

**1. Chemicals and company information**

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| (1) Product name<br>Grade                                      | <b>Carbon Black Master batch<br/>CB3693</b>              |
| (2) Recommended use of the product and restrictions on its use |  |
| ① Recommended use of the product                               | PPS Compound   |
| ② Limitations on use of the product                            | No data  |
| (3) Supplier information                                       |  |
| ① Company  | <b>Muil Chemical Co., Ltd</b>                            |
| ② Address  | 237, Yeosusandan-ro, Yeosu-si, Jeollanam-do, 59619 Korea |
| ③ Tel:   | +82-61-690-9425  |

**2. Hazard and Risks**

- |   |                |
|---|----------------|
| (1) Hazard classification                                   | Not applicable |
| (2) Warning label items, including precautionary statements |                |
| ① Symbols   | Not applicable |
| ② Signal word   | No data        |
| ③ Hazard statement  | No data        |
| ④ Precautionary statements                                  |                |

Prevention	P201 Obtain instructions before use.
	P202 Do not handle until all safety precautions have been read and understood.
	P235 + P410 Keep at the low temperature and avoid direct sunlight
	P260 Avoid breathe dust, fume, gas, mist, vapors, spray
	P264 Wash thoroughly after handling
	P270 Do not eat, drink or smoke while using this product.
Response	P280 Wear protective gloves, protective clothing, eye protection, face protection
	P308 + P313 If exposed, then seek medical advice
	P314 If you feel unwell, get the medical advice.
	P333 + P313 If skin irritation or rash occurs, seek medical advice
	P361 Remove all contaminated clothing
	P362 Take off contaminated clothing and wash before reuse.
Storage	P390 Absorb spillage to avoid material damage
	P403 + P233 Keep container tightly closed in a well-ventilated place.
	P403 + P235 Store in a well-ventilated place. Keep cool.
	P410 Avoid direct sunlight
Disposal	P420 Keep away from other materials
	P501 Dispose of contents container according to applicable regulations

(3) Other hazards which do not fall under Hazard category (NFPA)

① Carbon Black

Health	0
Flammability	1
Reactivity	No data

② PPS

Health	1
Flammability	1
Reactivity	0

Reference: National Fire Protection Association (NFPA)

\*NFPA 1, Fire Code, advances fire and life safety for the public and first responders as well as property protection by providing a comprehensive, integrated approach to fire code regulation and hazard management. It addresses all the bases with extracts from and references to more than 130 NFPA® codes and standards including such industry benchmarks as NFPA 101, NFPA 54, NFPA 58, NFPA 30, NFPA 13, NFPA 25, and NFPA 72.

**3. Composition / Information on Ingredients**

Chemical Name	Common name	CAS number	Contents
Carbon Black	Carbon Black	1333-86-4	
Poly(1,4-Phenylene Sulfide)	PPS	25212-74-2	
			<b>&gt;99%</b>

**4. First Aid Measures**

(1) Eye contact	If it gets on your eyes, wash it carefully with water for a few minutes. If possible, remove contact lenses and continue to wash.
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	If eye irritation occurs, seek medical advice
(2) Skin contact	If skin irritation or rash occurs, seek medical advice
	Take off contaminated clothing and wash before reuse
	Remove contaminated clothing and shoes and isolate contaminated areas
	Wash your skin and eyes immediately with plenty of water for at least 20 minutes if you contacted with this material
(3) Inhaled	If exposure then get medical advice
	Move to a place with fresh air
	Please keep warm and stabilize
(4) Ingestion	If exposed or feel uncomfortable, then seek medical advice
	If substance is ingested or inhaled, do not use artificial respiration with mouth-to-mouth method and use appropriate respiratory medical equipment.
(5) Other precautions from physician	Let the health care worker to know about the material and take protective measures

### 5. Fire - Fighting Measures

(1) Suitable extinguishing media	Use alcohol foam, carbon dioxide or water spray for digestion related to this material
	Use dry sand or earth for digestion
(2) Specific hazards arising from the chemical	Stable at the room temperature
	Can be decomposed at a high temperature and generates a toxic gas
(3) Protective equipment and precautions for fire-fighting	Rescuers should wear appropriate protective equipment.
	Extinguish the area and maintain safety distance
	Be careful because it reacts (vigorously) with water to release flammable, corrosive, toxic gases.
	Move container from fire area if it is not hazardous.
	In case of tank fire, extinguish at maximum distance
	In the case of fire in a tank then cool the tanks with large amounts of water even after the fire was extinguished.
	In the case of fire in a tank, then stay away
In the case of a large fire in a tank, use unmanned firefighting equipment and allow it to retreat if it is not possible	

### 6. Accidental Release Measures

(1) Personal precautions and protective equipment	Do not breathe dust, fume, gas, mist, vapors, spray
	Wipe off any spills immediately and follow all protective precautions
	Isolate contaminated areas
	If you do not need to enter or do not have protective equipment, do not go in
	Remove all ignition sources
	Stop the leakage if it is not dangerous
	Do not touch a damaged container or spill without adequate protection
	Wear a full face protection even if it is not fire
	Cover with plastic sheet to prevent diffusion
	Prevent dust formation
Note the substances and conditions to avoid	
(2) Protection of the environment	Prevent entry into waterways, sewers, basements, and confined spaces
	Absorb spillage to prevent material damage
(3) Methods for cleaning up	For water leaks use the appropriate tools and vacuum cleaners, with high-performance filter system is equipped.
	Keep the container according to the applicable laws and regulations.

### 7. Handling and Storage

(1) Safety Handling Tips	Avoid breathing dust, fume, gas, mist, vapors, spray
	After contacting this product wash hands with plenty of water
	Avoid eating and smoking while using this product.
	Handle it outdoors or in a well-ventilated area
	Do not carry contaminated clothing out of the workplace
	Follow all MSDS and label precautions as product residues may remain after emptying containers
	Handle and store carefully
	Be careful while opening
	Avoid prolonged or repeated skin contact

	Note the substances and conditions to avoid
	Before starting work follow the engineering controls rules and wear personal protective clothes
(2) Safe storage	Store only in original container
	Keep container tightly closed in a well-ventilated place
	Store and handle in accordance with all current regulations.
	The empty drum should be completely drained, properly blocked and immediately returned to the drum regulator or properly positioned
	Keep away food and drinks

### 8. Exposure Controls / Personal Protection

(1) Exposure standards for chemical substances, biological exposure standards, etc.	
① Local regulation	
Carbon Black	TWA - 3.5mg/m3
PPS	No data
② ACGIH regulation	
Carbon Black	TWA - 3.5mg/m3
PPS	No data
③ Biological exposure standard	No data
(2) Proper engineering management	Use process isolation, local exhaust ventilation or other engineering controls to keep air levels below exposure limits. Install the working facilities in order to make clean and comfortable work place
(3) Personal protective equipment	Wear a respirator that has been approved by the Korean Occupational Safety and Health Administration in accordance with the physicochemical properties of the substance being exposed

### 9. Physical & Chemical Properties

(1) Carbon Black	
① Appearance	
Form	Powder, bead
Color	Black
② Odor	Odorless
③ Odor threshold	No data
④ pH	Not applicable
⑤ Melting point / freezing point	(About 3550 °C)
⑥ Initial boiling point and boiling range	4200 °C
⑦ Flash point	> 500 °C
⑧ Evaporation rate	Not applicable
⑨ Flammability (solid, gas)	No data
⑩ Upper / lower limit of burning or explosion range	No data
⑪ Vapor pressure	No data
⑫ Solubility	Do not melt
⑬ Vapor density	Not applicable
⑭ Specific gravity	1.7-2.1
⑮ N-Octanol / water partition coefficient	No data
⑯ Auto ignition temperature	900 °C
⑰ Decomposition temperature	No data
⑱ Viscosity	No data
⑲ Molecular weight	12.01
(2) PPS	
① Appearance	
Form	Solid
Color	Opaque
② Odor	Slight characteristic Odor
③ Odor threshold	No data
④ pH	No data
⑤ Melting point / freezing point	285 °C
⑥ Initial boiling point and boiling range	No data
⑦ Flash point	370 °C
⑧ Evaporation rate	No data

⑨	Flammability (solid, gas)	Contact with combustible material may cause fire.
⑩	Upper / lower limit of burning or explosion range	No data
⑪	Vapor pressure	No data
⑫	Solubility	Negligible <0.1% (in water)
⑬	Vapor density	No data
⑭	Specific gravity	1.3 - 2.1
⑮	N-Octanol / water partition coefficient	No data
⑯	Auto ignition temperature	No data
⑰	Decomposition temperature	No data
⑱	Viscosity	No data
⑲	Molecular weight	No data

### 10. Stability and Reactivity

(1)	Possibility of chemical stability and adverse reaction	It is stable under normal conditions and does not easily explode or react.
(2)	Conditions to avoid	Avoid flames, heat, sparks and contact with incompatible materials
(3)	Substances to avoid	Combustible materials
(4)	Hazardous substances generated during decomposition	During burning, pyrolysis or combustion can produce irritating and highly toxic gases
		Irritant, toxic gas

### 11. Toxicological Information

(1)	Information on possible routes of exposure	No data
(2)	Health hazard information	
①	Acute toxicity	
②	Oral	
	Carbon Black	None (LD50 (Rat) 8,000 mg / kg Rat, Method: Same as OECD Test Guideline 401
	PPS	No data
③	Percutaneous	
	Carbon Black	No data
	PPS	No data
④	Inhale	No data
(3)	Skin corrosive or irritant	
	Carbon Black	Non-irritant (same as OECD Test Guideline 404, rabbit) Edema: 0, erythema: 0
	PPS	No data
(4)	Severe eye damage or irritation	No data
	Carbon Black	Non-irritant (same as OECD Test Guideline 405, Rabbit) Cornea / iris / conjunctiva / conjunctival edema: 0
	PPS	No data
(5)	Respiratory sensitization	No data
(6)	Skin sensitization	No data
	Carcinogenicity	No data
(7)	Industrial Safety and Health Ac	No data
(8)	Notice of Ministry of Employment and Labor	No data
(9)	IARC	No data
(10)	OSHA	No data
(11)	ACGIH	
	Carbon Black	A4
	PPS	No data
(12)	NTP	No data
(13)	EU CLP	No data
(14)	Germ cell mutagenicity	No data
(15)	Reproductive toxicity	No data
(16)	Specific target organ toxicity (single exposure)	No data
(17)	Specific target organ toxicity (repeated exposure)	No data
(18)	Aspiration hazard	No data

### 12. Ecological Information

(1) Ecotoxicity	
① Fish	
Carbon Black	LOC (Brachydanio rerio): 1,000 mg / l Exposure time: 96 h Method: OECD 203, LOC (Leuciscus idus melanotus):> 5,000 mg / l Exposure time: 14 d, Method: According to DIN 381412 part 15
PPS	No data
② Crustaceans	
Carbon Black	EC50 > 5600 mg/l 24 hr Method: OECD 202
PPS	No data
③ Birds	
Carbon Black	EC50 > 10,000 mg/l 72 hr Method : OECD 201 NOEC > 10,000 mg/l 72 hr Method : OECD 201
PPS	No data
(2) Persistence and degradability	
① Persistence	No data
② Degradability	No data
(3) Bioaccumulative potential	
① Condensability	No data
② Biodegradable	No data
(4) Mobility in soil	No data
(5) Ozone layer harmful effect	No data
(6) Other harmful effects	No data
<b>13. Disposal Considerations</b>	
(1) Disposal method	Dispose of contents and container in accordance with local regulations
(2) Disposal Considerations	Dispose of contents container according to applicable regulations.
<b>14. Transport Information</b>	
(1) UN number	Not regulated as dangerous goods
(2) Proper shipping name	Not regulated as dangerous goods
(3) Hazard rating in transport	
Carbon Black	4
PPS	Not applicable
(4) Packing group	Not applicable
(5) Marine pollutants	Not applicable
(6) Special safety measures that the user needs or needs to know about transportation	
① Emergency measures in case of fire	
Carbon Black	F-A
PPS	Not applicable
② Emergency Action	
Carbon Black	S-J
PPS	Not applicable
<b>15. Regulatory Information</b>	
(1) Regulation by the Industrial Safety and Health Act	No data
(2) Regulation under the Harmful Chemical Substance Control Act	No data
(3) Regulations under the Dangerous Goods Safety Management Act	No data
(4) Regulations under the Waste Management Act	No data
(5) Regulation due to ozone layer hazard	Not applicable
(6) Other domestic and foreign regulations	
***Domestic regulation	
① Residual Organic Pollutant Control Act	Not applicable
***Foreign regulation	
② USA Administration Information (OSHA Regulation)	Not applicable
③ USA Administration Information (CERCLA Regulation)	Not applicable
④ USA Management Information (EPCRA 302 regulation)	Not applicable
⑤ USA Management Information (EPCRA 304 regulation)	Not applicable

⑥	USA Management Information (EPCRA 313 regulation)	Not applicable
⑦	USA Management Information (Rotterdam Convention substance)	Not applicable
⑧	USA Management Information (Stockholm Convention substance)	Not applicable
⑨	USA Management Information (Montreal Protocol substance)	Not applicable
⑩	EU classification information (confirmed classification result)	Not applicable
⑪	EU classification information (hazard notes)	Not applicable
⑫	EU classification information (Safety notes)	Not applicable

#### 16. References

- (1) This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS
- (2) **DISCLAIMER OF LIABILITY:** The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

#### 17. Data

(1) Issued First Date	2020-07-13
(2) Number of revisions and date of last revision	
Number of revisions	1
Date of last revision	2020-07-13
(3) Other	

The Material Safety Data Sheets (MSDS) are prepared and edited with reference to the MSDS provided by the Korea Occupational Safety and Health Agency.