

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Opteon™ XP30 (R-514A) Refrigerant

SDS-Identcode : 130000144003

Manufacturer or supplier's details

Company : PT The Chemours Indonesia

Address : Sovereign Plaza, 21st Floor Suite M17A, Jl. T.B. Simatupang,
Kav. 36
Jakarta 12430 Indonesia

Telephone : 021 2939 8815

Emergency telephone number : 001-803-017-9114 (toll free)

Telefax : 021 2939 8817

Recommended use of the chemical and restrictions on use

Recommended use : Refrigerant
Heat transfer fluids

Restrictions on use : For professional and industrial installation and use only.

2. HAZARDS IDENTIFICATION

GHS Classification

Serious eye damage/eye irritation : Category 2B

Specific target organ toxicity - single exposure : Category 3

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : H320 Causes eye irritation.
H336 May cause drowsiness or dizziness.

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue:
5.1	2023/09/25	4580560-00012	2023/03/24
			Date of first issue: 2019/07/02

Precautionary statements : **Prevention:**
P261 Avoid breathing mist or vapours.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.

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

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.
Rapid evaporation of the product may cause frostbite.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
(Z)-1,1,1,4,4,4-Hexafluoro-2-butene#	692-49-9	75.1
Trans-Dichloroethylene	156-60-5	24.9

Voluntarily-disclosed substance

4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

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

In case of skin contact : In case of contact, immediately flush skin with plenty of water.

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version 5.1	Revision Date: 2023/09/25	SDS Number: 4580560-00012	Date of last issue: 2023/03/24 Date of first issue: 2019/07/02
----------------	------------------------------	------------------------------	---

		Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
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	:	May cause cardiac arrhythmia. Other symptoms potentially related to misuse or inhalation abuse are Cardiac sensitisation Anaesthetic effects Light-headedness Dizziness confusion Lack of coordination Drowsiness Unconsciousness Skin contact may provoke the following symptoms: Irritation Swelling of tissue Itching Discomfort Redness Eye contact may provoke the following symptoms tearing Redness Discomfort Causes eye irritation. May cause drowsiness or dizziness.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
Notes to physician	:	Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray Alcohol-resistant foam Carbon dioxide (CO ₂) Dry chemical
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SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version 5.1	Revision Date: 2023/09/25	SDS Number: 4580560-00012	Date of last issue: 2023/03/24 Date of first issue: 2019/07/02
----------------	------------------------------	------------------------------	---

- Unsuitable extinguishing media : None known.
- Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.
- Hazardous combustion products : Hydrogen fluoride
carbonyl fluoride
Carbon oxides
Chlorine compounds
- 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 : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.
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6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
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.
Prevent spreading over a wide area (e.g. by containment or oil barriers).
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

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue:
5.1	2023/09/25	4580560-00012	2023/03/24
			Date of first issue: 2019/07/02

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.
- Advice on safe handling : Do not get on skin or clothing.
Avoid breathing mist or vapours.
Do not swallow.
Do not get in eyes.
Wash skin thoroughly after 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.
- Conditions for safe storage : Do not expose drums to direct heat or temperature above 46°C (115°F) to avoid pressurizing and possibly distorting the drums.
Material should not be dispensed by pouring from pail/drum shipping containers containing 5 gallons or more. The use of a drum pump is recommended for dispensing from pail/drum shipping containers with 5 gallons or more, except for smaller containers where adequate ventilation can be used to manage the exposure.
Keep in properly labelled containers.
Store locked up.
Keep in a cool, well-ventilated place.
Store in accordance with the particular national regulations.
- Materials to avoid : No special restrictions on storage with other products.
- Recommended storage temperature : < 46 °C
- Storage period : > 10 yr
- Further information on storage stability : The product has an indefinite shelf life when stored properly.

Keep away from direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Trans-Dichloroethylene	156-60-5	TWA	200 ppm	ACGIH

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version 5.1	Revision Date: 2023/09/25	SDS Number: 4580560-00012	Date of last issue: 2023/03/24 Date of first issue: 2019/07/02
----------------	------------------------------	------------------------------	---

Engineering measures : Minimize workplace exposure concentrations.
If sufficient ventilation is unavailable, use with local exhaust ventilation.

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 : Organic gas and low boiling vapour type

Hand protection

Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

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

Skin and body protection : Wear the following personal protective equipment:
If assessment demonstrates that there is a risk of explosive atmospheres or flash fires, use flame retardant antistatic protective clothing.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : clear

Odour : slight, ether-like

Odour Threshold : No data available

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

pH	:	7
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	29.1 °C
Flash point	:	Method: ASTM D 56 does not flash
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	No data available
Upper explosion limit / Upper flammability limit	:	Upper flammability limit Method: ASTM E681 None.
Lower explosion limit / Lower flammability limit	:	Lower flammability limit Method: ASTM E681 None.
Vapour pressure	:	871.4 hPa (25 °C)
Relative vapour density	:	5.01 (Air = 1.0)
Relative density	:	1.31 (25 °C)
Density	:	1.308 g/cm ³ (25 °C)
Solubility(ies) Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

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

Particle size : Not applicable

10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : None known.

Conditions to avoid : None known.

Incompatible materials : None.

Hazardous decomposition products : No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Not classified based on available information.

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Acute inhalation toxicity : LC50 (Rat): > 690.413 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

No observed adverse effect concentration (Dog): 12500 ppm
Test atmosphere: gas

Lowest observed adverse effect concentration (Dog): 25000 ppm
Test atmosphere: gas

Cardiac sensitisation threshold limit (Dog): 1,677,740 mg/m3
Test atmosphere: gas

Trans-Dichloroethylene:

Acute oral toxicity : LD50 (Rat): 7,902 mg/kg

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

Method: OECD Test Guideline 420

Acute inhalation toxicity : LC50 (Rat): 95.5 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Lowest observed adverse effect concentration (Dog): 250000 ppm
Test atmosphere: gas

Cardiac sensitisation threshold limit (Dog): 991,309 mg/m3
Test atmosphere: gas

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Not classified based on available information.

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Result : No skin irritation

Trans-Dichloroethylene:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Mild skin irritation

Serious eye damage/eye irritation

Causes eye irritation.

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Result : No eye irritation

Trans-Dichloroethylene:

Species : Rabbit
Result : Irritation to eyes, reversing within 7 days
Method : OECD Test Guideline 405

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version 5.1	Revision Date: 2023/09/25	SDS Number: 4580560-00012	Date of last issue: 2023/03/24 Date of first issue: 2019/07/02
----------------	------------------------------	------------------------------	---

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Exposure routes	: Skin contact
Result	: negative

Germ cell mutagenicity

Not classified based on available information.

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: negative Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Rat Application Route: inhalation (vapour) Method: OECD Test Guideline 474 Result: negative
Germ cell mutagenicity - Assessment	: Weight of evidence does not support classification as a germ cell mutagen.

Trans-Dichloroethylene:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: negative
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Ingestion

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version 5.1	Revision Date: 2023/09/25	SDS Number: 4580560-00012	Date of last issue: 2023/03/24 Date of first issue: 2019/07/02
----------------	------------------------------	------------------------------	---

Method: OECD Test Guideline 474
Result: negative

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapour)
Method: OECD Test Guideline 416
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat
Application Route: inhalation (vapour)
Method: OECD Test Guideline 414
Result: negative

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity, No effects on or via lactation

Trans-Dichloroethylene:

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat
Application Route: Inhalation
Method: OECD Test Guideline 414
Result: negative

STOT - single exposure

May cause drowsiness or dizziness.

Components:

Trans-Dichloroethylene:

Assessment : May cause drowsiness or dizziness.

STOT - repeated exposure

Not classified based on available information.

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Exposure routes	: inhalation (vapour)
Assessment	: No significant health effects observed in animals at concentrations of 1 mg/l/6h/d or less.

Trans-Dichloroethylene:

Exposure routes	: Inhalation
Assessment	: No significant health effects observed in animals at concentrations of 250 ppmV/6h/d or less.

Exposure routes	: Ingestion
Assessment	: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Repeated dose toxicity

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Species	: Rat, male and female
NOAEL	: 33.5 mg/l
LOAEL	: 50.3 mg/l
Application Route	: inhalation (vapour)
Exposure time	: 90 d
Method	: OECD Test Guideline 413

Trans-Dichloroethylene:

Species	: Rat, male and female
NOAEL	: 4000 ppm
LOAEL	: > 4000 ppm
Application Route	: Inhalation
Exposure time	: 90 Days
Method	: OECD Test Guideline 413

Species	: Rat, male and female
NOAEL	: 3,210 mg/kg
LOAEL	: > 3,210 mg/kg
Application Route	: Ingestion
Exposure time	: 98 Days
Method	: OECD Test Guideline 408

Aspiration toxicity

Not classified based on available information.

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

No aspiration toxicity classification

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version 5.1	Revision Date: 2023/09/25	SDS Number: 4580560-00012	Date of last issue: 2023/03/24 Date of first issue: 2019/07/02
----------------	------------------------------	------------------------------	---

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

- | | |
|--|---|
| Toxicity to fish | : LC50 (Oryzias latipes (Japanese medaka)): 76.1 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water flea)): 22.5 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202 |
| Toxicity to algae/aquatic plants | : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 23.7 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 6.92 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201 |
| Toxicity to fish (Chronic toxicity) | : NOEC (Gobiocypris rarus (rare gudgeon)): 10 mg/l
Exposure time: 32 d
Method: OECD Test Guideline 210 |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : NOEC (Daphnia magna (Water flea)): 10 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211 |

Trans-Dichloroethylene:

- | | |
|---|---|
| Toxicity to fish | : LC50 (Lepomis macrochirus (Bluegill sunfish)): 135 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water flea)): 220 mg/l
Exposure time: 48 h
Method: EPA-660/3-75-009 |
| Toxicity to algae/aquatic plants | : EbC50 (Pseudokirchneriella subcapitata (green algae)): 36.36 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 201 |

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

Persistence and degradability

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 302C

Trans-Dichloroethylene:

Biodegradability : Result: not rapidly degradable
Method: OECD Test Guideline 301D

Bioaccumulative potential

Components:

(Z)-1,1,1,4,4,4-Hexafluoro-2-butene:

Partition coefficient: n- : log Pow: 2.3
octanol/water

Trans-Dichloroethylene:

Partition coefficient: n- : log Pow: 2.06
octanol/water

Mobility in soil

No data available

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Do not dispose of waste into sewer.

Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling 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

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

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.

Special precautions for user

Not applicable

15. REGULATORY INFORMATION

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

Minister of Industry Regulation No. 23/M-IND/PER/4/2013 concerning the Revision of Minister of Industry Regulation No. 87/M-IND/PER/9/2009 concerning Globally Harmonized System of Classification and Labelling of Chemicals.

Regulation of the Minister of Health No. 472 of 1996 on the Safeguarding of Substances Hazardous to Health

Hazardous substances that must be registered : Not applicable

Government Regulation No. 74 of 2001 on the Management of Hazardous and Toxic Substances

Hazardous substances approved for use : Not applicable

Prohibited substances : Not applicable

Restricted substances : Not applicable

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

Regulation of the Ministry of Trade No. 7 of 2022 on Distribution and Control of Hazardous Materials

Type of hazardous materials subject to distribution and control, Annex I : Not applicable

Type of hazardous materials subject to distribution and control, Annex II : Not applicable

16. OTHER INFORMATION

Revision Date : 2023/09/25

Other information : Opteon™ 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/>

Date format : yyyy/mm/dd

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

ACGIH / TWA : 8-hour, time-weighted average

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

SAFETY DATA SHEET



Opteon™ XP30 (R-514A) Refrigerant

Version	Revision Date:	SDS Number:	Date of last issue: 2023/03/24
5.1	2023/09/25	4580560-00012	Date of first issue: 2019/07/02

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 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.

ID / EN