

FORANE® 142b**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® 142b
Synonyms: 1-CHLORO-1,1-DIFLUOROETHANE
Molecular formula: CH₃CClF₂
Chemical family: Hydrochlorofluorocarbon
Molecular weight: 100.48 g/mol
Product use: Chemical intermediate

2. HAZARDS IDENTIFICATION**Emergency Overview**

Color: Clear - colourless
Physical state: gaseous
Odor: Ether-like (slightly)

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

Flammable Gases, Category 1, H220
Gases under pressure, Liquefied gas, H280
Chronic aquatic toxicity, Category 3, H412
Hazardous to the ozone layer, Category 1, H420

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

FORANE® 142b**GHS-Labeling**

Hazard pictograms:



Signal word:

Danger**Hazard statements:**

H280 : Contains gas under pressure; may explode if heated.

H412 : Harmful to aquatic life with long lasting effects.

H220 : Extremely flammable gas.

H420 : Harms public health and the environment by destroying ozone in the upper atmosphere.

Supplemental Hazard Statements:

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

Precautionary statements:**Prevention:**

P273 : Avoid release to the environment.

P210 : Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Response:

P377 : Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 : Eliminate all ignition sources if safe to do so.

Storage:

P403 : Store in a well-ventilated place.

P410 : Protect from sunlight.

Disposal:

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

P502 : Refer to manufacturer/ supplier for information on recovery/ recycling.

Supplemental information:**Potential Health Effects:**

Liquid : Contact with liquid or refrigerated gas can cause cold burns and frostbite. Vapor: 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.

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Medical conditions aggravated by overexposure:
Heart disease or compromised heart function.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Ethane, 1-chloro-1,1-difluoro-	75-68-3	99.85 %	H220, H280, H420, H412

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

4. 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. 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.

Notes to physician:

Do not give drugs from adrenaline-ephedrine group.

5. FIREFIGHTING MEASURES

Extinguishing media (suitable):

Water spray, Carbon dioxide (CO₂), Dry chemical

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:

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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
Carbon oxides
Carbonyl halides

6. ACCIDENTAL RELEASE MEASURES**In case of spill or leak:**

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.

FORANE® 142b**7. HANDLING AND STORAGE****Handling****General information on handling:**

Avoid breathing gas.
Avoid contact with the skin, eyes and clothing.
Wear cold-insulating gloves/face shield/eye protection.
Keep away from heat, sparks and flames.
Keep container closed.
Use only with adequate ventilation.
Use equipment rated for cylinder pressure.
Use a backflow preventative device in piping.
Wash thoroughly after handling.
Close valve after each use and when empty.
Do not change or force fit connections.
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.
Container hazardous when empty.
Do not enter confined spaces unless adequately ventilated.
RESIDUAL GASES MAY EXPLODE ON IGNITION.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Improper disposal or reuse of this container may be dangerous and/or illegal.
Emptied container retains vapor and product residue.
Follow label warnings even after container is emptied.

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. Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate when transferring material. All metal and groundable storage containers, including but not limited to drums, cylinders, Returnable Intermodal Bulk Containers (RIBCs) and Class C Flexible Intermodal Bulk Containers (FIBCs) must be bonded and grounded during filling and emptying operations. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497.

Storage stability – Remarks:

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

Storage incompatibility – General:

Store separate from:

Finely divided metals (aluminium, magnesium, zinc...)

Strong bases

Alkali metals

Alkaline earth metals

Strong oxidizing agents

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Odor threshold:	No data available
Flash point	Not applicable
Auto-ignition temperature:	Not applicable
Lower flammable limit (LFL):	6.9 %(V)
Upper flammable limit (UFL):	15.5 %(V)
pH:	Not applicable
Density:	Not applicable
Vapor pressure:	2,244.000 mmHg (70.0 °F (21.1 °C))
Relative vapor density:	3.49 (Air = 1.0)
Vapor density:	Not applicable
Boiling point/boiling range:	14.4 °F (-9.8 °C)
Freezing point:	-204 °F (-131 °C)
Melting point/range:	No data available
Evaporation rate:	No data available
Solubility in water:	slightly soluble
% Volatiles:	100 %
Molecular weight:	100.48 g/mol
Oil/water partition coefficient:	No data available
Thermal decomposition	No data available
Flammability:	See GHS Classification in Section 2

10. STABILITY AND REACTIVITY

Stability:

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

Materials to avoid:

Alkaline earth metals
 Strong oxidizing agents
 Finely divided metals (aluminium, magnesium, zinc...)

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Alkali metals
Strong acids

Conditions / hazards to avoid:
Heat

Hazardous decomposition products:

Thermal decomposition giving toxic and corrosive products :
Carbonyl halides
Carbon oxides
hydrofluoric acid

11. TOXICOLOGICAL INFORMATION**Data for FORANE® 142b****Acute toxicity****Inhalation:**

Practically nontoxic. (rat) 6 h LC50 > 400000 ppm. signs: respiratory irritation (Gas)

Practically nontoxic. (rat) 4 h ALC ~ 128000 ppm. (Gas)

Eye Irritation:

Causes mild eye irritation. (rabbit) (liquid)

Sensitization:

Causes cardiac sensitization. Inhalation. (dog) signs: irregular heart beat, rapid heart beat, in some cases, sudden death (Reaction may occur in response to stress (natural adrenaline release) or administration of epinephrine.)

Repeated dose toxicity

Repeated inhalation administration to rat and dog / No adverse systemic effects reported.

Carcinogenicity

Chronic inhalation administration to rat / signs: No increase in tumor incidence was reported.

Genotoxicity**Assessment in Vitro:**

Both positive and negative responses for genetic changes were observed in laboratory tests using: bacteria, animal cells

Assessment in Vivo:

No genetic changes were observed in laboratory tests using: rats

Developmental toxicity

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

FORANE® 142b**Reproductive effects**

Repeated administration. Inhalation (rat, dog) / Did not cause damage to the reproductive organs.

Exposure prior to mating. Inhalation (mouse) / No toxicity to reproduction. / (males)

12. ECOLOGICAL INFORMATION**Chemical Fate and Pathway**

Data on this material and/or a similar material are summarized below.

Data for FORANE® 142b**Biodegradation:**

Not readily biodegradable. (20 d) biodegradation 5.60 %

Octanol Water Partition Coefficient:

log Pow = 1.64 - 2.05 (calculated)

Photodegradation:

Half-life direct photolysis: = 12.8 d

Global Warming Potential:

GWP 0.42 (Halocarbon global warming potential; HGWP; (R-11 = 1))

GWP 1,800 (Global warming potential with respect to CO₂ (time horizon 100 years))

Ozone Depletion Potential:

ODP 0.065 (Ozone depletion potential; ODP; (R-11 = 1))

Ecotoxicology

Data on this material and/or a similar material are summarized below.

Data for FORANE® 142b**Aquatic toxicity data:**

Practically nontoxic. *Poecilia reticulata* (guppy) 96 h LC₅₀ = 220 mg/l

Aquatic invertebrates:

Practically nontoxic. *Daphnia magna* (Water flea) 48 h EC₅₀ = 160 mg/l

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

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waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number : 2517
 Proper shipping name : 1-Chloro-1,1-difluoroethane
 Class : 2.1
 Marine pollutant : no

International Maritime Dangerous Goods Code (IMDG)

UN Number : 2517
 Proper shipping name : 1-CHLORO-1,1-DIFLUOROETHANE (REFRIGERANT GAS R 142b)
 Class : 2.1
 Marine pollutant : no

15. REGULATORY INFORMATION

Chemical Inventory Status

EU. EINECS	EINECS	Conforms to
US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Australia. Industrial Chemical (Notification and Assessment) Act	AICS	Conforms to
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL.
Japan. Kashin-Hou Law List	ENCS (JP)	Does not conform
Korea. Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	Conforms to
China. Inventory of Existing Chemical Substances	IECSC (CN)	Conforms to

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.

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SARA Title III - Section 311/312 Hazard Categories:

Acute Health Hazard, Fire Hazard, Sudden Release of Pressure Hazard

SARA Title III – Section 313 Toxic Chemicals:

The following components are subject to reporting levels established by SARA Title III, Section 313:

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>De minimis concentration</u>	<u>Reportable threshold:</u>
Ethane, 1-chloro-1,1-difluoro-	75-68-3	1.0 %	10000 lbs (Otherwise used (non-manufacturing/processing)) 25000 lbs (Manufacturing and processing)

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

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Reportable quantity</u>
Ethane, 1-chloro-1,1-difluoro-	75-68-3	100 lbs

United States – State Regulations

New Jersey Right to Know

<u>Chemical Name</u>	<u>CAS-No.</u>
Ethane, 1-chloro-1,1-difluoro-	75-68-3

New Jersey Right to Know – Special Health Hazard Substance(s)

<u>Chemical Name</u>	<u>CAS-No.</u>
Ethane, 1-chloro-1,1-difluoro-	75-68-3

Pennsylvania Right to Know

<u>Chemical Name</u>	<u>CAS-No.</u>
Ethane, 1-chloro-1,1-difluoro-	75-68-3

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.

16. OTHER INFORMATION

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

- H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.
H412 Harmful to aquatic life with long lasting effects.
H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

Latest Revision(s):

Reference number: 000000033851
Date of Revision: 05/09/2015
Date Printed: 05/09/2015

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