SECTION 1: PRODUCT / COMPANY IDENTIFICATION

PRODUCT NAME: PTFE Fluoropolymer Fiber (Natural & Bleached)  SDS # DU006977

DATE OF PREPARATION OR REVISION: Revised 11/11/2015

TRADE NAMES AND SYNONYMS:
PTFE Fluoropolymer Continuous Multifilament Yarn, Staple, Flock, or Fabric

MANUFACTURER/DISTRIBUTOR:
Toray Fluorofibers (America), Inc.
2032 Highway 20
Decatur, AL 35601

PHONE NUMBERS (ALTERNATES):
TECHNICAL: 256-260-5906 (256-345-2723)
EMERGENCY: 256-260-5912 (256-260-5927)
AFTER HOURS: 256-318-3860 (256-654-1232)

RESTRICTIONS ON USE:
Caution: Do not use in medical applications involving permanent or temporary implantation in the human body.

SECTION 2: HAZARDS IDENTIFICATION

Classification
This product is not considered hazardous according to the OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is considered to be an article and/or a nuisance particle under normal conditions of use. No pictogram is required.

Breathing decomposition products from PTFE Fluoropolymer that is burned or heated above 330 deg. C can produce flu-like symptoms (polymer fume fever) that usually last ~24 hours. The symptoms may occur several hours after the exposure.

Smoking tobacco and cigarettes contaminated with PTFE Fluoropolymer particles may produce polymer fume fever. Gases that can be fatal at low concentrations may be emitted when PTFE Fluoropolymer is heated above 400 deg. C.

Carcinogenicity Information: None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

PTFE FLUOROPOLYMER FIBER (Natural)

<table>
<thead>
<tr>
<th>Components/Material</th>
<th>CAS Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTFE Fluoropolymer Yarn</td>
<td>9002-84-0</td>
<td>92-97</td>
</tr>
<tr>
<td>Carbonaceous Residues</td>
<td>7440-44-0</td>
<td>3-8</td>
</tr>
</tbody>
</table>

PTFE FLUOROPOLYMER FIBER (Bleached)

<table>
<thead>
<tr>
<th>Components/Material</th>
<th>CAS Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTFE Fluoropolymer Yarn</td>
<td>9002-84-0</td>
<td>&gt;99</td>
</tr>
</tbody>
</table>

Components (Remarks): PTFE Fluoropolymer is principally a solid polymer composed of carbon and fluorine.
SAFETY DATA SHEET

The SDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

SECTION 4: FIRST AID MEASURES

**EYE CONTACT:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

**INGESTION:** Not a probable route. However, in case of gastro-intestinal distress following accidental ingestion, call a physician.

**INHALATION:** If exposed to excess levels of fiber dust or fly, remove to fresh air and get medical attention if cough or other symptoms persist.

**SKIN:** Wash with soap and water. Get medical attention if irritation develops or persists.

SECTION 5: FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES / FLASH POINT:** Not applicable. The lower explosive limit is not applicable. The upper explosive limit is not applicable. Auto-ignition Temperature is not available. This product is inherently flame retardant.

**HAZARDOUS COMBUSTION PRODUCTS:** Hydrogen fluoride forms during combustion. Hydrogen fluoride is highly corrosive and toxic. Other combustion gases are mostly carbon dioxide, water and oxides of nitrogen. However, carbon monoxide and various other toxic gases may be produced depending on the conditions of burning.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** PTFE Fluoropolymer thermal decomposition begins at 330 degrees C. Up to 400 deg. C, the decomposition products are mainly monomer and a waxy sublimate. Breathing these decomposition products can result in flu-like symptoms, (polymer fume fever) which normally last ~24 hours with no cumulative effect. Above 400 deg. C, gases such as hydrogen fluoride and perfluoroisobutylene, which can be fatal at low concentrations, are evolved.

**EXTINGUISHING MEDIA:** Use any available extinguishing media.

**FIRE FIGHTING INSTRUCTIONS:** As in any fire, wear self-contained breathing apparatus pressure demand, MSHA/NIOSH approved (or equivalent) and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

**SAFEGUARDS (PERSONNEL):** Review FIRE FIGHTING MEASURES sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

**SPILL CLEAN UP:** Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Clean up dusts and fibers with vacuum equipment. Sweep up spilled solids, place in clean container and seal for later disposal or reclamation.

SECTION 7: HANDLING AND STORAGE

No special handling or storage required.
SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS
VENTILATION: Breathing decomposition products from PTFE Fluoropolymer at 330 to 400 deg. C can produce flu-like symptoms (polymer fume fever) that usually last ~24 hours. The symptoms may occur several hours after the exposure. Smoking tobacco and cigarettes contaminated with PTFE Fluoropolymer particles may produce polymer fume fever. Gases that can be fatal at low concentrations may be emitted when PTFE Fluoropolymer is heated above 400 deg. C. Practice good industrial hygiene when handling PTFE Fluoropolymer products and avoid breathing fumes from when PTFE Fluoropolymer is heated above 330 deg. C. Provide adequate exhaust ventilation to completely capture and remove vapors and fumes from operations that involve heating PTFE Fluoropolymer products above 330 deg. C.

PERSONAL PROTECTIVE EQUIPMENT
INHALATION: When these products are used at elevated temperature or in a way that creates airborne decomposition products, wear NIOSH/MSHA approved combination organic vapor/acid gas/dust-mist respirators. Get medical attention, if cough or other symptoms develop.
SKIN: Observe good industrial hygiene practices while handling these products and provide adequate exhaust ventilation to maintain exposures below the applicable dust and fibers limits. Gloves and long sleeved loose fitting clothing may be useful in some cases. Wash with mild soap and water after handling these products. Get medical attention if irritation develops or persists.
EYES: Wear safety glasses with side shield for general eye protection. Get medical attention if irritation persists.
INGESTION: Not a probable route. However, in case of gastro-intestinal distress following accidental ingestion, call a physician.

APPLICABLE EXPOSURE LIMITS
PTFE Fluoropolymer (Particulates (Not Otherwise Regulated))

|        | PEL (OSHA): | 15 mg/m³, 8 Hr. TWA, total dust |
|        |             | 5 mg/m³, 8 Hr. TWA, respirable dust |
|        | TLV (ACGIH):| 10 mg/m³, 8 Hr. TWA, total dust |
|        |             | 5 mg/m³, 8 Hr. TWA, respirable dust |
| AEL*:   | 10 mg/m³, 8 Hr. TWA, total dust |
|         | 5 mg/m³, 8 Hr. TWA, respirable dust |

* AEL is Toray's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the Acceptable Exposure Limit are in effect, such limits shall take precedence.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical Data
Form : Solid.
Color : Brown/White.
Melting Point : 327 degrees C for PTFE Fluoropolymer
Solubility in Water : Insoluble
Odor : Burnt Sugar/None.

All physical and chemical properties are same except for color and odor. The natural fiber is brown in color and burnt sugar in odor. The bleached fiber is white in color and none in odor.
SECTION 10: STABILITY AND REACTIVITY

CHEMICAL STABILITY:

Stable at normal temperatures and storage conditions.

CONDITIONS TO AVOID:

This product's polymer begins to thermally degrade rapidly above 400 deg. C (750 deg. F). The thermal degradation rate increases with temperature.

Avoid contaminating tobacco products with PTFE Fluoropolymers.

INCOMPATIBLE MATERIALS:

None known.

DECOMPOSITION:

PTFE Fluoropolymer thermal decomposition begins at 330 deg. C. Up to 400 deg. C, the decomposition products are mainly monomer and a waxy sublimate. Breathing these decomposition products can result in flu-like symptoms (polymer fume fever) which normally lasts ~24 hours with no cumulative effect. Above 400 deg C, gases such as hydrogen fluoride and perfluoroisobutylene, which can be fatal at low concentrations, are evolved.

POLYMERIZATION:

Polymerization will not occur.

SECTION 11: TOXICOLOGY INFORMATION

HUMAN/ANIMAL DATA:

These products present minimal risk to human health and the environment. Human skin irritation or animal testing has not been conducted.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

These products are essentially inert in the environment. They do not decompose in landfills and other natural environments, and therefore, do not release toxic degradation materials into the ecosystems. This material is not toxic to aquatic life.
SAFETY DATA SHEET

The SDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. These products are not hazardous waste as defined by regulations implementing the Resource Conservation and Recovery Act (RCRA). In general, waste materials may be discarded in accordance with State and Local regulations governing the disposal of other common or non-RCRA regulated waste materials.

INCINERATION INFORMATION:

Due to the inherent thermal resistance of these products and their components, they are not usually incinerated. However, should it be necessary to incinerate PTFE Fluoropolymer products, these precautions should be exercised.

- The hydrogen fluoride that forms during incineration must be neutralized or otherwise treated. Hydrogen fluoride is highly corrosive to materials of construction that may be in incinerators including refractory brick.
- Toxic gases are emitted during the thermal decomposition of PTFE Fluoropolymer and provision to prevent their release must be implemented. The incinerator must be equipped with off-gas treatment facilities and adequate monitoring to assure that no toxic releases occur.

SECTION 14: TRANSPORT INFORMATION

SHIPPING INFORMATION – DOT
Not Regulated.
International Civil Aviation Organization (ICAO) classification not required.
International Maritime Dangerous Goods (IMDG) classification not required.

SHIPPING INFORMATION – CANADA

TDG Class : This material is Not Regulated.

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III: These products are not regulated as hazardous substances under CERCLA and are not subject to reporting requirements.

STATE REGULATIONS (U.S.): California Safe Drinking Water and Toxic Enforcement Act of 1986 (proposition 65): This product contains none of the substances known to the State of California to cause cancer or reproductive toxicity.

State Right-To-Know Regulations. The information in this SDS complies with the requirements of those Laws.
SECTION 16: OTHER INFORMATION

NFPA Rating
Health : 1  Flammability : 0  Reactivity : 0

NPCA-HMIS Rating
Health : 1  Flammability : 0  Reactivity : 0

MEDICAL USE:
Caution: Do not use in medical applications involving permanent or temporary implantation in the human body.

OZONE DEPLETERS:
This product does not contain any of the ozone depleting substances listed in either Class I (chlorofluorocarbons, halon, carbon tetrachloride, and methyl chloroform) or Class II (hydrochlorofluorocarbons) of the Clean Air Act Amendments of 1990. Nor do any of these chemicals come in contact with these products during their manufacture.

The data in this 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.

Responsibility for SDS : Jamie Foote, P.E.
Address : Toray Fluorofibers (America), Inc.
          2032 HWY 20
          Decatur, Alabama 35601
Telephone : (256) 260-5927 FAX (256) 260-5910

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of SDS