

SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006 (REACH) Article 31, Annex II as amended.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name: **EMKARATE™ RL 3000**

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

Identified uses: Refrigeration Lubricants.

Uses advised against: None identified.

1.3 Details of the supplier of the safety data sheet

Supplier

Company Name: LUBRIZOL LIMITED
Address: THE KNOWLE, NETHER LANE
HAZELWOOD, DERBYSHIRE, DE56 4AN
GB
Telephone: (44) 01332-842211
E-mail contact: EUSDS@lubrizol.com {Lubrizol Safety Data Sheets can be obtained at
www.mylubrizol.com}

1.4 Emergency telephone number:

FOR TRANSPORT EMERGENCY CALL CHEMTREC (+1) 703 527 3887

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Classification according to Regulation (EC) No 1272/2008 as amended.

Skin sensitizer	Category 1	H317: May cause an allergic skin reaction.
Chronic hazards to the aquatic environment	Category 3	H412: Harmful to aquatic life with long lasting effects.

The full text for all H-phrases is displayed in section 16.

2.2 Label elements according to Regulation (EC) No 1272/2008 as amended



Signal Words: Warning

Hazard Statement(s): H317: May cause an allergic skin reaction.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements

Prevention: P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Supplemental label information
not applicable

Components for Label Disclosure:

Chemical name	EC No.
Oxirane, [[(2-ethylhexyl)oxy]methyl]-	219-553-6

2.3 Other hazards: None identified.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Regulation No. 1272/2008.

Chemical name	Concentration	EC No.	REACH Registration No.	M-Factor:	Notes
Tricresylphosphate	1 - 2.5%	215-548-8			
Oxirane, [[(2-ethylhexyl)oxy]methyl]-	0.1 - 1%	219-553-6			

600, 700 and 900 ECHA List Numbers do not have any legal significance; rather they are purely technical identifiers and are displayed for informational purposes only.

Classification Regulation No. 1272/2008.

Chemical name	Classification	Notes
Tricresylphosphate	Repr. 2; H361 Aquatic Chronic 1; H410 Aquatic Acute 1; H400	
Oxirane, [[(2-ethylhexyl)oxy]methyl]-	Skin Corr. 2; H315 Skin Sens. 1A; H317	

The full text for all H-phrases is displayed in section 16.

See Section 15 for Regulation (EC) No. 1907/2006 REACH Article 59(1). Candidate List (Substances of Very High Concern (SVHC))

SECTION 4: First aid measures

General: IF exposed or concerned: Get medical advice/attention.

4.1 Description of first aid measures

Inhalation: Remove exposed person to fresh air if adverse effects are observed.

Eye contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses.

Skin Contact: Wash skin thoroughly with soap and water. If skin irritation or rash occurs: Get medical attention. Launder contaminated clothing before reuse.

Ingestion: Treat symptomatically. Get medical attention.

4.2 Most important symptoms and effects, both acute and delayed: See section 11.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: No data available.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

5.1 Extinguishing media

Suitable extinguishing media: CO₂, dry chemical, foam, water spray, water fog.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

5.2 Special hazards arising from the substance or mixture:

A solid stream of water will spread the burning material. Material creates a special hazard because it floats on water. See section 10 for additional information.

5.3 Advice for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Recommend wearing self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures: No data available.

6.2 Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

6.3 Methods and material for containment and cleaning up: Dike far ahead of larger spill for later recovery and disposal. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material.

6.4 Reference to other sections:

See sections 8 and 13 for additional information.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling:

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with eyes, skin, and clothing. Observe good industrial hygiene practices. Provide adequate ventilation. Use personal protective equipment as required. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Launder contaminated clothing before reuse. Avoid environmental contamination.

Maximum Handling Temperature:

Not determined.

7.2 Conditions for safe storage, including any incompatibilities:

Store away from incompatible materials. See section 10 for incompatible materials.

Maximum Storage Temperature:

Not determined.

7.3 Specific end use(s):

End uses are listed in an attached exposure scenario when one is required.

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

8.2 Exposure controls

Appropriate engineering controls:

No special requirements under ordinary conditions of use and with adequate ventilation.

Individual protection measures, such as personal protective equipment

General information:

Please follow the recommended personal protective equipment (PPE) guidelines below and refer to the appropriate EN standard where applicable. Use personal protective equipment as required.

Eye/face protection:

If contact is likely, safety glasses with side shields are recommended. Eye protection should meet the standards set out in EN 166.

Skin protection

Hand Protection:

Suitable gloves can be recommended by the glove supplier.

General: Because specific work environments and material handling practices vary, safety procedures should be specific for each intended application. The correct choice of protective gloves depends upon the chemicals being handled, and the conditions of work and use. Most gloves provide protection for only a limited time before they must be discarded and replaced (even the best chemically resistant gloves will break down after repeated chemical exposures). Gloves should be chosen in consultation with the supplier / manufacturer and taking account of a full assessment of the working conditions. For typical use and handling of chemical substances, gloves should meet the standards set out in EN 374. For applications involving mechanical risks with potential for abrasion or puncture, the standards set out in EN 388 should be considered. For tasks involving thermal hazards, the standards set out in EN 407 should be considered.

Break-through time: Breakthrough time data are generated by glove manufacturers under laboratory test conditions and represent how long a glove can be expected to provide effective permeation resistance. It is important when following breakthrough time recommendations that actual workplace conditions are taken into account. Always consult with your glove supplier for up-to-date technical information on breakthrough times for the recommended glove type.

For continuous contact, we suggest gloves with a minimum breakthrough time of 240 minutes, or > 480 minutes if suitable gloves can be obtained. If suitable gloves are not available to offer that level of protection, gloves with shorter breakthrough times may be acceptable as long as appropriate glove maintenance and replacement regimes are determined and adhered to. For short-term, transient exposures and splash protection, gloves with shorter breakthrough times may commonly be used. Therefore, appropriate maintenance and replacement regimes must be determined and rigorously followed.

Glove thickness: For general applications, we recommend gloves with a thickness typically greater than 0.35 mm.

It is important to note that glove thickness is not the only predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.

Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.

Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example: Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, before being disposed of. Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential.

Other: Gloves, coveralls, apron, boots as necessary to minimize contact.

Respiratory Protection: Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material. A respiratory protection program compliant with all applicable regulations must be followed whenever workplace conditions require the use of a respirator.

Respiratory Protective Equipment (RPE) is not normally required where there is adequate natural or local exhaust ventilation to control exposure. In case of insufficient ventilation, wear suitable respiratory equipment. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions. Please refer to the relevant EN standards for the RPE selected.

Hygiene measures: Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.

Environmental Controls: No data available.
See section 6 for details.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state: liquid

Form: liquid

Color: Clear

Odor: Mild

Odor Threshold: No data available.

pH: No data available.

Freezing point: No data available.

Boiling Point: No data available.

Flash Point: 250 °C (Cleveland Open Cup)

Evaporation Rate: No data available.

Flammability (solid, gas): No data available.

Upper/lower limit on flammability or explosive limits

Flammability Limit - Upper (%): No data available.

Flammability Limit - Lower (%): No data available.

Vapor pressure: No data available.

Vapor density (air=1): No data available.

Relative density: 0.982 (15.6 °C)

Solubility(ies)

Solubility in Water: Insoluble in water

Solubility (other): No data available.

Partition coefficient (n-octanol/water): No data available.

Autoignition Temperature:	No data available.
Decomposition Temperature:	No data available.
Viscosity:	80 mm ² /s (40 °C); > 10.2 mm ² /s (100 °C)
Explosive properties:	No data available.
Oxidizing properties:	No data available.
VOC Content:	No data available.
Other information	
Pour Point Temperature:	-36 °C

SECTION 10: Stability and reactivity

10.1 Reactivity:	No data available.
10.2 Chemical Stability:	Material is stable under normal conditions.
10.3 Possibility of hazardous reactions:	Will not occur.
10.4 Conditions to avoid:	None known.
10.5 Incompatible Materials:	Strong acids. Oxidizing agents. Strong bases.
10.6 Hazardous Decomposition Products:	Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide, and other products of incomplete combustion.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	No data available.
Ingestion:	No data available.
Skin Contact:	No data available.
Eye contact:	No data available.

11.1 Information on toxicological effects

Acute toxicity

Oral

Product:	Ingestion of this material may cause gastric disturbances. Ingestion of this material can result in neurotoxicity. Signs and symptoms include increased sweating of hands and feet, numbness, tingling and weakness in extremities, unsteady gait and decreased reflexes. Not classified for acute toxicity based on available data.
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Dermal

Product:	Skin absorption of components of this material will cause systemic effects; note toxicity in other sections. Not classified for acute toxicity based on available data.
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Inhalation

Product: High concentrations may cause headaches, dizziness, fatigue, nausea, vomiting, drowsiness, stupor, other central nervous system effects leading to visual impairment, respiratory failure, unconsciousness and death.
Not classified for acute toxicity based on available data.

Skin Corrosion/Irritation:

Product: Not classified as a primary skin irritant.
Remarks: Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin.

Serious Eye Damage/Eye Irritation:

|| Tricresylphosphate Classification: May cause irritation. (Literature); Rabbit.

|| Oxirane, [[[2-ethylhexyl)oxy)methyl]- Classification: Not Classified (Literature); Rabbit.

Respiratory sensitization:

No data available

Skin sensitization:

|| Oxirane, [[[2-ethylhexyl)oxy)methyl]- Classification: Strong skin sensitizer. (Literature) May cause sensitization by skin contact.
Remarks: Category 1A

Specific Target Organ Toxicity - Single Exposure:

Tricresylphosphate If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Aspiration Hazard:

No data available

Chronic Effects

Carcinogenicity:

No data available

Germ Cell Mutagenicity:

No data available

Reproductive toxicity:

Tricresylphosphate Suspected of damaging fertility.
This material has been shown to impair fertility and cause adverse reproductive effects in rats and mice.

Tricresylphosphate Suspected of damaging fertility.
This material has been shown to impair fertility and cause adverse reproductive effects in rats and mice.

Specific Target Organ Toxicity - Repeated Exposure:

Tricresylphosphate	Repeated occupational exposure to tricresyl phosphate over a prolonged period of time may cause delayed neurotoxicity characterized by ataxia and tremors.
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SECTION 12: Ecological information

12.1 Ecotoxicity

Fish

Tricresylphosphate	LC 50 (Rainbow Trout, 4 Days): 0.6 mg/l NOEC (Rainbow Trout, 4 Days): 0.56 mg/l
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Aquatic Invertebrates

Tricresylphosphate	EC 50 (Water flea (Daphnia magna), 2 d): 0.146 mg/l
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Toxicity to Aquatic Plants

Tricresylphosphate	EC 50 (Alga, 3 Days): 0.4042 mg/l
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Toxicity to soil dwelling organisms

No data available

Sediment Toxicity

No data available

Toxicity to Terrestrial Plants

No data available

Toxicity to Above-Ground Organisms

No data available

Toxicity to microorganisms

Tricresylphosphate	LC 50 (Sludge, 0.1 Days): > 1,000 mg/l
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12.2 Persistence and Degradability

Biodegradation

Tricresylphosphate	Oxygen depletion 24.2 % (28 d, OECD TG 301 D)
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BOD/COD Ratio

No data available

12.3 Bioaccumulative Potential

Bioconcentration Factor (BCF)

No data available

Partition Coefficient n-octanol / water (log Kow)

Tricresylphosphate	Log Kow: 5.93 (Measured)
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12.4 Mobility:

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other Adverse Effects:

No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Disposal methods: Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Dispose of packaging or containers in accordance with local, regional, national and international regulations. Empty container contains product residue which may exhibit hazards of product.

Contaminated Packaging: Container packaging may exhibit hazards.

SECTION 14: Transport information

ADR

Not regulated.

IMDG

Not regulated.

IATA

Not regulated.

|| 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

None known.

|| Shipping descriptions may vary based on mode of transport, quantities, temperature of the material, package size, and/or origin and destination. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material. For transportation, steps must be taken to prevent load shifting or materials falling, and all relating legal statutes should be obeyed. Review classification requirements before shipping materials at elevated temperatures.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

EU Regulations

Regulation (EC) No. 2037/2000 Substances that deplete the ozone layer:

None present or none present in regulated quantities.

Regulation (EC) No. 850/2004 on persistent organic pollutants:

None present or none present in regulated quantities.

Regulation (EC) No. 689/2008 Import and export of dangerous chemicals:

None present or none present in regulated quantities.

Regulation (EC) No. 1907/2006, REACH Article 59(1). Candidate List:

None present or none present in regulated quantities.

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended:

None present or none present in regulated quantities.

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use:

None present or none present in regulated quantities.

Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work.:

None present or none present in regulated quantities.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breast feeding.:

None present or none present in regulated quantities.

Directive 96/82/EC (Seveso III): on the control of major accident hazards involving dangerous substances:

Chemical name	EC No.	Concentration
Tricresylphosphate	215-548-8	1.0 - 10%

EU. Regulation No. 166/2006 PRTR (Pollutant Release and Transfer Registry), Annex II: Pollutants:

None present or none present in regulated quantities.

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work:

Chemical name	EC No.	Concentration
Tricresylphosphate	215-548-8	1.0 - 10%

Inventory Status

Australia (AICS)

All components are in compliance with chemical notification requirements in Australia.

Canada (DSL/NDSL)

All substances contained in this product are in compliance with the Canadian Environmental Protection Act and are present on the Domestic Substances List (DSL) or are exempt.

China (IECSC)

All components of this product are listed on the Inventory of Existing Chemical Substances in China.

European Union (REACH)

To obtain information on the REACH compliance status of this product, please e-mail REACH@SDSInquiries.com.

Japan (ENCS)

All components are in compliance with the Chemical Substances Control Law of Japan.

Korea (ECL)

All components are in compliance in Korea.

New Zealand (NZIoC)

All components are in compliance with chemical notification requirements in New Zealand.

Philippines (PICCS)

All components are in compliance with the Philippines Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (R.A. 6969).

Switzerland (SWISS)

All components are in compliance with the Environmentally Hazardous Substances Ordinance in Switzerland.

Taiwan (TCSCA)

All components of this product are listed on the Taiwan inventory.

United States (TSCA)

All substances contained in this product are listed on the TSCA inventory or are exempt.

The information that was used to confirm the compliance status of this product may deviate from the chemical information shown in Section 3.

15.2 Chemical safety assessment:

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

Key literature references and sources for data: Internal company data and other publically available resources.

Wording of the H-statements in section 2 and 3:

H317	May cause an allergic skin reaction.
H361	Suspected of damaging fertility or the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Other information:

Revision(s) are noted by the double bar in the margin and the light gray box. Text that has been removed from the previous version can be found in the Revision Information summary table.

Abbreviations and acronyms:

ACGIH	– American Conference of Governmental Industrial Hygienist
ADR	- International Carriage of Dangerous Goods by Road
AICS	- Australian Inventory of Chemical Substances
ATEmix	- Acute Toxicity Estimate for the mixture
BCF	- Bio concentration factor
DMSO	- Dimethyl sulfoxide
DSL	- Domestic Substance List
EC50	- Effective concentration that gives a response in 50% of the population
ECHA	- European Chemical Agency
ECL	- Existing Chemical List
ENCS	- Existing and New Chemical Substances
EPA	– Environmental Protection Agency
IARC	- International Agency for Research on Cancer
IATA	- International Air Transport Association
IECSC	- Inventory of Existing Chemical Substances
IMDG	- International Maritime Dangerous Goods

IP 346 – A gravimetric assay used to determine the percentage weight of polycyclic aromatics in oil, via a DMSO extraction technique
 LC50 - Lethal concentration required to kill 50% of the population
 MARPOL - International Conventions for the Prevention of Pollution from Ships
 NDSL - Non Domestic Substance List
 NOAEC - No observed adverse effect concentration
 NOAEL - No observed adverse effect level
 NOEC - No observed effective concentration
 NTP - National Toxicology Program
 NZloc - New Zealand Inventory of chemicals
 OECD TG - Organization for Economic Cooperation and Development Test Guidelines
 OSHA – Occupational, Safety, and Health Administration
 PBT – Persistent bioaccumulative toxic chemical
 PEL – Permissible Exposure Level
 PICCS - Philippine Inventory of Chemicals and Chemical Substances
 PPE - Personal Protective Equipment
 PRTR - Pollutant Release and Transfer Register
 REACH - Registration, Evaluation, Authorization & restriction of Chemicals
 SVHC - Substance of Very High Concern
 SWISS - Switzerland chemical ordinance
 TCSCA - Toxic Chemical Substance Control Act
 TLV – Threshold Limit Value
 TSCA - Toxic Substances Control Act
 TWA – Time Weighted Average
 vPvB – very Persistent very Bioaccumulative

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Disclaimer: As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.

Revision Information:

SECTION 2: Hazards identification	Deleted	Hazard Category	Category 1A
SECTION 2: Hazards identification	Deleted	Phrase text	Precautionary Statement
SECTION 2: Hazards identification	Deleted	Prec. Statements: Prevention	Avoid breathing dust/fume/gas/mist/vapors/spray.
SECTION 7: Handling and storage	Deleted	Advice	Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.A
SECTION 7: Handling and storage	Deleted	Advice	breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Observe good industrial hy
SECTION 7: Handling and storage	Deleted	Advice	practices. Provide adequate ventilation. Use personal protective equipment as

			required. Wash hands thoroughly after
SECTION 7: Handling and storage	Deleted	Advice	Contaminated work clothing should not be allowed out of the workplace. Launder contaminated clothing before reuse.
SECTION 7: Handling and storage	Deleted	Advice	environm
SECTION 11: Toxicological information	Deleted	Remarks	Not classified as a primary eye irritant.
SECTION 14: Transport information	Deleted	Phrase text	Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
SECTION 14: Transport information	Deleted	Phrase text	Shipping descriptions may vary based on mode of transport, quantities, temperature of the material, package size, a
SECTION 14: Transport information	Deleted	Phrase text	and destination It is the responsibility of the transporting organization to follow all applicable laws, regulatio
SECTION 14: Transport information	Deleted	Phrase text	relating to the transportation of the material.
SECTION 15: Regulatory information	Deleted	Phrase text	Directive 96/82/EC (Seveso II): on the control of major accident hazards involving dangerous substances
SECTION 15: Regulatory information	Deleted	Remarks	All components are in compliance with the Canadian Environmental Protection Act and are present on the Domestic Su
SECTION 15: Regulatory information	Deleted	Remarks	May require notification before sale in Taiwan.
SECTION 15: Regulatory information	Deleted	Remarks	All components of this material are on the US TSCA Inventory.