

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version 4.0	Revision Date: 2023/11/02	SDS Number: 1765320-00016	Date of last issue: 2023/03/24 Date of first issue: 2017/06/23
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1. PRODUCT AND COMPANY IDENTIFICATION

Chemical product name : Krytox™ GPL 2E7

SDS-Identcode : 130000031530

Supplier's company name, address and phone number

Company name of supplier : Chemours Kabushiki Kaisha

Address : Kamiyacho Prime Place, 4-1-17, Toranomom, Minato-ku, Tokyo, Japan

Telephone : 050-3823-0500

Emergency telephone number : 0120 081167

Prepared by : Product Stewardship & Regulatory

Recommended use of the chemical and restrictions on use

Recommended use : Lubricant

Restrictions on use : For industrial use only.
Do not use or resell Chemours™ materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless agreed to by Seller in a written agreement covering such use. For further information, please contact your Chemours representative.

2. HAZARDS IDENTIFICATION

GHS classification of chemical product

Not a hazardous substance or mixture according to the Globally Harmonised System (GHS).

GHS label elements

No hazard pictogram, no signal word, no hazard statement(s), no precautionary statement(s) required

Other hazards which do not result in classification

Important symptoms and outlines of the emergency assumed : The thermal decomposition vapours of fluorinated plastics may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.

3. COMPOSITION/INFORMATION ON INGREDIENTS

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version 4.0	Revision Date: 2023/11/02	SDS Number: 1765320-00016	Date of last issue: 2023/03/24 Date of first issue: 2017/06/23
----------------	------------------------------	------------------------------	---

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)	ENCS No.
Additive	Proprietary Ingredient	>= 2.5 - < 10	Proprietary Ingredient

4. FIRST AID MEASURES

If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.

In case of skin contact : Wash with water and soap as a precaution.
Get medical attention if symptoms occur.

In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.

If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention if symptoms occur.
Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed : Inhalation may provoke the following symptoms:
Irritation
Lung oedema
Eye contact may provoke the following symptoms
Blurred vision
Discomfort
Lachrymation
Skin contact may provoke the following symptoms:
Irritation
Redness
Inhalation may provoke the following symptoms:
Irritation
Shortness of breath

Protection of first-aiders : No special precautions are necessary for first aid responders.

Notes to physician : Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : Not applicable
Will not burn

Unsuitable extinguishing media : Not applicable
Will not burn

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

- Hazardous combustion products : Hydrogen fluoride
carbonyl fluoride
potentially toxic fluorinated compounds
aerosolized particulates
Carbon oxides
Metal oxides
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.
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6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).
- Environmental precautions : Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material.
For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.
Clean up remaining materials from spill with suitable absorbent.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.
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7. HANDLING AND STORAGE

Handling

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

- Local/Total ventilation : Use only with adequate ventilation.
- Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Take care to prevent spills, waste and minimize release to the environment.

Do not breathe decomposition products.
- Avoidance of contact : None.
- Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.

Storage

- Conditions for safe storage : Keep in properly labelled containers.
Store in accordance with the particular national regulations.
- Materials to avoid : No special restrictions on storage with other products.
- Further information on storage stability : No decomposition if stored and applied as directed.
- Packaging material : Unsuitable material: None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Threshold limit value and permissible exposure limits for each component in the work environment

Contains no substances with occupational exposure limit values.

Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
hydrofluoric acid	7664-39-3	ACL	0.5 ppm	JP OEL ISHL
		OEL-C	3 ppm 2.5 mg/m3	JP OEL JSOH
Further information: Skin absorption				
		TWA	0.5 ppm (Fluorine)	ACGIH
		C	2 ppm (Fluorine)	ACGIH
Carbonyl difluoride	353-50-4	TWA	2 ppm	ACGIH

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version 4.0 Revision Date: 2023/11/02 SDS Number: 1765320-00016 Date of last issue: 2023/03/24
Date of first issue: 2017/06/23

		STEL	5 ppm	ACGIH
Carbon dioxide	124-38-9	OEL-M	5,000 ppm 9,000 mg/m ³	JP OEL JSHO
		TWA	5,000 ppm	ACGIH
		STEL	30,000 ppm	ACGIH
Carbon monoxide	630-08-0	OEL-M	50 ppm 57 mg/m ³	JP OEL JSHO
Further information: Group 1: Substances known to cause reproductive toxicity in humans				
		TWA	25 ppm	ACGIH

Engineering measures : Processing may form hazardous compounds (see section 10).
Ensure adequate ventilation, especially in confined areas.
Minimize workplace exposure concentrations.

Personal protective equipment

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type : Combined particulates, acidic gas/vapour and organic vapour type

Hand protection

Remarks : Wash hands before breaks and at the end of workday.

Eye protection : Wear the following personal protective equipment:
Safety glasses

Skin and body protection : Skin should be washed after contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : Grease

Colour : white

Odour : odourless

Odour Threshold : No data available

Melting point/freezing point : 320 °C

Boiling point, initial boiling : No data available

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version 4.0	Revision Date: 2023/11/02	SDS Number: 1765320-00016	Date of last issue: 2023/03/24 Date of first issue: 2017/06/23
----------------	------------------------------	------------------------------	---

point and boiling range

Flammability (solid, gas) : Will not burn

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit / Upper
per flammability limit : No data available

Lower explosion limit /
Lower flammability limit : No data available

Flash point : Not applicable

Decomposition temperature : 300 °C

pH : 7

Evaporation rate : Not applicable

Auto-ignition temperature : No data available

Viscosity

Viscosity, kinematic : Not applicable

Solubility(ies)

Water solubility : insoluble

Partition coefficient: n-
octanol/water : Not applicable

Vapour pressure : Not applicable

Density and / or relative density

Relative density : 1.89 - 1.93

Relative vapour density : Not applicable

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Particle characteristics

Particle size : No data available

10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Hazardous decomposition products will be formed at elevated temperatures.

Conditions to avoid : None known.

Incompatible materials : None.

Hazardous decomposition products

Thermal decomposition : hydrofluoric acid
Carbonyl difluoride
Carbon dioxide
Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Skin contact
Ingestion
Eye contact

Acute toxicity

Not classified based on available information.

Components:

Additive:

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity Remarks: Based on data from similar materials

Skin corrosion/irritation

Not classified based on available information.

Components:

Additive:

Species	: Rabbit
Result	: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

Components:

Additive:

Species	: Bovine cornea
Method	: OECD Test Guideline 437
Species	: Tissue Culture
Method	: EpiOcular
Result	: Irritation to eyes, reversing within 21 days

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

Additive:

Test Type	: Intracutaneous test
Exposure routes	: Skin contact
Species	: Guinea pig
Result	: negative
Remarks	: Based on data from similar materials

Germ cell mutagenicity

Not classified based on available information.

Components:

Additive:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative Remarks: Based on data from similar materials Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Remarks: Based on data from similar materials Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials
Genotoxicity in vivo	: Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) Species: Rat Application Route: Ingestion

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version 4.0	Revision Date: 2023/11/02	SDS Number: 1765320-00016	Date of last issue: 2023/03/24 Date of first issue: 2017/06/23
----------------	------------------------------	------------------------------	---

Result: negative
Remarks: Based on data from similar materials

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Components:

Additive:

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Result: negative

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

Additive:

Species : Rat
NOAEL : $\geq 1,000$ mg/kg
Application Route : Ingestion
Exposure time : 6 Months

Aspiration toxicity

Not classified based on available information.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Additive:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EL50 (Acartia tonsa (Calanoid copepod)): $> 10 - 100$ mg/l
Exposure time: 48 h
Test substance: Water Accommodated Fraction

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version 4.0	Revision Date: 2023/11/02	SDS Number: 1765320-00016	Date of last issue: 2023/03/24 Date of first issue: 2017/06/23
----------------	------------------------------	------------------------------	---

	Method: ISO 14669 and PARCOM method Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	: NOELR (Skeletonema costatum (marine diatom)): > 1 - 10 mg/l Exposure time: 72 h Test substance: Water Accommodated Fraction Method: ISO 10253 Remarks: Based on data from similar materials
	EL50 (Skeletonema costatum (marine diatom)): > 10 - 100 mg/l Exposure time: 72 h Test substance: Water Accommodated Fraction Method: ISO 10253 Remarks: Based on data from similar materials

Persistence and degradability

Components:

Additive:

Biodegradability	: Result: Readily biodegradable. Biodegradation: 89 % Exposure time: 28 d Method: OECD Test Guideline 306
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Bioaccumulative potential

Components:

Additive:

Partition coefficient: n-octanol/water	: log Pow: -4.9
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Mobility in soil

No data available

Hazardous to the ozone layer

Not applicable

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	: Dispose of in accordance with local regulations. Do not dispose of waste into sewer.
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Contaminated packaging	: Empty containers should be taken to an approved waste han-
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SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

ding site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	: Not applicable
Proper shipping name	: Not applicable
Class	: Not applicable
Subsidiary risk	: Not applicable
Packing group	: Not applicable
Labels	: Not applicable

IATA-DGR

UN/ID No.	: Not applicable
Proper shipping name	: Not applicable
Class	: Not applicable
Subsidiary risk	: Not applicable
Packing group	: Not applicable
Labels	: Not applicable
Packing instruction (cargo aircraft)	: Not applicable
Packing instruction (passenger aircraft)	: Not applicable

IMDG-Code

UN number	: Not applicable
Proper shipping name	: Not applicable
Class	: Not applicable
Subsidiary risk	: Not applicable
Packing group	: Not applicable
Labels	: Not applicable
EmS Code	: Not applicable
Marine pollutant	: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

Refer to section 15 for specific national regulation.

Special precautions for user

Not applicable

15. REGULATORY INFORMATION

Related Regulations

Fire Service Law

Not applicable to dangerous materials / designated flammables.

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version 4.0	Revision Date: 2023/11/02	SDS Number: 1765320-00016	Date of last issue: 2023/03/24 Date of first issue: 2017/06/23
----------------	------------------------------	------------------------------	---

Chemical Substance Control Law

Not applicable for Specified Chemical Substance, Monitoring Chemical Substance and Priority Assessment Chemical Substance.

Industrial Safety and Health Law

Harmful Substances Prohibited from Manufacture

Not applicable

Harmful Substances Required Permission for Manufacture

Not applicable

Substances Prevented From Impairment of Health

Not applicable

Circular concerning Information on Chemicals having Mutagenicity - Annex 2: Information on Existing Chemicals having Mutagenicity

Not applicable

Circular concerning Information on Chemicals having Mutagenicity - Annex 1: Information on Notified Substances having Mutagenicity

Not applicable

Substances Subject to be Notified Names

Not applicable

Substances Subject to be Indicated Names

Not applicable

Substances Subject to be Indicated Names

Not applicable

Carcinogenic Substances (Article 577-2 of the Occupational Health and Safety Regulations)

|| Not applicable

Ordinance on Prevention of Hazards Due to Specified Chemical Substances

Not applicable

Ordinance on Prevention of Lead Poisoning

Not applicable

Ordinance on Prevention of Tetraalkyl Lead Poisoning

Not applicable

Ordinance on Prevention of Organic Solvent Poisoning

Not applicable

Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances)

Not applicable

Poisonous and Deleterious Substances Control Law

Not applicable

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

|| Not applicable

High Pressure Gas Safety Act

Not applicable

Explosive Control Law

Not applicable

Vessel Safety Law

Not regulated as a dangerous good

Aviation Law

Not regulated as a dangerous good

Marine Pollution and Sea Disaster Prevention etc Law

Bulk transportation : Not classified as noxious liquid substance

Pack transportation : Not classified as marine pollutant

Narcotics and Psychotropics Control Act

Narcotic or Psychotropic Raw Material (Export / Import Permission)

Not applicable

Specific Narcotic or Psychotropic Raw Material (Export / Import permission)

Not applicable

Waste Disposal and Public Cleansing Law

Industrial waste

16. OTHER INFORMATION

Other information : Krytox™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC.
Chemours™ and the Chemours Logo are trademarks of The Chemours Company.
Before use read Chemours safety information.
For further information contact the local Chemours office or nominated distributors.

Further information

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format : yyyy/mm/dd

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
JP OEL ISHL	:	Japan. Administrative Control Levels
JP OEL JSOH	:	Japan. The Japan Society for Occupational Health. Recommendation of Occupational Exposure Limits
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
ACGIH / C	:	Ceiling limit
JP OEL ISHL / ACL	:	Administrative Control level
JP OEL JSOH / OEL-M	:	Occupational Exposure Limit-Mean
JP OEL JSOH / OEL-C	:	Occupational Exposure Limit-Ceiling

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their

SAFETY DATA SHEET



Krytox™ GPL 2E7

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
4.0	2023/11/02	1765320-00016	Date of first issue: 2017/06/23

intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

JP / EN