SAFETY DATA SHEET

SDS IDENTIFICATION NAME: V-Wrap HM Carbon Fiber Fabric (High Modulus)  PAGE: 1 OF 7
Product Group: V-Wrap C100HM, C200HM, C400HM, & C220B  DATE: 12/17/19

SECTION 1: IDENTIFICATION

1.1 Product identifier
   Product name  V-Wrap HM Carbon Fiber Fabric (High Modulus)

1.2 Other means of identification
   V-Wrap C100HM, V-Wrap C200HM, V-Wrap C400HM, & V-Wrap C220B

1.3 Recommended use of the chemical and restrictions on use
   Carbon fiber fabric used to reinforce structural elements.

1.4 Supplier’s details
   Name  STRUCTURAL TECHNOLOGIES, LLC
   Address  10150 Old Columbia Road
             Columbia, MD 21046
             USA
   Telephone  410-859-6539

1.5 Emergency phone number(s)
   CHEMTREC: 1-800-424-9300

SECTION 2: HAZARD(S) IDENTIFICATION

General hazard statement
The product is non-hazardous as delivered. All components of the product are strongly bound in a solid matrix. However, generation of excessive amounts of dust from the product is hazardous. The main hazards from dust generation are listed below.

2.1 Classification of the substance or mixture

GHS classification in accordance with: (US) OSHA (29 CFR 1910.1200)
- Eye damage/irritation, Cat. 2A
- Skin corrosion/irritation, Cat. 2
- Specific target organ toxicity (single exposure), Cat. 3

2.2 GHS label elements, including precautionary statements

Pictogram

Hazard statement(s)
H315  Causes skin irritation
H319  Causes serious eye irritation
H335  May cause respiratory irritation
Precautionary statement(s)

P261 Avoid breathing dust.
P264 Wash hands and exposed skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear eye protection/face protection/protective gloves.
P302+P352 IF ON SKIN: Wash with plenty of water
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P312 Call a POISON CENTER/doctor if you feel unwell.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container in accordance with applicable Federal, State and local laws and regulations.

2.3 Other hazards which do not result in classification
Carbon material is electrically conductive. Electrical systems should be protected from exposure to airborne fiber.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances – Not applicable

3.2 Mixtures

Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon fiber (CAS no.: 7440-44-0)</td>
<td>92-96 % (weight)</td>
</tr>
<tr>
<td>Epoxy sizing (CAS no.: 25068-38-6)</td>
<td>2-4 % (weight)</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures

General advice Consult a physician. Show this safety data sheet to the doctor in attendance.
Move out of dangerous area.

If inhaled
After exposure to dust: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Call a poison center or doctor.

In case of skin contact
After exposure to dust: Wash with plenty of water for at least 15 minutes. Call a poison center or doctor if irritation develops or persists. Take off contaminated clothing and wash it before reuse.

In case of eye contact
After exposure to dust: Rinse cautiously with water. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center or doctor if you feel unwell.

If swallowed
After exposure to dust: Call a poison center or doctor if you feel unwell.
vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

<table>
<thead>
<tr>
<th>Condition</th>
<th>Symptom Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>If inhaled</td>
<td>May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.</td>
</tr>
<tr>
<td>In case of skin contact</td>
<td>May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.</td>
</tr>
<tr>
<td>In case of eye contact</td>
<td>May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.</td>
</tr>
<tr>
<td>If swallowed</td>
<td>May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.</td>
</tr>
</tbody>
</table>

4.3 Indication of immediate medical attention and special treatment needed, if necessary
No data available.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media - Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical - Hazardous decomposition products: Carbon oxides, nitrogen oxides.

5.3 Special protective actions for fire-fighters Wear self-contained breathing apparatus for firefighting if necessary.

Further information - Carbon fibers are sufficiently conductive to cause severe electrical problems.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures - Wear respiratory protection if necessary. Do not breathe dust or mist. Ensure adequate ventilation. For personal protection see section 8. Chopped or milled carbon fibers may be slippery if spilled.

6.2 Environmental precautions - Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up - Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

Reference to other sections - For disposal see Section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Ensure adequate ventilation. Avoid dust formation. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Avoid ingestion and inhalation.

Protect all electrical equipment, in or near areas in which fiber is handled or used, from contact with airborne particles and filaments to avoid possible damage caused by electrical shorts. Airborne particles and filaments
should be controlled so as to minimize (1) skin irritation, (2) electrical shorts in switch gear, etc. due to conductivity of fiber.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep in a dry and well-ventilated place. Protect electrical equipment from exposure to conductive carbon fibers to avoid electrical short circuits.

**Specific end use(s)** - Apart from the uses mentioned in section 1 no other specific uses are stipulated.

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1 Control parameters

**Particulates not otherwise regulated:**

<table>
<thead>
<tr>
<th></th>
<th>OSHA PEL 8-hour TWA</th>
<th>ACGIH® TLV® 8-hour TWA</th>
<th>Cal/OSHA PEL 8-hour TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEL-TWA</strong></td>
<td>5 mg/m³ (*15 mppcf)</td>
<td>3 mg/m³ (respirable particles) and 10 mg/m³ (inhalable particles)</td>
<td>5 mg/m³ (respirable fraction), 10 mg/m³ (total dust)</td>
</tr>
<tr>
<td><strong>OSHA PEL</strong></td>
<td>8-hour TWA</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ACGIH® TLV®</strong></td>
<td>8-hour TWA</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cal/OSHA PEL</strong></td>
<td>8-hour TWA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 8.2 Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

#### 8.3 Individual protection measures, such as personal protective equipment (PPE)

**Eye/face protection** - Safety goggles are recommended.

**Skin protection** - Wear protective gloves.

**Body protection** - Wear protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection** - Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Thermal hazards** - No data available.

**Environmental exposure controls** - Do not let product enter drains.

### SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance/form (physical state, color, etc.)</td>
<td>Black solid</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available.</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available.</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not flammable.</td>
</tr>
<tr>
<td>Upper/lower flammability limits</td>
<td>No data available.</td>
</tr>
</tbody>
</table>
Upper/lower explosive limits: Not applicable.
Vapor pressure: Not applicable.
Vapor density: Not applicable.
Relative density: No data available.
Specific gravity: 1.75-1.85
Solubility(ies): Negligible (Dispersible) in water
Partition coefficient: n-octanol/water: Not applicable.
Auto-ignition temperature: No data available.
Decomposition temperature: No data available.
Viscosity: Not applicable.
Explosive properties: No data available.
Oxidizing properties: No data available.

Other safety information
No data available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity - Not reactive under normal use and storage conditions.

10.2 Chemical stability - Stable under normal storage conditions.

10.3 Possibility of hazardous reactions - Carbon fiber can react violently with strong oxidizers, such as fluorine.

10.4 Conditions to avoid - Avoid dust generation, avoid exposure to incompatible materials. Exposure to electrical equipment and circuitry.

10.5 Incompatible materials - Strong oxidizing agents.

10.6 Hazardous decomposition products - Carbon oxides, nitrogen oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects

11.1 Acute toxicity - Based on available data, classification data are not met
Likely Routes of Exposure: Eye contact. Skin contact. Inhalation.

11.2 Skin corrosion/irritation - Dust may cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

11.3 Serious eye damage/irritation - Dust may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

11.4 Germ cell mutagenicity - No data available.

11.5 Carcinogenicity - Based on available data, no component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA, IARC and NTP.

11.6 Reproductive toxicity - No data available.

11.7 STOT-single exposure - Dust may cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

11.8 STOT-repeated exposure - No data available.
11.9 Aspiration hazard - No data available.

11.10 Additional information - No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity - No data available on product

12.2 Persistence and degradability - No data available on product

12.3 Bioaccumulative potential
   No data available on product

12.4 Mobility in soil - No data available.

12.5 Results of PBT and vPvB assessment - PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects - No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal of the product - Disposal should be in accordance with applicable Federal, State and local laws and regulations. Local regulations may be more stringent than State or Federal requirements.

13.2 Disposal of contaminated packaging
   Dispose of as unused product.

SECTION 14: TRANSPORTATION INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question

California Prop. 65 Components
WARNING: This product can expose you to chemicals including epichlorohydrin and phenyl glycidyl ether, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 311/312 Hazards
Acute health hazard for dust exposure

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

All materials or components of this product are either listed or are not required to be listed in the epa tsca inventory

**HMIS Rating**

<table>
<thead>
<tr>
<th>V-Wrap HM Carbon Fiber Fabric (High Modulus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
</tr>
<tr>
<td>PHYSICAL HAZARD</td>
</tr>
<tr>
<td>PERSONAL PROTECTION</td>
</tr>
</tbody>
</table>

**NFPA Rating**

1 1 0

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**SECTION 16: OTHER INFORMATION**

**16.1 Further information/disclaimer**

Date of issue: December 17, 2019.

SPECIAL PRECAUTIONS: Empty containers will retain some of the product residue. When handling of disposing of them, follow all label warnings, other instructions and waste disposal procedures.

DISCLAIMER: Wherever such words of phrases as “hazardous,” “toxic,” “carcinogen,” etc. appear herein, they are used as defined or described under state employee right-to-know laws, Federal OSHA laws or the or the direct sources for these laws such as the International Agency for Research on Cancer (ISRC), the National Toxicology Program (NTP), etc. The use of such words or phrases should not be taken to mean that we deem or imply any substance or exposure to be toxic, hazardous or otherwise harmful. ANY EXPOSURE CAN ONLY BE UNDERSTOOD WITHIN THE ENTIRE CONTEXT OF ITS OCCURRENCE, WHICH INCLUDES SUCH FACTORS AS THE SUBSTANCE’S CHARACTERISTICS AS DEFINED IN THE SDS, AMOUNT AND DURATION OF EXPOSURES, OTHER CHEMICALS PRESENT AND PREEXISTING INDIVIDUAL DIFFERENCES IN RESPONSE TO THE EXPOSURE.

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