

1. Chemicals and company information

(1) Product name	Carbon black Master batch
Grade	CB7093H
(2) Recommended use of the product and restrictions on its use	
① Recommended use of the product	PC Compound
② Limitations on use of the product	No data
(3) Supplier information	
① Company	Muil Chemical Co., Ltd
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 Do not 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
Storage	P314 If you feel unwell, get the medical advice.
	P405 Seal and store
	P407 Keep space between the stacks
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	0

② Polycarbonate

Health	1
Flammability	1
Reactivity	0

③ PETS

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	Confidential
Carbonic acid, diphenyl ester, polymer with 4,4-(1-methylethylidene)bisphenol	Polycarbonate	25929-04-8	Confidential
Pentaerythrityl Tetrastearate	PETS	115-83-3	Confidential
			>99%

4. First Aid Measures

(1) Eye contact	If it gets on your eyes, wash it carefully with water for 20 minutes.
	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	Unstable at room temperature
	Container may explode on heat
	Can be re-ignited after digestion
	Flammable or combustible material
	Some materials flash quickly and can move
	Non-flammable, the substance itself is not burned but decomposes on heating
(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 or toxic gases.
	Move container from fire area if it is not hazardous.
	In case of tank fire, extinguish at maximum distance or use unmanned firefighting equipment
	In the case of fire in a tank then cool the tanks with large amounts of water even after the fire was extinguished.
	In th 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
(2) Protection of the environment	Note the substances and conditions to avoid
	Prevent entry into waterways, sewers, basements, and confined spaces
(3) Methods for cleaning up	Absorb spillage to prevent material damage
	Prevent entry into waterways, sewers, basements, and confined spaces
	Absorb spillage to prevent material damage
	Absorb spillage with inert materials (eg dry sand or earth) and place in a chemical waste container
	Remove airborne dust and moisten with water to prevent scattering
Absorb liquid and rinse contaminated area with detergent and water	

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
	It is a metal corrosive substance and should be stored in a corrosion-resistant container (as specified by the manufacturer or administrative office).
	The empty drum should be completely drained, properly blocked and immediately returned to the drum regulator or properly positioned
	Keep away food and drink

8. Exposure Controls / Personal Protection

(1) Exposure standards for chemical substances, biological exposure standards, etc.	
① Local regulation	
Carbon Black	TWA - 3.5mg/m3
Polycarbonate	No data
PETS	No data
② ACGIH regulation	
Carbon Black	TWA 3 mg/m3
Polycarbonate	No data
PETS	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 Appearance	
Form	Pellet
Color	Black
② Odor	Almost Odorless
③ Odor threshold	No data
④ pH	No data
⑤ Melting point / freezing point	150 ~ 220 °C
⑥ Initial boiling point and boiling range	No data
⑦ Flash point	No data
⑧ Evaporation rate	No data
⑨ Flammability (solid, gas)	No data
⑩ Upper / lower limit of burning or explosion range	No data
⑪ Vapor pressure	No data
⑫ Solubility	No data
⑬ Vapor density	No data
⑭ Specific gravity	0.95 ~ 1.25
⑮ N-Octanol / water partition coefficient	No data
⑯ Auto ignition temperature	No data
⑰ Decomposition temperature	No data
⑱ Viscosity	No data

⑰ Molecular weight	No data
(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) Polycarbonate	
① Appearance	
Form	Solid form
Color	No data
② Odor	No data
③ Odor threshold	No data
④ pH	No data
⑤ Melting point / freezing point	No data
⑥ Initial boiling point and boiling range	No data
⑦ Flash point	450 °C
⑧ Evaporation rate	No data
⑨ Flammability (solid, gas)	V0-V2
⑩ Upper / lower limit of burning or explosion range	1.2 g/cm ³
⑪ Vapor pressure	No data
⑫ Solubility	No data
⑬ Vapor density	No data
⑭ Specific gravity	No data
⑮ N-Octanol / water partition coefficient	No data
⑯ Auto ignition temperature	550 °C
⑰ Decomposition temperature	No data
⑱ Viscosity	No data
⑲ Molecular weight	No data
(3) PETS	
① Appearance	
Form	Solid, beads
Color	White
② Odor	Very weak smell
③ Odor threshold	None
④ pH	Neutrality
⑤ Melting point / freezing point	62 ~ 68 °C
⑥ Initial boiling point and boiling range	Not applicable
⑦ Flash point	304 °C
⑧ Evaporation rate	No data
⑨ Flammability (solid, gas)	No data

mUIL Chemical

⑩	Upper / lower limit of burning or explosion range	No data
⑪	Vapor pressure	No data
⑫	Solubility	0.00000000000000000000000006955 mg / l (water solubility: <0.1%)
⑬	Vapor density	No data
⑭	Specific gravity	No data
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	102.02

10. Stability and Reactivity

(1) Possibility of chemical stability and adverse reaction	Stable at normal temperature and pressure
	Some can move, but not easily ignite
	Inhalation of the substance may be harmful
	Non-flammable, the substance itself is not burned but decomposes on heat
(2) Conditions to avoid	Heat source, spark, flame, etc
(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	LD50> 15400 mg/kg Rat
Polycarbonate	No data
PETS	LD50 > 5000 mg/kg Rat
③ Percutaneous	
Carbon Black	LD50> 3000 mg/kg Rabbit
Polycarbonate	No data
PETS	No data
④ Inhale	No data
(3) Skin corrosive or irritant	No data
(4) Severe eye damage or irritation	No data
(5) Respiratory sensitization	No data
(6) Skin sensitization	
Carcinogenicity	No data
(7) Industrial Safety and Health Ac	No data
(8) Notice of Ministry of Employment and Labor	
Carbon Black	2
Polycarbonate	No data
PETS	No data
(9) IARC	
Carbon Black	2B
Polycarbonate	No data
PETS	No data
(10) OSHA	No data
(11) ACGIH	
Carbon Black	A3
Polycarbonate	No data
PETS	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 LC50 > 1000 mg/l 96 hretc (Tribolodonhakonensis)
Polycarbonate No data
PETS LC50 > 0.0000000000000115 mg/l 96 hr
- ② Crustaceans
Carbon Black EC50 > 5600 mg/l 24 hr Daphnia magna (OECD Guideline 202, GLP)
Polycarbonate No data
PETS LC50 > 0.0000000000000000000000266 mg/l 48 hr
- ③ Birds
Carbon Black ErC50 > 10000 mg/l 72 hr Other (Desmodesmussubspicatus)
Polycarbonate No data
PETS EC50 > 0.0000000000000000279 mg/l 96 hr
- (2) Persistence and degradability
- ① Persistence No data
② Degradability No data
- (3) Bioaccumulative potential
- ① Condensability No data
② Biodegradable
Carbon Black No data
Polycarbonate No data
PETS No data
- (4) Mobility in soil No data
(5) Ozone layer harmful effect No data
(6) Other harmful effects No data

13. Disposal Considerations

- (1) Disposal method Dispose of contents and container in accordance with local regulations
(2) Disposal Considerations Dispose of contents container according to applicable regulations.

14. Transport Information

- (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
Polycarbonate Not applicable
PETS Not applicable
- (4) Packing group
Carbon Black I
Polycarbonate Not applicable
PETS 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
Polycarbonate Not applicable
PETS Not applicable
- ② Emergency Action
Carbon Black S-J
Polycarbonate Not applicable
PETS Not applicable

15. Regulatory Information

- (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	2011-08-01
(2) Number of revisions and date of last revision	
Number of revisions	3
Date of last revision	2017-08-31
(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.