

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
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### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Capstone™ FS-50 Fluorosurfactant

SDS-Identcode : 130000042667

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

Recommended use : Fluoroadditive

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.

#### Manufacturer or supplier's details

Company : Chemours Korea Inc.

Address : 12FL, Majestarcity Tower 1, 12, Seocho-daero 38-gil, Seocho-gu, Seoul 06655, Korea

Telephone : 82-2-2015-5000

Emergency telephone number : 080-880-0454

Telefax : 82-2-2015-5091

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### 2. HAZARDS IDENTIFICATION

#### GHS Classification

Flammable liquids : Category 3

Long-term (chronic) aquatic hazard : Category 2

#### GHS label elements

Hazard pictograms :  

Signal word : Warning

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

Hazard statements : H226 Flammable liquid and vapour.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.  
P242 Use non-sparking tools.  
P243 Take action to prevent static discharges.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.  
P391 Collect spillage.

**Storage:**  
P403 + P235 Store in a well-ventilated place. Keep cool.

**Disposal:**  
P501 Dispose of contents/ container according to waste-related laws

### Other hazards which do not result in classification

Inhalation of decomposition products in high concentration may cause shortness of breath (lung oedema).

Vapours may form explosive mixture with air.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	Common Name	CAS-No.	Concentration (% w/w)
Ethanol	Ethyl alcohol	64-17-5	>= 30 - < 40
Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide	No data available	34455-29-3	>= 25 - < 30
Propan-2-ol	Isopropyl alcohol	67-63-0	>= 0.1 - < 1

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

Butanone	Ethyl methyl ketone	78-93-3	$\geq 0.1 - < 1$
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### 4. FIRST AID MEASURES

- |   |   |
|---|---|
| In case of eye contact                                      | : Flush eyes with water as a precaution.<br>Get medical attention if irritation develops and persists.  |
| In case of skin contact                                     | : Remove contaminated clothing and shoes.   |
| If inhaled  | : If inhaled, remove to fresh air.<br>Get medical attention if symptoms occur.  |
| If swallowed  | : If swallowed, DO NOT induce vomiting.<br>Get medical attention if symptoms occur.<br>Rinse mouth thoroughly with water.   |
| Most important symptoms and effects, both acute and delayed | : Dizziness<br>Blurred vision<br>Headache<br>Irritation<br>Nausea<br>Pain<br>Lachrymation<br>Vomiting<br>Eye contact may provoke the following symptoms<br>tearing<br>Swelling of tissue<br>Redness<br>Impairment of vision |
| Protection of first-aiders                                  | : No special precautions are necessary for first aid responders.  |
| Notes to physician  | : Treat symptomatically and supportively.   |

### 5. FIREFIGHTING MEASURES

#### Suitable and unsuitable extinguishing media

- |                              |  |
|------------------------------|--|
| Suitable extinguishing media | : Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry chemical |
|------------------------------|--|

- |                                |                         |
|--------------------------------|-------------------------|
| Unsuitable extinguishing media | : High volume water jet |
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- |                               |  |
|-------------------------------|--|
| Specific hazards during fire- | : Do not use a solid water stream as it may scatter and spread |
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# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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- fighting
- fire.  
Flash back possible over considerable distance.  
Vapours may form explosive mixtures with air.  
Exposure to combustion products may be a hazard to health.
- Hazardous combustion products : Carbon oxides  
Hydrogen fluoride  
carbonyl fluoride  
potentially toxic fluorinated compounds  
aerosolized particulates
- 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 : Remove all sources of ignition.  
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 : Non-sparking tools should be used.  
Soak up with inert absorbent material.  
Suppress (knock down) gases/vapours/mists with a water spray jet.  
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 deter-

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

mine which regulations are applicable.  
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

### 7. HANDLING AND STORAGE

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.  
Use explosion-proof electrical, ventilating and lighting equipment.
- Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment  
Non-sparking tools should be used.  
Keep container tightly closed.  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
Take precautionary measures against static discharges.  
Take care to prevent spills, waste and minimize release to the environment.
- Do not breathe decomposition products.
- Conditions for safe storage : Keep in properly labelled containers.  
Keep tightly closed.  
Keep in a cool, well-ventilated place.  
Store in accordance with the particular national regulations.  
Keep away from heat and sources of ignition.
- Materials to avoid : Do not store with the following product types:  
Oxidizing solids  
Oxidizing liquids

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Ethanol	64-17-5	TWA	1,000 ppm	KR OEL
		STEL	1,000 ppm	ACGIH
Propan-2-ol	67-63-0	TWA	200 ppm	KR OEL
		STEL	400 ppm	KR OEL
		TWA	200 ppm	ACGIH

## SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1      Revision Date: 2025/02/10      SDS Number (Internal): 1334665-00052      Date of last issue: 2024/11/04  
Date of first issue: 2017/02/27

		STEL	400 ppm	ACGIH
Butanone	78-93-3	TWA	200 ppm	KR OEL
		STEL	300 ppm	KR OEL
		TWA	75 ppm	ACGIH
		STEL	150 ppm	ACGIH

Other ingredients, which are listed in section 3 but not listed in this section, do not have established 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	TWA	0.5 ppm (Fluorine)	KR OEL
	Further information: Substances designated by 'Skin' may be absorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)			
		C	3 ppm (Fluorine)	KR OEL
	Further information: Substances designated by 'Skin' may be absorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)			
		TWA	0.5 ppm (Fluorine)	ACGIH
		C	2 ppm (Fluorine)	ACGIH
Carbonyl difluoride	353-50-4	TWA	2 ppm	KR OEL
		STEL	5 ppm	KR OEL
		TWA	2 ppm	ACGIH
		STEL	5 ppm	ACGIH
Carbon dioxide	124-38-9	TWA	5,000 ppm	KR OEL
		STEL	30,000 ppm	KR OEL
		TWA	5,000 ppm	ACGIH
		STEL	30,000 ppm	ACGIH
Carbon monoxide	630-08-0	TWA	30 ppm	KR OEL
	Further information: Known human reproductive toxicant			
		STEL	200 ppm	KR OEL
	Further information: Known human reproductive toxicant			
		TWA	30 ppm	KR PEL
		STEL	200 ppm	KR PEL
		TWA	25 ppm	ACGIH

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1      Revision Date: 2025/02/10      SDS Number (Internal): 1334665-00052      Date of last issue: 2024/11/04  
Date of first issue: 2017/02/27

### Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Propan-2-ol	67-63-0	Acetone	Urine	End of shift at end of work-week	40 mg/l	ACGIH BEI
Butanone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI

**Engineering measures** : Processing may form hazardous compounds (see section 10).  
Minimize workplace exposure concentrations.  
If sufficient ventilation is unavailable, use with local exhaust ventilation.  
Use explosion-proof electrical, ventilating and lighting equipment.

**Personal protective equipment. Among the following personal protective equipment, the PPEs which require safety certification need to be certified by KOSHA.**

**Respiratory protection** : Use respiratory protection (gas mask) unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

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

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

**Hand protection**

**Material** : Not applicable

**Remarks** : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Take note that the product is flammable, which may impact the selection of hand protection. Wash hands before breaks and at the end of workday.

**Skin and body protection** : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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potential.  
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.  
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

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.

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: clear, amber
Odour	: alcohol-like
Odour Threshold	: No data available
pH	: 5 - 7
Melting point/freezing point	: No data available
Initial boiling point and boiling range	: 82 °C
Flash point	: 25 °C
Evaporation rate	: No data available
Flammability (solid, gas)	: Not applicable
Flammability (liquids)	: Ignitable (see flash point)
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available



# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

Vapour pressure	: 53 hPa (20 °C)
Solubility(ies) Water solubility	: completely soluble
Relative vapour density	: No data available
Relative density	: 1
Partition coefficient: n-octanol/water	: Not applicable
Auto-ignition temperature	: > 100 °C
Decomposition temperature	: > 200 °C
Viscosity Viscosity, kinematic	: 9.7 mm <sup>2</sup> /s ( 20 °C)
Explosive properties	: Not explosive
Oxidizing properties	: The substance or mixture is not classified as oxidizing.
Molecular weight	: No data available
Particle characteristics Particle size	: Not applicable

### 10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions	: Reactivity: Not classified as a reactivity hazard. Chemical stability: Stable under normal conditions. Possibility of hazardous reactions: Flammable liquid and vapour. Vapours may form explosive mixture with air. Can react with strong oxidizing agents. Hazardous decomposition products will be formed at elevated temperatures.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Oxidizing agents

#### Hazardous decomposition products

Thermal decomposition	: hydrofluoric acid Carbonyl difluoride Carbon dioxide
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# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

Carbon monoxide

### 11. TOXICOLOGICAL INFORMATION

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

#### Health hazard information

##### Acute toxicity

No data available

##### Components:

##### Ethanol:

Acute oral toxicity : LD50 (Rat): 10,470 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat, male): 116.9 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 15,800 mg/kg

##### Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 425  
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

##### Propan-2-ol:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 25 mg/l  
Exposure time: 6 h  
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

##### Butanone:

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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Acute oral toxicity : LD50 (Rat): > 2,000 - 5,000 mg/kg  
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 25.5 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Method: OECD Test Guideline 436  
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

### Skin corrosion/irritation

No data available

#### Components:

##### **Ethanol:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

##### **Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

##### **Propan-2-ol:**

Species : Rabbit  
Result : No skin irritation

##### **Butanone:**

Assessment : Repeated exposure may cause skin dryness or cracking.

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation  
Remarks : Based on data from similar materials

### Serious eye damage/eye irritation

No data available

#### Components:

##### **Ethanol:**

Species : Rabbit  
Result : Irritation to eyes, reversing within 21 days  
Method : OECD Test Guideline 405

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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### **Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

Species	: Rabbit
Result	: No eye irritation
Method	: OECD Test Guideline 405

### **Propan-2-ol:**

Species	: Rabbit
Result	: Irritation to eyes, reversing within 21 days

### **Butanone:**

Species	: Rabbit
Result	: Irritation to eyes, reversing within 21 days
Method	: OECD Test Guideline 405

## **Respiratory or skin sensitisation**

### **Respiratory sensitisation**

No data available

### **Skin sensitisation**

No data available

## **Components:**

### **Ethanol:**

Test Type	: Mouse ear swelling test (MEST)
Exposure routes	: Skin contact
Species	: Mouse
Result	: negative

### **Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

Exposure routes	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative

### **Propan-2-ol:**

Test Type	: Buehler Test
Exposure routes	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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### Butanone:

Test Type	: Buehler Test
Exposure routes	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative

### Carcinogenicity

No data available

### Components:

#### Ethanol:

No data available

### Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:

No data available

### Propan-2-ol:

No data available

Species	: Rat
Application Route	: inhalation (vapour)
Exposure time	: 104 weeks
Method	: OECD Test Guideline 451
Result	: negative

### Butanone:

No data available

### Germ cell mutagenicity

No data available

### Components:

#### Ethanol:

No data available

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
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	Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative
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# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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Test Type: Chromosome aberration test in vitro  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Rat  
Application Route: Ingestion  
Result: negative

### **Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

No data available

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

### **Propan-2-ol:**

No data available

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Test Type: In vitro mammalian cell gene mutation test  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Application Route: Intraperitoneal injection  
Result: negative

### **Butanone:**

No data available

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Test Type: In vitro mammalian cell gene mutation test  
Result: negative

Test Type: Chromosome aberration test in vitro  
Result: negative

Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)  
Result: negative

Test Type: Saccharomyces cerevisiae, gene mutation assay (in vitro)

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Application Route: Intraperitoneal injection  
Result: negative

### Reproductive toxicity

No data available

### Components:

#### Ethanol:

No data available

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Mouse  
Application Route: Ingestion  
Result: negative

### **Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

No data available

#### Propan-2-ol:

No data available

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: Ingestion  
Result: negative

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

#### Butanone:

No data available

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: Ingestion  
Result: negative  
Remarks: Based on data from similar materials

Effects on foetal development : Test Type: Embryo-foetal development  
Species: Rat

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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Application Route: Inhalation  
Method: OECD Test Guideline 414  
Result: negative

### STOT - single exposure

No data available

#### Components:

##### Propan-2-ol:

Assessment : May cause drowsiness or dizziness.

##### Butanone:

Assessment : May cause drowsiness or dizziness.

### STOT - repeated exposure

No data available

#### Components:

##### Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:

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

### Repeated dose toxicity

#### Components:

##### Ethanol:

Species : Rat  
NOAEL : 1,730 mg/kg  
LOAEL : 3,200 mg/kg  
Application Route : Ingestion  
Exposure time : 90 Days

##### Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:

Species : Rat  
NOAEL : 200 mg/kg  
LOAEL : 1,000 mg/kg  
Application Route : Ingestion  
Exposure time : 28 d

##### Propan-2-ol:

Species : Rat  
NOAEL : 12.5 mg/l



# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

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Application Route : inhalation (vapour)  
Exposure time : 104 Weeks

### Butanone:

Species : Rat  
NOAEL : 14.84 mg/l  
Application Route : inhalation (vapour)  
Exposure time : 90 Days  
Method : OECD Test Guideline 413

### Aspiration toxicity

No data available

### Components:

#### Butanone:

The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

### Experience with human exposure

No data available

### Toxicology, Metabolism, Distribution

No data available

### Neurological effects

No data available

### Further information

No data available

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## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

### Components:

#### Ethanol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 14,200 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Ceriodaphnia dubia (water flea)): 5,012 mg/l  
aquatic invertebrates Exposure time: 48 h

Toxicity to algae/aquatic : ErC50 (Chlorella vulgaris (Fresh water algae)): 275 mg/l  
plants Exposure time: 72 h

EC10 (Chlorella vulgaris (Fresh water algae)): 11.5 mg/l  
Exposure time: 72 h

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
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Toxicity to fish (Chronic toxicity) : NOEC (Oryzias latipes (Japanese medaka)):  $\geq 79$  mg/l  
Exposure time: 100 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 9.6 mg/l  
Exposure time: 9 d

Toxicity to microorganisms : EC50 (Protozoa): 5,800 mg/l  
Exposure time: 4 h

### **Carboxymethyldimethyl-3-[[[3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 144 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 3.26 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

### **Propan-2-ol:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 9,640 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)):  $> 10,000$  mg/l  
Exposure time: 24 h

Toxicity to microorganisms : EC50 (Pseudomonas putida):  $> 1,050$  mg/l  
Exposure time: 16 h

### **Butanone:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 308 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 2,029 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 1,240 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 201

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
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### Persistence and degradability

#### Components:

##### **Ethanol:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 84 %  
Exposure time: 20 d

##### **Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301

##### **Propan-2-ol:**

Biodegradability : Result: rapidly degradable  
BOD/COD : BOD: 1,19 (BOD5)COD: 2,23BOD/COD: 53 %

##### **Butanone:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 98 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

### Bioaccumulative potential

#### Components:

##### **Ethanol:**

Partition coefficient: n-octanol/water : log Pow: -0.35

##### **Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide:**

Partition coefficient: n-octanol/water : log Pow: 1

##### **Propan-2-ol:**

Partition coefficient: n-octanol/water : log Pow: 0.05

##### **Butanone:**

Partition coefficient: n-octanol/water : log Pow: 0.3

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
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### Mobility in soil

No data available

### Other adverse effects

No data available

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## 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Dispose of contents and container according to wastes control act.

Do not dispose of waste into sewer.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Empty containers retain residue and can be dangerous.  
Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death.  
If not otherwise specified: Dispose of as unused product.

### Disposal precautions

Dispose of contents and container according to wastes control act.

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## 14. TRANSPORT INFORMATION

### International Regulations

#### UNRTDG

UN number	: UN 1170
Proper shipping name	: ETHANOL SOLUTION
Class	: 3
Packing group	: III
Labels	: 3
Environmentally hazardous	: yes

#### IATA-DGR

UN/ID No.	: UN 1170
Proper shipping name	: Ethanol solution
Class	: 3
Packing group	: III
Labels	: Flammable Liquids
Packing instruction (cargo aircraft)	: 366
Packing instruction (passenger aircraft)	: 355

#### IMDG-Code

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
-----------------	------------------------------	---	---

UN number : UN 1170  
Proper shipping name : ETHANOL SOLUTION  
(Carboxymethyldimethyl-3-[[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide)  
Class : 3  
Packing group : III  
Labels : 3  
EmS Code : F-E, S-D  
Marine pollutant : yes

### 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

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.

## 15. REGULATORY INFORMATION

### National regulatory information

#### Regulation under the Occupational Safety and Health Act

#### Harmful Substances Prohibited from Manufacturing

Not applicable

#### Harmful Substances Required Permission for Manufacture

Not applicable

#### Harmful Agents to be kept below Occupational Exposure Limits

Chemical name	CAS-No.
Ethyl alcohol	64-17-5
Isopropyl alcohol	67-63-0
Methyl ethyl ketone	78-93-3

#### Harmful Agents Required to be kept below Permission Levels

Not applicable

#### Hazardous substances requiring management

Not applicable

#### Special Management Materials

Not applicable

#### Controlled Substances Subject to Environment Monitoring

Not applicable

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
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### Controlled Substances Subject to Health Examination

Not applicable

### Hazardous Substances Subject to Process Safety Management (PSM) Reporting Obligation

Chemical name/Classification	Manufacturing or handling quantity	Storage quantity
Flammable liquids	5,000 kg	200,000 kg

### K-OSHA Hazardous Substances (Occupational Safety and Health Regulations, Table 1)

Category
Flammable liquid

### K-OSHA Hazardous Substances (Occupational Safety and Health Regulations, Table 9)

Category	Manufacturing or handling quantity
Flammable liquid	400 litre

### Regulation under the Chemicals Control Act

#### Toxic Chemicals

Not applicable

#### Restricted Chemicals

Not applicable

#### Prohibited Chemicals

Not applicable

#### Toxic Release Inventory

Not applicable

#### Accident Precaution Chemicals

Not applicable

### Dangerous Substances Safety Management Act

Classification	: Group 4, Flammable liquids, Type 2 petroleums, Water soluble liquid
Hazard rank	: Hazardous rank III
Designated Quantity	: 2000 litre
Safety Warning	: Keep away from fire

### Wastes Control Act

Industrial general wastes  
Follow article 13 of the act to dispose the product waste

## 16. OTHER INFORMATION

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version 12.1	Revision Date: 2025/02/10	SDS Number (Internal): 1334665-00052	Date of last issue: 2024/11/04 Date of first issue: 2017/02/27
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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/>

Issuing date : 2017/02/27

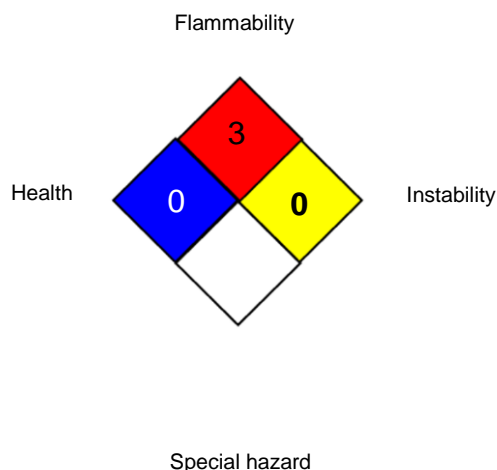
### Revision number and date

Number of Revision : 51

Revision Date : 2025/02/10

Date format : yyyy/mm/dd

### NFPA:



### Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
KR OEL	: Harmful Agents to be kept below Occupational Exposure Limits
KR PEL	: Harmful Agents Required to be kept below Permission Levels

# SAFETY DATA SHEET



## Capstone™ FS-50 Fluorosurfactant

Version	Revision Date:	SDS Number (Internal):	Date of last issue: 2024/11/04
12.1	2025/02/10	1334665-00052	Date of first issue: 2017/02/27

ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
ACGIH / C	:	Ceiling limit
KR OEL / TWA	:	Time Weighted Average
KR OEL / STEL	:	Short Term Exposure Limit
KR OEL / C	:	Ceiling
KR PEL / TWA	:	TWA
KR PEL / STEL	:	STEL

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 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.

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