Dust or fume from processing can cause mechanical irritation.

Ingestion: Not revelant, due to the form of the product.

GHS Signal Word:
WARNING

GHS Hazard Pictograms:

GHS Classifications:
Physical, Flammable Solids, 2

GHS Phrases:
H228 - Flammable solid

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P308+313 - IF exposed or concerned: Get medical advice/attention.

Solid. Silvery. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
Explosion/fire hazards may be present when:
• Dust or fines are dispersed in air.
• Chips, dust or fines are in contact with water.
• Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).
Dust and fume from processing can cause irritation of the eyes, skin and upper respiratory tract.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
7429-90-5	>85%	Aluminum
7440-66-6	<2%	Zinc
7439-89-6	<9.4%	Iron
7440-21-3	<1.5%	Silicon
7439-96-5	<2%	Manganese
7440-47-3	<0.3%	Chromium
7440-02-0	<0.1%	Nickel
7440-62-2	<0.9%	Vanadium

4 FIRST AID MEASURES

Inhalation:	Solid aluminum does not present an inhalation hazard. Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. If breathing is difficult, provide oxygen. Loosen any tight clothing on neck or chest. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.
Skin Contact:	Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists. Skin contact with hot metal can cause burns.
Eye Contact:	Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Consult a physician.
Ingestion:	Not relevant, due to the form of the product.

5 FIRE FIGHTING MEASURES

Flammability:	NA
Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible as a solid, rapid as a dust.

Suitable extinguishing media:
Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.
Unsuitable extinguishing media:
DO NOT USE halogenated extinguishing agents on small chips/fines. DO NOT USE water in fighting fires around molten metal.
These fire extinguishing agents will react with the burning material.
Specific hazards arising from the chemical:
May be a potential hazard under the following conditions:
• Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
• Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
• Dust and fines in contact with certain metal oxides (e.g., rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
• Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.
Special protective equipment and precautions for firefighters:
Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full

protective clothing when appropriate.
Fire-fighting equipment/instructions:
Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material. Apply extinguishing media carefully to avoid creating airborne dust. If impossible to extinguish, protect surroundings and allow fire to burn itself out.
General fire hazards: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot Aluminum does not necessarily glow red. Use personal protection recommended in Section 8 of the SDS.

Molten metal: Keep unnecessary personnel away.

Collect scrap for recycling. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap.

No special environmental precautions required.

7 HANDLING AND STORAGE

Handling Precautions:	Keep material dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.
Storage Requirements:	If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) codes and standards listed in Section 16. Use non-sparking handling equipment, tools and natural bristle brush. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15). Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts (Aluminum). Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron,

iron oxide (rust) or other metal oxides.

Do not allow small chunks, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained. Do not use compressed air to remove settled material from floors, beams or equipment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Dust and fumes from processing, use with adequate explosion-proof ventilation
Personal Protective Equip:	Wear safety glasses with side shields.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Silver to gray wire
Physical State:	Solid
Odor:	Odorless
Solubility:	Insoluble in water
Spec Grav./Density:	2.70-2.92 g/cubic cm
Freezing/Melting Pt.:	1150-1220°F

10 STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of use, storage, and transportation as shipped.
Conditions to Avoid:	Chips, fines, dust and molten metal are considerably more reactive with the following: • Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particulary when the water is entrapped. • Heat: Oxidizes at a rate dependent upon temperature and particle size. Explosions can occur with coils of foil that have been submerged or partially submerged in water for an extended period of time. Water can penetrate between the layers of foil, react with the aluminum surface and generate heat and hydrogen gas. When the coils are removed from the cooling effects of the water, rapid temperature increases can occur causing steam explosions which result in the rupture of the coils and discharge of debris. Coils of foil may be a potential hazard under the following conditions: • Coil has been annealed (annealing removes residual oil that could prevent

penetration of water
• Foil is very thin gauge (5-9 mcm thickness which increases surface area)
• Coil has been immersed for an extended period of time (several hours or more)
• Wetted coil has recently been removed from the cooling effects of the water
In such situations, the coils should be isolated (30 meters from any personnel) for at least 72 hours as soon as possible after removal from the water. Coils making crackling sounds or emitting steam should not be approached or transported in commerce. Wetted coils should not be charged into a furnace for remelting until completely dry.

Materials to Avoid: Chips, fines, dust and molten metal are considerably more reactive with the following:
• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
• Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

Hazardous Decomposition: No hazardous decomposition products are known.

Hazardous Polymerization: Will not occur.

11 TOXICOLOGICAL INFORMATION

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Some products are supplied with an oil coating or have residual oil from the manufacturing process. Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.
Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.
Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B). Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting of aluminum can generate oxides of nitrogen.
Oxides of nitrogen (NO and NO2): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemaglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.
Nitrogen dioxide (NO2): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on likely routes of exposure

Eye contact	Dust and fumes from processing: Can cause irritation.
Inhalation	Additional health effects from elevated temperature processing (e.g., welding, plasma arc cutting): Can cause. Acute overexposures: Can cause the accumulation of fluid in the lungs (pulmonary edema) and reduced ability of the blood to carry oxygen (methemaglobin).
Ingestion	Not available.
Skin contact	Dust and fumes from processing: Can cause irritation. Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause dermatitis.

Symptoms related to the physical, chemical and toxicological characteristics

Dust and fume from processing: Can cause mechanical irritation.
Contact with residual oil/oil coating: Prolonged skin contact may cause skin irritation and/or dermatitis.

Information on toxicological effects

Acute toxicity	Not applicable.
Skin corrosion/irritation	Non-corrosive.
Serious eye damage/eye irritation	Dust and fume from processing: May irritate eyes.
Respiratory or skin sensitization	Not a skin sensitizer.
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	Contact with residual oil/oil coating: Prolonged contact may cause redness and irritation.
Germ cell mutagenicity	Contains no ingredient listed as a mutagen.
Neurological effects	Not classified. Based on available data, the classification criteria are not met.
Pre-existing conditions aggravated by exposure	Dust and fume from processing: Asthma, chronic lung disease, and skin rashes.
Carcinogenicity	Contains no ingredient listed as a carcinogen
ACGIH Carcinogens	
Aluminum - CAS 7429-90-5	A4 Not classifiable as a human carcinogen.
Reproductive toxicity	Contains no ingredient listed as toxic to reproduction.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Teratogenicity	Not applicable.
Specific target organ toxicity - single exposure	Not classified. Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Not classified. Based on available data, the classification criteria are not met.
Aspiration hazard	Not applicable.
Chronic effects	Not applicable.

12 ECOLOGICAL INFORMATION

Ecotoxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product contains inorganic compounds which are not biodegradable.
Bioaccumulative potential	Will not bio-accumulate.
Mobility in soil	Not available.
Other adverse effects	Not available.

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7429-90-5	>85%	Aluminum
7440-66-6	<2%	Zinc
7439-89-6	<9.4%	Iron
7440-21-3	<1.5%	Silicon
7439-96-5	<2%	Manganese
7440-47-3	<0.3%	Chromium
7440-02-0	<0.1%	Nickel

CERCLA (Comprehensive Response Compensation, and Liability Act)

7440-66-6	<2%	Zinc
7440-47-3	<0.3%	Chromium
7440-02-0	<0.1%	Nickel

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7429-90-5	>85%	Aluminum
7440-66-6	<2%	Zinc
7439-96-5	<2%	Manganese
7440-47-3	<0.3%	Chromium
7440-02-0	<0.1%	Nickel

*Aluminum (7429905 >85%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Zinc (7440666 <2%) CERCLA, EPCRAWPC, MASS, NJHS, PA, PRIPOL, SARA313, TOXICPOL, TSCA

*Iron (7439896 <9.4%) TSCA

*Silicon (7440213 <1.5%) MASS, OSHAWAC, PA, TSCA, TXAIR

*Manganese (7439965 <2%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 <0.3%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

*Nickel (7440020 <0.1%) CERCLA, EPCRAWPC, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA

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CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens
```

16 OTHER INFORMATION

OTHER INFORMATION: THIS SDS IS A COMPILATION OF INFORMATION FOUND IN THE SAFETY DATA SHEET(S) SUPPLIED BY RAW MATERIAL SUPPLIERS.

THE INFORMATION IN THIS SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. PHIFER INCORPORATED BELIEVES THIS INFORMATION TO BE RELIABLE AND UP-TO-DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT PHIFER INCORPORATED AT THE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

PHIFER INCORPORATED
P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Brite Kote, Lite Kote, Grill Cloth
Revision Date: 5/20/2015
Version: 1
SDS Number: PI-SDS-M500
Product Code: PI-SDS-M500
Product Use: Insect Screening

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Solid Aluminum does not present an inhalation hazard. Aluminum dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion).

Ingestion: Consult physician

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name	
7429-90-5	92-99%	Aluminum	OSHA: PEL 5mg/cubic meter
7439-95-4	0.2-5.6%	Magnesium	OSHA: PEL 15mg/cubic meter
7439-96-5	.05-1.4%	Manganese	OSHA: PEL 5mg/cubic meter
7440-47-3	.04-.35%	Chromium	OSHA: PEL 0.5mg/cubic meter
NA	Balance	Alkyd Resin	

Consists of 5154A aluminum wire coated with a very thin coating of a proprietary paint mixture.

4 FIRST AID MEASURES

Inhalation: Solid aluminum does not present an inhalation hazard. Aluminum dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation.

Ingestion: Consult physician.

5 FIRE FIGHTING MEASURES

Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible
Autoignition Temp:	N/A
LEL:	N/A
UEL:	N/A

Use Class D rated extinguisher.
Wear SCBA and appropriate PPE when exposed to products of decomposition.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

This product requires no special spill handling procedures.

7 HANDLING AND STORAGE

Handling Precautions:	Screen is electrically conductive
Storage Requirements:	Store at ambient temperature at atmospheric pressure.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	General mechanical room ventilation is expected to be satisfactory.
Personal Protective Equip:	Not required for intended use.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Aluminum colored woven screen.
Physical State:	Solid
Solubility:	Insoluble in water
Viscosity:	Solid
Bulk Density:	(water=1) 2.5-2.9

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Oxidation promoting conditions (Heat, Sunlight and Air).
Materials to Avoid:	Strong Oxidizing Agents, Strong Acids, Acid Chlorides, Strong Bases, Chlorinated Hydrcarbons, and Alcohols.
Hazardous Decomposition:	Combustion will produce CO2, CO, HCN, metal fumes, and other hazardous products.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Data not available

12 ECOLOGICAL INFORMATION

Data not available

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

CERCLA (Comprehensive Response Compensation, and Liability Act)

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

*Aluminum (7429905 92-99%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Magnesium (7439954 0.2-5.6%) MASS, PA, TSCA

*Manganese (7439965 .05-1.4%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 .04-.35%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens

16 OTHER INFORMATION

THE INFORMATION IN THIS SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. PHIFER INCORPORATED BELIEVES THIS INFORMATION TO BE RELIABLE AND UP-TO-DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT PHIFER INCORPORATED AT THE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

PHIFER INCORPORATED
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TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Perma Kote, Vent Mesh, Grill Cloth
Revision Date: 5/20/2015
Version: 1
SDS Number: PI-SDS-M510
Product Code: PI-SDS-M510
Product Use: Insect Screening

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Solid Aluminum does not present an inhalation hazard. Aluminum dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion).

Ingestion: Consult physician

GHS Precautionary Statements:

P281 - Use personal protective equipment as required.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name	
7429-90-5	92-99%	Aluminum	OSHA: PEL 5mg/cubic meter
7439-95-4	0.2-5.6%	Magnesium	OSHA: PEL 15mg/cubic meter
7439-96-5	.05-1.4%	Manganese	OSHA: PEL 5mg/cubic meter
7440-47-3	.04-.35%	Chromium	OSHA: PEL 0.5mg/cubic meter
NA	Balance	Proprietary Coating	

Consists of 5154A aluminum wire coated with a very thin coating of an epoxy or polyester powder coating.

4 FIRST AID MEASURES

Inhalation: Solid aluminum does not present an inhalation hazard. Aluminum dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation.

Ingestion: Consult physician.

5 FIRE FIGHTING MEASURES

Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible
Autoignition Temp:	N/A
LEL:	N/A
UEL:	N/A

Use Class D rated extinguisher.
Wear SCBA and appropriate PPE when exposed to products of decomposition.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

This product requires no special spill handling procedures.

7 HANDLING AND STORAGE

Handling Precautions:	Screen is electrically conductive
Storage Requirements:	Store at ambient temperature at atmospheric pressure.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	General mechanical room ventilation is expected to be satisfactory.
Personal Protective Equip:	Not required for intended use.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Black or charcoal colored woven screen.
Physical State:	Solid
Solubility:	Insoluble in water
Viscosity:	Solid
Bulk Density:	(water=1) 2.5-2.9

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Oxidation promoting conditions (Heat, Sunlight and Air).
Materials to Avoid:	Strong Oxidizing Agents, Strong Acids, Acid Chlorides, Strong Bases, Chlorinated Hydrcarbons, and Alcohols.
Hazardous Decomposition:	Combustion will produce CO2, CO, HCN, metal fumes, and other hazardous products.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Data not available

12 ECOLOGICAL INFORMATION

Data not available

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

CERCLA (Comprehensive Response Compensation, and Liability Act)

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

California Proposition 65:
WARNING: This product contains a chemical known to the State of California to cause cancer.

*Aluminum (7429905 92-99%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Magnesium (7439954 0.2-5.6%) MASS, PA, TSCA

*Manganese (7439965 .05-1.4%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 .04-.35%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens

16 OTHER INFORMATION

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PHIFER INCORPORATED
P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Uncoated 5154A Screen, Grill Cloth
Revision Date: 5/20/2015
Version: 1
SDS Number: PI-SDS-M530
Product Code: PI-SDS-M530
Product Use: Insect Screening

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Solid Aluminum does not present an inhalation hazard. Aluminum dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion).

Ingestion: Consult physician

GHS Precautionary Statements:

P281 - Use personal protective equipment as required.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name	
7429-90-5	92-99%	Aluminum	OSHA: PEL 5mg/cubic meter
7439-95-4	0.2-5.6%	Magnesium	OSHA: PEL 15mg/cubic meter
7439-96-5	.05-1.4%	Manganese	OSHA: PEL 5mg/cubic meter
7440-47-3	.04-.35%	Chromium	OSHA: PEL 0.5mg/cubic meter

Consists of 5154A aluminum wire.

4 FIRST AID MEASURES

Inhalation: Solid aluminum does not present an inhalation hazard. Aluminum dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation.

Ingestion: Consult physician.

5 FIRE FIGHTING MEASURES

Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible
Autoignition Temp:	N/A
LEL:	N/A
UEL:	N/A

Use Class D rated extinguisher.
Wear SCBA and appropriate PPE when exposed to products of decomposition.

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

This product requires no special spill handling procedures.

7 HANDLING AND STORAGE

Handling Precautions:	Screen is electrically conductive
Storage Requirements:	Store at ambient temperature at atmospheric pressure.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	General mechanical room ventilation is expected to be satisfactory.
Personal Protective Equip:	Not required for intended use.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Aluminum colored woven screen.
Physical State:	Solid
Solubility:	Insoluble in water
Viscosity:	Solid
Bulk Density:	(water=1) 2.5-2.9

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Oxidation promoting conditions (Heat, Sunlight and Air).
Materials to Avoid:	Strong Oxidizing Agents, Strong Acids, Acid Chlorides, Strong Bases, Chlorinated Hydrcarbons, and Alcohols.
Hazardous Decomposition:	Combustion will produce CO2, CO, HCN, metal fumes, and other hazardous products.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Data not available

12 ECOLOGICAL INFORMATION

Data not available

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

CERCLA (Comprehensive Response Compensation, and Liability Act)

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7429-90-5	92-99%	Aluminum
7439-96-5	.05-1.4%	Manganese
7440-47-3	.04-.35%	Chromium

*Aluminum (7429905 92-99%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Magnesium (7439954 0.2-5.6%) MASS, PA, TSCA

*Manganese (7439965 .05-1.4%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 .04-.35%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens

16 OTHER INFORMATION

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PHIFER INCORPORATED
P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: SeeVue, Stainless Steel Insect Screen, Stainless Steel Wire
Revision Date: 5/21/2015
Version: 1
SDS Number: PI-SDS-M700
Product Code: PI-SDS-M700
Product Use: Insect Screening

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Solid stainless steel does not present an inhalation hazard. Stainless steel dusts and fumes may have negative effects on the users' health.

Effects of overexposure are as follows:
Acute: Excessive inhalation of all metallic fumes and dusts may result in irritation of eyes, nose and throat. Also high concentrations of fumes and ducts of iron-oxide, manganese, copper & selenium may result in metal fume fever. Typical symptoms consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, and usually last from 12 to 48 hours.
Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the elements:
Iron (iron-oxide): Pulmonary effects, siderosis
Manganese: Bronchitis, pneumonitis, lack of coordination, central nervous system.
Chromium: Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces human cancer.
Nickel: SAME AS CHROMIUM Molybdenum: Pain in joints, hands, knees and feet.
Medical conditions generally aggravated by exposure would be dermatitis and pulmonary disease or disorders.

Chromium and Nickel have been identified by the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) as potential carcinogens.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Stainless steel dust can irritate the eyes (mechanical abrasion).

Ingestion: Consult physician

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
7439-96-5	0.0-2.0%	Manganese
7440-47-3	18.0-20.0%	Chromium
7440-02-0	8.0-10.5%	Nickel
1309-37-1	67.50-74%	IRON OXIDE
NA	Balance	Proprietary Coating

Consists of 304L stainless steel alloy coated with a very thin proprietary epoxy or polyester coating.

4 FIRST AID MEASURES

Inhalation: Solid stainless steel does not present an inhalation hazard. Stainless steel dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Stainless steel dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation.

Ingestion: Consult physician.

5 FIRE FIGHTING MEASURES

Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible
Autoignition Temp:	N/A
LEL:	N/A
UEL:	N/A

Use Class D rated extinguisher.
Wear SCBA and appropriate PPE when exposed to products of decomposition.

Suspensions of stainless steel dust in air may pose a explosion hazard.

6 ACCIDENTAL RELEASE MEASURES

This product requires no special spill handling procedures.

7 HANDLING AND STORAGE

Handling Precautions:	Screen is electrically conductive
Storage Requirements:	Store at ambient temperature at atmospheric pressure.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Steel products in the natural state do not present an inhalation, ingestion, or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas.
Personal Protective Equip:	Not required for intended use.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Black colored woven stainless steel screen.
Physical State:	Solid
Solubility:	Insoluble in water
Spec Grav./Density:	7.8-8.0 g/cubic meter
Viscosity:	Solid
Melting Point:	1370-1540°C

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Non-ventilated areas when cutting, welding, burning or brazing; avoid generation of airborne dust and fumes
Materials to Avoid:	Stable under normal conditions to use, storage and transport. Reacts with strong acids to form hydrogen gas.
Hazardous Decomposition:	At temperatures above melting point, metallic oxide fumes may be liberated. . Keep Area Well Ventilated Hazardous Decomposition Products: Metallic oxides.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Data not available

12 ECOLOGICAL INFORMATION

Data not available

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7439-96-5	0.0-2.0%	Manganese
7440-47-3	18.0-20.0%	Chromium
7440-02-0	8.0-10.5%	Nickel
1309-37-1	67.50-74%	IRON OXIDE

CERCLA (Comprehensive Response Compensation, and Liability Act)

7440-47-3	18.0-20.0%	Chromium
7440-02-0	8.0-10.5%	Nickel

SARA TITLE III (Superfund Amendments and Reauthorization Act)
313/312 Hazard categories:
None.
313 Reportable Ingredients:

7440-47-3	18.0-20.0%	Chromium
7440-02-0	8.0-10.5%	Nickel

California Proposition 65:
WARNING: This product contains a chemical known to the State of California to cause cancer.

*Manganese (7439965 0.0-2.0%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Chromium (7440473 18.0-20.0%) CERCLA, EPCRAWPC, HWRCRA, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

*Nickel (7440020 8.0-10.5%) CERCLA, EPCRAWPC, MASS, NJHS, NRC, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA

*IRON OXIDE (1309371 8.0-10.5%) MASS, OSHAWAC, PA, TSCA, TXAIR

CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens

16 OTHER INFORMATION

THE INFORMATION IN THIS SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. PHIFER INCORPORATED BELIEVES THIS INFORMATION TO BE RELIABLE AND UP-TO-DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT PHIFER INCORPORATED AT THE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

PHIFER INCORPORATED
P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Epoxy Coated 1006B Low Carbon Steel
Revision Date: 5/20/2015
Version: 1
SDS Number: PI-SDS-M800
Product Code: PI-SDS-M800
Product Use: Filter media and other industrial uses

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

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.

Inhalation: Solid steel does not present an inhalation hazard.
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.

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.

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.

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.

GHS Signal Word:
DANGER

GHS Hazard Pictograms:

GHS Classifications:
Health, Carcinogenicity, 2
Health, Specific target organ toxicity - Repeated exposure, 1
Health, Respiratory or skin sensitization, 1 Skin

GHS Phrases:
H351 - Suspected of causing cancer
H372 - Causes damage to organs through prolonged or repeated exposure
H317 - May cause an allergic skin reaction

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.
P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P308+313 - IF exposed or concerned: Get medical advice/attention.

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, chromium (hexavalent), cobalt, lead, cadmium, antimony (trioxide), arsenic, beryllium. See Section 11, for additional, specific information on effects noted above.

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

Ingredients:

Cas #	Percentage	Chemical Name
7439-89-6	99.43-99.75	Iron
7439-96-5	.025-.040%	Manganese
7440-44-0	0.08%	Carbon
7440-21-3	0.05%	Silicon
7723-14-0	0.04%	Phosphorus
NA	Balance	Proprietary Epoxy Coating

Consists of 1006b steel wire coated with a very thin proprietary epoxy coating.

4 FIRST AID MEASURES

Inhalation: In case of overexposure to dusts or fumes, remove to fresh air. Get immediate medical attention if symptoms described in this SDS develop.

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.

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.

Ingestion: Not considered an ingestion hazard. However, if excessive amounts of dust or particulates are swallowed, treat symptomatically and supportively. Get medical attention.

5 FIRE FIGHTING MEASURES

Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	N/A
Autoignition Temp:	N/A
LEL:	N/A
UEL:	N/A

Under normal conditions, steel products do not present fire or explosion hazards, and dust generated by handling steel products is oxidized and not combustible. Processing of steel product by some individual customers may produce potentially combustible dust that may represent a fire or explosion hazard.
Use Class D rated extinguisher.
Wear SCBA and appropriate PPE when exposed to products of decomposition.

Suspensions of steel dust in air may pose a explosion hazard.

6 ACCIDENTAL RELEASE MEASURES

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.

7 HANDLING AND STORAGE

Handling Precautions:	Screen is electrically conductive
Storage Requirements:	Store at ambient temperature at atmospheric pressure. Store away from strong oxidizers. Dusts and/or powders, alone, or combined with process specific fluids, may form explosive mixtures with air. 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. Avoid breathing dusts or fumes.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	General mechanical room ventilation is expected to be satisfactory.
Personal Protective Equip:	Not required for intended use.

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:	Black or charcoal colored woven screen.
Physical State:	Solid
Solubility:	Insoluble in water
Freezing/Melting Pt.:	2800F

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Steel at temperatures above the melting point may liberate fumes containing oxides of iron and alloying elements. Avoid generation of airborne fume.
Materials to Avoid:	Reacts with strong acids to form hydrogen gas. Do not store near strong oxidizers.
Hazardous Decomposition:	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 cadmium, zinc, magnesium, copper, antimony, nickel, cobalt, manganese, tin, lead, beryllium, silver, chromium, aluminum, selenium, iron, and arsenic. The most common agents involved are zinc and copper.

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 cadmium. Primary target organs for cadmium overexposure are the lung and the kidney. Because of its cumulative nature, chronic cadmium poisoning can cause serious disease which takes many years to develop and may continue to progress despite cessation of exposure. Progression of the disease may not reflect current exposure conditions. It is also capable of causing a painful osteomalacia called "Itai-Itai" in postmenopausal women, and has caused developmental effects and/or reproductive effects in male and female animals. Cadmium is a listed carcinogen by NTP, OSHA, and IARC (Group 1).

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.

This product may contain small amounts of lead. Lead can accumulate in the body. Consequently, exposure to fumes or dust may produce signs of polyneuritis, diminished vision and peripheral neuropathy, such as tingling and loss of feeling in fingers, arms and legs. Lead is a known reproductive and developmental toxin. It is also associated with central nervous system disorders, anemia, kidney dysfunction and neurobehavioral abnormalities. The brain is a major target organ for lead exposure. Elemental lead is listed as an IARC 2B 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

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

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.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.

7439-89-6 | 99.43-99.75 | Iron
7439-96-5 | .05-1.4% | Manganese

CERCLA (Comprehensive Response Compensation, and Liability Act)

7439-96-5 | .05-1.4% | Manganese

SARA TITLE III (Superfund Amendments and Reauthorization Act)

313/312 Hazard categories:

None.

313 Reportable Ingredients:

7439-96-5 | .05-1.4% | Manganese

California Proposition 65:
WARNING: This product contains a chemical known to the State of California to cause cancer.

*Manganese (7439965 .05-1.4%) MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

*Iron (7439896 n/a%) TSCA

CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWRCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens

16 OTHER INFORMATION

THE INFORMATION IN THIS SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. PHIFER INCORPORATED BELIEVES THIS INFORMATION TO BE RELIABLE AND UP-TO-DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT PHIFER INCORPORATED AT THE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

PHIFER INCORPORATED
P.O. BOX 1700
TUSCALOOSA, AL 35403

(205) 345-2120

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PHIFER INCORPORATED
P.O. Box 1700
Tuscaloosa, AL 35403

Phone: 205/345-2120
Web: www.Phifer.com

Product Name: Bronze Screen
Revision Date: 5/18/2015
Version: 1
SDS Number: PI-SDS-M900
Product Code: PI-SDS-M900
Product Use: Insect Screening

2 HAZARDS IDENTIFICATION

Route of Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Solid bronze does not present an inhalation hazard. Bronze dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Bronze dust can irritate the eyes (mechanical abrasion).

Ingestion: Consult physician

GHS Precautionary Statements:

P281 - Use personal protective equipment as required.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name	
7440-50-8	87.5-90%	Copper	OSHA: PEL 1mg/cubic meter
7440-66-6	10-12.5%	Zinc	OSHA: PEL 5mg/cubic meter
NA	Balance	Alkyd Resin (cured)	

Consists of bronze wire coated with a very thin coating of a clear proprietary paint mixture.

4 FIRST AID MEASURES

Inhalation: Solid bronze does not present an inhalation hazard. Bronze dusts generated during the use are considered nuisance particles.

Skin Contact: Skin contact with hot metal can cause burns.

Eye Contact: Bronze dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation.

Ingestion: Consult physician.

5 FIRE FIGHTING MEASURES

Flash Point:	N/A
Flash Point Method:	N/A
Burning Rate:	Negligible
Autoignition Temp:	N/A
LEL:	N/A
UEL:	N/A

Use foam, dry chemical, or water fog.
Wear SCBA and appropriate PPE when exposed to products of decomposition.

Suspensions of bronze dust in air may pose an explosion hazard.

6 ACCIDENTAL RELEASE MEASURES

This product requires no special spill handling procedures.

7 HANDLING AND STORAGE

Handling Precautions:	Screen is electrically conductive
Storage Requirements:	Store at ambient temperature and pressure.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	General mechanical room ventilation is expected to be satisfactory.
Personal Protective Equip:	Not required for intended use.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Copper color woven screen.
Physical State:	Solid
Solubility:	Insoluble in water
Viscosity:	Solid

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Oxidation promoting conditions (Heat, Sunlight and Air).
Materials to Avoid:	Strong Oxidizing Agents, Azides, Ethylene Oxide, Iodates, Hydrazines, Potassium compounds, Sodium compounds, Acetylenes, strong scids and strong bases.
Hazardous Decomposition:	Combustion will produce CO2, CO, HCN, Copper Fumes, Copper Oxides, and other hazardous products.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Data not available

12 ECOLOGICAL INFORMATION

Data not available

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

14 TRANSPORT INFORMATION

DOT Class: Not regulated #

Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.
7440-50-8 | 87.5-90% | Copper
7440-66-6 | 10-12.5% | Zinc
CERCLA (Comprehensive Response Compensation, and Liability Act)
7440-50-8 | 87.5-90% | Copper
7440-66-6 | 10-12.5% | Zinc
SARA TITLE III (Superfund Amendments and Reauthorization Act)
313/312 Hazard categories:
None.
313 Reportable Ingredients:
7440-50-8 | 87.5-90% | Copper
7440-66-6 | 10-12.5% | Zinc

*Copper (7440508 87.5-90%) CERCLA, EPCRAWPC, MASS, NJHS, OSHAWAC, PA, PRIPOL, SARA313, TOXICPOL, TSCA, TXAIR

*Zinc (7440666 10-12.5%) CERCLA, EPCRAWPC, MASS, NJHS, PA, PRIPOL, SARA313, TOXICPOL, TSCA

CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level

16 OTHER INFORMATION

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