ZIC XQ TOP 0W-40

1. IDENTIFICATION

A. Product name:

ZIC XQ TOP 0W-40

B. Recommended use of the chemical and restrictions on use:

-General use: Lubricants for gasoline engines
-Restriction on use: Not available

C. Information of manufacturer, supplier:

○ Company:

: SK Lubricants Co., Ltd.

○ Address:

: 26, Jong-ro, Jongno-gu, Seoul, Korea

○ Emergency Telephone No:

: 1899-1147, 02-2121-6605

2. HAZARD IDENTIFICATION

A. Classification:

Eye Damage/Irritation : 2A
Specific target organ toxicity(single exposure) : 3

B. Label element, including precautionary statements:

○ Symbols:

○ Signal word(s):

Warning

○ Hazard statement(s):

- H319: Causes serious eye irritation
- H335: May cause respiratory irritation; or May cause drowsiness and dizziness

○ Precautionary statement(s):

◎ Prevention
- P261: Avoid breathing dust/fume/gas/mist/vapours/spray.

- P264: Wash ... thoroughly after handling.
- P271: Use only outdoors or in a well-ventilated area.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.

◎ Response
- P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312: Call a POISON CENTER or doctor/physician if you feel unwell.
- P337+P313: If eye irritation persists: Get medical advice/attention.

◎ Storage
- P403+P233: Store in a well-ventilated place. Keep container tightly closed.
- P405: Store locked up.

◎ Disposal
- P501: Dispose of contents/container to (in accordance with local/regional/national/international regulation).

C. Other hazards which do not result in classification;

○ NFPA grade (0 ~ 4 level)
- Health : 2, Flammability : 1, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical identity	Common name, synonym	CAS number	Percentages(%)
1-Decene, homopolymer, hydrogenated	-	68037-01-4	87.0 ~ 94.5
Additive mixture	-	-	4.5 ~ 10.0
Ethenylbenzene polymer with 2-methyl-1,3-butadiene	-	25038-32-8	0.5 ~ 1.5
Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts	Phosphorodithioic acid, O,O-di-C1-14-alkyl esters, zinc salts	68649-42-3	0.5 ~ 1.5

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.

- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.

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.
- Get medical attention immediately.

C. Inhalation:

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

D. Ingestion:

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

E. Most important symptoms/effect, acute and delayed:

- Not available

F. Indication of immediate medical attention and special treatment needed, if necessary:

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

5. FIRE-FIGHTING MEASURES

A. Suitable 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 equipment and precautions for firefighters:

- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

- 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.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures:

- Must work against the wind, let the upwind people to evacuate.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Handling the damaged containers or spilled material after wearing protective equipment.

- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.

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 leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.

7. HANDLING AND STORAGE

A. Precautions for safe handling:

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Get the manual before use.
- Operators should wear antistatic footwear and clothing.
- Do not inhale the steam prolonged or repeated.

B. Conditions for safe storage. including incompatibilities:

- Check regularly for leaks.
- Do not use damaged containers.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- Keep sealed when not in use.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits in the air of the workplace, biological limit values:

○ ACGIH TLV
- Not available
○ OSHA PEL
- Not available

B. 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.

C. Individual protection measures:

○ 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.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vaporcartridge(s).

- Any air-purifying respirator with a full facepiece and an organic vapor canister.

- 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.

○ Body protection:

- Wear appropriate clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance (physical state, colour etc):

-Appearance: Liquid
-Color: Transparent brown

B. Odour:

Not available

C. Odour threshold:

Not available

D. pH:

Not available

E. Melting point/freezing point:

≥ 300 ℃
Not available

F. Initial boiling point and boiling range:

≥ 300 ℃

G. Flash point:

≥ 200 ℃

H. Evaporation rate:

Not available

I. Flammability(solid, gas) :

Not available

J. Upper/lower flammability or explosive limits:

Not available

K. Vapour pressure:

≤ 0.1 kPa (20 ℃)

L. Solubility(ies):

Not available

M. Vapour density:

≥ 5 (Air = 1)

N. Specific gravity:

0.85

O. Partition coefficient: n-octanol/water:

Not available

P. Auto-ignition temperature:

Not available

Q. Decomposition temperature:

Not available

R. Viscosity:

Approximately 14.0 cSt (100℃)

10. STABILITY AND REACTIVITY

A. Chemical stability:

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

B. Possibility of hazardous reactivity:

- 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 exposures:

○ Inhalation exposure:

- May cause respiratory irritation.

○ Ingestion exposure:

- Not available

○ Skin exposure:

- Not available

○ Eye exposure:

- Causes serious eye irritation

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

○ Acute toxicity:

* Oral
- Not available
* Dermal
- Not available
* Inhalation
- Not available

○ Skin corrosion/irritation:

- Not available

○ Serious eye damage/irritation:

- Causes serious eye irritation

○ 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:

- Not available

○ Reproductive toxicity:

- Not available

○ Specific target organ systemic toxicity-single exposure:

- May cause respiratory irritation.

○ Specific target organ systemic toxicity-repeated exposure:

- Not available

○ Aspiration hazard:

- Not available

C. Numerical measures of toxicity(such as acute toxicity estimate):

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12. ECOLOGICAL INFORMATION

A. Aquatic, terrestrial organisms toxicity:

○ Fish
- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : LC50 1 ~ 5 ㎎/ℓ 96 hr Pimephales promelas
○ Crustaceans
- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : EC50 1 ~ 1.5 ㎎/ℓ 48 hr Daphnia magna
○ Algae
- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : EC50 1 ~ 5 ㎎/ℓ 96 hr Selenastrum capricornutum

B. Persistence and degradability:

○ Persistence
- Not available
○ Degradability
- Not available

C. Bioaccumulative potential:

○ Bioaccumulative potential
- [Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts] : BCF 3.162
○ Biodegration
- Not available

D. Mobility in soil:

- Not available

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.
- Incinerate the oil by separating the oil and water
- The remainder of the water after separation will be processed in a water pollution prevention facilities.

- Do incineration or stabilization of the residue after disposal as the method of evaporation and concentration.
- Do incineration of the residue after disposal as the method of agglomeration and precipitation.

- Take care of incinerate or stabilization after treatment, purified by means of Separation&#8226distillation&#8226extractio&#8226filtration&#8226pyrolysis

B. Disposal considerations(Specify disposal container and methods):

- 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. UN Proper Shipping Name:

- Not available

C. Transport hazard class(es):

- Not available

D. Packing group, if applicable:

- Not available

E. Environmental hazards:

- Not available

F. Special precautions for user:

- 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. Safety, health and environmental regulations specific for the product in question:

○ 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. References and sources for data:

- 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. Originated date:

- 2015-06-19

C. Revision number and date:

- 3 times, 2015-10-01