

## 1. IDENTIFICATION OF THE SUBSTANCE/ PREPARATION AND OF THE COMPANY/ UNDERTAKING

A. Product name: KUMHO SOL 6270M

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

B. Relevant identified uses: Raw materials for tires, shoes

C. Uses advised against: Not available

### 1.3. Details of the supplier of the safety data sheet

A. Name of manufacture/supplier: Korea Kumho Petrochemical Co., Ltd.

B. Address: 287-1, Pyeongyeo-Dong, Yeosu-si, Jeollanam-do, Korea

C. Dept. : Quality Assurance Team

D. Telephone: +82-61-688-3060 ~ 9

E. Fax: +82-61-688-3168

F. Email:

G. Website:

### 1.4. Emergency telephone numbers

A. Telephone number:

## 2. HAZARD IDENTIFICATION

### 2.1. Classification of the substance or mixture

A. Classification(in accordance with EC No. 1272/2008):

Acute Inhalation toxicity : Category 4

Germ cell mutagenicity : Category 2

Specific target organ toxicity(single exposure) : Category 2 (Lung)

Specific target organ toxicity(repeated exposure) : Category 1 (Lung, skin)

Aspiration hazard : Category 1

B. Classification(in accordance with 1999/45/EC):

R20 • Harmful by inhalation.

R46 • May cause heritable genetic damage.

R39 • Danger of very serious irreversible effects.

R48 • Danger of serious damage to health by prolonged exposure.

R65 • Harmful may cause lung damage if swallowed.

## 2.2. Label elements

### - Symbol(s)



### - Signal word: **Danger**

### - Hazard statement(s):

H332 (dust, Mist) Harmful if inhaled.

H341 Suspected of causing genetic defects.

H371 May cause damage to lung.

H372 Causes damage to lung, skin through prolonged or repeated exposure.

H304 May be fatal if swallowed and enters airways.

### - Precautionary statement(s):

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P201 Obtain special instructions before use.

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

P281 Use personal protective equipment as required.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

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

P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

P314 Get medical advice/attention if you feel unwell.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P331 Do NOT induce vomiting.

P405 Store locked up.

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

## 2.3. Other hazards

- NFPA rating: (0-4 steps) : Health=2, Flammability=0, Reactivity=0

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. Information on ingredients

Chemical name	pre-registration number / registration number	CAS No.	WT(%)	Classification 67/548/EEC	Classification 1272/2008/EC
Styrene-Butadiene- Copolymer	- / - *	9003-55-8	71.2~74.2	-	-
TDAE	05-2114779801- 39-0000 / -	64741-88-4	25.8~28.8	R22, R68, R45, R39, R48, R65	Acute Tox. 4 Skin Irrit. 3 Eye Irrit. 2B Muta. 2 Carc. 1A STOT SE 1 STOT RE 1 Asp. Tox. 1
Antioxidant(BHT)	- / -	128-37-0	0.3~0.6	R22, R43, R39 R48 R50/53,	Acute Tox. 4 Skin Sens. 1 STOT SE 1 STOT RE 2 Aquatic Acute 1 Aquatic Chronic 1

\* Monomer is registered instead of Styrene-Butadiene-Styrene copolymer. (Registration number of monomer: 1,3-Butadiene ; 01-2119471988-16-\*\*\*\*, Styrene ; 01-2119457861-32-\*\*\*\*)

### 4. FIRST AID MEASURES

#### 4.1. Description of first aid measures

A. Ingestion:

- Do not drink anything to an unconscious person.
- If conscious and give 2-4 cups water or milk.
- If vomiting occurs, head lower than hips to prevent blocking the airway.
- Rinse mouth with water.
- Get medical attention if necessary.

B. Eye Contact:

- Flush the eye with large quantities of water at least 15min.
- Do not use hands to rub or scratch.
- Get medical attention if irritation persists.

C. Skin Contact:

- Wash the skin area with plenty of water at least 15 minutes.
- Wash with flowing water or shower if there are no irritation and long term contact.
- All contaminated clothing and shoes remove and laundry thoroughly before reuse.
- Seek medical attention if irritation persists or develops.

D. Inhalation:

- Remove to fresh air.

- If inhaled fumes or vapor, remove to fresh air and keep open respiratory tract. If necessary, give artificial respiration.
- If not breathing, give artificial respiration.
- Use respirator when breathing is difficult.
- Get medical attention if necessary.

#### **4.2. Most important symptoms and effects, both acute and delayed**

- Not available

#### **4.3. Indication of any immediate medical attention and special treatment needed**

- No specific antidote. Treatment may vary with condition of victim and specifics of incident.
- Skin and respiratory disorders, impaired liver function may deteriorate due to exposure.

### **5. FIRE FIGHTING MEASURES**

#### **5.1. Extinguishing media**

- Suitable extinguishing media: Dry chemicals, CO<sub>2</sub>, water, regular foam.
- Unsuitable extinguishing media: Water jet.
- Large Fire : Water, fog or regular foam.

#### **5.2. Special hazards arising from the substrate or mixture**

- Thermal decomposition products :
  - CO, CO<sub>2</sub>, hot fume, toxic gas and irritating gas.
- Fire and Explosion Hazards :
  - Slight fire hazard when exposed to heat or flame.
  - Dust / air mixtures may ignite or explode.

#### **5.3. Advice for fire-fighters**

- Wear appropriate personal protective equipment (see section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION).
- Avoid with heats, flames, sparks and other sources of ignition.
- Use cautiously water spray and foam and be available for use in long distance.
- Avoid excessive watering.
- Cool exposed surfaces with water spray and use in long distance.
- Prevent the scatter of leaks using water spray.

### **6. ACCIDENTAL RELEASE MEASURES**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

- Perform in accordance with 「See section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION」.
- Isolate the area.

- Suppress dust generation.
- Avoid with heats, flames, sparks and other sources of ignition.
- Ventilation conducted in an appropriate manner.
- Use vapor suppression foam to reduce vapors.

#### **6.2. Environmental precautions**

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

#### **6.3. Methods and material for containment and cleaning up**

- Re-packaging dismantled rubber and if possible re-use.
- If necessary, use dry sand or soil to absorb leaks and disposal should be collected in waste containers.
- Combustible materials such as sawdust should not be used.
- Dispose of in compliance with all federal, state and local regulations.

#### **6.4. Reference to other sections:**

- Refer to "Section 8 Exposure controls/personal protection" and "Section 13 Disposal consideration" as appropriate.

### **7. HANDLING AND STORAGE**

#### **7.1. Precautions for safe handling**

- Wear appropriate personal protective equipment(see section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION).
- Avoid above 316 °C
- Use appropriate ventilation measures.
- Minimize occurrence of dust and accumulation.
- Ground storage containers.
- Avoid contact with eyes, skin, clothing.
- Use fire prevention tools and explosion-proof equipment.
- Avoid contact with heat, sparks, flames, static electricity and other sources of ignition.
- Do not ingestion or inhalation.
- Container of liquid and vapor residue risk, containers may be emptied completely.
- Do not act pressure, cutting, welding, soldering, drilling, grinding, etc. Because the explosive residue can remain.
- Stay upwind before loading and unloading. Open the doors and ventilate.
- All contaminated clothing remove and wash with water and soap.
- Wash thoroughly after handling.

## 7.2. Conditions for safe storage, including any incompatibilities

- Store at normal temperature.
- Avoid contact with excessive heats, sparks, other sources of ignition, strong oxidizers.
- Do not keep with incandescent and mercury lamps that emit ultraviolet light.
- Do not keep at high temperature( 50 °C / 120 °F, direct sunlight).
- Save in cool, dry and well ventilated places.
- Save the seals.
- Save in outdoor.

## 7.3. Specific end use(s) : Not available

# 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

## 8.1. Control parameters

Chemical name	European Union (EU) First List of Indicative Occupational Exposure Limit Values (IOELVs)
Styrene-Butadiene-Copolymer	Not estimated
TDAE	Not estimated
Antioxidant(BHT)	Not estimated

## 8.2. Exposure controls

### A. Appropriate 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.

### B. Individual protection measures, such as 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

- 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)
- High-efficiency particulate filter respirator attached self-service protector.

※ For Unknown Concentration or Immediately Dangerous to Life or Health

- Self-contained breathing apparatus (Hybrid air-line mask)
  - Supplied-air respirator with full facepiece
  - Eye Protection : Wear appropriate protective gloves.
  - Hand Protection : Wear chemical resistant protected gloves.
  - Body Protection : Wear appropriate chemical resistant protected clothing.
- Wear appropriate face protection.

C. Environmental Exposure Controls: Not available

**8.3. DNEL, PNEC, OEL, EQS and DMEL values :** Not available

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

### **9.1. General information**

- A. Appearance: State – Solid, Color - Dark brown
- B. Odor: Mild odor
- C. Odor threshold: Not available

### **9.2. Important health, safety and environmental information:**

- A. pH: Not applicable
- B. Boiling point/boiling range: Not applicable
- C. Melting point: Not applicable
- D. Flash point: Not available
- E. Flammability(solid, gas): Not available
- F. Explosive properties: Not available
- G. Oxidizing properties: Not available
- H. Vapour pressure: Not applicable
- I. Relative density: Not available
- J. Solubility: Insoluble
- K. Water solubility: Not available
- L. Partition coefficient: Not applicable
- M. Viscosity: Not applicable
- N. Vapour density: Not applicable
- O. Evaporation rate: Not available

### **9.3. Other information:**

- A. Autoignition Temperature: Not available
- B. Molecular weight : Not available
- C. Specific gravity: 0.91~0.97 (20 °C)

## 10. STABILITY AND REACTIVITY

### 10.1. Reactivity

- Not available

### 10.2. Stability

- This material is stable under normal temperature and pressure.
- Avoid above 316 °C.

### 10.3. Possibility of Hazardous Reaction

- Will not occur.

### 10.4. Conditions to avoid

- Direct sunlight, above 50 °C, dust, heats, sparks, flames, other sources of ignition.
- Avoid contact with incompatible materials.

### 10.5. Incompatible materials

- Acids, (strong) bases, flammable materials, halocarbon compounds, strong oxidizers(Nitrate, chlorate, peroxide), acid chloride, acid anhydrides, peroxides, metal, steel, copper (alloy).

### 10.6. Hazardous decomposition products

- CO, CO<sub>2</sub>, smoke, carbon oxides, hydrogen cyanide, aldehydes, aromatic substances, other asphyctic substances.

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Potential acute health effects

- A. Inhalation : (Dust)Harmful if inhaled. May cause damage to lung. Causes damage to lung through prolonged or repeated exposure.
- B. Ingestion : May be fatal if swallowed and enters airways.
- C. Eye contact : Other Category
- D. Skin contact : Causes damage to skin through prolonged or repeated exposure.

### 11.2. Toxicity and irritation:

- A. Acute toxicity:
  - oral:
    - TDAE : LD<sub>50</sub> (rat) > 5000 mg/kg bw
    - Antioxidant(BHT) : LD<sub>50</sub> (rat) 1559 mg/kg
  - dermal:
    - TDAE : LD<sub>50</sub> (rabbit) > 5000 mg/kg bw
    - Antioxidant(BHT) : LD<sub>50</sub> (rat) > 2000mg/kg



- inhalation:
  - TDAE : LD50 (rat) = 2.18 mg/l
- B. Skin corrosion/irritation:
  - TDAE : Slight skin stimulation to rabbit.
  - Antioxidant(BHT) : Slight irritation to humans
- C. Eye corrosion/irritation:
  - TDAE : Eyes stimulation to rabbit.
  - Antioxidant(BHT) : Mild inflammations (rabbit)
- D. Respiratory sensitization:
  - Antioxidant(BHT) : No anaphylaxis (guinea pig)
- E. Skin Sensitization:
  - TDAE : Maximization test – No sensitization
  - Antioxidant(BHT) : Skin sensitization (human)
- F. Carcinogenicity:
  - Not classify to be carcinogenic substance(A1) and carcinogenic substance of presumed(A2) in Public notice.
  - Styrene-Butadiene copolymer : IARC group 3
  - TDAE : IARC group 3, ACGIH group 3 (Highly refined oil)
  - Antioxidant(BHT) : IARC group 3, ACGIH group 4
- G. Mutagenicity:
  - TDAE : Rat, the information of the generative cell in vivo hereditary virulence examination in the peripheral blood lymphocyte of the Homo sapiens who received occupation revelation and, as well as the increase of the abnormal cell in the examination [a chromosome aberration examination] (a somatic cell in vivo variation Hara-related examination) of the cytogenetics.
  - Antioxidant(BHT) :
    - In vitro Ames Test, Cytogenetic assay – Negative,
    - In vivo Cytogenetic assay, Micronucleus assay - Negative
- H. Reproductive toxicity:
  - Antioxidant(BHT) : Reproductive and developmental toxicity was not observed
- I. Specific target organ toxicity(single exposure):
  - TDAE : Rat inhalation test, histopathological acute change to lungs was seen in (1.51-5.05mg/L) of the amount of medicine for usage.
  - Antioxidant(BHT) : Cause nervous system effects, weakness, vomiting, fatigue, mental confusion, short-term unconsciousness to Women.
- J. Specific target organ toxicity(repeated exposure):
  - TDAE : Pulmonary fibrosis, fat pneumonia, the fat granuloma of lungs are reported with the Homo sapiens
  - Antioxidant(BHT) : Affect lung, liver, thyroid gland to mouse.
- K. Aspiration hazard:
  - TDAE : When swallow it, and invade the respiratory tract; is fear of the danger for life.

## 12. ECOLOGICAL INFORMATION

### 12.1. Ecotoxicity:

#### A. Acute aquatic toxicity

##### - Fish :

- TDAE : LC50 >5000 mg/l/96hr, Oncorhynchus mykiss

##### - Invertebrate :

- TDAE : EC50 > 1000 mg/l/48hr, Daphnia magna

##### - Algae :

- TDAE : EC52 > 1000mg/l/96hr, NOELR > 1000 mg/l/96hr,  
Scenedesmus subspicatus

- Antioxidant(BHT) : EC50 6mg/L/72hr, Scenedesmus subspicatus

### 12.2. Mobility in soil: Not available

### 12.3. Persistence/degradability:

#### - Persistence :

- Antioxidant(BHT) : log pow 4.17 @ 37 °C

#### - Degradability : Not available

### 12.4. Bioaccumulative potential:

#### - Bioaccumulation :

- Antioxidant(BHT) : BCF 230-2500 (fish, after 56d), 2-17 (fish, after 28d), 30 (snails, 28d), 38 (algae, 28d)

#### - Biodegradability :

- TDAE : Not readily biodegradable (6% after 28day)
- Antioxidant(BHT) : Not readily biodegradable (4.5% degradation after 28d)

### 12.5. Results of PBT assessment: Not available

### 12.6. Other adverse effects: Not available

## 13. DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment 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.
- 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.

**13.2. Additional information:** Not available

## **14. TRANSPORTATION INFORMATION**

**14.1. UN number:** Not regulated for transport of dangerous goods.

**14.2. UN proper shipping name:** Not available

**14.3. Transport hazard class(es):** Not available

**14.4. Packing group:** Not available

**14.5. Environmental hazard:** Not available

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

- EmS FIRE SCHEDULE : Not applicable
- EmS SPILLAGE SCHEDULE : Not applicable

## **15. REGULATORY INFORMATION**

**15.1. Safety, health and environmental regulation / legislation specific for the substance or mixture**

- Labelling in accordance with 1999/45/EC
  - Hazard Symbol or Symbols



- **Risk Phrases:**

- |     |   |
|-----|---|
| R20 | • Harmful by inhalation.                                    |
| R46 | • May cause heritable genetic damage.                       |
| R39 | • Danger of very serious irreversible effects.              |
| R48 | • Danger of serious damage to health by prolonged exposure. |
| R65 | • Harmful may cause lung damage if swallowed.               |

- **Safety Phrases**

- |      |  |
|------|--|
| S01  | • Keep locked up.  |
| S38  | • In case of insufficient ventilation wear suitable respiratory equipment.                   |
| S51  | • Use only in well ventilated areas.   |
| S09  | • Keep container in a well ventilated place.   |
| S401 | • To clean the floor and all objects contaminated by this material, use water and detergent. |
| S35  | • This material and its container must be disposed of in a safe way.                         |
| S13  | • Keep away from food, drink and animal foodstuffs.  |

**- Regulatory information on labelling according to 1272/2008 Regulation (EC)Symbol(s)**

**• Symbol(s) :**



**• Signal word:            Danger**

**• Hazard statement(s):**

- H332            Harmful if inhaled.
- H341            Suspected of causing genetic defects.
- H371            May cause damage to lung.
- H372            Causes damage to lung, skin through prolonged or repeated exposure.
- H304            May be fatal if swallowed and enters airways.

**• Precautionary statement(s):**

- P261            Avoid breathing dust/fume/gas/mist/vapours/spray.
- P271            Use only outdoors or in a well-ventilated area.
- P201            Obtain special instructions before use.
- P202            Do not handle until all safety precautions have been read and understood.
- P281            Use personal protective equipment as required.
- P260            Do not breathe dust/fume/gas/mist/vapours/spray.
- P264            Wash thoroughly after handling.
- P270            Do not eat, drink or smoke when using this product.
- P304+P340    IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312            Call a POISON CENTER or doctor/physician if you feel unwell.
- P308+P313    IF exposed or concerned: Get medical advice/attention.
- P309+P311    IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
- P314            Get medical advice/attention if you feel unwell.
- P301+P310    IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P331            Do NOT induce vomiting.
- P405            Store locked up.
- P501            Dispose of contents/container in accordance with local/regional/national/international regulation.

**15.2. Chemical Safety Assessment:** Not conducted

## **16. OTHER INFORMATION**

### **16.1. Full text of H-Statements referred to under section 3**

- H332 : Harmful if inhaled.
- H317 : May cause an allergic skin reaction.
- H341 : Suspected of causing genetic defects.
- H350 : May cause cancer.
- H371 : May cause damage to organs.
- H372 : Causes damage to organs through prolonged or repeated exposure.
- H304 : May be fatal if swallowed and enters airways.
- H400 : Very toxic to aquatic life.
- H410 : Very toxic to aquatic life with long lasting effects.

### **16.2. Full text of R-phrases referred to under sections 2 and 3**

- R20 Harmful by inhalation.
- R43 May cause SENSITISATION by skin contact.
- R68 Possible risk of irreversible effects.
- R45 May cause CANCER.
- R39 Danger of very serious irreversible effects.
- R48 Danger of serious damage to health by prolonged exposure.
- R65 Harmful may cause lung damage if swallowed.
- R50/53 Very toxic to aquatic organisms, may cause long-term effects in the aquatic environment.

### **16.3. Update history:**

- Date of issue: 2011.09.10
- Date of revision:

### **16.4. Others**

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