

FORANE® 123

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Canada Inc.
1100 Burloak Drive, Suite 107
Burlington, Ontario, L7L 6B2

Fluorochemicals

Customer Service Telephone Number: (800) 567-5726
(Monday through Friday, 8:30 AM to 4:30 PM EST)

Emergency Information

Transportation: CANUTEC: (613) 996-6666
(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® 123
Synonyms: Not available
Molecular formula: CHCl₂CF₃
Chemical family: Hydrochlorofluorocarbon
Molecular weight: 152.93 g/mol
Product use: Refrigerant, Aerosol propellants

2. HAZARDS IDENTIFICATION

Emergency Overview

WARNING!
VAPOR REDUCES OXYGEN AVAILABLE FOR BREATHING AND IS HEAVIER THAN AIR.
MAY CAUSE HEADACHE, NAUSEA, DIZZINESS, DROWSINESS, LOSS OF CONSCIOUSNESS.
MAY CAUSE EFFECTS ON:
HEART

Potential Health Effects

Primary routes of exposure:
Inhalation and skin contact.

Signs and symptoms of acute exposure:
Liquid : Rapid evaporation of the liquid may cause frostbite. Vapor: May cause eye irritation. Central nervous system effects: headache, nausea, dizziness, drowsiness, loss of consciousness. Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Stress induced heart effects: irregular heart beat, rapid heart beat, (severity of effects depends on extent of exposure).

Skin:
No more than slightly toxic. Non-irritating to slightly irritating. (based on animal studies)

Inhalation:
Practically nontoxic. Central nervous system effects. (based on animal studies)

Eyes:

FORANE® 123

Slightly to moderately irritating. (based on animal studies)

Ingestion:

Practically nontoxic. (based on animal studies)

Medical conditions aggravated by overexposure:

Heart disease or compromised heart function. Liver disorders

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	WHMIS Controlled
Ethane, 2,2-dichloro-1,1,1-trifluoro-	306-83-2	>= 60 - <= 100 %	N

The substance(s) marked with a "Y" in the above WHMIS Controlled column are those identified as hazardous chemicals under the Controlled Products Regulation.

4. FIRST AID MEASURES

Inhalation:

If inhaled, remove 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. Get medical attention if irritation persists.

Ingestion:

If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

Notes to physician:

Do not give drugs from adrenaline-ephedrine group.

5. FIREFIGHTING MEASURES

Flash point: Not applicable

Auto-ignition temperature: Not applicable

Lower flammable limit (LFL): None.

Upper flammable limit (UFL): None.

Extinguishing media (suitable):

Dry chemical, Water spray, Carbon dioxide (CO2)

Protective equipment:

Product code: 04123

Version 1.0

Issued on: 06/11/2014

Page: 2 / 9

FORANE ® 123

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:

Keep containers and surroundings cool with water spray.

Fire fighting equipment should be thoroughly decontaminated after use.

Keep containers cool by spraying with water if exposed to fire.

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

Hazardous combustion products:

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.

Explosion Data:

Sensitivity to Mechanical Impact: No

Sensitivity to Static Discharge: No

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

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. Do not smoke or operate internal combustion engines. Remove flames and heating elements. Stop the leak if you can do so without risk. Sources of ignition should be kept well clear. Consult a regulatory specialist to determine appropriate provincial or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

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

Avoid contact with eyes.

Avoid breathing vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Do not enter confined spaces unless adequately ventilated.

Wash thoroughly after handling.

Emptied container retains vapor and product residue.

Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Storage**General information on storage conditions:**

Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity.

Storage stability – Remarks:

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

FORANE® 123

Storage incompatibility – General:

Store separate from: Alkaline earth metals

Finely divided metals

Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Ethane, 2,2-dichloro-1,1,1-trifluoro- (306-83-2)

US. AIHA Workplace Environmental Exposure Level (WEEL) Guides

time weighted average	50 ppm (310 mg/m3)
-----------------------	--------------------

Remarks:	Listed
----------	--------

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). Provide ventilation if necessary to control exposure levels below airborne exposure limits (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.

Respiratory protection:

Avoid breathing vapor or mist. 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.

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:

Where eye contact may be likely, wear chemical goggles and have eye flushing equipment available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Clear - colourless
---------------	--------------------

Physical state:	liquid
------------------------	--------

Odor:	Ether-like (slightly)
--------------	-----------------------

Odour Threshold:	Not determined
-------------------------	----------------

Product code: 04123

Version 1.0

Issued on: 06/11/2014

Page: 4 / 9

FORANE ® 123

pH:	Not applicable
Density:	1.46 g/cm ³ 77 °F (25 °C)
Vapor pressure:	594.722 mmHg 70.0 °F (21.1 °C)
Vapor density:	5.31 kg/m ³
Boiling point/boiling range:	27.8 °C
Freezing point:	-161 °F (-107 °C)
Evaporation rate:	No data available
Solubility in water:	Slightly soluble
% Volatiles:	100 %
Molecular weight:	152.93 g/mol

10. STABILITY AND REACTIVITY

Stability:

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

Hazardous reactions:
Materials to avoid:

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

Conditions / hazards to avoid:

Heat.

Hazardous decomposition products:

Halogen acids (HCl and HF), Carbon monoxide, Carbon dioxide (CO₂), Carbonyl halides

Thermal decomposition giving toxic and corrosive products :

11. TOXICOLOGICAL INFORMATION

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

Data for FORANE ® 123
Acute toxicity
Oral:

Practically nontoxic. (Rat) ALD 9,000 mg/kg.

Dermal:

No more than slightly toxic. (rat, rabbit) LD₅₀ > 2,000 mg/kg.

Inhalation:

Practically nontoxic. (Rat) 4 h LC₅₀ ~ 200 mg/l (32000 ppm). .

(laboratory animal) signs: Anaesthetic effect, weakness, incoordination, unresponsive (At high

FORANE ® 123

concentrations)

Skin Irritation:

Non-irritating to slightly irritating. (rabbit) (4 h) (Rapid evaporation of the liquid may cause frostbite.)
Non-irritating to slightly irritating

Eye Irritation:

Slightly to moderately irritating. (rabbit) signs: Rapid evaporation of the liquid may cause frostbite (gas spray)

Sensitization:

Causes cardiac sensitization. Inhalation. (dog) Stress-induced heart effects. signs: irregular heart beat, rapid heart beat, in some cases, sudden death
Causes cardiac sensitization

Skin Sensitization:

Not a skin sensitizer. Guinea pig maximization test. (guinea pig) No skin allergy was observed

Repeated dose toxicity

Chronic inhalation administration to Rat / affected organ(s): liver, pancreas, adrenal gland, eye, testes / signs: changes in organ structure or function, clinical chemistry changes

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

Carcinogenicity

No data available.

Genotoxicity

Assessment in Vitro:

No genetic changes were observed in laboratory tests using: bacteria, animal cells
Genetic changes were observed in laboratory tests using: human cells

Assessment in Vivo:

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

Developmental toxicity

Exposure during pregnancy. inhalation (rat and rabbit) / No birth defects were observed. (at doses that produce effects in mothers)

Reproductive effects

Reproduction test. inhalation (Rat) / No toxicity to reproduction. / (levels produced toxic effects in the mothers and offspring)

Human experience

Inhalation:

Liver: clinical chemistry changes, jaundice, hepatitis. Effects were reversible after cessation of exposure.
Exposures exceeded recommended occupational exposure limit.

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway

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

Data for FORANE ® 123

FORANE ® 123

Biodegradation:

Not readily biodegradable. (28 d) biodegradation 24 %

Octanol Water Partition Coefficient:

log Pow = 2.3 (calculated) (Low potential to bioaccumulate)

Ecotoxicology

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

Data for FORANE ® 123
Aquatic toxicity data:

Slightly toxic. Oncorhynchus mykiss (rainbow trout) 96 h LC50 = 55.5 mg/l

Slightly toxic.

Aquatic invertebrates:

Slightly toxic. Daphnia magna (Water flea) 48 h EC50 = 17.3 mg/l

Slightly toxic.

Algae:

Slightly toxic. Pseudokirchneriella subcapitata 72 h EbC50 = 67.8 mg/l

Slightly toxic. Pseudokirchneriella subcapitata 72 h ErC50 = 96.6 mg/l

Slightly toxic.

Slightly toxic.

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, provincial and local regulations.

Consult a regulatory specialist to determine appropriate provincial 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, provincial and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

Canadian Transportation of Dangerous Good (TDG): not regulated

International Maritime Dangerous Goods Code (IMDG): not regulated

15. REGULATORY INFORMATION

Product code: 04123

Version 1.0

Issued on: 06/11/2014

Page: 7 / 9

FORANE® 123

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)	Conforms to
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
New Zealand. Inventory of Chemicals (NZIOC), as published by ERMA New Zealand	NZIOC	Does not conform

Canada - Federal Regulations

Workplace Hazardous Materials Information System (WHMIS)

NOT CONTROLLED.

Ingredient Disclosure List (IDL)

WHMIS Ingredient Disclosure List IDL: No component is listed on the WHMIS ingredients disclosure list.

WHMIS Regulated Carcinogens (IARC, ACGIH Listed):

IARC:

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH:

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

National Pollution Release Inventory (NPRI)

<u>Chemical Name</u>	<u>CAS-No.</u>
Ethane, 2,2-dichloro-1,1,1-trifluoro-	306-83-2

16. OTHER INFORMATION

Latest Revision(s):

Reference number: 000000033836
Date of Revision: 06/11/2014

FORANE ® 123

Date Printed: 06/11/2014

PREPARED BY: TECHNICAL DEPARTMENT
PHONE NUMBER OF PREPARER: (800) 567-5726
PREPARATION DATE: 06/11/2014

FORANE ® is a registered trademark of Arkema Inc.

THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CPR AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, ARKEMA CANADA INC. MAKES NO WARRANTY EXPRESSED OR IMPLIED, WITH RESPECT TO COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE. THE INFORMATION PROVIDED HEREIN RELATES ONLY TO THE SPECIFIC PRODUCT DESIGNATED AND MAY NOT BE VALID WHERE SUCH PRODUCT IS USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS.