SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifier

Product Name: TANSOME Carbon Fiber
Synonyms: None
Product Type: H2550-6K, H2550-12K, H2550-24K, H3055-12K

1.2 Recommended use of the product and restrictions on use

Recommended Uses: Industrial applications including carbon fiber reinforced composites
Restrictions on Use: N/A

1.3 Details of the Manufacturer

Company: Hyosung Corporation
Address: 886, Girin-daero, Deokjin-gu, Jeonju-si, Jeonbuk, Korea 54849
Phone: +82-63-281-5480
Home Page: www.hyosung.com
Contact: khlee2@hyosung.com

2. HAZARDS IDENTIFICATION

2.1 Hazard-Risk Classification

Not classified

2.2 Label elements including precautionary statements

Symbol: None
Signal Word: None
Hazard Statement: None
Precautionary statements Prevention: see section 8.2 Personal protective equipment.
Response: None
Storage: See Section 7. Handling and storage
Disposal: Dispose of contents/containers in accordance with local/regional/national/international regulations.

2.3 Other Hazards

Mechanical processing for this material may produce dust and broken filament. This cause a temporary irritation of the skin. Also, this product and its dusts are electrically conductive.
3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>Composition, % by weight</th>
<th>CAS No.</th>
<th>TSCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Fiber</td>
<td>≥ 98.0%</td>
<td>7440-44-0</td>
<td>Registered</td>
</tr>
<tr>
<td>Sizing agent</td>
<td>≤ 2.0%</td>
<td>Trade Secret</td>
<td>Registered</td>
</tr>
</tbody>
</table>

※ Minimal : 0, Slight : 1, Moderate : 2, Serious : 3, Severe : 4

4. FIRST AID MEASURES

4.1 Eye contact
Immediately wash eyes with plenty of water for at least 15 minutes and if irritation persists or allergic reaction occurs, consult a medical physician.

4.2 Skin contact
Immediately wash skin with plenty of water and soap. To avoid further irritation, do not rub or scratch irritated skin. If irritation persists or allergic reaction occurs, consult a medical physician.

4.3 Inhalation
Evacuate from the dusty contaminated and remove to fresh air. If breathing continues to be difficult, get medical attention.

4.4 Ingestion
In the event of deliberate ingestion, do not induce vomiting unless directed to do so by consulting with a doctor.

4.5 Indication of immediate medical attention and notes for physician
Carbon fiber is inert, but it is so sharp and strong that it may cause physical injury.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
- Suitable extinguishing media: use water mist, foam, dry powder
- Unsuitable extinguishing media: dependent on processing plant conditions

5.2 Specific hazards arising from the chemical
In case of fire hazardous decomposition such as CO, CO₂, N₂, HCN occurs.
5.3 Special protective equipment and precautions for fire-fighters

Fire fighters should wear suitable protection and avoid exposure from the gas, carbon monoxide using a self-contained, positive pressure breathing apparatus (SCBA).

Fight fires from a safe distance or protected areas.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedure

N/A

6.2 Environmental precautions and protective procedure

N/A

6.3 Methods and materials for containment and cleaning up

In case of spill, collect the spilled materials. If the material is not contaminated, put it into a clean container and it can be reused. Otherwise, dispose of it properly. Because the fiber and dust is electrically conductive and may become airborne, clean up with a vacuum.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

At all stages of processing and handling, make sure that airborne fiber dust and broken filaments are extracted with adequate ventilation, as to minimize skin irritation, electrical malfunction to machinery, electronics, etc.

Avoid skin contact by using appropriate protective equipment such as safety glasses, gloves, clothing.

7.2 Conditions for safe storage

Store in a cool, dry place and maintain sealed against contamination. Do not store together with oxidizing agents.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

8.1 Exposure standards for chemicals, biological exposure standards, etc.

- Domestic exposure standard N/A
- ACGIH exposure standard N/A
- Biological exposure standard N/A

8.2 Appropriate engineering controls

Local exhaust for fiber dust removal.
8.3 Personal Protective Equipment

Respiratory protection
Overall, no breathing apparatus is needed. However, if the dust concentration in the atmosphere increases, use an approved dust respirator.

Eye protection
Wear safety glasses with side shields

Hands protection
Wear protective gloves

Body protection
Recommend disposal protective cloths to prevent the transfer of dust

9. PHYSICAL & CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Black fiber (Solid)</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>N/A</td>
</tr>
<tr>
<td>pH</td>
<td>None</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>3,500°C</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>None</td>
</tr>
<tr>
<td>Flash point</td>
<td>None</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>None</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>N/A</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility</td>
<td>insoluble (water and others)</td>
</tr>
<tr>
<td>Vapor density</td>
<td>N/A</td>
</tr>
<tr>
<td>Specific gravity (relative density)</td>
<td>1.7 ~ 2.0 g/cm³</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>N/A</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>N/A</td>
</tr>
<tr>
<td>Decomposition temperature (in air)</td>
<td>Sizing agent: 160 °C</td>
</tr>
<tr>
<td></td>
<td>Carbon fiber: 700 °C</td>
</tr>
<tr>
<td>Viscosity</td>
<td>N/A</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>N/A</td>
</tr>
</tbody>
</table>

10. STABILITY & REACTIVITY

10.1 Chemical Stability
Stable under the normal condition for transfer and storage

10.2 Possibility of hazardous reactions
Can react with strong oxidizing agents

10.3 Condition to avoid
See section 7.2

10.4 Incompatible materials
See section 10.2
10.5 Hazardous decomposition product  See section 5.2

11. TOXICOLOGICAL INFORMATION

11.1 Information on the likely routes of exposure

- Acute toxicity  N/A
- Respiratory  N/A
- Oral  N/A
- Eyes or skin  N/A
- Skin contact  N/A

11.2 Health hazards information

- Acute toxic  N/A
- Skin corrosive / irritant  N/A
- Serious eye damage / eye irritation  N/A
- Respiratory sensitization  N/A
- Skin sensitization  May cause an allergic skin reaction
- Carcinogenicity  N/A
- Germ cell mutagenicity  N/A
- Reproductive toxicity  N/A
- Specific target organ toxicity (single exposure)  N/A
- Specific target organ toxicity (repeated exposure)  N/A
- Aspiration hazard  N/A
- Other harmful effects  N/A

12. ECOLOGICAL INFORMATION

12.1 Aquatic and terrestrial ecotoxicity  N/A
12.2 Persistence and degradability  N/A
12.3 Bioaccumulative potential  N/A
12.4 Mobility in soil  N/A
12.5 Other adverse effects  N/A

13. DISPOSAL CONSIDERATIONS

13.1 Disposal Method  Waste materials must be disposed in accordance with applicable local/regional/national/international regulations.

14. TRANSPORT INFORMATION

14.1 UN number  None
14.2 UN proper shipping name
Not classified as a dangerous goods
ADR (The European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID (The European Agreement concerning the International Carriage of Dangerous Goods by Rail)
IMDG (International Maritime Dangerous Goods)
IATA (International Air Transport Association)
DOT (US Department of Transportation)

14.3 Transport hazard class
None (see section 14.2)

14.4 Packing group
None (see section 14.2)

14.5 Marine pollution
N/A

14.6 Special precaution which a user to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises
See section 6 to 8

15. REGULATORY INFORMATION

15.1 Regulations under the Industrial Safety and Health Act
Measuring material for working environment
None

Exposure standard setting substance
None

Toxic substances to be controlled
None

Special health checkup
None

Process Safety Report (PSM) Substances subject to submission
None

15.2 Regulations under the Chemical Substance Control Act
Toxic
None

Observation
None

Emissions subject chemical substances
None

Accidental Materials
None

Restricted Substances
None

15.3 Regulations under the Dangerous Goods Safety Management Act

15.4 Regulation by Waste Management Act

15.5 Other domestic and foreign regulations
○ Domestic regulations
- **Persistent Organic Pollutant Control Act**  None

○ **Canada management information**  None

○ **US management information**  TSCA Carbon fiber, 7440-44-0

OSHA None

This product is not classified as a toxic chemical or hazardous material. No special warning label is required.

TSCA (US) Carbon fiber, 7440-44-0

EINECS  N/A

WHMIS (Canada)  N/A

CAS  7440-44-0

OSHA  N/A

SARA TITLE III  None

16. OTHER INFORMATION

16.1 **Source of data**  N/A

16.2 **Initial Date**  2013

16.3 **Number of revisions and the date of the last revision**

Second

Revision date  23 January, 2018

Previous revision  11 February, 2016

16.4 **Others**

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