MATERIAL SAFETY DATA SHEET

PRODUCT NAME : GREASE - KRYTOX® SERIES 240 & LVP

1. Product and Company Identification

Product name: Krytox® 240 Series and LVP fluorinated greases

Synonyms: None

Item Numbers: Krytox® 240AD : U30002525; U30002206
Krytox® 240AB : U30002536; U30002535
Krytox® 240AC : U30002538; U30002537
Krytox® LVP : U300-02-075, U300-02-539

European Contact Details

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West Sussex, RH10 9LW, England

General enquiries

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France :	+(33) 1 47 98 24 01
Germany :	+(49) 6420-82-410
Italy :	+(39) 0248-4471

US Contact Details

Edwards, 301 Ballardvale Street,
Wilmington, MA 01887

General enquiries
+(1) 978-658-5410
Toll Free: 1-800-848-9800

24 h Emergency telephone number:

Chemtrec: 1-800-424-9300

2. Composition/Information on Ingredients

Ingredient	% Weight	CAS No	Hazard class*	Risk phrase*
Perfluoroalkylether	Krytox® 240 Series: 68-82 Krytox® LVP: 70	60164-51-4	Not applicable	Not applicable
Polytetrafluoroethylene (PTFE)	Krytox® 240 Series: 18-27 Krytox® LVP: 30	9002-84-0	Not applicable	Not applicable

*Hazard class & Risk phrase. These columns are only completed for ingredients which are classified as hazardous under EU Directive (67/548/EEC, as amended) and are present in sufficient concentration to make the overall substance hazardous. In all other situations, the column will be completed as "Not applicable".

3. Hazards Identification

EMERGENCY OVERVIEW

This material when properly handled according to good working and hygienic practices is not dangerous to human health and the environment. Product begins to release irritating and toxic fumes above 290 °C/554 °F.

For short and long term exposure effects see Section 11 Toxicological data.

Eye Effects: Excessive exposure may cause irritation, discomfort, excessive lacrimation and blurred vision.

Skin Effects: Excessive exposure may cause irritation, discomfort and rash.

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Ingestion/Oral Effects: Relatively non-toxic. (Oral LD50 > 25000 mg/kg).

Inhalation Effects: Low volatility makes inhalation an unlikely hazard in normal use. The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu like symptoms in humans, especially when smoking contaminated tobacco.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

NFPA Hazard codes		HMIS Hazard codes		Rating System
Health	1	Health	1	0 = No Hazard
Flammability	0	Flammability	0	1 = Slight Hazard
Instability	0	Reactivity	0	2 = Moderate Hazard
				3 = Serious Hazard
				4 = Severe Hazard

4. First Aid Measures

Eyes: Remove contact lenses. Wash/rinse with plenty of water. If irritation persists, consult a specialist.

Skin: Wash off with soap and water. If irritation persists, seek medical attention.

Ingestion/Oral: Rinse mouth. Drink water as a precaution. Do not induce vomiting without medical advice.

Inhalation: Move to fresh air in case of accidental inhalation of vapours of decomposition products. If breathing problems occur, a qualified individual should administer oxygen or artificial respiration as indicated. Seek immediate medical attention.

Other Information: Never give anything by mouth to an unconscious person. If substantial quantities are ingested, seek medical attention.

5. Fire Fighting Measures

Extinguishing Media: The products do not burn. Select extinguishing media to suit other material(s) involved.

Fire and Explosion Hazard: Possible risk due to irritation and toxic affects of thermal combustion products at temperatures above 290 °C/554 °F. Fire may produce toxic fluorine compounds including hydrogen fluoride, phosgene, and perfluoroolefins.

Special Protective Equipment for Fire Fighters: Fire fighters should wear a self-contained breathing apparatus (SCBA) which meets appropriate standards operated in positive pressure mode. Skin protection should be worn to protect from thermal combustion products.

For Flammability Properties - see Section 9

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6. Accidental Release Measures

In the event of spillage :

- Wear personal protective clothing (see Section 8 Exposure Controls and Personal Protection).
- Recover released product and collect in a suitable container for reuse or disposal. Wash area to prevent slip hazard.
- Avoid discharge into sewage systems, surface or underground waters and the soil.

7. Handling and Storage

Handling: Avoid temperatures above 290 °C/554 °F without adequate ventilation. Avoid contact with eyes and skin.

Do not carry cigarettes or cigars or smoke in areas where this product is being used or stored. Greasy hands may contaminate tobacco products. Smoking contaminated products may cause polymer fume fever. Wash thoroughly after handling and before meals and breaks.

Storage: Keep containers tightly closed and store in dry, cool well-ventilated areas. No special restrictions on storage with other products. Store in glass or polythene containers.

8. Exposure Controls/Personal Protection

Exposure Limits:

Ingredient	ACGIH - TLV -	OSHA - PEL	Occupational Exposure Limits EH40 (UK)
None	Not Applicable	Not Applicable	Not Applicable

Personal Protection:

Engineering Measures: None required under normal conditions of use. Heat only in areas with appropriate exhaust ventilation.

Respiratory Protection: None required under normal conditions of use. Wear suitable self-contained breathing apparatus if heating above 290 °C/554 °F.

Hand/Skin Protection: Wear impervious gloves.

Eye/Face Protection: Use safety glasses.

Hygiene Measures: Wash hands before taking breaks and immediately after handling the product. Keep away from tobacco products.

Other/General Protection: None.

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9. Physical and Chemical Properties

Appearance and Odour	Solid white odourless paste	Boiling point	No data available	°C/°F
pH (as supplied)	Neutral	Freezing Point	320 / 608	°C/°F
Solubility in Water	Insoluble	Auto Ignition	Not applicable	°C/°F
Volatile Content by Volume	No data available	Flash Point	Does not flash	°C/°F
Specific Gravity	1.89 - 1.93 @ 25 °C / 77 °F			
Vapour Pressure (mbar)	No data available	Vapour Pressure (Torr)	No data available	

10. Stability and Reactivity

Stability: Stable.

Material/Conditions to Avoid: No materials to be specifically avoided. Avoid heating to above 290 °C/554 °F.

Hazardous Decomposition: Vapours which may irritate the respiratory system may be released above 290 °C/554 °F. Thermal decomposition will produce toxic fluorine compounds.

Hazardous Polymerisation: Will not occur.

11. Toxicological Information

For a comprehensive description for the various toxicological (health) effects which may arise if the user comes into contact with the substance or preparation refer to Section 3 Hazards Identification.

Animal data:

ALD value: Dermal : >17000 mg/kg (rat), Oral : >25000 mg/kg (rat)

ALC value: Inhalation /4h : >19.54 mg/l (rat)

Note: The figures stated above are for perfluoroalkylether.

Note: ALD/ALC = Average lethal dose/ average lethal concentration.

Carcinogenicity:

No information available.

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Toxicity information for PTFE decomposition products:

Inhalation: PTFE decomposition products vary widely in toxicity in experimental animals. Four hour LC50s (inhalation) for decomposition products range from 0.76 ppm (perfluoroisobutane) to 40,000 ppm (tetrafluoroethylene monomer). Workers exposed to PTFE fumes produced at 350-380 ^{0}C (temperatures associated with liberation of hexafluoroethane, perfluoroisobutylene, and octafluorocyclobutene) exhibited symptoms consistent with polymer fume fever at workplace air concentrations of 3.5 mg/m^3 compounds containing fluorine.

Chronic: Repeated episodes of polymer fume fever may damage the lungs.

12. Ecological Information

Toxicity (perfluoroalkylether) :

Static text LC50 /96 h /Oncorhynchus mykiss (rainbow trout) : > 1 000 mg/l

Static test /EC50 /48 h /Daphnia magna (Water flea): > 1 000 mg/l

13. Disposal Considerations

If recycling is not practicable, dispose of residues, unused grease and contaminated packaging in compliance with local, state and federal regulations.

14. Transport Information

This product is not classified as dangerous under transport regulations.

PARAMETER	EUROPEAN	CANADIAN TDG	UNITED STATES DOT
Proper Shipping Name	Not applicable	Not applicable	Not applicable
Hazard Class	Not applicable	Not applicable	Not applicable
Identification Number	Not applicable	Not applicable	Not applicable
Shipping Label	Not applicable	Not applicable	Not applicable

15. Regulatory Information

European Regulatory Information

This product has been classified in accordance with the Dangerous Substances Directive (67/548/EEC, as amended) and the Preparations Directive (88/379/EEC, as amended), implemented in the UK as the Chemical (Hazard Information and Packing) Regulations 1994 (CHIP, as amended).

Classified as dangerous to supply : No

Risk Phrases : Not applicable

Safety Phrases : Not applicable

Symbols : None

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United States Regulatory Information

All ingredients contained in this product are included on the EPA TSCA Chemical Substance Inventory.

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA of 1986 and 40 CFR Part 372.

California Proposition 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive toxicity.

Canadian Regulatory Information

WHMIS Classification: D2B

All ingredients contained in this product are included on the Canadian DSL.

16. Other Information

This MSDS is compiled in accordance with ANSI Z400.1 and the EU Safety Data Sheet Directive 91/155/EEC.

Sources of information for this data sheet:

- DuPont Safety Data Sheet for "Krytox® Fluorinated Grease". Reference :150000001170. Version 2.3. Revision Date 27.06.2005.
- National Library of Medicine (NLM) electronic databases (HSDB, RTECS, CHEMID, Toxline).

Glossary:

ACGIH - American Conference of Governmental Industrial Hygienists; **ALC** - Average Lethal Concentration; **ALD** - Average Lethal Dose; **ANSI** - American National Standards Institute; **Canadian TDG** - Canadian Transportation of Dangerous Goods; **CAS** - Chemical Abstracts Service; **CHEMID** - Chemical Identification Database; **Chemtrec** - Chemical Transportation Emergency Center (US); **CHIP** - Chemical (Hazard Information and Packing); **DSL** - Domestic Substances List; **EC** - Equivalent Concentration; **EH40 (UK)** - HSE Guidance Note EH40 Occupational exposure limits; **EPA** - Environmental Protection Agency; **EPCRA** - Emergency Planning and Community Right-To-Know Act; **HMIS** - Hazardous Material Information Service; **HSDB** - Hazardous Substances Data Base; **LC** - Lethal Concentration; **LD** - Lethal Dose; **NFPA** - National Fire Protection Association; **NLM** - National Library of Medicine; **OSHA** - Occupational Safety and Health Administration, US department of Labour; **PEL** - Permissible exposure limit; **RTECS** - Registry of Toxic Effects of Chemical Substances; **SARA (Title III)** - Superfund Amendments and Reauthorization Act; **SARA 313** - Superfund Amendments and Reauthorization Act, Section 313; **SCBA** - Self-Contained Breathing Apparatus; **STEL** - Short Term Exposure Limit; **TLV** - threshold limit value; **TSCA** - Toxic Substances Control Act Public Law 94-469; **TWA** - Time-Weighted Average; **US DOT** - US Department of Transportation; **WHMIS** - Workplace Hazardous Materials Information System.

Revisions:

Nov 2007 - Data Sheet updated to reflect the latest supplier safety information.
