**NORTH AMERICAN STAINLESS**

Material Safety Data Sheet
Stainless Steel
July 2012

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Section 1 – Chemical Product and Company Identification

Manufacturer: North American Stainless
6870 US 42 East
Ghent, KY 41045

Emergency Number: (502) 347-6650
(502) 347-6111 after 5:00 PM

Product Name: Stainless Steel Products, All Grades

Description: Solid material in various forms

Technical Contact: Environmental, Safety & Health

Date of Revision: July 25, 2012

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Section 2 – Composition / Ingredients

Note: Steel products in their natural state do not present an inhalation or contact hazard, however operations such as burning, welding, sawing, brazing and grinding may release fumes and or dust, which may present health hazards. There is not an American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) or OSHA exposure limit (PEL) established for steel.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Percent</th>
<th>OSHA PEL (mg/m³)</th>
<th>ACGIH TLV (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>45 - 90</td>
<td>10 mg/m³ Iron Oxide – Fume</td>
<td>10 mg/m³ Iron Oxide – Dust &amp; Fume</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-2</td>
<td>0 - 40</td>
<td>1 mg/m³, Metal, soluble &amp; insoluble compounds</td>
<td>1.5 mg/m³ Metal</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.1 mg/m³ Soluble compounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.2 mg/m³, Insoluble compounds</td>
</tr>
<tr>
<td>Chromium</td>
<td>7440-47-3</td>
<td>10.5 - 30</td>
<td>1 mg/m³, Metal &amp; insoluble salt</td>
<td>0.5 mg/m³ Metal and Cr (III)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.5 mg/m³, Cr (III)</td>
<td>0.05 mg/m³, Cr (VI) &amp; water soluble compounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 µg/m³, Cr (VI)</td>
<td>0.01 mg/m³, Cr (VI) Insoluble compounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.5 µg/m³ Action Level Cr (VI)</td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>0 - 15</td>
<td>5 mg/m³ (ceiling)</td>
<td>0.2 mg/m³</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>7429-98-7</td>
<td>0 - 5</td>
<td>5 mg/m³ Soluble compounds as MO</td>
<td>5 mg/m³ Soluble compounds as MO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 mg/m³ Total dust</td>
<td>10 mg/m³ Insoluble compounds as MO</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>0 - 5</td>
<td>0.1 mg/m³ Fume</td>
<td>0.2 mg/m³ Fume</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.0 mg/m³ Dust &amp; Mist</td>
<td>1.0 mg/m³ Dust &amp; Mist</td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>0 - 3</td>
<td>15 mg/m³ Total dust</td>
<td>10 mg/m³ Total dust</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 mg/m³ Respirable dust</td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>0 - 1</td>
<td>15 mg/m³ Metal &amp; Total dust</td>
<td>1 mg/m³ Respirable dust</td>
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<td></td>
<td></td>
<td></td>
<td>5 mg/m³ Respirable dust</td>
<td>5 mg/m³ Welding fume</td>
</tr>
<tr>
<td>Cobalt</td>
<td>7440-48-4</td>
<td>0 - 1</td>
<td>0.1 mg/m³ Metal, Dust &amp; Fume</td>
<td>0.02 mg/m³ Metal, Dust &amp; Fume</td>
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<tr>
<td>Vanadium</td>
<td>1314-62-1</td>
<td>Trace</td>
<td>0.5 mg/m³ (ceiling) Vanadium Pentoxide dust</td>
<td>0.05 mg/m³ Vanadium Pentoxide</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1 mg/m³ (ceiling) Vanadium Pentoxide fume</td>
<td></td>
</tr>
</tbody>
</table>
**Section 3 – Hazard Identification:**

**General Hazard Statement:** Solid metallic products are classified as "articles" and are not hazardous materials in their solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Articles manufactured from these solid products are generally considered non-hazardous as well. However, some hazardous elements of these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, brazing, grinding, machining, milling, and welding.

**Primary route of entry:** Inhalation of dust or fume during welding, burning, melting, cutting, brazing, grinding, machining, milling, and welding operations.

**Effects of Overexposure:** Stainless, as a solid, is not toxic and presents no health hazard. Overexposure to dusts and/or fumes which may result during processing can pose health hazards as defined below.

**Acute Effects of Overexposure:**
- **Inhalation:** Inhalation of high concentrations of fumes or dusts may result in irritation and/or sensitization of the respiratory track, nasal irritation, and metal fume fever.
- **Eyes:** Exposure to fumes and dusts can cause irritation and/or sensitization and conjunctivitis.
- **Skin:** Contact with dusts may cause irritation or sensitization leading to dermatitis.
- **Ingestion:** Nausea or vomiting may result from ingestion of dusts.

**Chronic Effects of Overexposure:**
- **Inhalation:** Prolonged inhalation of dust or fume may cause lung, central nervous system, liver, kidney, and nasal cavity damage.
- **Eyes:** Prolonged exposure to fumes and dusts can cause severe irritation, and/or sensitization and conjunctivitis.
- **Skin:** Prolonged contact with dusts may cause severe irritation or sensitization leading to dermatitis.
- **Ingestion:** Nausea or vomiting may result from ingestion of dusts.
- **Eye Inflammation**

**Section 4 – First Aid Measures:**

**Eye Contact:** Wash with copious amounts of water for 15 minutes to ensure that no articles remain in the eye. Seek medical advice if irritation persists.
**Skin Contact:** If irritation develops, wash skin thoroughly with soap and water. Seek medical attention, if necessary.
**Inhalation:** Remove from dusty area to fresh air. If discomfort persists, consult physician.
**Ingestion:** If significant amounts of dusts are ingested, consult physician.

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**Table:**

<table>
<thead>
<tr>
<th>Material</th>
<th>CAS Number</th>
<th>Concentration (mg/m³)</th>
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<tbody>
<tr>
<td>Tungsten</td>
<td>7440-33-7</td>
<td>Trace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³ Total Dust</td>
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<tr>
<td></td>
<td></td>
<td>5 mg/m³ Respirable dust</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.0 mg/m³ 3 mg/m³ STEL Soluble</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.0 mg/m³ 10 mg/m³ STEL Insoluble</td>
</tr>
<tr>
<td>Tantalum</td>
<td>7440-25-7</td>
<td>Trace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mg/m³ Metal &amp; Oxide dust</td>
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<td></td>
<td>10 mg/m³ STEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mg/m³ Metal &amp; Oxide dust</td>
</tr>
<tr>
<td>Titanium</td>
<td>7440-32-6</td>
<td>0 – 1</td>
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<tr>
<td></td>
<td></td>
<td>15 mg/m³ Titanium Dioxide total dust</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m³ Titanium Dioxide total dust</td>
</tr>
<tr>
<td>Lead</td>
<td>7439-92-1</td>
<td>Trace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.05 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.05 mg/m³</td>
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</table>
Section 5 - Fire and Explosion Information:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Flash Point (°F):</td>
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<tr>
<td>Method Used:</td>
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</tr>
<tr>
<td>Auto-Ignition Temperature (°F):</td>
<td>N/A</td>
</tr>
<tr>
<td>Flammability Limits (%Vol):</td>
<td>N/A</td>
</tr>
<tr>
<td>LEL: (Lower Explosive Limit)</td>
<td>N/A</td>
</tr>
<tr>
<td>UEL: (Upper Explosive Limit)</td>
<td>N/A</td>
</tr>
<tr>
<td>Flammability Classification</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Hazardous Combustion Products: Not applicable for solid formed alloy. Toxic metal and metallic oxide fumes may be evolved from fires involving finely divided alloy.

Extinguishing Media: For solid formed alloys, as appropriate for surrounding fire. A fire involving finely divided alloy should be treated as Class D Combustible metal fire. Fire should be extinguished by a properly trained and experienced firefighter. Proper care should be taken in applying extinguishing agent.

Special Fire Fighting Instructions: For solid formed alloy, as appropriate for surrounding fire. Positive pressure SCBE and structural firefighter's protective clothing should be used at a minimum for surrounding fire.

Unusual Fire and Explosion Hazards: Solid formed alloy does not constitute a fire or explosion hazard. However, finely divided, suspended particulates may present a fire and explosion hazard in the presence of an ignition source.

Section 6 - Accidental Release Measures:

Solid Form: N/A

Dust Form: Shut off ignition source; no flares, smoking or flames should be in or near hazard area. Do not touch or walk through spilled material. Clean up using methods which avoid dust generation. Compressed air should not be used. During cleanup avoid inhalation and skin and eye contact. Provide local exhaust or dilution ventilation as required.

Disposal: Dispose of in accordance with all applicable federal, state and local regulations.

Section 7 - Handling and Storage:

Handling: Avoid breathing of and contact with fumes and dusts during processing. No specific requirements for solid formed steel product

Storage: Keep away from incompatible materials (section 10)

Section 8 - Exposure Control and Personal Protection:

Engineering Controls: Local and or general exhaust ventilation should be used to keep worker exposure below applicable exposure limits (section 2) during welding, brazing, grinding, machining, and other processes which may generate airborne contaminants.

Respiratory: NIOSH / MSHA - approved dust/mist/fume respiratory should be used during welding, burning, and grinding operations, if applicable exposure limits (section 2) are exceeded.

Gloves: Suitable for protection against physical injury and skin contact during handling and processing.

Eyes: Safety glasses or goggles should be worn when there is probability of flying particles or elevated levels of dust or fume.
Section 9 - Physical and Chemical Properties:

Boiling Point (°F): N/A
Vapor Pressure (mmHg @ 20°C): N/A
Vapor Density (AIR=1): N/A
Melting Point: 2500 – 2800 °F
Solubility in Water: Insoluble
Viscosity: N/A
Specific Gravity (H2O=1): 7.65 to 7.94
Percent Volatile by Volume: N/A
Evaporative rate (Ethyl Ether = 1): N/A
pH Information: N/A
Appearance and Odor: Odorless solid silver-gray metallic

Section 10 - Stability and Reactivity Data:

STABILITY (Conditions to avoid): Stable under normal conditions of transport, storage and use for solid formed product

INCOMPATIBILITY (Material to avoid): Oxidizers. Reacts with strong acids to form explosive hydrogen gas.

HAZARDOUS DECOMPOSITION PRODUCTS: During certain operations such as welding, burning, melting or hot rolling, metal fumes may be generated. Hexavalent chromium which is a suspect carcinogen may result from pickling of stainless.

HAZARDOUS POLYMERIZATION: Will not occur.

Section 11 - Toxicological Data:

Iron: Excessive exposure of eyes to airborne iron dust can cause conjunctivitis, choroiditis, and retinitis. Chronic inhalation of high concentrations of iron oxide fume or dust may result in the siderosis (benign pneumoconiosis).
LD50 (oral rat) - 30mg/kg; LC50 - No Data

Nickel: The most common effect resulting from exposure to nickel compounds is "nickel itch", a form of dermatitis in sensitized individuals. Nickel sensitivity, once acquired, may persist indefinitely.
LD50 = 50 mg/kg mouse – intravenous. LC50 – No Data

Carcinogenicity: NTP- Reasonably anticipated to be carcinogenic; IARC- Group 1 (there is sufficient evidence for carcinogenicity in humans) and 2B (agents which are possibility carcinogenic to humans); OSHA – Not regulated; ACGIH – A5 (not a suspected human carcinogen)

Chromium: Health hazards associated with exposures are dependent upon its oxidation state. Suspect carcinogen and tumorigen. Dermatitis may result from exposure to chromium fumes.
LD50 (Oral) – No Data; LC50 – No Data

Carcinogenicity: Chromium metal and trivalent chromium compounds are not classifiable as human carcinogens. Hexavalent Chromium (produced by welding, torch cutting, brazing and possibly grinding) is a confirmed human carcinogen. NTP – Group 1 (known to be carcinogenic); IARC- Group 1 (there is sufficient evidence for carcinogenicity in humans) and 2B (agents which are possibility carcinogenic to humans); ACGIH – A1 (confirmed human carcinogen)
Manganese: Can affect central nervous system, including languor, sleepiness, weakness, emotional disturbances, spastic gait, recurring leg cramps, and paralysis. Upper respiratory system damage may result from inhalation of fume and dust. 
LD$_{50}$ (Oral - Rat) – 30 gm/kg; LC$_{50}$ – No Data
Molybdenum: Irritation of nose and throat, weight loss and digestive disturbances in animals. Can cause joint pains in the hands, knees, and feet. No industrial poisonings have been reported. 
LD$_{50}$ (Oral) – No Data; LC$_{50}$ – No Data
Copper: May be responsible for one form of metal fume fever. Metal fume fever's symptoms include cough, headache, fever, nausea, chilling, pain in muscles and joints, and metal taste in mouth. This condition is usually transitory lasting one day or less. Chronic exposure may also result in Wilson's Disease (characterized by hepatic cirrhosis, brain damage, demyelination, renal disease, and copper deposition in the cornea.
LD$_{50}$ (Oral) – No Data; LC$_{50}$ – No Data
Silicon: Is an inert material which does not appear to have the ability to cause fibrosis in lung tissue. Silicon may cause chronic respiratory effects. 
LD$_{50}$ (Oral-Rat) – 3160 mg/kg; LC$_{50}$ – No Data
Aluminum: Inhalation of finely divided aluminum and aluminum oxide powder can cause pulmonary fibrosis and lung damage. 
LD$_{50}$ (Oral) – No Data; LC$_{50}$ – No Data
Cobalt: Exposure to high levels of cobalt can result in lung and heart effects and dermatitis. An experimental carcinogen.
LD$_{50}$ (Oral) – No Data; LC$_{50}$ – No Data
Carcinogenicity: IARC – possibly carcinogenic to humans. ACGIH – animal carcinogen.
Particulates: Eye and respiratory irritation may occur with exposures to dust.

Medical conditions known to be aggravated by exposure to this material: Persons with lung disorders or diseases or skin disorders may be at added risk as a result of overexposure to this material.

Section 12 – Ecological Data:
Not applicable for solid alloy product in its as shipped form. Articles produced from solid product are not an ecological hazard. No information has been found on specific alloy to establish its effect onto the environment if released in a finely divided form. It is believed that finely divided alloy will be hazardous to fish, animals, plants, and the environment. The degree of hazard would depend on the particle size and quantity released. If particle size is small enough, alloy may be ingested by wildlife, with possible toxic effects occurring.

Solid alloy is not expected to migrate easily into soil or ground water. Finely divided alloy can become mobile in water and contaminate soil and ground water. Finely divided alloy may persist in the environment for long periods of time based upon the corrosion resistant, insoluble, and non-biodegradable properties of the alloy. In addition, heavy metals may contaminate the food chain and be consumed by humans.

Some alloy components will react with oxygen to form metallic oxides at varying rates. Iron oxidizes most rapidly in moist air. Metallic particulate discharged to a POTW may pass through or contaminate sewage sludge, may interfere with the treatment system process, and may be non compliant with a POTW permit or other regulations.
Section 13 – Disposal Data:
If product as shipped becomes a solid waste, it would not be considered a hazardous waste and should be recycled. Product dusts from processing may be classified as hazardous wastes which are defined within 40 CFR 261 as well as state and or local regulation. Solid waste generated from product processing should be classified by a competent environmental professional and disposed, processed, or recycled in accordance with federal, state, and local regulation.

Section 14 – Transportation Data:
Hazardous Material Proper Shipping Name: N/A for solid formed product
Hazard Class: N/A for solid formed product
Identification Number: N/A for solid formed product

Note: Stainless steel transported in coiled form is under tension and represents a significant source of potential energy due to the tension induced by coiling; it will uncoil to try to lay flat in a long strip when banding is cut or other forces are released; uncoiling can be sudden and catastrophic and measures should be taken to ensure that uncoiling will not occur.

Section 15 – Regulatory Data:
SARA Title III Hazard Categorization: Product (dust and fume) is categorized as an immediate (acute) health hazard and a delayed (chronic) health hazard as defined by 40 CFR 370. Product is not categorized as a fire hazard. Product is not categorized as a reactivity hazard. Product is not categorized as a pressure release hazard.

SARA Title III Section 302 Extremely Hazardous Substances (EHS's): None
SARA Title III Section 313 Reportable Substances:
Nickel, Cobalt, Chromium, Aluminum, Manganese and Copper.
CERCLA Hazardous Substance: (If diameter of released particle >1 micrometers)
Nickel – 100 pound threshold
Chromium – 5000 pound threshold
Copper – 5000 pound threshold
TSCA: The components of this product are listed on the Toxic Substance Control Act Inventory.
Pennsylvania R-T-K List:
Aluminum, Manganese, Molybdenum, Nickel, Silicon, Chromium, Cobalt, Copper, and Tantalum.
New Jersey R-T-K Environmental Hazardous Substance List:
Aluminum, Chromium, Copper, Cobalt, Manganese, and Nickel
California Proposition 65:
Listed possible trace elements known by the state to cause cancer – Arsenic (inorganic), Cadmium, Lead.
Listed possible trace elements known by the state to cause reproductive toxicity – Lead
Listed components known by the state to cause cancer – Nickel, Cobalt (metal powder)
Listed components known by the state to cause reproductive effects – None

Section 16 - Additional Information
NFPA Rating: Health: 1 Flammability: 0 Reactivity: 0
HMIS Rating: Health: 1 Flammability: 0 Reactivity: 0 PPE: B
EPA Hazardous Waste Number: N/A

Note: The percent composition Section 2 reflects the range that is possible within this group of products. These are not the technical specifications for particular product. All grades do not include all hazardous ingredients in section 2.

ABBREVIATIONS / ACRONYMS

ACGIH American Conference of Governmental Hygienists
CAS Chemical Abstracts Service
CFR Code of Federal Regulations
HMIS Hazardous Materials Information System
IARC International Agency for Research on Cancer
mg/m³ Milligrams per cubic meter of air
MSDS Material Safety Data Sheets
MSHA Mine Safety and Health Administration
N/A Not Applicable
NFPA National Fire Protection Association
NIOSH National Institute for Occupational Safety and Health
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
POTW Publicly Owned Treatment Work
PPE Personal Protective Equipment
STEL Short Term Exposure Limit
TLV Threshold Limit Value
TWA Time-weighted Average

The information and recommendations contained herein are believed to be accurate as of the date issued and in certain instances are based upon information provided by others. However, North American Stainless makes no warranty or guarantee expressed or implied of any data herein and shall not be liable for any loss arising out of the use thereof. For further information in any specific situation, please contact either the appropriate North American Stainless Technical Representative or a responsible public health care official.
August 2014

1. MATERIAL/COMPANY IDENTIFICATION

Material Identification
TPO 90A-UGRD

Company Identification
Manufacturer/Distributor:
TPE Solutions, Inc.
3 Patterson Road
Shirley, MA 01464

Telephone Number

Product Information: 1-978-425-3033

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components

<table>
<thead>
<tr>
<th>Material</th>
<th>CAS Number</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>133-86-4</td>
<td>3.5 mg/m³</td>
</tr>
<tr>
<td>Polyolefin Compound</td>
<td>Mixture</td>
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</tr>
</tbody>
</table>

Components (Remarks)

Raw material not mentioned above are not considered hazardous ingredients as defined by OSHA Hazard Communication Standard 29 CFR 1910.120

CARCINOGENICITY: Carbon black has been evaluated by IARC as possible Carcinogenic to Human (Group 2B). However, the carbon black contained in this product is completely encapsulated in thermoplastics and as such, should not present a health hazard. Carbon black has not been listed as carcinogen by the National Toxicology Program (NTP) or Occupational Safety & Health (OSHA)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Physical Appearance: Black pellets/ slight odor

POTENTIAL HEALTH EFFECTS:
Eyes: Mechanical irritation is possible
Skin: Molten polymer may cause thermal burns
Ingestion: Ingestion is not a likely route of exposure
Inhalation: Inhalation of process fumes and vapors may cause irritation in the respiratory system

Chronic Effects:
None are known.
Medical Conditions Aggravated By Exposure:
None are known.

Routes of Entry: Eyes, Ingestion, Inhalation, Skin

Comments: Hazard identification shown in section 3 is based upon general information as to normal uses and conditions. Where special or unusual use or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified profession be sought.

4. FIRST AID MEASURES

First Aid

Inhalation: If symptoms are experienced, move victims to fresh air.

Ingestion: Adverse health effects due to ingestion are not anticipated.

Skin Contact: If molten material contacts the skin, immediately flush with large amounts of water to cool the affected tissue and polymer. Do not attempt to peel polymer from skin.

Eye Contact: In case of contact, immediately flush eyes with plenty of water for 2-3 minutes. Remove any contact lenses and continue flushing for at least 15 minutes.

5. FIRE FIGHTING MEASURES

FLAMMABLE LIMITS; N/A

FLASHPOINT AND METHOD: N/A

HAZARDOUS COMBUSTION PRODUCTS: Carbon Dioxide, Carbon Monoxide, Monomer fragments.

FLAMMABLE CLASS: Not classified. Polymer will burn but does not easily ignite.

EXTINGUISHING MEDIA: Carbon Dioxide, foam, fog, sprays and dry chemical water.

OTHER CONSIDERATIONS: Avoid excessive heat & strong oxidizers

FIRE FIGHTING PROCESURES: Wear self-contained breathing apparatus

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Sweep or Vacuum up spill and place in drums for recovery or disposal

7. HANDLING AND STORAGE

HANDLING: Keep material off walking surfaces, it may create a slipping hazard. Polymer dust may form explosive mixture with air. Avoid accumulation of dust in enclosed space. Use in well-ventilated area.
Ground and bond equipment to prevent electrostatic charge when transferring product. Control spilled material to prevent runoff to the sewers and the environment.

STORAGE: Keep container dry. Store away from excessive heat and away from strong oxidizing agents. Keep container closed to prevent contamination.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: If dust is generated, provide local exhaust ventilation to control airborne levels below the ACGIH TLV-TWA exposure limit for Particulates Not Otherwise Classified of 10 mg/m3 for inhalable particles and 3 mg/m3 of respirable.

PERSONAL PROTECTIVE EQUIPMENT:
Eyes and Face: Wear safety glasses with side shield or goggles when handling this material.

SKIN: To prevent any contact, wear impervious protective clothing such as neoprene or butyl rubber gloves, apron, boots, or whole bodysuit as appropriate, when handling dry material. Use thermal resistant gloves when handling molten material.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid                                               ODOR: Slight odor
APPEARANCE: Plastic pellets                                         pH: Not applicable
VAPOR PRESSURE: Not Applicable                                      VAPOR DENSITY: Not applicable
BOILING POINT: Not Applicable                                       MELTING POINT: 250F to 350 F
SOLUBILITY IN WATER: Insoluble                                      EVAPORATION RANGE: N/A

10. PHYSICAL AND CHEMICAL PROPERTIES

STABLE: Yes
HAZARDOUS POLYMERIZATION: No
CONDITIONS TO AVOID: Excessive heat and strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, Carbon Monoxide, monomer fragments

11. TOXICOLOGICAL INFORMATION

ACUTE:
EYES: Low Hazard for usual industrial handling
SKIN ABSORPTION: Molten material will produce thermal burns
CARCINOGENITY: Carbon black has been evaluated by IARD as possible Carcinogenic to Human (Group 2B) However, the carbon black contained in this product is completely encapsulated in thermoplastics and as such, should not present a health hazard. Carbon black has not been listed as carcinogen by the National Toxicology Program (NTP) or Occupational Safety & Health (OSHA)

12. ECOLOGICAL INFORMATION

Eco-toxicological Information: Ecotoxicity is expected to be minimal based on the low water solubility of polymers.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of waste at an appropriate waste disposal facility according to applicable laws and regulations.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)
PRIMARY HAZARD CLASS/DIVISION: Not Regulated
UN/NA NUMBER: N/A PACKING GROUP: N/A

15. REGULATORY INFORMATION

SARA TITLE 111 (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)
313 REPORTABLE INGREDIENTS: To the best of TPE Solutions Inc. knowledge, as of preparation date, this product contains following chemical(s) listed in Section 313 at or above de minimis concentrations. NONE
TSCA REGULATORY: All ingredients are on the TSCA inventory or are not required to be listed on TSCA inventory.

16. OTHER INFORMATION

NFPA CODES:
FIRE: 1 HEALTH: 0 REACTIVITY: 0 SPECIAL: -
The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

<table>
<thead>
<tr>
<th>Responsibility for MSDS</th>
<th>Jonas Angus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>TPE SOLUTIONS, INC.</td>
</tr>
<tr>
<td></td>
<td>3 PATTERSON ROAD</td>
</tr>
<tr>
<td></td>
<td>SHIRLEY, MA 01464</td>
</tr>
</tbody>
</table>

| Telephone               | 978-425-3033 |