1. IDENTIFICATION OF THESUBSTANCE/PREPARTION AND OF THE COMPANY/UNDERTAKING

1.1. Product name: KUMHO SOL 5271H

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

A. Relevant identified uses: Raw materials for tires, shoes, rubber hoses
B. 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):**
- This product is not classified classification according to Regulation (EC) No 1272/2008

B. **Classification(in accordance with 1999/45/EC):**
- This product is not classified classification according to Directive 67/548/EEC or 1999/45/EC.

2.2. Label elements

- Symbol(s) : Not applicable
- Signal word: Not applicable
- Hazard statement(s): Not applicable
- Precautionary statement(s): Not applicable

2.3. Other hazards

- NFPA rating: (0-4 steps) : Health=0, 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	99.5	-	-
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 plenty of water or saline solution.
- Rinse with plenty of water occasionally lifting the upper and lower eyelids (About 15-20min).
- Get medical attention.

C. Skin Contact:
- Wash the skin area with plenty of water at least 15 minutes.
- All contaminated clothing and shoes remove and laundry thoroughly before reuse.
- Get medical attention if serious burns from hot materials are happened.
- Seek medical attention if irritation persists.

D. Inhalation:
- Remove to fresh air.
- If not breathing, give artificial respiration.
- Use respirator when breathing is difficult.
- Get medical attention.

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

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

5. FIRE FIGHTING MEASURES

5.1. Extinguishing media

- Suitable extinguishing media: Dry chemicals, CO2, water, regular foam
- Unsuitable extinguishing media: Water jet
- Large Fire : Water, regular foam

5.2. Special hazards arising from the substrate or mixture

- Thermal decomposition products :
  - CO, CO2, hot fume, toxic 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).
- Prevent the scatter of leaks using water spray.
- Cool containers with 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」.
- Put on appropriate personal protective equipment.
- Suppress dust generation.
- Avoid contact 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.
- Put in suitable containers and reuse.
- Ventilate adequately.
- Suppress occurrence of dust.
- 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 ℃ and contact.
- Handle in the shade and well ventilated places.
- Minimize occurrence of dust and accumulation.
- Ground storage containers.
- Avoid contact with eyes, skin and clothing.
- All contaminated clothing remove and laundry thoroughly before reuse.
- Avoid contact with eyes of volatile substances.
- Use fire prevention tools and explosion-proof equipment.
- Avoid contact with heats, sparks, flames.
- Do not ingestion or inhalation.
- When handling, do not eat, drink or smoke. Wash thoroughly after handling.
- Maintain a clean working environment.
- Do not act pressure, cutting, welding, soldering, drilling, grinding, etc.

7.2. Conditions for safe storage, including any incompatibilities

- Avoid direct sunlight.
- Do not store outdoor.
- Avoid high temperature, moisture, UV light when stored inside.
- Store at normal temperature.
- Avoid contact with excessive heat, sources of ignition, strong oxidizers.
- Save in cool, dry and well ventilated places.
- Save the seals.

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
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 – Not available

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 ℃)

10. STABILITY AND REACTIVITY

10.1. Reactivity

- Not available

10.2. Stability

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

10.3. Possibility of Hazardous Reaction

- Will not occur.

10.4. Conditions to avoid

- Heats, sparks, flames, other sources of ignitions.
- Avoid contact with incompatible materials.
- Avoid above 50 ℃ and dust occurrence, direct sunlight.

10.5. Incompatible materials

- Acids, flammable materials, bases, halocarbon compounds, strong oxidizers, CO, CO2, acid chlorides, acid anhydride, steel, copper(alloy), direct sunlight.

10.6. Hazardous decomposition products

- CO, CO2, smoke, hydrocarbons, irritating and toxic fumes and gas.

11. TOXICOLOGICAL INFORMATION

11.1. Potential acute health effects

A. Inhalation : Other Category
B. Ingestion : Other Category
C. Eye contact : Other Category
D. Skin contact : Other Category

11.2. Toxicity and irritation:

A. Acute toxicity:
   - oral:
     • Antioxidant(BHT) : LD50 (rat) 1559 mg/kg
   - dermal:
     • Antioxidant(BHT) : LD50 (rat) > 2000mg/kg
   - inhalation: Not available
B. Skin corrosion/irritation:
   • Antioxidant(BHT) : Slight irritation to humans
C. Eye corrosion/irritation:
   • Antioxidant(BHT) : Mild inflammations (rabbit)
D. Respiratory sensitization:
   • Antioxidant(BHT) : No anaphylaxis (guinea pig)
E. Skin 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
   • Antioxidant(BHT) : IARC group 3, ACGIH group 4

G. Mutagenicity:
   • 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):
   • Antioxidant(BHT) : Cause nervous system effects, weakness, vomiting, fatigue, mental confusion, short-term unconsciousness to Women.

J. Specific target organ toxicity(repeated exposure):
   • Antioxidant(BHT) : Affect lung, liver, thyroid gland to mouse.

K. Aspiration hazard: Not available

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity:

A. Acute aquatic toxicity
   - Fish : Not available
   - Invertebrate : Not available
   - Algae :
   •Antioxidant(BHT) : EC50 6mg/L/72hr, Scenedesmus subspicatus

12.2. Mobilityin 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 :
   •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:** Not applicable
- **Risk Phrases:** Not applicable
- **Safety Phrases :** Not applicable

- Regulatory information on labelling according to 1272/2008 Regulation (EC)Symbol(s)
- **Symbol(s) :** Not applicable
- **Signal word :** Not applicable
- **Hazard statement(s):** Not applicable
- **Precautionary statement(s):** Not applicable

15.2. Chemical Safety Assessment: Not conducted

16. OTHER INFORMATION

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

H302: Harmful if swallowed
H317: May cause an allergic skin reaction
H370: Causes damage to organs
H373: May cause damage to organs through prolonged or repeated exposure
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 :

R22 : Harmful if swallowed.
R43 : May cause SENSITISATION by skin contact.
R39 : Danger of very serious irreversible effects.
R48: Danger of serious damage to health by prolonged exposure.
R50/53 : Very toxic to aquatic organisms, may cause long-term effects in the aquatic environment.

16.3. Update history:

Date of issue: 2017.03.06
Date of revision:

16.4. Others

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