

KUMHO PETROCHEMICAL	MATERIAL SAFETY DATA SHEET	reporting date	2010.05.18
		revising date	2011.06.13

1. IDENTIFICATION

A. PRODUCT NAME

KUMHO 1502

B. Recommended Use and Restriction on Use

- General use : Raw materials for rubber products (tires, rubber shoes, sneakers, rubber hoses, belts)
- Restriction on Use Not available

C. Information of Manufacturer/Supplier/distributor

- Manufacturer
- Company name Korea Kumho Petrochemical Co., Ltd.
- Address 680, Sanggae-dong, Nam-gu, Ulsan, 680-180 Korea
- Dept. Quality Assurance Team
- Telephone number +82-52-259-6051~7
- Fax number +82-52-259-6053

2. HAZARD IDENTIFICATION

A. GHS Classification :

Acute Inhalation toxicity : Category 4
 Skin sensitization : Category 1
 Respiratory sensitization : Category 1

B. Hazard identification :

 Hazard symbols Signal word Danger

- Hazard statement Harmful if inhaled
 May cause an allergic skin reaction
 May cause an allergic reaction or asthma if inhaled

 Precautionary statements

- Prevention: Avoid breathing dust/fume.
 Contaminated work clothing should not be allowed out of the workplace.
 Wear protective gloves/protective clothing/eye protection/face protection.
- Response: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 Call a POISON CENTER or doctor/physician if you feel unwell.
 IF ON SKIN: Wash with plenty of soap and water.
 If skin irritation or rash occurs: Get medical advice/attention.
 Wash contaminated clothing before reuse.
- Storage: Not applicable
- Disposal: 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=2, Flammability=1, Reactivity=0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No./ECL No./EINECS No.	Contents(%)
SBR	9003-55-8/KE-13258,KE-32267/-	94.5
Rosin	8050-09-7/KE-18168/232-475-7	5.0
Facid	68911-24-0/KE-16740/-	
STP	61788-44-1/KE-32262/262-975-0	0.5 ~ 1.0
K3020	110553-27-0/-/402-860-6	

※ 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 the eye with plenty of water.
Get medical attention if necessary.
- B. Skin Contact : Immediately wash the contaminated skin area with plenty of water.
Remove all contaminated clothing and shoes.
Clothing and shoes laundry and dry thoroughly before reuse.
If irritation develops or symptoms persists, seek medical attention.
- C. Inhalation : Remove exposed person to fresh air.
If not breathing, give artificial respiration.
Supply oxygen if breathing is difficult.
Get medical attention if necessary.
- D. Ingestion : Do not give anything by mouth to an unconscious person.
Rinse mouth with water if conscious and give 2~4 cups water or milk.
Vomiting occurs, head lower than hips to prevent blocking the airway.
Rinse mouth.
Get medical attention if necessary.
- E. Delay and immediate effects and also chronic effects from short and long term exposure :
 - Inhalation : May cause mild irritation concerning short-term exposure.
 - Skin corrosion/irritation : No data concerning severe toxicity.
 - Serious eye damage/irritation : May cause mild irritation concerning short-term exposure.
- F. Notice to Physician : No specific antidote. Treatment may vary with condition of victim and specifics of incident.

5. FIRE FIGHTING MEASURE

- A. Suitable (Unsuitable) extinguishing media :
 - Extinguishing media: Dry chemicals, CO₂, water, foam
 - Unsuitable Extinguishing media : Waterjet
 - Large Fire : Water, foam
- B. Specific hazards arising from the chemical :
 - Thermal decomposition products : CO, CO₂, fume, toxic gas.
 - Fire and Explosion H : Slight fire hazard
Dust explosion possible in the presence of air.

C. Fire fighting procedures and equipments :

Wear appropriate personal protective equipment (see section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION).

Do not disperse spilled material with water to avoid scattering.

Cool containers with water.

Avoid inhalation of vapors and use extinguishing media appropriate against the wind.

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.

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.

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 :

Dispose of in compliance with all federal, state and local regulations.

7. HANDLING AND STORAGE

A. Handling :

Wear appropriate personal protective equipment(see section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION).

Ventilate adequately.

Minimize occurrence of dust and accumulation.

Storage containers ground.

Avoid contact with eyes, skin and clothing.

Use non-sparking handtools and explosion-proof equipment.

Avoid contact with heats, sparks, flames.

Do not ingestion or inhalation.

Do not pressing, cutting, welding, soldering, bonding, drilling, grinding.

B. Storage Precautionary Statements :

Store at normal temperature.

Avoid with severe heats, other sources of ignition, strong oxidizing agents.

Save in cool, dry and well ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limit

Exposure limit under ISHL

Not applicable

ACGIH

SBR Not applicable

Rosin For all routes of exposure should be controlled to levels as low as possible

Facid Not applicable

STP Not applicable

K3020 Not applicable

Biological exposure limits

Not applicable

- 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 Dust, mist, fume-purifying respiratory protection
Any air-purifying respirator with a corpuscle filter of high
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
Supplied-air respirator (Hybrid air-line mask).
Supplied-air respirator with full facepiece
 - Eye Protection Wear appropriate protective gloves.
 - Hand Protection Wear appropriate protective gloves.
 - Body Protection Wear appropriate chemical resistant protected clothing. Wear appropriate face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

- A. Appearance : State - rubber, Color - Not available
- B. Odor : Mild odor
- C. Odor threshold : Not available
- D. pH : Not available
- E. Melting point/Freezing point : Not applicable
- F. Initial Boiling Point/Boiling Ranges : Not applicable
- G. Flash point : 246 °C
- H. Evapourating Rate : Not applicable
- I. Flammability(solid, gas) : Not available
- J. Upper/Lower Flammability or explosive : Not available
- K. Vapour pressure : Not applicable
- L. Solubility : Insoluble
- M. Vapour density(Air=1) : Not applicable
- N. Specific gravity : 0.92 ~ 0.96
- O. Partition coefficient of n-octanol/water : Not applicable
- P. Autoignition Temperature : > 388 °C
- Q. Decomposition Temperature : Not available
- R. Viscosity : Not applicable
- S. Molecular weight : Approximately 500,000

10. STABILITY AND REACTIVITY

- A. Stability : This material is stable under normal temperature and pressure.
- B. Possibility of Hazardous Reaction : Will not occur.
- C. Conditions to Avoid : Heats, flames, sparks and other sources of ignition
Avoid contact with incompatible materials.
- D. Materials to Avoid : Not available
- E. Hazardous Decomposition Products : CO, CO₂, smoke, hydrocarbon

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- (Respiratory tracts) (Dust) Harmful if inhaled.
- (Oral) Not available
- (Eye ·Skin) May cause an allergic skin reaction.

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

- Acute toxicity :
 - Acute oral toxicity :
 - SBR Not available
 - Rosin LD50 (rat) 7600 mg/kg bw
 - Facid Not available
 - STP LD50(rat) 2500 mg/kg bw
 - K3020 LD50(rat) > 5000 mg/kg
 - Acute dermal toxicity :
 - SBR Not available
 - Rosin LD50 (rat) 2500 mg/kg bw
 - Facid Not available
 - STP LD50(rabbit) > 7940 mg/kg bw
 - K3020 LD50(rabbit) > 2000 mg/kg bw
 - Acute Inhalation toxicity :
 - SBR Not available
 - Rosin LD50 (rat) 2.3 mg/l/4hr
 - Facid Not available
 - STP Not available
 - K3020 Not available
 - Skin corrosion/irritation :
 - SBR Not available
 - Rosin Mild irritation in the skin irritation test using the rats
 - Facid Not available
 - STP Rabbit, not irritating
 - K3020 Rabbit, not an irritant
 - Serious eye damage/irritation :
 - SBR Not available
 - Rosin Mild irritant property in the eye irritation tests using the rats
 - Facid Not available
 - STP Rabbit, not irritating
 - K3020 Rabbit, not an irritant
 - Respiratory sensitization :
 - SBR Not available
 - Rosin It is listed as a chemical material which causes sensitivity at the Japanese Society of Occupational allergy.
 - Facid Not available
 - STP Not available
 - K3020 Not available
 - Skin sensitization :
 - SBR Not available
 - Rosin Cutaneous sensitizing substances in Japan Society for Occupational Health. There was a case report of allergic contact dermatitis in ACGIH and DFGOT.
 - Facid Not available
 - STP Not available
 - K3020 Skin sensitization in maximization test (Non-sensitization (Guinea pig, Maximization test))

- Carcinogenicity : Not classify to be carcinogenic substance(A1) and carcinogenic substance of presumed(A2) in Public notice.
 - SBR IARC group 3
 - Rosin Not available
 - Facid Not available
 - STP Not available
 - K3020 Not available
- Germ cell mutagenicity :
 - SBR Not available
 - Rosin Not available
 - Facid Not available
 - STP in Vitro, Ames test – Negative
 - K3020 DNA damage and repair assay (comet assay) – Positive
- Reproductive toxicity :
 - SBR Not available
 - Rosin
 - Facid Not available
 - STP Not available
 - K3020 A teratology study was performed with rats was slightly toxic to the mothers, there were no significant effects on pregnancy or embryo/fetal development.
- Specific target organ toxicity(single exposure) : Not available
- Specific target organ toxicity(repeated exposure) :
 - SBR Not available
 - Rosin Not available
 - Facid Not available
 - STP Rat, no significant toxic effects were noted.
 - K3020 A 90–day oral Gavage study was conducted in the rat. Effects included hypersalivation and increased liver weight without histopathologic changes.
- Aspiration hazard : Not available

C. Calculation the classification of the mixture(acute toxicity estimate calculation etc.) :

Acute oral, dermal and inhalation Toxicity

Acute toxicity estimate(ATEmix) :

$$100 - (\sum C_{\text{unknown if } > 10\%}) / \text{ATEmix} = C_i / \text{ATE}_i$$

- Acute oral toxicity estimate :
 - ATEmix = 6100 mg/kg, Not classified
 - (Contain about above 10% chemical substances of unknown toxicity)
- Acute dermal toxicity estimate :
 - ATEmix = 2679 mg/kg, Not classified
 - (Contain about above 10% chemical substances of unknown toxicity)
- Acute inhalation toxicity estimate :
 - ATEmix = 2.3 mg/l, Category 4
 - (Contain about above 10% chemical substances of unknown toxicity)

12. ECOLOGICAL INFORMATION

A. Ecotoxicity :

- Acute aquatic toxicity :
 - Fish :
 - SBR Not available
 - Rosin Not available
 - Facid Not available
 - STP Not available
 - K3020 LC50 > 100ppm/96hr, Zebra Fish (estimated, based on components)
 - Invertebrate :

SBR Not available
Rosin EC50 4.5 mg/L/4hr, Crustacea (Daphnia magna)
Facid Not available
STP Not available
K3020 EC 0 < 0.5 ppm/24hr, EC 100 > 5.5 ppm/24hr, Daphnia magna

- Algae :

SBR Not available
Rosin Not available
Facid Not available
STP Not available
K3020 EL50 > 100mg/l/72hr, Scenedesmus subspicatus

B. Persistence and degradability :

- Persistence : Not available
- Degradability :

SBR Not available
Rosin Not rapidly degrading (BOD 36-48%)
Facid Not available
STP Not available
K3020 COD 2.66 g Oxygen/g

C. Bioaccumulative potential :

- Bioaccumulation : Not available
- Biodegradability :

SBR Not available
Rosin Not available
Facid Not available
STP Not available
K3020 Not biodegradable in Modified Sturm Test

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

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
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 available

C. Hazard class :

Not available

D. Packing group :

Not available

E. Marine pollutant :

Not available

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

- EmS FIRE SCHEDULE : F-A
- EmS SPILLAGE SCHEDULE : S-A

15. REGULATORY INFORMATION

- A. Korea Industry Safety and Health Law (ISHL) : This product is subject to the chemical for classification and labeling under ISHL Article 41.
- B. The Toxic Chemical Control Act in Korea(TCCA) : This product is not classified as Toxic chemical and Observational chemical under TCCA Article 2.3. and 2.4. Toxic Release Inventory(TRI) Chemicals: Not regulated
- C. Dangerous goods Safety Management Law in Korea : Not applicable
- D. US regulations :
- OSHA regulation (29CFR1910.119) : Not applicable
 - CERCLA section 103 (40CFR302.4) : Not applicable
 - EPCRA section 302(40CFR355.30) : Not applicable
 - EPCRA section 304(40CFR355.40) : Not applicable
 - EPCRA section 313(40CFR372.65) : Not applicable
- E. Other local or international regulation :
- POPs Management Law : Not applicable
 - Rotterdam Convention on Harmful Chemicals & Pesticides : Not applicable
 - Stockholm Convention on Persistent Organic Pollutants : Not applicable
 - Montreal Protocol on Substances That Deplete the Ozone Layer : Not applicable
 - **Information of EU Classification :**
 - Rosin
 - Classification : R43
 - Risk Phrases : R43
 - Safety Phrase : S2, S24, S37

16. OTHER INFORMATION

- A. Reference : This MSDS 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. KOSHA (Korea Occupational Safety & Health Agency) GHS MSDS Database
OECD Existing Chemicals Database
European chemical Substances Information System
NITE (National Institute of Technology and Evaluation) in Japan
- B. Issue date : 2010. 5. 18
- C. Revision number and Last revised : 1 time, 2010. 6. 13
- D. Other information : Not available