

SAFETY DATA SHEET



FORANE® FBA 1233zd

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Fluorochemicals

Customer Service Telephone Number: (800) 245-5858
(Monday through Friday, 8:00 AM to 5:00 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: FORANE® FBA 1233zd
Synonyms: 1233zd(E), 1-CHLORO-3,3,3-TRIFLUOROPROPENE (E)
Molecular formula: C₃H₂ClF₃
Chemical family: Halogenated alkene
Product use: Foam blowing agent

SECTION 2: HAZARDS IDENTIFICATION

Emergency Overview

Color: Clear - colourless
Physical state: gaseous
Form: Liquefied gas
Odor: none

***Classification of the substance or mixture:**

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)
Gases under pressure, Liquefied gas, H280
Chronic aquatic toxicity, Category 3, H412

*For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms:



Signal word:

Warning**Hazard statements:**

H280 : Contains gas under pressure; may explode if heated.
H412 : Harmful to aquatic life with long lasting effects.

Supplemental Hazard Statements:

May displace oxygen and cause rapid suffocation.
May cause headache, nausea, dizziness, drowsiness, loss of consciousness.
May cause frostbite.
May cause cardiac sensitization/cardiac arrhythmia.
May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.
Overheating or overpressurizing may cause gas release or violent cylinder bursting.

Precautionary statements:**Prevention:**

P273 : Avoid release to the environment.

Storage:

P403 : Store in a well-ventilated place.
P410 : Protect from sunlight.

Disposal:

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

Supplemental information:**Potential Health Effects:**

Liquid : Rapid evaporation of the liquid may cause frostbite. Vapor: Gas/vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. If inhaled: Central nervous system effects: headache, nausea, dizziness, drowsiness, loss of consciousness. Stress induced heart effects: Inhalation may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats and reduced heart function.

FORANE® FBA 1233zd

Medical conditions aggravated by overexposure:

Heart disease or compromised heart function.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-No.	Wt/Wt	GHS Classification**
1-Propene, 1-chloro-3,3,3-trifluoro-, (1E)-	102687-65-0	<= 100 %	H280, H412

**For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES**4.1. Description of necessary first-aid measures:****Inhalation:**

If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:

If on skin, flush exposed skin with lukewarm water (not hot), or use other means to warm skin slowly. Get medical attention if frostbitten by liquid or if irritation occurs. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:

Immediately flush eye(s) with plenty of water.

Ingestion:

Ingestion is not applicable - product is a gas at ambient temperatures.

4.2. Most important symptoms and effects, both acute and delayed:

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information if applicable) and Section 11 (Toxicology Information) of this SDS.

4.3. Indication of any immediate medical attention and special treatment needed:

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

**FORANE® FBA 1233zd****Notes to physician:**

Do not give drugs from adrenaline-ephedrine group.

SECTION 5: FIREFIGHTING MEASURES**Extinguishing media (suitable):**

Use extinguishing media appropriate to surrounding fire conditions.

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Fight fire with large amounts of water from a safe distance.

Stop the flow of gas if possible.

Water mist should be used to reduce vapor concentrations in air.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:

May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products. Liquid and gas under pressure, overheating or overpressurizing may cause gas release and/or violent cylinder bursting.

Container may explode if heated due to resulting pressure rise.

Some mixtures of HCFCs and/or HFCs, and air or oxygen may be combustible if pressurized and exposed to extreme heat or flame.

When burned, the following hazardous products of combustion can occur:

hydrofluoric acid

Hydrochloric acid

Carbon oxides

Carbonyl halides

Phosgene

SECTION 6: ACCIDENTAL RELEASE MEASURES**Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:**

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Eliminate all ignition sources. Use Halogen leak detector or other suitable means to locate leaks or check atmosphere. Keep upwind. Evacuate enclosed spaces and disperse gas with floor-level forced-air ventilation. Avoid breathing leaked material. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

Protective equipment:

Appropriate personal protective equipment is set forth in Section 8.

SECTION 7: HANDLING AND STORAGE**Handling****General information on handling:**

Avoid breathing gas.
Avoid contact with skin, eyes and clothing.
Wear cold-insulating gloves/face shield/eye protection.
Keep container closed.
Use only with adequate ventilation.
Use equipment rated for cylinder pressure.
Use a backflow preventative device in piping.
Do not enter confined spaces unless adequately ventilated.
Wash thoroughly after handling.
Close valve after each use and when empty.
Follow label warnings even after container is emptied.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.
Emptied container retains vapor and product residue.
Improper disposal or reuse of this container may be dangerous and/or illegal.

Storage**General information on storage conditions:**

Keep away from direct sunlight. Keep cylinders restrained. Store in cool, dry, well ventilated area away from sources of ignition such as flame, sparks and static electricity.

Storage stability – Remarks:

Do not apply direct flame to cylinder. Do not store cylinder in direct sun or expose it to heat above 120 F (48.9 C.).
Do not drop or refill this cylinder.

Storage incompatibility – General:

Store separate from:
Finely divided metals



FORANE® FBA 1233zd

Strong bases
Alkali metals
Alkaline earth metals
Strong oxidizing agents

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

1-Propene, 1-chloro-3,3,3-trifluoro-, (1E)- (102687-65-0)

US. OARS. WEELs Workplace Environmental Exposure Level Guide, as amended

Remarks:	Listed
Time weighted average	800 ppm

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Monitor carbon monoxide and oxygen levels in tanks and enclosed spaces. Consult ACGIH ventilation manual, NFPA Standard 91 and NFPA Standard 654 for design of exhaust system and safe handling.

Respiratory protection:

Avoid breathing gas. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components (full facepiece recommended). Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Rinse immediately if skin is contaminated. Wash contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling.

Eye protection:

Use good industrial practice to avoid eye contact.

FORANE® FBA 1233zd

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Color:	Clear - colourless
Physical state:	gaseous
Form:	Liquefied gas
Odor:	none
Odor threshold:	Not applicable
Flash point	Has no measurable flash point up to the boiling point
Auto-ignition temperature:	716 °F (380 °C) (Method: DIN 51794)
Lower flammable limit (LFL):	None.
Upper flammable limit (UFL):	None.
pH:	not determined
Density:	1.27 g/cm ³ (68 °F (20 °C))
Specific Gravity (Relative density):	compressed liquefied gas
Vapor pressure:	799 mmHg (67.87 °F (19.93 °C))
Vapor density:	6.1 kg/m ³ (68 °F (20 °C))
Boiling point/boiling range:	66 °F (19 °C)
Melting point/range:	-130 °F (-90 °C) 759.8 mmHg
Freezing point:	No data available.
Evaporation rate:	Not applicable
Solubility in water:	1.90 g/l 68 °F (20 °C)
Viscosity, dynamic:	No data available
Oil/water partition coefficient:	log Pow: = 2.2, at 77 °F (25 °C) pH = 7.4

SAFETY DATA SHEET



FORANE® FBA 1233zd

Thermal decomposition: 482 °F (250 °C)
Critical point: Critical temperature: 331.61 °F (166.45 °C)
Flammability: See GHS Classification in Section 2 if applicable

SECTION 10: STABILITY AND REACTIVITY

Stability:

This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Hazardous reactions:

None known.

Materials to avoid:

Alkaline earth metals
Finely divided metals
Alkali metals
Strong bases
Strong oxidizing agents

Conditions / hazards to avoid:

Heat

Hazardous decomposition products:

Thermal decomposition giving toxic and corrosive products :
Carbonyl halides
Carbon oxides
Halogen acids (HCl and HF)
Possible formation of :
Phosgene

SECTION 11: TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for 1-Propene, 1-chloro-3,3,3-trifluoro-, (1E)- (102687-65-0)

Acute toxicity

Inhalation:

Practically nontoxic. (rat) 4 h LC50 (= 98500 ppm). signs: At high concentrations, incoordination, tremors, convulsions (gas)

Skin Irritation:

Not irritating. (rabbit) (4 h)

Sensitization:

FORANE® FBA 1233zd

Cardiac sensitization not observed. (dog) (2.5 %)

Unable to evaluate response. (dog) (5 %)

Similar materials cause cardiac sensitization. (dog) (Reaction may occur in response to stress (natural adrenaline release) or administration of epinephrine.)

Repeated dose toxicity

Subchronic inhalation administration to rat / affected organ(s): heart / signs: changes in organ structure or function, clinical chemistry changes

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in a laboratory test using: bacteria, human cells

Genotoxicity**Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: rats, mice

Developmental toxicity

Exposure during pregnancy. Inhalation (rat and rabbit) / No birth defects were observed.

Reproductive effects

Two generation reproduction study. Inhalation (rat) / No toxicity to reproduction.

Human experience**General:**

Contact can cause cold burns, frostbite and/or chemical burns with severe skin damage.

SECTION 12: ECOLOGICAL INFORMATION**Chemical Fate and Pathway**

Data on this material and/or its components are summarized below.

Data for 1-Propene, 1-chloro-3,3,3-trifluoro-, (1E)- (102687-65-0)**Biodegradation:**

Not readily biodegradable. (28 d) biodegradation 0 %

Octanol Water Partition Coefficient:

log Pow: = 2.2, at 77 °F (25 °C) pH = 7.4

Global Warming Potential:

GWP 1 (Global warming potential with respect to CO₂ (time horizon 100 years))

Ozone Depletion Potential:

ODP 0.00024 - 0.00034

Ecotoxicology

SAFETY DATA SHEET



FORANE® FBA 1233zd

Data on this material and/or its components are summarized below.

Data for 1-Propene, 1-chloro-3,3,3-trifluoro-, (1E)- (102687-65-0)

Aquatic toxicity data:

Harmful. Oncorhynchus mykiss (rainbow trout) 96 h LC50 = 38 mg/l

Aquatic invertebrates:

Harmful. Daphnia magna (Water flea) 48 h EC50 = 82 mg/l

Algae:

Practically nontoxic. Raphidocelis subcapitata (freshwater green algae) 72 h ErC50 > 215 mg/l

Chronic toxicity to aquatic plants:

Practically nontoxic. Raphidocelis subcapitata (freshwater green algae) 72 h NOEC r = 115 mg/l

SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal:

Do not vent the container contents, or product residuals, to the atmosphere. Recover and reclaim unused contents or residuals as appropriate. Recovered/reclaimed product can be returned to an approved certified reclaimer or back to the seller depending on the material. Completely emptied disposable containers can be disposed of as recyclable steel. Returnable cylinders must be returned to seller. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment.

SECTION 14: TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number : 3163
Proper shipping name : Liquefied gas, n.o.s.
Technical name : (1-Propene, 1-chloro-3,3,3-trifluoro-, (1E)-)
Class : 2.2
Marine pollutant : no

International Maritime Dangerous Goods Code (IMDG)

UN Number : 3163
Proper shipping name : LIQUEFIED GAS, N.O.S.
Technical name : (1-PROPENE,1-CHLORO-3,3,3-TRIFLUORO-,(1E))
Class : 2.2
Marine pollutant : no

SAFETY DATA SHEET



FORANE® FBA 1233zd

SECTION 15: REGULATORY INFORMATION

Chemical Inventory Status

US. Toxic Substances Control Act	TSCA	The components of this product are all on the Active TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	All components of this product are listed or exempted
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	All components of this product are listed or exempted
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	All components of this product are listed or exempted
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	All components of this product are listed or exempted
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	All components of this product are listed or exempted
Australian Inventory of Industrial Chemicals	AU AIICL	All components of this product are listed or exempted
Taiwan Chemical Substance Inventory (TCSI)	TCSI	All components of this product are listed or exempted

United States – Federal Regulations**SARA Title III – Section 302 Extremely Hazardous Chemicals:**

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:

Acute Health Hazard
Sudden Release of Pressure Hazard

SARA Title III – Section 313 Toxic Chemicals:

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.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

Product code: F0713

Version 2.8

Issued on: 02/06/2025

Page: 11 / 12

SAFETY DATA SHEET



FORANE® FBA 1233zd

United States – State Regulations

California Prop. 65

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

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

- H280 Contains gas under pressure; may explode if heated.
- H412 Harmful to aquatic life with long lasting effects.

Latest Revision(s):

Reference number: 200005529
Date of Revision: 02/06/2025
Date Printed: 02/07/2025

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