

MATERIAL SAFETY DATA SHEET

KUMANOX-5010L

Date of issue: 2013-06-13

Revision date: Not applicable

Version: R0001.0001

1. IDENTIFICATION

A. Product name

- KUMANOX-5010L

B. Recommended use and restriction on use

- General use : Antioxidant for rubber product
- Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

○ Manufacturer information

- Company name :
- Address :
- Dept. :
- Telephone number :
- Emergency telephone number :
- Fax number :
- E-mail address :

○ Supplier/Distributor information

- Company name : Kumho Petrochemical Co., Ltd. Yeosu Specialty chemicals Plant
- Address : 227, Yeosusandan 2-ro, Yeosu-si, Jeollanam-do, Korea
- Dept. : Production Technology Team
- Telephone number : +82-61-688-3920
- Emergency telephone number : +82-61-688-3930~4
- Fax number : +82-61-688-3939
- E-mail address : kwseo08@kkpc.com

2. HAZARD IDENTIFICATION

A. GHS Classification

- Not applicable

B. GHS label elements

- Hazard symbols
 - Not applicable
- Signal words
 - Not applicable
- Hazard statements
 - Not applicable
- Precautionary statements
 - 1) Prevention
 - Not applicable
 - 2) Response
 - Not applicable
 - 3) Storage
 - Not applicable
 - 4) Disposal
 - Not applicable

C. Other hazards which do not result in classification : (NFPA Classification)

- NFPA grade (0 ~ 4 level)
 - Health : 1, Flammability : 1, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Butylated reaction product of p-Cresol and Dicyclopentadiene	Phenol, 4-methyl-, reaction products with dicyclopentadiene and isobutylene	68610-51-5	99.7
Others	-	-	0.3

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15minutes and call a doctor/physician.

B. Skin contact

- Flush skin with plenty of wter for at least 15 minutes while removing contaminated clothing and shoes.
- Laundering enough contaminated clothing before reuse.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.

D. Ingestion contact

- About whether I should induce vomiting Take the advice of a doctor.
- Rinse your mouth with water immediately.

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

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Using a unattended and water devices in case of large fire and leave alone to burn if you do not imperative.
- Avoid inhalation of materials or combustion by-products.
- Do not access if the tank on fire.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Must work against the wind, let the upwind people to evacuate.
- Move container to safe area from the leak area.
- Remove all sources of ignition.

- Handling the damaged containers or spilled material after wearing protective equipment.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small liquid state spills: Appropriate container for disposal of spilled material collected.
- For disposal of spilled material in appropriate containers collected and clear surface.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Wash thoroughly after handling.
- Avoid direct physical contact.
- Avoid contact with incompatible materials.
- Refer to Engineering controls and personal protective equipment.

B. Conditions for safe storage, including any incompatibilities

- Do not use damaged containers.
- Do not apply direct heat.
- Save applicable laws and regulations.
- Avoid direct sunlight.
- Keep in the original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- ACGIH TLV
 - Not available

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**
 - 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.
 - 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)
 - Self-contained breathing apparatus with a corpuscle filter of high efficiency
 - For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a 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**
 - Wear appropriate glove.
- **Skin protection**
 - Wear appropriate clothing.

- **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Solid(Pellet, Powder)
- Color	Pale yellow
B. Odor	No odor
C. Odor threshold	Not available
D. pH	1% soluble suspension
E. Melting point/Freezing point	115 °C
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	(0.08 mmHg)
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	2 E-5 Pa(25°C)
L. Solubility	<0.02 ppm(23°C)
M. Vapour density	Not available
N. Specific gravity	1.03(25°C)
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	900cps(25°C)
S. Molecular weight	650 (Min.)

10. STABILITY AND REACTIVITY

A. Chemical stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- **(Respiratory tracts)**
 - Not available
- **(Oral)**
 - Not available
- **(Eye-Skin)**
 - Not available

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

- **Acute toxicity**

- * **Oral**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : LD50 (rat) > 4000 mg/kg bw
- * **Dermal**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : LD50 > 5010 mg/kg Rabbit
- * **Inhalation**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : dust LC50 41.25 mg/ℓ 4 hr Rat
- **Skin corrosion/irritation**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : Rabbit skin irritation test (GLP) - No irritating
- **Serious eye damage/irritation**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : Rabbit eye irritation test (GLP) - slightly irritating
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - Not available
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - Not available
 - * **EU CLP**
 - Not available
- **Germ cell mutagenicity**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : In vitro, bacteria(salmonella) genetic test - negative, CHO cell cytogenetic test - negative
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Not available
- **STOT-repeated exposure**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : Rat(male, female) 28days oral test(GLP) - NOAEL=1000ppm, LOAEL=5000ppm. no death animal in 1000-5000ppm dose group, no significant effect with treatment. But liver weight was increased significantly with control group in 5000-10000ppm female group.(IUCLID)
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - Not available
- **Crustaceans**
 - Not available
- **Algae**
 - Not available

B. Persistence and degradability

- **Persistence**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : log Kow 10.36
- **Degradability**
 - Not available

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : BCF 180.9
- **Biodegradation**
 - [Butylated reaction product of p-Cresol and Dicyclopentadiene] : (Cut-off value = -0.0919 : Non - biodegradability (BIOWIN 5))

D. Mobility in soil

- [Butylated reaction product of p-Cresol and Dicyclopentadiene] : Koc 6643000 (Can be adsorbed in the soil.)

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS**A. Disposal methods**

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

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 all applicable laws and regulations.

14. TRANSPORT INFORMATION**A. UN number**

- Not available

B. 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

- 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.
- EmS FIRE SCHEDULE : Not available
- EmS SPILLAGE SCHEDULE : Not available

15. REGULATORY INFORMATION**A. National and/or international regulatory information**

- POPs Management Law
 - Not applicable
- Information of EU Classification
 - * Classification
 - Not applicable
 - * Risk Phrases
 - Not applicable
 - * Safety Phrase
 - Not applicable
- U.S. Federal regulations
 - * OSHA PROCESS SAFETY (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
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable
- **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2013-06-13

C. Revision number and Last date revised

- Not applicable

D. Other

- This MSDS is prepared according to the Globally Harmonized System (GHS).