SAFETY DATA SHEET

1. IDENTIFICATION

A. PRODUCT NAME

○ KUMHO HFA 708F

B. Recommended Use and Restriction on Use

○ General use : Not available

○ Restriction on Use : Not applicable

C. Information of Manufacturer

- Manufacturer

○ Company name : Korea Kumho Petrochemical Co., Ltd.

○ Address : 260-257, Cheoyong-ro, Nam-Gu, Ulsan, 44785, Korea

○ Dept. : Quality Assurance Team

○ Person in charge :

○ Telephone number : +82-52-279-8852

○ Fax number : +82-52-279-8840

○ Emergency :

- Supplier / distributor

○ Company name :

○ Address :

○ Dept. :

○ Person in charge :

○ Telephone number :

○ Fax number :

○ Emergency :

2. HAZARD IDENTIFICATION

A. GHS Classification : Not applicable

- Carcinogenicity : Category1B

- Specific target organ toxicity(Repeated exposure) : Category2

B. GHS label elements

○ Hazard symbols :

○ Signal word : Danger

○ Hazard statement :

- H350 May cause cancer
- H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

○ Precautionary statements :

- Prevention
  - P201 Obtain special instructions before use.
  - P202 Do not handle until all safety precautions have been read and understood.
  - P260 Do not breathe dust/fume/gas/mist/vapours/spray.
  - P281 Use personal protective equipment as required.
- Response
  - P308+P313 If exposed or concerned: Get medical advice/attention.
  - P314 Get medical advice/attention if you feel unwell.
- Storage
  - P405 Store locked up.
- Disposal
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

C. Other hazards which do not result in classification :

- NFPA rating: (0~4 steps) : Health=1, Flammability=1, Reactivity=0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No./ECL No./EINECS No.	Contents(%)
ABS Resin	9003-56-9/KE-29398/-	70~80

Brominated flame retardant	25713-60-4/2000-3-1422/-	15~20
Chlorinated Polyethylene	64754-90-1/KE-5477/-	1~5
Antimony Trioxide	1309-64-4/KE-9846/215-175-0	1~5
Antioxidant	2082-79-3/KE-3070/218-216-0	0.1~10
Wax	85116-93-4/KE-14846/285-547-5	0.1~5

※ Reference No. : ECL(Registration number of Korean Existing Chemical List)
EINECS(Registration number of Europe Existing Chemical List)

4. FIRST-AID MEASURES

A. Eye Contact :

- Immediately flush eyes with plenty of water at least 15minutes.
- If irritation persists, get a doctor's examination.

B. Skin Contact :

- Wash the contaminated skin area with running water.
- If irritation persists, get a doctor's attention.

C. Inhalation :

- Remove victim to fresh air immediately.
- Take Artificial respiration if not breathing.
- Use respirator when breathing is difficult.
- Get medical attention.

D. Ingestion :

- Do not induce vomiting.
- Do not feed anything if that is not conscious.
- Give 2~4 cups water or milk if conscious.
- Get medical attention.

E. Notice to Physician :

- Treatment may vary with condition of victim and specifics of incident.

5. FIRE FIGHTING MEASURE

A. Suitable (Unsuitable) extinguishing media :

○ Extinguishing media : Carbon Dioxide, foam, powder extinguishing media

○ Unsuitable Extinguishing media : Do not use direct water.

○ Large fire : Alcohol-resistant foam.

B. Specific hazards arising from the chemical

○ Combustion : Carbon dioxide, carbon monoxide

○ Levels of fire hazard :

- There is potential for caused by the fire that irritating or toxic gases.
- Vapors are heavier than air.
- Containers may rupture or explode if exposed.

C. Fire fighting procedures and equipments :

- Wear appropriate personal protective equipment(see section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION).
- Use water spray to keep fire-exposed containers cool.
- Move container from fire area if it can be done without risk.
- Suppression using water can be spread fire.
- Avoid inhalation of substance itself or combustion.
- Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

A. Personal Precautions, Protective Equipment and Emergency procedures :

- Perform in accordance with 「See section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION」. Put on appropriate personal protective equipment.
- Avoid contact with eyes and skin.
- Avoid inhalation of substance itself or combustion.
- Evacuation against the wind.
- Avoid contact with heat, sparks, flame or other ignition sources.

B. Environmental Precautions

- Avoid dispersal of spilt material and runoff and contact with waterways, drains and sewers. If large spills, advise emergency services.

C. Methods and materials for containment and cleaning up :

○ For small spills.

- Remove all sources of ignition.
- Absorb for use sand or other non-combustible material.
- Ventilate leak areas and clearing leak area.

○ For large spills.

- Remove all sources of ignition.
- Dike to prevent flowing into the nearby river and reservoir.
- Avoid entering to sewers or water system.
- Absorb for use sand or other non-combustible material.
- Appropriate container for disposal of spilled material collected.

7. HANDLING AND STORAGE

A. Handling :

- Perform in accordance with 「See section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION」. Put on appropriate personal protective equipment.
- Handle in a well-ventilated place.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Remove all sources of ignition.
- Wash thoroughly after handling.

B. Storage Precautionary Statements :

- Do not store where the moisture.
- Store in a cool, dry, location and avoid heat.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limit

- ACGIH : Not applicable
- OSHA :

<Antimony Trioxide> : PEL 0.5 mg/m3

B. Engineering Controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally

preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Personal Protective Equipment :

- Respiratory Protection : Use the respirator be given official approval by Korea Occupational Safety & Health Agency. Under conditions of frequent use or heavy exposure, Respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
  - ※ When take shelter
    - Any chemical cartridge respirator with organic vapour cartridge(s).
    - Any chemical cartridge respirator with a full facepiece and organic vapour cartridge(s).
    - Any air-purifying respirator with a full facepiece and an organic vapour canister.
  - ※ 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 faceshield. Provide an emergency eye wash station and quick drench shower in the immediate work area.
- Hand Protection : Wear chemical resistant protected gloves if there is hazard potential for direct skin contact. Wear heat resistant protected gloves to withstand the temperature of molten product.
- Body Protection : Wear chemical resistant protected clothing if there is hazard potential for direct contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance : Solid(Pellets)
B. Odor : Odorless
C. Odor threshold : Not available
D. pH : Not applicable

E. Melting point/Freezing point : Not available
F. Initial Boiling Point/Boiling Ranges : Not available
G. Flash point : 350℃
H. Evapourating Rate : Not available
I. Flammability(solid, gas) : Not available
J. Upper/Lower Flammability or explosive limits : Not available
K. Vapour pressure : Not applicable
L. Solubility : Insoluble
M. Vapour density(Air=1) : Not applicable
N. Relative density : 1.15~1.18
O. Partition coefficient of n-octanol/water : Not available
P. Autoignition Temperature : 455℃
Q. Decomposition Temperature : Not applicable
R. Viscosity : Not applicable
S. Molecular weight : Not applicable

10. STABILITY AND REACTIVITY

A. Stability

- This material is stable under recommended storage and handling conditions

B. Possibility of Hazardous Reaction

- Will not occur.

C. Conditions to Avoid

- Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Materials to Avoid

- Strong oxidizing agents

E. Hazardous Decomposition Products

- Hydrogen cyanide, halogen compounds, carbon compounds

11. TOXOCOLOGICAL INFORMATION

A. Information on the likely routes of exposure

O (Respiratory tracts) : Not applicable

- (Oral) : May harmful if swallowed.
- (Eye · Skin) : Not applicable

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- Acute toxicity :
  - Oral : ※ATE MIX : > 5000mg/kg
    [Antioxidant] : LD50 > 2000 ㎎/㎏ Rat
    [Chlorinated Polyethylene] : LD50 > 5000 ㎎/㎏ Rat
    [Antimony Trioxide] : LD50 > 34600 ㎎/㎏ Rat
  - Dermal : ※ATE MIX : > 2000mg/kg
    [Antioxidant] : LD50 > 2000 ㎎/㎏ Rat
  - Inhalation : ※ATE MIX : Not available
    [Antioxidant] : dust LC50 > 1.8 ㎎/ℓ Rat
- Skin corrosion/irritation : Not available
- Serious eye damage/irritation : Not available
- Respiratory sensitization : Not available
- Skin sensitization : Not available
- Carcinogenicity :
  - IARC : [Antimony Trioxide] : Group 2B
  - ACGIH : [Antimony Trioxide] : A2
  - EU CLP : [Antimony Trioxide] : Carc. 2
- Germ cell mutagenicity : Not available
- Reproductive toxicity : Not available
- Specific target organ toxicity(single exposure) : Not available
- Specific target organ toxicity(repeated exposure) : Category 2 (respiratory irritation)
- Aspiration hazard : Not available
- Chronic effect : Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity :

- Fish :
  [ABS Resin] : LC50 11.5 ㎎/ℓ 96 hr Pimephales promelas
  [Antioxidant] : LC50 = 19.2 ㎎/ℓ 96 hr Oryzias latipes

[Antimony Trioxide] : LC50 80 ㎎/ℓ 96 hr

- Crustaceans :
  [Antioxidant] : EC50 = 13.9 ㎎/ℓ Daphnia magna
  [Antimony Trioxide] : EC50 423.45 ㎎/ℓ 48 hr
- Algae :
  [Antioxidant] : ErC50 > 30 ㎎/ℓ 72 hr Scenedesmus subspicatus
  [Antimony Trioxide] : EC50 67 ㎎/ℓ 72 hr

B. Persistence and degradability :

- Persistence :
  [Antioxidant] : log Kow = 13.41 (Estimates)
- Degradability : Not available

C. Bioaccumulative potential and biodegration :

- Bioaccumulative :
  [Antioxidant] : BCF ≤ 12 (Carp(Cyprinus carpio) 6 weeks 0.05mg/L)
- Biodegration :
  [Antioxidant] : Biodegradability = 21 ~ 39 (%) 28 day

D. Mobility in soil : Not available

E. Other adverse effects : Not available

13. DISPOSAL CONSIDERATION

A. Disposal methods

- The user of this product must properly characterize the waste/container 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.

B. Special precautions for disposal :

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.

- Dispose of waste in accordance with local regulation.

14. TRANSPORT INFORMATION

A. UN number : Not regulated for transport of dangerous goods

B. Proper shipping name : Not applicable

C. Hazard class : Not applicable

D. Packing group : Not applicable

E. Marine pollutant : Polypropylene glycol

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

1) EmS FIRE SCHEDULE : Not applicable

2) EmS SPILLAGE SCHEDULE : Not applicable

G. IATA Transport : Not Classified as dangerous for IATA Transport

15. REGULATORY INFORMATION

A. POPs Management Law : Not applicable

B. Information of EU Classification

- Classification :

  [Antimony Trioxide] : Carc. Cat. 3; R40

- Risk Phrases

  [Antimony Trioxide] : S2, S22, S36/37

- Safety Phrase

  [Antimony Trioxide] : S2, S22, S36/37

- U.S. Federal regulations

- OSHA PROCESS SAFETY (29CFR1910.119) : Not applicable

- CERCLA Section 103 (40CFR302.4) :

  [Antimony Trioxide] : 453.599 kg 1000 lb

- EPCRA Section 302 (40CFR355.30) : Not applicable

- EPCRA Section 304 (40CFR355.40) : Nor applicable
- EPCRA Section 313 (40CFR372.65) : Not applicable

C. Rotterdam Convention listed ingredients : Not applicable

D. Stockholm Convention listed ingredients : Not applicable

E. Montreal Protocol listed ingredients : Not applicable

16. OTHER INFORMATION

A. Reference

- This SDS is prepared in accordance with ISHL Article 41 and MOL Notification No. 09-68 in Korea and consider the internal regulations by Korea Kumho Petrochemical Co., Ltd.

B. Issue date : 2016. 02. 17

C. Revision number and Last revised : 2nd. 2018. 07. 19

D. Other information : Not available