

60 Below™
1. Identification
Product Name: 60 Below™, Freeze Spray

Item #: 06200, 06206, 06212

Synonyms: C₂H₄F₂
Recommended Use: Freezing Tissue, Frozen Section
 Diagnosis

Restrictions on Use: Any other than directed
In Case of Emergency:
Manufacturer:

 Cancer Diagnostics, Inc.
 4300 Emperor Blvd. #400
 Durham, NC 27703
 1-877-846-5393

 Chemtrec US 1-800-424-9300
 Infotrac International 1-352-323-3500

2. Hazards Identification
OSHA Hazard Classification(s):

Liquefied gas H280

Signal Word: Warning

Hazard Statement(s): Contains gas under pressure; may explode if heated. Flammable gas

Pictogram(s):

Precautionary Statement(s): Prevention: Pressurized container: Do not pierce or burn, even after use. Wear protective gloves and eye protection.

Response: IF IN EYES-Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

Storage: Protect from sunlight. Store in a well-ventilated place. Do not expose to temperatures exceeding 50 °C/122 °F.

Disposal: Dispose of contents/container through licensed treatment, storage or disposal facility.

Descriptions of Hazards not otherwise classified:

In accordance with aerosol flammability definitions, this product is non-flammable. However, the pressurized liquified gas is extremely flammable. Using this product in an upside-down position, or shaking while using, can cause liquid product to be expelled. The information pertaining to flash point below applies to the liquified gas. Contact with liquid may cause cold burns/frostbite. Contains gas under pressure; may explode if heated. Asphyxiant in high concentrations.

Inhalation: Intentional misuse and inhalation abuse may cause cardiac or central nervous systems effects.

Ingestion: not considered to be a potential route of exposure.

Eyes: "Frostbite-like " effects may occur if the liquid or escaping vapors contact the eyes. Mist may cause irritation.

Skin: "Frostbite-like " effects may occur if the liquid or escaping vapors contact the eyes.. Mist can cause irritation.

Percent of mixture with unknown acute toxicity: N/A

3. Composition and Information on Ingredients

Chemical Name	EC #	CAS #	Concentration %
1,1-Difluoroethane liquefied, under pressure	200-866-1	75-37-6	>99

4. First Aid Measures
General: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in

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shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain.

Depending on the victim's condition: doctor/hospital. Never give alcohol to drink.

Eye Contact: Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

Skin Contact: Rinse with water. Take victim to a doctor if irritation persists. In case of frostbites: Wash immediately with lots of water (15 minutes)/shower. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

Inhalation: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

Ingestion: Not applicable.

Symptoms: Contains refrigerated gas; may cause cryogenic burns or injury. Not expected to present a significant hazard under anticipated conditions of normal use.

Inhalation: EXPOSURE TO HIGH CONCENTRATIONS: Dizziness. Slight irritation. Headache. Nausea. Vomiting. Coordination disorders. Disturbances of consciousness. Disturbances of heart rate.

Skin: Frostbites.

Eye Contact: No data available.

Ingestion: Not applicable.

Chronic: No effects known.

Recommendations for immediate medical care/special treatment: Get medical advice/attention if you feel unwell.

5. Fire- Fighting Measures

Extinguishing Media: Water spray. BC powder. Carbon dioxide.

Extinguishing Media For Surrounding Fires: Adapt extinguishing media to the environment.

Unsuitable extinguishing media: No unsuitable extinguishing media known.

Fire Hazards:

Direct: Extremely flammable. Gas/vapor flammable with air within explosion limits.

Indirect: May build up electrostatic charges: risk of ignition. May be ignited by sparks. Gas/vapor spreads at floor level: ignition hazard.

Explosion Hazards:

Direct: Gas/vapor explosive with air within explosion limits.

Indirect: May build up electrostatic charges: risk of ignition. May be ignited by sparks. Gas/vapor spreads at floor level: ignition hazard.

Reactivity: On heating/burning: release of toxic and corrosive gases/vapor e.g.: hydrofluoric acid, carbonyl fluoride. Reacts violently with (strong) oxidizers.

Special Protective Equipment: Fire fighters should use self-contained breathing apparatus and protective clothing.

Precautions for Firefighters:

Firefighting Instructions: If no hazard for/from the surroundings: controlled burning. If hazardous substances are nearby: consider extinguishment. Extinguish only if gas supply/leak can be shut afterwards. Cool tanks/drums with water spray/remove them into safety. Physical explosion risk: extinguish/cool from behind cover. Do not move the load if exposed to heat. After cooling: persistent risk of physical explosion. Dilute toxic gases with water spray.

Protection during firefighting: Heat/fire exposure: compressed air/oxygen apparatus.

Physical explosion risk: cool from behind cover. Do not move the load if exposed to heat.

After cooling: persistent risk of physical explosion. Dilute toxic gases with water spray.

Other information: NFPA Aerosol Level 1.

6. Accidental Release Measures

General Measures: Remove ignition sources. Use special care to avoid static electric charges. Eliminate every possible source of ignition. No naked lights. No smoking.

Emergency Procedures:

For non-emergency personnel: Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames. Spark- and explosion-proof appliances and lighting equipment. Avoid ingress of water in the containers. Wash contaminated clothes.

For emergency responders: Ventilate Area.

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Protective Equipment:

For non-emergency personnel: Insulating gloves. Protective Goggles, and clothing. Large spills/in enclosed spaces: compressed air apparatus. See "Material-Handling" to select protective clothing.

For emergency responders: Equip cleanup crew with proper protection.

Environmental Precautions: Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

Containment and Clean-Up Procedures:

Containment: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Tip the container on one side to stop the leakage. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute/disperse combustible gas/vapor with water curtain. Provide equipment/receptacles with earthing. Do not spray water on unheated tank walls. Do not use compressed air for pumping over spills.

Clean up: Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. See "Material-handling" for suitable container materials. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

References to other sections: See Heading 8. Exposure controls and personal protection.

7. Handling and Storage

Precautions for safe handling:

Additional hazards when processed: Pressurized container: Do not pierce or burn, even after use.

Handling: Comply with the legal requirements. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not use compressed air for pumping over. Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe normal hygiene standards. Measure the concentration in the air regularly. Measure the oxygen concentration in the air. Work under local exhaust/ventilation.

Hygiene: Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Storage: Keep only in the original container in a cool, well ventilated place away from naked flames/heat. Keep container closed when not in use. Keep in fireproof place. Do not expose to temperatures exceeding 50°C / 122°F

Incompatible products: Strong bases. Strong acids.

Incompatible materials: Sources of ignition. Direct sunlight. Heat sources.

Technical Measures: Proper grounding procedures to avoid static electricity should be followed.

Temperature: < 50°C / 122°F

Heat-ignition: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Prohibitions on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents.

Storage area: Ventilation at floor level. Fireproof storeroom. Provide for an automatic sprinkler system. Provide for a tub to collect spills. Provide the tank with earthing. Keep out of direct sunlight. Meet the legal requirements.

Special rules on packaging: with pressure relief valve. clean. correctly labeled. meet the legal requirements.

Suitable packaging materials: steel. stainless steel. monel steel. lead. aluminum. copper. tin.

Specific end use(s): Follow Label Directions.

8. Exposure Controls/Personal Protection

OSHA Permissible Exposure Limits (PELs):

Reagent	CAS #	OSHA PEL TWA
1,1-Difluoroethane	75-37-6	1000ppm TWA (8hr)

ACGIH Threshold Limit Values (TLVs):

Reagent	CAS #	ACGIH PEL TLV	ACGIH STEL
1,1-Difluoroethane	75-37-6	None Established	None Established

Engineering Controls: Local exhaust ventilation, vent hoods.

Personal Protective Measures: Avoid all unnecessary exposure. Gloves. Safety glasses. Contact lenses should not be worn when working with this material.

Suitable protective clothing materials: Give good resistance; butyl rubber. leather. neoprene. polyethylene. PVC.

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Hand protection: Insulated gloves.

Eye protection: Safety glasses.

Skin and body protection: Protective clothing.

Respiratory protection: High vapor/gas concentration: self-contained respirator. Maintain oxygen levels above 19.5% in the workplace. Use supplied air respiratory protection if oxygen levels are below 19.5% or during emergency response to a release of this product. Wear appropriate mask.

Special PPE Requirements: If ventilation hood not available wear self-contained respirator, especially around high vapor/gas concentration.

Other Information: Do not eat, drink, or smoke during use.

9. Physical and Chemical Properties Section

Appearance: Gas, Liquefied gas, Gas under pressure

Molecular Mass: 66.05 g/mol

Molecular Formula: C₂H₄F₂

pH: No data available

Boiling Point and Boiling Range: -25°C

Melting Point/Freezing Point: -117°C / No data available

Critical Temperature: 114°C

Flash Point: < -50°C *Flash Point stated here applies to the liquefied gas

Specific Gravity: 1004 kg/m³ (-25 °C)

Relative Density: 1.0 (-25°C)

Density: 1206 kg/m³ (-27 °C)

Odor: Mild odor. Slight Ether-like odor

Odor Threshold: N/A

Color: Colorless

Vapor Density: 2.3 (20°C)

Upper/Lower flammability or explosive limits: N/A

Oxidizing properties: N/A

Vapor Pressure: 5100 hPa

Vapor Pressure (at 50°C): 11700 hPa

Critical Pressure: 44960 hPa

Evaporation Rate: N/A

Log Pow: 0.75 (Experimental value)

Log Kow: No data available

Explosive properties: No data available

Explosive limits: 4 - 19 vol %
112 - 518 g/m³

Oxidizing properties: No data available

Viscosity (kinematic): No data available

Viscosity (dynamic): 0.37 Pa.s (-31 °C)

Auto-ignition temperature: 455°C

Solubility: Poorly soluble in water. Soluble in organic solvents.

Water: 0.54 g/100ml (0 °C)

Decomposition Temperature: No data available

VOC content: 0%

Other Properties: Gas/vapor heavier than air at 20°C. May generate electrostatic charges.

10. Stability and Reactivity

Reactivity: On heating/burning: release of toxic and corrosive gases/vapor e.g.: hydrofluoric acid, carbonyl fluoride. Reacts violently with (strong) oxidizers.

Chemical Stability: Stable under normal conditions.

Conditions of Stability/Instability: Stable under normal conditions of temperature and pressure.

Stabilizers needed: None

Safety issue indicated by appearance change: N/A

Other: N/A

Hazardous Reactions: Not established

Hazardous Polymerization: Does not occur

Conditions to avoid: Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.

Classes of Incompatible Materials: Oxidizers, Strong Acids, Strong Bases

Hazardous Decomposition Products: Thermal-oxidation degradation can produce oxides of carbon. Toxic gases, fumes and vapors (I.e. Carbon monoxide) may be released in a fire. Carbon dioxide, Carbon monoxide, Carbonyl fluoride, Hydrofluoric Acid.

11. Toxicological Information

Likely Routes of Exposure

Eyes: May cause frostbite.

Skin: Frostbites.

Inhalation: EXPOSURE TO HIGH CONCENTRATIONS: Dizziness. Slight irritation. Headache. Nausea. Vomiting. Coordination disorders. Disturbances of consciousness. Disturbances of heart rate.

Ingestion: Not an expected route of exposure.

Signs or Symptoms of Exposure: Frostbite effects are a change in color of the skin to gray or white, followed by blistering.

Effects from short term exposure (delayed, immediate, chronic): Irritation to the eyes, nose, and throat. Headache, dizziness, nausea, drowsiness, dullness, red skin, blisters or frostbite (on contact with liquid)

Exposure to high concentrations: Dizziness. Slight irritation. Headache. Nausea. Vomiting. Coordination disorders. Disturbances of consciousness. Disturbances of heart rate.

Acute Toxicity (Numerical Measures): N/A

Carcinogenicity (NTP, IARC, OSHA): Not classified

1,1-difluoroethane (75-37-6)	
LC50 Inhalation rat (mg/l)	176 mg/l/4h (Rat; Literature study)
LC50 Inhalation rat (ppm)*	> 437500 ppm/4h

*Mortality in 2/6 at 43.75% and 1/6 at 38.3%. At \geq 17.52% lethargy, labored breathing, reduced responsiveness to sound were observed. At 6.64% only hyperaemia and shallow breathing were observed.

12. Ecological Information

Ecotoxicity:

Ecology - General: No environmental hazard.

Ecology - Air: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Included in the list of substances which may contribute to the greenhouse effect (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.5.

Ecology - Water: Mild water pollutant (surface water). No data available on ecotoxicity.

Persistence and degradability: **Biodegradability in water:** no data available.

Bioaccumulation Potential: Low potential for bioaccumulation (Log Kow < 4).

Log Pow: 0.75 (Experimental value)

Mobility in the soil: N/A

Adverse Environmental Effects: Avoid release to the environment.

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13. Disposal Considerations

Waste Disposal Recommendations: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Refer to manufacturer/supplier for information on recovery/ recycling.

Additional Information: LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC.

Ecology - waste materials: Avoid release to the environment.

14. Transport Information

US DOT (ground): UN1030, 1,1-Difluoroethane, R152A Flammable, 2.1

ICAO/IATA (air): UN1950, Aerosols, Flammable, 2.1, Limited Quantity

IMO/IMDG (water): UN1950, Aerosols, Flammable, 2.1, Limited Quantity

Special Provisions: DOT-SP 11516: In accordance with this special permit, this product is not subject to labeling requirements unless offered for transportation by air. This product is not subject to placarding requirements. Outside packaging must be marked with proper shipping description and 'DOT-SP 11516'

DOT Proper Shipping Name: 1,1-Difluoroethane, R152A Flammable

DOT Hazard Classes: 2.1 - Class 2.1 - Flammable gas 49 CFR 173.115

DOT Hazard labels: 2.1 - Flammable gas



DOT Special Provisions (49 CFR 172.102):

DOT-SP 11516: In accordance with this special permit, this product is not subject to labeling requirements unless offered for transportation by air. This product is not subject to placarding requirements. Outside packaging must be marked with proper shipping description and 'DOT- SP 11516'

DOT Packaging Exceptions (49 CFR 173.xxx): 306

DOT Packaging Non Bulk (49 CFR 173.xxx): 304

DOT Packaging Bulk (49 CFR 173.xxx): 314; 315

Additional Information:

Other information: No supplementary information available.

Special transport precautions (DOT-SP 11516): In accordance with this special permit, this product is not subject to labeling requirements unless offered for transportation by air. This product is not subject to placarding requirements. Outside packaging must be marked with proper shipping description and 'DOT- SP 11516'.

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Overland Transport

Class (ADR): 2 – Gasses

Hazard Identification Number (Kemler No.): 23

Classification Code (ADR): 2F

Hazard Labels (ADR): 2.1 - Flammable gases

Orange plates:



Tunnel restriction code: B/D

Transport by Sea

DOT Vessel Stowage Location: B – (i) The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) “On deck only” on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

DOT Vessel Stowage Other: 40 - Stow “clear of living quarters”

EmS-No. (1): F-D

EmS-No. (2): S-U

Air Transport

DOT Quantity Limitations Passenger Aircraft/rail: Forbidden (49 CFR 173.27)

DOT Quantity Limitations Cargo Aircraft Only: 150 kg (49 CFR 175.75)

15. Regulatory Information

SARA Section 311/312 (US Federal regulations):

Fire hazard

Sudden release of pressure hazard

Immediate (acute) health hazard

WHIMS Classification (CANADA):

Class A – Compressed Gas

Class B Division 5 – Flammable Aerosol

HSNO regulation (NEW ZEALAND):

Hazard Class: 2.1.2A: UN1030, 1,1-Difluoroethane, R152A Flammable, Gases that are not otherwise hazardous

EU-Regulations: No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]:

Flam. Gas 1 H220 Press.

Gas

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Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD] F+;
 R12

National regulations:

No additional information available

US State regulations:

New Jersey: Right to Know Hazardous Substance List

Pennsylvania: RTK (Right to Know) List

Massachusetts: Right To Know List

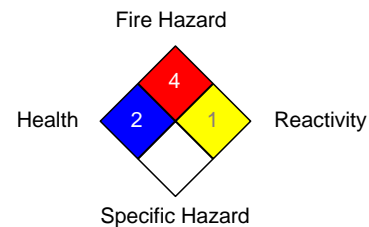
16. Other Information

Revision Date: 2019-01-11

NFPA

Health	2
Fire Hazard	4
Reactivity	1
Specific Hazard	

National Fire Protection Association (USA) NFPA


HMIS

Health	2
Flammability	4
Physical Hazard	1
Personal Protection	B

Hazardous Material Information System HMIS

Health	2
Flammability	4
Physical Hazard	1
Personal Protection	B

The Supplier identified in Section 1 of this MSDS has evaluated this product and certifies it to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission, and where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission. All closures have been tested in accordance with the latest protocols. No other testing is required to certify compliance with the above. The date of manufacture is stamped on the product

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