	Material Safety Data Sheet (MSDS)	Date	2011-11-11
		Revision date	2019-10-01
	Hanwha Total Petrochemical Composite Material FB72D	Revision No.	3.0
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1. IDENTIFICATION

A. Product name

○ Product name: Hanwha Total Petrochemical Composite Material FB72D

B. Recommended Use and Restriction on Use

○ General Use: Injection molding raw material for synthetic resin products

○ Restriction in use: Do not use other than for any purpose

C. Manufacturer/Distributor Information

- Manufacturer Information

Company	Hanwha Total Petrochemical Co., Ltd.		
Address	103, Dokgot 2-ro, Daesan-eup, Seosan-si, Chungcheongnam-do, Korea 31900		
Phone	82-41-660-6106	FAX	82-41-660-6089

2. HAZARDS IDENTIFICATION

A. GHS Classification:

○ Physical Hazards

- Not Classified

○ Health Hazards

- Carcinogenicity : Category 2

○ Environmental Hazards

- Not Classified

B. GHS label elements, including precautionary statements:

○ Hazard symbols:

○ Signal word: Warning

○ Hazard statement:

- H351: Suspected of causing cancer

○ Precautionary statements:

- Prevention:

• P201 Obtain special instructions before use.

• P202 Do not handle until all safety precautions have been read and understood.

• P280 Wear protective gloves/protective clothing/eye protection/ face protection.

- Response:

• P308+P313 IF exposed or concerned: Get medical advice/ attention.

- Storage:

• P405 Store locked up.

- Disposal:

• P501 Dispose of contents and container in accordance with local/regional/national/international regulation.

C. Other hazards which do not result in classification:

- No data

3. COMPOSION/INFORMATION ON INGREDIENTS

Chemical name	Other name	CAS No. or Identification No	Content(%)
ETHYLENEPROPYLENE COPOLYMER	1-PROPENE, POLYMER WITH ETHENE	9010-79-1	75 - 85
ANTIMONY OXIDE	ANTIMONY OXIDE	1309-64-4	1 - 10
Flame Retardants	-	trade secret	5 - 15
Additives	-	trade secret	1 - 5

※ Identification No.: KE(Korea Existing Chemicals Registration Number)

4. FIRST-AID MEASURES

A. Eye Contact:

- In case of eye contact, rinse well with water for a few minutes.
If possible, remove contact lens and keep wash.
- If irritation persists, get medical attention.
- In case of contact with substances, rinse your eyes immediately with running water for at least 20 minutes.
- Do not rub your eyes.
- Get medical attention immediately.

B. Skin Contact:

- In case of contact with substances, rinse your skin immediately with soap and running water for at least 20 minutes.
- Thoroughly clean clothes and shoes before reuse.
- Get medical attention immediately.
- Take off contaminated clothes and clean them before reuse.
- If exposed to heat, affected area should be immersed into or rinsed with plentiful water to eliminate heat.
- Remove contaminated clothes and shoes and isolate contaminated area.
- At minimal skin contact, prevent the spread of contaminated area.

C. Inhalation:

- If short of breathing, provide oxygen supply system.
- If not breathing, carry out the artificial respiration.
- Keep warm and take it easy.
- If any exposure or contact is concerned, seek medical advice or attention.
- Move into fresh air.
- Seek emergency medical care.

D. Ingestion:

- Do not put anything into the mouth of an unconscious person.
- Get medical attention immediately.
- In case of intake or inhalation of substances, do not perform mouth-to-mouth

resuscitation, but use proper respiratory medical device.
- If any exposure or contact is concerned, seek medical advice or attention.
- Do not induce vomiting unless directed to do so by medical personnel.
- Rinse mouth immediately.

E. Notice to Physician:
- Let a medical provider recognize the substance and take appropriate protection.
- Inform health care workers about the contamination and let them take proper protective measures.
- IF exposed or concerned: Get medical advice/attention.

5. FIRE FIGHTING MEASURE

A. Suitable (Unsuitable) extinguishing media:
○ Extinguishing media: Mist, fine water spray, chemical desiccant, dry sand, carbon dioxide, foam, alcohol resistant foam
○ Unsuitable Extinguishing media: water jet
○ Large Fire: Mist, fine water spray, foam
○ Do not use direct water stream.
○ Wear fire resistant clothing, helmet, safety shoes, gloves, air respirator.

B. Specific hazards arising from chemicals:
○ Thermal decomposition products:
- Pyrolysis or combustion cause irritative gases or carbon oxides.
- Fire may produce irritating and/or toxic gases.
- Some liquids can produce gases that cause dizziness, suffocation.

○ Fire and Explosion Hazards:
- May be ignited by heat, sparks or flames.
- Containers may explode when heated.
- Some may burn but none ignite readily.
- May be toxic by inhalation.

C. Fire fighting procedures and equipments:
- For a fire on tank, cool down the containers with cool water after being extinguished.
- Move the containers out of the fire areas, if possible to do without risk.

- For a fire on tank, step back from the tank engulfed in flames.
- Immediately evacuate, in case of noise from pressure relief units or discoloration of the tank.
- For disposal of fire water, dig a ditch to trap and prevent the spread of substances.
- Effluents may cause contamination.
- Some are possibly at high temperature during transfer.
- Direct contact may cause burning on the skin and eyes.
- Fight fire from a safe distance.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Wear appropriate protective equipment.
- Keep unauthorized personnel out.
- Notify your local fire station and inform the location of the fire and characteristics hazard.
- Fine powder may cause ignition.

6. ACCIDENTAL RELEASE MEASURES

A. Personal Precautions, Protective Equipment and Emergency procedures:

- Remove all flammable sources.
- If it is not dangerous, stop leaking.
- Take caution of substances and conditions that should be avoided.
- Ventilate properly.
- DO NOT touch the effluents or walk around the area.
- Prevent producing dust.
- Unnecessary personnel or anyone without protective gears should not enter.
- Move the containers out of the area.
- Moist with water to prevent dust scattering.
- Cleanup and disposal immediately under expert supervision is advised.
- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Move the containers out of the fire areas

B. Environmental Precautions:

○ Spill in air:
- Collect the effluents to dispose as potential risky waster.
- Ventilate properly.

○ Spill in soil: Not available

○ Spill in water: Not available

○ Sewage water leak, water will be prevented from entering.

○ Leakage in many cases be reported to the fire department and related departments.

C. Methods and materials for containment and cleaning up:

○ Small leak:
- Wipe out
- Put in proper containers for waste.
- Ventilate and clean up the area.
- Dispose of waste in accordance with Industry

○ Large leak:
- Powder emission: To minimize the spread, cover it with plastic sheets or water-proof cloths and keep it away from water. Keep unauthorized people away, isolate hazard area and deny entry. Notification to central government, local government. When emissions at least of the standard amount. Stay upwind and keep out of low areas. Dike far ahead of liquid spill for later disposal.

7. HANDLING AND STORAGE

A. Handling:
- Use with special caution of handling/storage.
- Even after the contents are removed, there may be still some product residues. Follow all preventive procedures on MSDS/label.
- Obtain special instructions before use.
- Avoid long or persistent skin contact.
- Without proper ventilation, do not enter storage area.
- Read and understand all safety and precaution statements before use.
- Do not inhale steam from heated substances.
- Take caution against high temperature.
- Refer Engineering Maintenance and Personal Protective Gears at work.

- Carefully release the tap, before open.
- Wash thoroughly after use.
- Take caution of substances and conditions that should be avoided.
- Avoid direct physical contact.
- Handle in accordance with national regulation.
- Operators should wear antistatic footwear and clothing.
- Minimize dust generation and accumulation.
- Contaminated work clothing should not be allowed out of the workplace.

B. Storage Precautionary Statements:

- Store in cool and dry places.
- Seal it before storage.
- Take caution of substances and conditions that should be avoided.
- Empty barrel should be completely drained and put it back to controller or properly arrange immediately.
- Check regularly for leaks.
- Do not use damaged containers.
- Store in accordance with local regulations.
- By specifying a storage area for carcinogenic substances.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- Protect from sunlight.
- No open fire.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure Limits By Material:

Chemical Name	Exposure limit under ISHL	ACGIH
ANTIMONY OXIDE	TWA : 0.5 mg/㎥ ANTIMONY OXIDE (Handling and Using) TWA : 0.5 mg/㎥ ANTIMONY OXIDE and compounds	N/A

○ Biological exposure limits: Not applicable

B. Engineering Controls

- The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

C. Personal Protective Equipment:

○ Respiratory protection: Frequent use or heavy exposure, respiratory protection if needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

※ When take shelter

- Dust, mist, fume-purifying respiratory protection
- Any air-purifying respirator with a corpuscle filter of high efficiency
- Any respiratory protection with a electromotion fan(for dust, mist, fume-purifying)

※ For Unknown Concentration or Immediately Dangerous to Life or Health

- Self-contained breathing apparatus(pressure-demand or other positive-pressure mode in combination)
- Supplied-air respirator with full facepiece

○ Eye protection: Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield. Provide an emergency eye wash station and quick drench shower in the immediate work area.

○ Hand protection: Where there is potential for hand contact, wear appropriate gloves.

○ Body protection: Where there is potential for skin contact, wear appropriate clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance (physical state, color, etc.): Solid (Pellet)

B. Smell: Not available

C. Odor threshold: Not available

D. pH: Not available

E. Melting / freezing range: Not available

F. Initial boiling point and boiling point range: Not available

G. Flash point: Not available

H. Evaporation Rate: Not available
I. Flammability (solid, liquid): Not available
J. Explosion range of prints or high / low: Not available
K. VAPOR PRESSURE: Not available
L. Solubility: Not available
M. Vapor Density: Not available
N. Specific gravity: 0.95 ~ 1.05
O. n-octanol / water partition coefficient: Not available
P. Autoignition temperature: Not available
Q. Decomposition temperature: Not available
R. Viscosity: Not available
S. Molecular Weight: Not available

10. STABILITY AND REACTIVITY

A. Stability:
- It is stable when stored and handled under recommended condition and at ambient temperature and pressure.

B. Possibility of Hazardous Reaction:
- No report about harmful polymerized reactions in the room temperature and pressure.

C. Conditions to Avoid:
- Avoid contacting with heat, flame and/or other ignition sources.

D. Materials to Avoid:
- Flammable substance, Reactive substance

E. Hazardous Decomposition Products:
- Thermal decomposition product a carbon oxides

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure:

○ (Respiratory system): Not Classified

○ (Oral): Not Classified

○ (Eyes · Skin): Not Classified

B. Information on Health Hazard

○ Acute Toxicity:

- Oral:

[ANTIMONY OXIDE] LD50 > 7,500 ㎎/㎏ Rat
(OECD TG401, Read-across antimony oxide)(ECHA)

- Skin:

[ANTIMONY OXIDE] LD50 > 8,300 ㎎/㎏ Guinea pig
(OECD TG 402)(ECHA)- Inhalation: Not available

○ Skin corrosiveness or irritation: Not available

○ Serious eye damage or irritation:

[ANTIMONY OXIDE] Rabbit No irritation (OECD Guideline 405, GLP)

○ Respiratory sensitization: Not available

○ Skin sensitization:

[ANTIMONY OXIDE] Guinea pig: Not sensitization(ECHA)

○ Carcinogenicity:

- Korea Industry Safety and Health Law (ISHL):

[ANTIMONY OXIDE] Carc. 2 (Handling and Using)

- OSHA: Not available

- NTP: Not available

- IARC(GROUP):

[ANTIMONY OXIDE] Group 2B

- ACGIH:

[ANTIMONY OXIDE] A2

- EC:

[ANTIMONY OXIDE] Carc.2

○ Germ cell mutagenicity:

[ANTIMONY OXIDE] Chromosome aberration test using bone marrow cells from mammals in vivo, negative. (OECD Guideline 475, GLP)(ECHA)

○ Reproductive toxicity:

[ANTIMONY OXIDE] Rat Increase in the weight of the liver in the high dose group, increase in cysts in the pituitary gland, and infiltration of plasma cells in the

cervical lymph nodes.
NOAEL=1686 mg/kg bw/day(Rat) As a result of the fetal toxicity test, the level of antimony in the red blood cells in the parent body, the weight of the lungs increase. (OECD Guideline 414, GLP)
Not classified as impact on high capacity (ECHA)

○ Specific target organ toxicity (single exposure):
[ANTIMONY OXIDE] Acute inhalation toxicity test: cough, Acute dermal toxicity test: Acute Symptoms Predicted Target Long-term Allotoxicity Test: a temporary increase in the proportion of blood count and neutroph, glaucoma, inflammation of the bronchial tubes and lungs, chronic atrophy inflammations and lung cancer occur(ICSC, HSDB)

○ Specific target organ toxicity (repeated exposures):
[ANTIMONY OXIDE] NOAEC(6h/day)>=0.51 mg/m³ air No mortality observed(OECD Guideline 452,GLP), Not classified(Substances classified as high-capacity and carcinogenic)(ECHA)

○ Aspiration hazard: Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity:

○ Acute aquatic toxicity:

- Fish:
[ANTIMONY OXIDE] LC50 > 833 mg/L 96 hr Pimephales promelas(U.S. EPA 1975)(ECHA)

- Invertebrate:
[ANTIMONY OXIDE] LC50 = 12.1 mg/L 48 hr Daphnia magna(static)(ECHA)

- Algae:
[ANTIMONY OXIDE] EC50 = 206 mg/L 72 hr (Pseudokirchneriella subcapitata, static, OECD Guideline 201)(ECHA)

B. Persistence and degradability:

○ Persistent:
[ANTIMONY OXIDE] -0.306 log Kow

○ Biodegradable: Not available

C. Bioaccumulative potential:

○ Bioaccumulation:

[ANTIMONY OXIDE] 1 (ECHA)

○ Biodegradability:

[ANTIMONY OXIDE] Not available

D. Mobility in soil: Not available

E. Hazardous to the ozone layer: Not applicable

F. Other adverse effects:

[ANTIMONY OXIDE] Fish: Pimephales promelas, NOEC, 30d, > 0.007 mg/L, (Flow-Through), Algae: Pseudokirchnerella subcapitata, NOErC50, 72h = 100 mg/L(approx.), ErC50, 72h, = 206 mg/L static(approx.), OECD Guideline 201(EHCA)

13. DISPOSAL CONSIDERATIONS

A. Disposal method:

- More than two kinds of wastes are a mixture if it is difficult to separate treatment by incineration or a similar process may stabilize the reducing.
- The possible to separate oil water separation must be disposed of Priority.
- Incinerate the waste in incinerator.
- Evaporated and the residue is treated by the method of incineration be disposed.
- Neutralization, hydrolysis, oxidation, and reduction.
- Incinerate or melt at high temperature.
- Solidify.

B. Special precautions for disposal:

- The user of this product must properly characterize the waste generated from the use of this product in accordance with all applicable federal, state and/or local laws and regulations in order to determine the proper disposal of the waste in accordance with all

applicable federal, state and/or local laws and regulations. Observe of Wastes Control Act.

14. TRANSPORT INFORMATION

A. UN No.: Not regulated as a hazardous material.

B. UN Proper Shipping Name: Not available

C. Hazard class: Not available

D. Packing group: Not available

E. Marine pollutant: Not applicable

F. Special precautions for user related to transport or transportation measures:

○ EmS FIRE SCHEDULE: Not available

○ EmS SPILLAGE SCHEDULE: Not available

○ Local transport follows in accordance with Dangerous goods Safety Management Law.

○ Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.

○ Air transport(IATA): Not subject to IATA regulations

15. REGULATORY INFORMATION

A. Occupational Safety and Health Act in Korea:

○ This product is subject to the chemical for classification and labeling under ISHL:
- Applicable

○ Harmful substance subject to work environment monitoring:

- Applicable(ANTIMONY OXIDE over 1% by volume(Measurement:6 month))

○ Substance with workplace exposure limit:

- Applicable(ANTIMONY OXIDE (Handling and Using))

○Special management materials: applicable

- Applicable

○ Hazardous substance subject to management:

- Applicable(ANTIMONY OXIDE over 0.1% by volume(Special management materials in Korea))

○ Hazardous substance subject to special physical examination:

- Applicable(ANTIMONY OXIDE over 1% by volume)

○ Materials the manufacture, etc. of which is prohibited:
Not applicable

○ Materials subject to permission: Not applicable

○ Substance subject to PSM: Not applicable

B. The Toxic Chemicals Control Act in Korea(TCCA)

○ Toxic substances:

- Applicable(ANTIMONY OXIDE over 1% by volume)

○ Permissible chemical: Not applicable

○ Restricted substances: Not applicable

○ Prohibited substances: Not applicable

○ Substances subject to Investigation of Volume of Chemical Discharges:

- Applicable (ANTIMONY OXIDE over 0.1% by volume)

○ Substances requiring preparation for accidents: Not applicable

C. Safety Control of Dangerous Substances Act in Korea

○ Dangerous Goods: Not Applicable

D. Wastes Control Act in Korea

○ Industrial waste: Designated waste(Toxic waste)

E. Other local or international regulation

○ Persistent Organic Pollutants Management Law: Not Applicable

○ EU classification:

- Classification: [ANTIMONY OXIDE] H351

○ US regulations

- OSHA regulation (29 CFR1910.119): Not Applicable

- CERCLA section 103 (40 CFR302.4):
  [ANTIMONY OXIDE] 453.599 kg 1000 lb
- EPCRA section 302 (40 CFR355.30): Not Applicable
- EPCRA section 304 (40 CFR355.40): Not Applicable
- EPCRA section 311/312 (40 CFR355.40): Not Applicable
- EPCRA section 313 (40 CFR372.65): [ANTIMONY OXIDE] Applicable
- U.S. waste disposal regulations:
  Hazardous Waste Number: Not Applicable
  Regulatory Standard: Not Applicable

○ Rotterdam Convention material: Not Applicable
○ Stockholm Convention material: Not Applicable
○ Montreal Protocol on Substances: Not Applicable

16. OTHER INFORMATION

A. References :
- ○ Chemwatch AuthorITe(MSDS Authoring Software)
- ○ KOSHA

B. Issue date :
- ○ 2011-11-11

C. Revision number and Last date revised :
- ○ 3.0
- ○ 2019-10-01

D. Other :
- ○ This SDS is prepared according to the Globally Harmonized System (GHS).