

CREATED 2002/09/25

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## Material Safety Data Sheet

### 1. Chemical Product and Company Identification

Product name : Carbon Fiber "TORAYCA" Sizing Type "4"

Name of supplier : TORAY Industries, Inc.

Address : 2-1, NIHONBASHI-MUROMACHI 2-CHOME, CHUO-KU, TOKYO 103-8666 JAPAN

Sales Department : Carbon Fibers Department

Manager of Sales Department : General Manager of Carbon Fibers Department

Telephone number : +81-3-3245-5762

FAX number : +81-3-3245-5703

Emergency phone No. : Torayca Technical Dept. Ehime Plant(+81-89-960-3823)

Technical Department : ACM Tehnology Department

Manager of Technical Department : General Manager of ACM Technology Department

Phone No. : +81-3-3245-5762

Product No.(MSDS No.) : I2E-C004-1

### 2. Composition/Information on Ingredients

Chemical name :

Carbon Fiber (Graphite Fiber), Resin Sizing

Substance/Mixture : Mixture

Common chemical name

Carbon Fiber(Carbon)

Composition : 98% min

Chemical formula(Constitutional/Structural formula)

C

CAS No. : 7440-44-0(Carbon)

: 308063-67-4(Carbon Fiber)

TSCA : 7440-44-0(Carbon)

Common chemical name

Resin Sizing

Composition : 2% max

Chemical formula(Constitutional/Structural formula)

Not opened to public

CAS No. : Registered

TSCA : Registered

Note :

Though the main content of carbon fiber is carbon, 0-2% of oxygen and 0-7% of nitrogen are contained.

### 3. Hazards Identification

Adverse human health effects :

No case of disease which is caused by Carbon Fiber is reported.

The long and repeated touch to short fiber including particles or fly can cause the itch and the skin irritation.

Bisphenol A epoxy resin which is the component of resin sizing has the mutagenicity of which content is not correspond to the notice of ministry of labor.(less than 1%)

(Notice No.312-2 from a chief of Labor Standard Bureau)

No silicosis case is reported on inhalation test with mouse.

Environmental effects :

1. Carbon Fiber is electrically conductive, and it can cause the short-circuiting of electrical equipments.

2. Carbon Fiber fly can also cause the electrical equipments trouble.

Physical and Chemical hazards :  
Not corresponding to the fire law.

Class name of hazardous chemicals for MSDS in Japan :  
Not corresponding to class standard.

#### 4. First-Aid Measures

Inhalation :

Move to fresh air space and wash inside mouth with water. Then, see doctor.  
When breathing is difficult, some qualified people inhales oxygen,  
and do medical treatment.

Skin contact :

S28-After contact with skin, wash immediately with plenty of water and soap.

Eye contact :

S26-In case of contact with eyes, rinse immediately with plenty of water and  
seek medical advice.

Have the victim remove contact lenses if he is wearing them and continue rinsing.

Ingestion :

Do not induce vomiting.

See Doctor.

#### 5. Fire-Fighting Measures

Extinguishing Media :

S43-In case of fire, use

water mist, foam, dry powder, CO<sub>2</sub>,

Dry chemical powder, carbon dioxide or dry sand should be used for small fires.

Specific fire-fighting measures :

Apply water from a safe distance to cool and protect surrounding area.

Protection of fire-fighters :

Since gas such as carbon monoxide can generate for the combustion,  
the fire fighter wears a suitable protection tools.

#### 6. Accidental Release Measures

Measures for Handling Personnel :

No special measures requested.

Measures for environmental effects :

No special measures requested.

Measures when handling spilled substances :

Carefully sweep up and remove.

#### 7. Handling and Storage

Handling :

Preventive measures :

Exposure control for handling personnel :

S20-When using do not eat or drink.

S21-When using do not smoke.

S24-Avoid contact with skin.

S25- Avoid contact with eyes.

Wash it away completely when you do eating and drinking and smoking  
after you touch it by hand.

Protective measures against fire & explosion :

S33-Take precautionary measures against static discharges.

Safety treatments :

Prevent deposition of dust.

Safety Measures/Incompatibility :

Wear suitable protective tools, protective clothing, long sleeve  
clothing or trousers.

Storage :

**Recommendation for storage :**

Keep bobbins in cool and dark space. Low humidity is recommended.

**Incompatible storage condition :**

It is enclosed not to touch to trash and water.

**8. Exposure Control/Personal Protection****Engineering measures :**

Local ventilator is used where dust and fly are generated by cutting or processing Carbon Fiber.

The ventilator for the entire operation area is needed.

Filter in ventilation is requested to prevent dust and fly from being discharged into open air.

**Adopted value :**

No data are available for carbon fiber. Reference values of carbon black and graphite are as follows.

**1. LABOR SAFETY & HEALTH ACT (JAPAN)**

2.9mg/m<sup>3</sup> (reference value by notice of by Min. of Labor Japan (1995))

**2. OSHA**

2.0mg/m<sup>3</sup> as the total dust of first class dust by the Japanese regulation (reference value) etc.

**3. ACGIH (U. S. A.)**

10.0mg/m<sup>3</sup> as the inhalation dust not classified to other categories, etc. (reference value)

**Personal protective equipment :****Respiratory protection :**

For most conditions, no respiratory protection should be needed, however, in dusty atmospheres, use an approved dust respirator.

**Hand protection :**

S37-Wear suitable gloves.

**Eye protection :**

Wear protective eyeglasses or chemical safety goggles.

**Skin and body protection :**

S36-Wear suitable protective clothing.

When it gets dirty, wear clothing after wash.

**Safety and Health measures :**

Wash hands before breaks and at the end of work.

Do not eat, drink or smoke at work.

**9. Physical and Chemical Properties****Physical properties :**

Appearance : solid fiber shaped

Color : black

Odor : None

pH : Not Surveyed

**Phase change temperature :**

Boiling point : None

Melting point : None

Flash point : None

Ignition temperature : None

**Explosion :**

None

Vapour pressure : None

Vapour density : None

Density : From 1.6, to 2.0

**Solubility :**

Solubility in solvent :

Not Available

Solubility as solvent :

Not Available

**10. Stability and Reactivity**

**Stability :**

This material is stable. Hazardous decomposition and polymerization will not occur.  
This product is considered a stable material under normal and anticipated storage and handling conditions.

Resin sizing sometimes changes under some environment conditions.

**Reactivity :**

Oxidization slowly proceeds in the air of 240 degrees Centigrade and more, and sometimes becomes red heat condition.

**Incompatibility :**

A strong oxide.

**Decomposition products :**

CO, CO<sub>2</sub>, NO and the other non-confirmed poisonous gases are thought to be generated by combustion. Don't inhale them.

**11. Toxicological Information****Acute toxicity :**

None

[Reference data about DMF]

LD50=2800mg/kg (through the mouth of rat)

LD50=5000mg/kg (through the skin of rat)

**Effects on skin, eyes and others :**

Contact with dust or fly can cause skin pricking.

**Allergenic and/or sensitizing effects :**

Long term and repeated contact can cause the skin irritation.

**Chronic and/or long term toxicity :**

N. A.

**Carcinogenic effects :**

As for this goods itself, there are no data available.

[Reference data for DMF]

IARC group=2B (possibly carcinogenic to humans)

**Mutagenic effects :**

Since the content of Bisphenol A epoxy resin which is the component of resin sizing is less than 1%, it does not correspond to the official notice from the Ministry of Labor.

(Notice No.312-2 from a chief of Labor Standard Bureau)

However, this is the chemical material which toxicity in the microorganism is verified.

Therefore, it is necessary to take the correspondence to secure safety in accordance with the guide, "The Policy to prevent the health difficulty by the chemical material which toxicity is admitted," as attached to the notice above.

**Teratogenic effects :**

N. A.

**Others :**

No silicosis case is reported on inhalation test with mouse.

**12. Ecological Information****Biodegradability :**

N. A.

**Bioaccumulation :**

N. A.

**13. Disposal Consideration**

1. Scrap or waste of this product must be treated as industrial waste, separated from public waste.

2. Scrap or waste of this product must not be incinerated. Carbon Fiber can not be incinerated well by general incinerator, and the fibrous fragments which may be generated by insufficient incineration may cause the short-circuiting trouble of electrical equipments.

#### 14. Transport Information

UN No./Packaging group :

No applicable number

Specific safety measures and conditions on transport :

Be careful for the fire, wet and pollution by other material.

#### 15. Regulatory information

TSCA

Carbon(Carbon Fiber) 7440-44-0

CAS

Carbon 7440-44-0

Carbon Fiber 308063-67-4

#### 16. Other Information/References

Other information :

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

References :

1)"Safe handling about Carbon Fiber", (Reinforced Plastic, Vol.42, No.3, (1996), Tanso-Seni-Kyokai)