

# SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



## Opteon™ 1150

Version	Revision Date:	SDS Number:	Date of last issue: 03/03/2025
3.2	04/16/2025	5366501-00013	Date of first issue: 01/06/2020

### SECTION 1. IDENTIFICATION

Product name : Opteon™ 1150

SDS-Identcode : 130000145172

#### Manufacturer or supplier's details

Company name of supplier : The Chemours Company FC, LLC

Address : 1007 Market Street  
Wilmington, DE 19801 United States of America (USA)

Telephone : 1-844-773-CHEM (outside the U.S. 1-302-773-1000)

Emergency telephone : Medical emergency: 1-866-595-1473 (outside the U.S. 1-302-773-2000) ; Transport emergency: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

#### Recommended use of the chemical and restrictions on use

Recommended use : Foam expansion agent

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

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Gases under pressure : Liquefied gas

Simple Asphyxiant

#### Other hazards

Vapors 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.

#### GHS label elements

Hazard pictograms :



Signal Word : Warning

Hazard Statements : H280 Contains gas under pressure; may explode if heated.  
May displace oxygen and cause rapid suffocation.

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Precautionary Statements : **Storage:**  
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance  
Substance name : (E)-1,1,1,4,4,4-Hexafluoro-2-butene  
CAS-No. : 66711-86-2

#### Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
(E)-1,1,1,4,4,4-Hexafluoro-2-butene	66711-86-2*	99.3455	-

\* Indicates that the identifier is a CAS No.

### SECTION 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.  
If not breathing, give artificial respiration.  
If breathing is difficult, give oxygen.  
Get medical attention immediately.

In case of skin contact : Thaw frosted parts with lukewarm water. Do not rub affected area.  
Get medical attention immediately.

In case of eye contact : Get medical attention immediately.

If swallowed : Ingestion is not considered a potential route of exposure.

Most important symptoms and effects, both acute and delayed : Other symptoms potentially related to misuse or inhalation abuse are  
Cardiac sensitization  
Anaesthetic effects  
Light-headedness  
Dizziness  
confusion  
Lack of coordination  
Drowsiness  
Unconsciousness  
May cause cardiac arrhythmia.

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Gas reduces oxygen available for breathing.  
Contact with liquid or refrigerated gas can cause cold burns and frostbite.  
May displace oxygen and cause rapid suffocation.

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

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.

### SECTION 5. FIRE-FIGHTING 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.  
If the temperature rises there is danger of the vessels bursting due to the high vapor pressure.

Hazardous combustion products : Hydrogen fluoride  
carbonyl fluoride  
Carbon oxides

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Fight fire remotely due to the risk of explosion.  
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 fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.  
Use personal protective equipment.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.  
Avoid skin contact with leaking liquid (danger of frostbite).  
Ventilate the area.  
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

Environmental precautions : Avoid release to the environment.

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Prevent further leakage or spillage if safe to do so.  
Retain and dispose of contaminated wash water.

Methods and materials for containment and cleaning up : Ventilate the area.  
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.

### SECTION 7. HANDLING AND STORAGE

Technical measures : Use equipment rated for cylinder pressure. Use a backflow preventative device in piping. Close valve after each use and when empty.

Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.

Advice on safe handling : Avoid breathing gas.  
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment  
Wear cold insulating gloves/ face shield/ eye protection.  
Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point.  
Prevent backflow into the gas tank.  
Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.  
Use a pressure reducing regulator when connecting cylinder to lower pressure (<3000 psig) piping or systems.  
Close valve after each use and when empty. Do NOT change or force fit connections.  
Prevent the intrusion of water into the gas tank.  
Never attempt to lift cylinder by its cap.  
Do not drag, slide or roll cylinders.  
Use a suitable hand truck for cylinder movement.  
Keep away from heat and sources of ignition.  
Take precautionary measures against static discharges.  
Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Cylinders should be stored upright and firmly secured to prevent falling or being knocked over.  
Separate full containers from empty containers.  
Do not store near combustible materials.  
Avoid area where salt or other corrosive materials are present.  
Do not expose drums to direct heat or temperature above 46°C (115°F) to avoid pressurizing and possibly distorting the drums.

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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 labeled containers.

Keep in a cool, well-ventilated place.

Keep away from direct sunlight.

Store in accordance with the particular national regulations.

Materials to avoid : Do not store with the following product types:  
Self-reactive substances and mixtures  
Organic peroxides  
Oxidizing agents  
Flammable liquids  
Flammable solids  
Pyrophoric liquids  
Pyrophoric solids  
Self-heating substances and mixtures  
Substances and mixtures which in contact with water emit flammable gases  
Explosives  
Very acutely toxic substances and mixtures  
Acutely toxic substances and mixtures  
Substances and mixtures with chronic toxicity

Recommended storage temperature : < 126 °F / < 52 °C

Storage period : > 10 y

Further information on storage stability : The product has an indefinite shelf life when stored properly.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
(E)-1,1,1,4,4,4-Hexafluoro-2-butene	66711-86-2	TWA	400 ppm 2,680 mg/m <sup>3</sup>	US WEEL

Engineering measures : Minimize workplace exposure concentrations.  
Use with local exhaust ventilation.

### Personal protective equipment

Respiratory protection : For use in spray foam applications (high and low pressure)  
Wear a NIOSH-approved respirator  
NIOSH-certified supplied-air respirator operated in pressure

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demand or other positive pressure mode and equipped with a tight-fitting full facepiece.

Assigned protection factor of at least 10.

For pour in place applications including continuous and discontinuous panels, slabstock, appliance and integral skin foam.

Use with local exhaust ventilation.

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

### Hand protection

Material	: Neoprene
Glove thickness	: 1 mm

### Remarks

: Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. 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. Breakthrough time is not determined for the product. Change gloves often!

### Eye protection

: Wear the following personal protective equipment:  
Chemical resistant goggles must be worn.  
Face-shield

### Skin and body protection

: Skin should be washed after contact.

### Protective measures

: Wear cold insulating gloves/ face shield/ eye protection.

### 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.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Liquefied gas
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Color	: clear
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Odor	:	slight, ether-like
Odor Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	45.52 °F / 7.51 °C (1,013 hPa)
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	Will not burn
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.
Vapor pressure	:	1,635.2 hPa (68.07 °F / 20.04 °C)
Relative vapor density	:	No data available
Density	:	1.31 g/cm <sup>3</sup> (68 °F / 20 °C)
Solubility(ies) Water solubility	:	0.28 g/l (77 °F / 25 °C)
Partition coefficient: n-octanol/water	:	log Pow: 2.5 (104 °F / 40 °C)
Autoignition temperature	:	918 °F / 492 °C
Decomposition temperature	:	No data available
Viscosity Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

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Particle characteristics  
Particle size : Not applicable

### SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable if used as directed. Follow precautionary advice and avoid incompatible materials and conditions.

Possibility of hazardous reactions : Can react with strong oxidizing agents.

Conditions to avoid : This substance is not flammable in air at temperatures up to 100 °C (212 °F) at atmospheric pressure. However, mixtures of this substance with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. This substance can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing this substance and air, or this substance in an oxygen enriched atmosphere become combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, this substance should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example this substance should NOT be mixed with air under pressure for leak testing or other purposes.  
Heat, flames and sparks.

Incompatible materials : Oxidizing agents

Hazardous decomposition products : No hazardous decomposition products are known.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Inhalation  
Skin contact  
Eye contact

#### Acute toxicity

Not classified based on available information.

#### Product:

Acute inhalation toxicity : Acute toxicity estimate: > 20000 ppm  
Exposure time: 4 h  
Test atmosphere: gas  
Method: Calculation method



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### Components:

#### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

Acute inhalation toxicity : LC50 (Rat): > 25400 ppm  
Exposure time: 4 h  
Test atmosphere: gas  
Method: OECD Test Guideline 403  
Assessment: The substance or mixture has no acute inhalation toxicity

No observed adverse effect concentration (Dog): 70000 ppm  
Test atmosphere: gas

#### **Skin corrosion/irritation**

Not classified based on available information.

#### **Serious eye damage/eye irritation**

Not classified based on available information.

#### **Respiratory or skin sensitization**

##### **Skin sensitization**

Not classified based on available information.

##### **Respiratory sensitization**

Not classified based on available information.

##### **Germ cell mutagenicity**

Not classified based on available information.

### Components:

#### **(E)-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: 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  
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.

**IARC** No ingredient of this product present at levels greater than or equal to 0.1% is

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identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

### Reproductive toxicity

Not classified based on available information.

#### Components:

##### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

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

### STOT-single exposure

May displace oxygen and cause rapid suffocation.

### STOT-repeated exposure

Not classified based on available information.

#### Components:

##### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

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

### Repeated dose toxicity

#### Components:

##### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

Species : Rat, male and female  
NOAEL : 7551 ppm  
Application Route : Inhalation  
Exposure time : 90 Days  
Method : OECD Test Guideline 412

### Aspiration toxicity

Not classified based on available information.

### Further information

#### Components:

##### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

Remarks : EPA has identified reproductive toxicity and specific target

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organ toxicity as hazards for this chemical.

### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

##### Components:

##### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

Toxicity to fish	:	LC50 (Gobiocypris rarus (rare gudgeon)): 1.78 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 92.9 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): > 14.4 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to fish (Chronic toxicity)	:	NOEC (Gobiocypris rarus (rare gudgeon)): 0.131 mg/l Method: OECD Test Guideline 210

#### Persistence and degradability

##### Components:

##### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

Biodegradability	:	Result: Not readily biodegradable. Method: OECD Test Guideline 301D
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#### Bioaccumulative potential

##### Components:

##### **(E)-1,1,1,4,4,4-Hexafluoro-2-butene:**

Partition coefficient: n-octanol/water	:	log Pow: 2.5
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#### Mobility in soil

No data available

#### Other adverse effects

No data available

### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

Waste from residues	:	Dispose of in accordance with local regulations.
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Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Empty pressure vessels should be returned to the supplier.  
If not otherwise specified: Dispose of as unused product.

### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### UNRTDG

UN number : UN 3163  
Proper shipping name : LIQUEFIED GAS, N.O.S.  
(E)-1,1,1,4,4,4-Hexafluoro-2-butene)  
Class : 2.2  
Packing group : Not assigned by regulation  
Labels : 2.2  
Environmentally hazardous : yes

##### IATA-DGR

UN/ID No. : UN 3163  
Proper shipping name : Liquefied gas, n.o.s.  
(E)-1,1,1,4,4,4-Hexafluoro-2-butene)  
Class : 2.2  
Packing group : Not assigned by regulation  
Labels : Non-flammable, non-toxic Gas  
Packing instruction (cargo aircraft) : 200  
Packing instruction (passenger aircraft) : 200

##### IMDG-Code

UN number : UN 3163  
Proper shipping name : LIQUEFIED GAS, N.O.S.  
(E)-1,1,1,4,4,4-Hexafluoro-2-butene)  
Class : 2.2  
Packing group : Not assigned by regulation  
Labels : 2.2  
EmS Code : F-C, S-V  
Marine pollutant : yes

#### Transport in bulk according to IMO instruments

Not applicable for product as supplied.

#### Domestic regulation

##### 49 CFR

UN/ID/NA number : UN 3163  
Proper shipping name : Liquefied gas, n.o.s.  
(E)-1,1,1,4,4,4-Hexafluoro-2-butene)  
Class : 2.2  
Packing group : Not assigned by regulation  
Labels : NON-FLAMMABLE GAS  
ERG Code : 126  
Marine pollutant : yes((E)-1,1,1,4,4,4-Hexafluoro-2-butene)

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### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

## SECTION 15. REGULATORY INFORMATION

### CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Gases under pressure  
Simple Asphyxiant

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### US State Regulations

#### Pennsylvania Right To Know

(E)-1,1,1,4,4,4-Hexafluoro-2-butene 66711-86-2

#### Additional regulatory information

(E)-1,1,1,4,4,4-Hexafluoro-2-butene 66711-86-2

The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product.

See 40 CFR § 721.10907

This material contains one or more substances which requires export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D:

## SECTION 16. OTHER INFORMATION

### Further information

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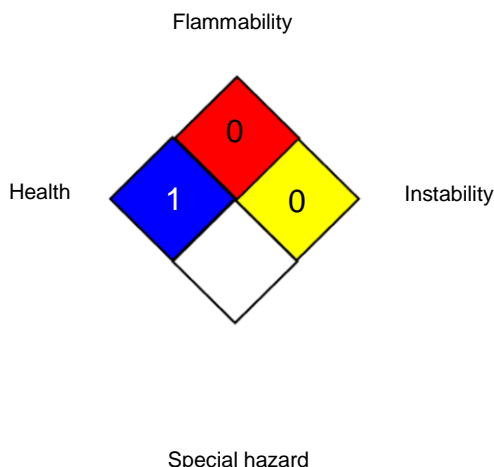
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### NFPA 704:



### HMIS® IV:

HEALTH	/	0
FLAMMABILITY		0
PHYSICAL HAZARD		3

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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Before use read Chemours safety information.

For further information contact the local Chemours office or nominated distributors.

### Full text of other abbreviations

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)  
US WEEL / TWA : 8-hr TWA

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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 sub-

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stance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; 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

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

Revision Date : 04/16/2025

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.

US / Z8