



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont  
Material Safety Data Sheet

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"DYMEL" 152a Aerosol Propellant/n-Butane Blends  
2094FR Revised 12-OCT-2008  
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CHEMICAL PRODUCT/COMPANY IDENTIFICATION  
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Material Identification

"DYMEL" is a registered trademark of DuPont.

Corporate MSDS Number : DU001253  
Formula : CH3CHF2/C4H10  
Grade : AEROSOL

Company Identification

MANUFACTURER/DISTRIBUTOR  
DuPont Fluoroproducts  
1007 Market Street  
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.  
302-774-1000)  
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S.  
703-527-3887)  
Medical Emergency : 1-800-441-3637 (outside the U.S.  
302-774-1000)

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COMPOSITION/INFORMATION ON INGREDIENTS  
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Components

Material	CAS Number	%
ETHANE, 1,1-DIFLUORO- ("DYMEL" 152a)	75-37-6	100-
n-BUTANE	106-97-8	0-100

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HAZARDS IDENTIFICATION  
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Potential Health Effects

Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

HUMAN HEALTH EFFECTS:

Contact with the liquid may cause frostbite. Overexposure by inhalation may include non-specific discomfort such as nausea, headache, or weakness; or temporary nervous system

## (HAZARDS IDENTIFICATION - Continued)

depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness. Higher exposures (>20% in air) may cause temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath; or temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation.

Individuals with preexisting diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposures.

## Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

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FIRST AID MEASURES  
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## First Aid

## INHALATION

Immediately remove to fresh air. Keep persons calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

## SKIN CONTACT

Flush skin with plenty of water. Treat for frostbite if necessary, by gently warming affected areas. Call a physician.

## EYE CONTACT

Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

## INGESTION

Ingestion is not considered a potential route of exposure.

## Notes to Physicians

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution only in situations of emergency life support.

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FIRE FIGHTING MEASURES  
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## Flammable Properties

Flash Point : "DYMEL" 152a: <-50 deg C (<-58 deg F)  
                   n-Butane : <-128.9 deg C (<-200 deg F)  
                   Mixture : Not determined  
 Method : TOC

## Flammable Limits in Air, % by Volume:

n-Butane in Mixture (Wt. %)	Lower	Upper	n-Butane in Mixture (Wt. %)	Lower	Upper
0	3.8	16.8	60	2.5	10.5
20	3.3	14.4	82	2.2	9.4
40	2.8	12.0	100	1.8	8.5

Autoignition : Mixture : Not determined  
 Temperature "DYMEL" 152a: Not determined  
                   n-Butane : 761 deg F  
 Autodecomposition: "DYMEL" 152a: 850 deg F  
 Temperature n-Butane : 806 deg F

## Fire and Explosion Hazards:

Flammable. Cylinders are equipped with temperature and pressure relief devices but may still rupture under fire conditions. Use water spray to cool cylinders and tanks.

HFC-152a fire decomposition by-products will include hydrofluoric acid, and possibly carbonyl fluoride. Avoid contact with these materials, which are toxic and irritating. Evacuate personnel immediately in the event of a fire involving HFC-152a.

## Extinguishing Media

Water Spray or Fog. "Alcohol" Foam. Dry Chemical. Carbon Dioxide. Halon 1301.

## Fire Fighting Instructions

Keep container cool with water spray. If gas exiting container ignites, stop flow of gas. Do not put out the fire unless leak can be stopped immediately. Self-contained breathing apparatus (SCBA) is required if containers rupture and contents are released under fire conditions.

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ACCIDENTAL RELEASE MEASURES  
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## Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

## Accidental Release Measures

Turn off valves and ignition sources. Evacuate area. Ventilate area - especially low places where heavy vapors might collect. Comply with Federal, State, and local regulations on reporting releases. Self-contained breathing apparatus (SCBA) is required if a large spill or release occurs.

This material is an ICR (Ignitable, Corrosive, Reactive) substance under CERCLA. A release of 100 lbs. may trigger the reporting requirements of CERCLA Section 103.

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HANDLING AND STORAGE  
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## Handling (Personnel)

Avoid breathing high concentrations of vapors. Avoid liquid contact with skin or eyes. Use with sufficient ventilation to keep employee exposure below recommended limits. Lines and equipment which will contain "DYMEL" 152a Aerosol Propellant/n-Butane Blends should be pretested with nitrogen using soapy water to detect leaks.

## Storage

Clean, dry area. Do not heat above 125 deg F. Store away from ignition sources.

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EXPOSURE CONTROLS/PERSONAL PROTECTION  
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## Engineering Controls

Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places. Ground all equipment and cylinders before use. Use explosive-proof electrical equipment rated Class I, Group D in Division I locations. In Division 2 locations, all spark-producing electrical equipment must be explosion-proof and rated Class I, Group D. Non-sparking motors need not be explosion-proof.

## (EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

## Personal Protective Equipment

Lined neoprene rubber gloves and chemical splash goggles should be used when handling liquid. Under normal manufacturing conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if a large spill or release occurs.

## # Exposure Guidelines

## Applicable Exposure Limits

ETHANE, 1,1-DIFLUORO- ("DYMEL" 152a)  
 PEL (OSHA) : None Established  
 TLV (ACGIH) : None Established  
 AEL \* (DuPont) : 1000 ppm, 8 & 12 Hr. TWA  
 WEEL (AIHA) : 1000 ppm, 8 Hr. TWA

## n-BUTANE

PEL (OSHA) : None Established  
 AEL \* (DuPont) : None Established

\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

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PHYSICAL AND CHEMICAL PROPERTIES  
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## Physical Data

Solubility in Water : 0.3 WT%  
 Odor : Slight ethereal  
 Form : Liquefied gas  
 Color : Clear, colorless

Component %		Liquid Density g/cc at	Vapor Pressure psia at	Vapor Density Vapor	Boiling Point	
"DYMEL" 152a   n-Butane		21.1 deg C 70 deg F	21.1 deg C 70 deg C	Density (Air=1)	deg C	deg F
100	0	0.907	77	2.3	-25.0	-13
80	20	0.815	80	2.2	-27.2	-17
60	40	0.742	76	2.2	-26.1	-15
40	60	0.675	70	2.1	-23.3	-10
20	80	0.622	59	2.1	-20.0	-4
0	100	0.577	31	2.0	-0.6	31

## (PHYSICAL AND CHEMICAL PROPERTIES - Continued)

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STABILITY AND REACTIVITY  
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## Chemical Stability

Material is stable. However, avoid open flames and high temperatures.

## Incompatibility with Other Materials

Incompatible with alkali or alkaline earth metals- powdered Al, Zn, Be, etc.

## Polymerization

Polymerization will not occur.

## Other Hazards

Decomposition : Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride.

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TOXICOLOGICAL INFORMATION  
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## Animal Data

## "DYMEL" 152a

Inhalation 4-hour ALC: 383,000 ppm in rats

The compound is untested for skin irritancy, is untested for eye irritancy, and is untested for animal sensitization. Toxicity effects seen in animals exposed by inhalation include anesthetic effects and cardiac sensitization. Tests in animals demonstrate no embryotoxic or carcinogenic activity. Tests in bacterial or mammalian cell cultures demonstrate no mutagenic activity.

## n-Butane

Inhalation 4-hour LC50: 658,000 mg/L in rats

The compound is untested for skin irritancy, is untested for eye irritancy, and is untested for animal sensitization. Toxic effects described in animals from exposure by inhalation include anesthetic effects and cardiac sensitization. No animal test reports are available to define carcinogenic, embryotoxic, or reproductive hazards.

## (TOXICOLOGICAL INFORMATION - Continued)

Tests in bacterial or mammalian cell cultures demonstrate no mutagenic activity.

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DISPOSAL CONSIDERATIONS  
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## Waste Disposal

Reclaim by distillation, incinerate or remove to a permitted waste disposal facility. Comply with Federal, State, and local regulations.

This material may be a RCRA regulated hazardous waste upon disposal due to the ignitability characteristic.

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TRANSPORTATION INFORMATION  
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## Shipping Information

DOT/IMO/IATA  
Proper Shipping Name : Liquefied Gas, Flammable, N.O.S.  
(Difluoroethane, n-butane)  
Hazard Class : 2.1  
UN No. : 3161  
Label(s) : Flammable Gas

## Shipping Containers

Tank Cars.  
Tank Trucks.

Cylinders  
Ton Tanks

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REGULATORY INFORMATION  
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## U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

## TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes  
Chronic : No  
Fire : Yes  
Reactivity : No  
Pressure : Yes

## (REGULATORY INFORMATION - Continued)

## LISTS:

Extremely Hazardous Substance	-No
CERCLA Hazardous Substance	-No
Toxic Chemicals	-No

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OTHER INFORMATION  
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## NFPA, NPCA-HMIS

NPCA-HMIS Rating	
Health	: 1
Flammability	: 4
Reactivity	: 1

Personal Protection rating to be supplied by user depending on use conditions.

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS	: MSDS Coordinator
>	: DuPont Fluoroproducts
Address	: Wilmington, DE 19898
Telephone	: (800) 441-7515

# Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS