



1 Identification

GHS Product Identifier

Product Form: Aerosol
Trade Name: plasmAID Endodontic Spray
Product Numbers: ENSP
CAS No.: 75-37-6
Formula: C₂H₂F₄

Other means of identification

Synonyms: 1,1-difluoroethane / 1,1-difluoroethane (refrigerant gas R 152a)

Recommended use of the chemical and restriction on use

Use of Substance/Mixture: Endodontic Spray, Pulp Vitality Refrigerant

Supplier's details

3D Dental
Windsor Mill, MD USA
www.3d-dent.com

Tel.: 877-605-8061

Emergency phone number

CHEMTREC 24 Hour Emergency Response
USA & Canada 800-424-9300

2 Hazard(s) identification

Classification of the substance or mixture

GHS Categories

Criteria	Category	Signal Word	Pictograms
Gas Under Pressure; Liquefied Gas	3	Warning	Gas Cylinder

Note: Non-flammable Aerosol. Not defined as flammable aerosol because heat of combustion is <20 kJ/g and ignition distance <15 cm according to 16 CFR 1500.3(c)(6) for the U.S. Federal Hazard Substance Act of the Consumer Product Safety Commission regulations. Not defined as a flammable aerosol under the Canadian Controlled Product Regulation SOR/88-66, 40 Division 5 criteria.

GHS label elements

Warning



Contains gas under pressure; may explode if heated

Do not pierce or burn, even after use.

Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.

Other hazards which do not result in classification

HCS2012 Criteria	Hazard Statements / Precautionary Statements	Signal Word	Pictograms
Simple Asphyxiant	May displace oxygen and cause rapid suffocation.	Warning	Not Applicable

Note: This product is a consumer product and is labeled in accordance with the US Consumer Product Safety Commission regulations which take precedence over OSHA Hazard Communication labeling. The actual container label will not include the label elements above. The labeling above applies to industrial/professional products.

3 Composition/information on ingredients

Description	CAS Number	EINECS Number	%	Note
1,1-Difluoroethane, liquefied, under pressure	75-37-6	200-866-1	> 99	Liquefied Gas, H280
Fragrance			< 1	

4 First-aid measures

Description of necessary first-aid measures

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 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.
First-aid measures after inhalation:	Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact:	Rinse with water. 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.
First-aid measures after eye contact:	Rinse with water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.
First-aid measures after ingestion:	Not applicable.

Most important symptoms/effects, acute and delayed

Symptoms/injuries:	Contains refrigerated gas; may cause cryogenic burns or injury. Not expected to present a significant hazard under anticipated conditions of normal use.
Symptoms/injuries after inhalation:	Exposure to high concentrations: Dizziness. Slight irritation. Headache. Nausea. Vomiting.
Symptoms/injuries after skin contact:	Frostbites.

Symptoms/injuries after eye contact: No data available.

Symptoms/injuries after ingestion: Not applicable.

Chronic symptoms: No effects known.

5 Fire-fighting measures

Suitable extinguishing media

Response: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
Use water spray to cool containers.

Specific hazards arising from the chemical

Combustion: Produces CO, CO₂, halogenated compounds, and hydrogen fluorides.

General: Vapors may accumulate in low-lying areas. Aerosol container may erupt with force at temperatures above 50 °C [122 °F]. Produces irritating and toxic fumes in fires or in contact with hot surfaces.

Special protective actions for fire-fighters

Fire-Fighter: Wear self-contained breathing apparatus for fire fighting.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid breathing the mist/vapors. For very large spills, wear self-contained breathing apparatus before approaching the spill. Wear cold-insulating clothing and gloves.

Environmental precautions

Prevent spreading in sewers.

Methods and materials for containment and cleaning up

For aerosol can size spill, leave the immediate spill area to avoid contact with the liquid. No containment required under normal circumstances. If it can safely be done, extinguish open flames or remove high temperature sources to avoid producing toxic decomposition products. Cleaning Ensure adequate ventilation, especially in low or enclosed areas. The product will turn gaseous and be dispersed.

7 Handling and storage

Precautions for safe handling

Prevention: Keep away from heat/sparks/open flames/hot surfaces. No smoking. Do not get in eye, on skin, or on clothing. Do not breathe mist/vapors/spray. In cases of inadequate ventilation wear respiratory protection. Do not pierce or burn, even after use.

Conditions for safe storage, including any incompatibilities

Level 1 Aerosol.

Handling: Keep upright when in use. Do NOT spray when container is more than 45 degrees off vertical or inverted. Wear cold-insulating gloves if exposure to liquid or aerosol jet is likely. Wear protective gloves/eye protection.
Recommendation: Wear cold-insulating gloves if exposure to liquid or aerosol jet

is likely.

8 Exposure controls/personal protection

Control parameters

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
1,1-difluoroethane	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada	Not established	Not established

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH2, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from by RTECS database1 of the Canadian Centre for Occupational Health and Safety (CCOHS) a data from suppliers' SDS were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.

Appropriate engineering controls

Local exhaust ventilation, vent hoods.

Individual protection measures

Avoid all unnecessary exposure. Gloves. Safety glasses.



Materials for protective clothing:	GIVE GOOD RESISTANCE: butyl rubber. leather. neoprene. polyethylene. PVC.
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.
Other information:	Do not eat, drink or smoke during use.

9 Physical and chemical properties

Physical and chemical properties

Physical State:	Gas
Appearance:	Liquefied gas
Molecular Mass:	66.05 g/mol
Color:	Colorless
Odor:	Mild odor. Slight Ether-like odor.
Odor Threshold:	No data available.
pH:	No data available.
Relative evaporation rate (butyl acetate = 1):	No data available.

Melting point:	-117 °C
Freezing Point:	No data available.
Boiling point:	-25 °C
Flash point:	< -50 °C
Critical temperature:	114 °C
Auto-ignition temperature:	455 °C
Decomposition temperature:	No data available.
Flammability (solid, gas):	No data available.
Vapor pressure:	5100 hPa
Vapor pressure at 50 °C:	11700 hPa
Critical pressure:	44960 hPa
Relative vapor density at 20 °C:	2.3
Relative density:	1.0 (-25 °C)
Specific gravity / density:	1004 kg/m ³ (-25 °C)
Solubility:	Poorly soluble in water. Soluble in organic solvents. Water: 0.54 g/100ml (0 °C)
Log Pow:	0.75 (Experimental value)
Log Kow:	No data available.
Viscosity, kinematic:	No data available.
Viscosity, dynamic:	0.37 Pa.s (-31°C)
Explosive properties:	No data available.
Oxidizing properties:	No data available.
Explosive limits:	4 - 19 vol % 112 - 518 g/m ³

10 Stability and reactivity

Reactivity

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

Chemical stability

Stable under normal conditions.

Possibility of hazardous reactions

Not established.

Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.

Incompatible materials

Strong acids. Strong bases.

Hazardous decomposition products

Toxic fume. Carbon monoxide. Carbon dioxide.

11 Toxicological information

Information on the likely routes of exposure

Eyes, inhalation, and skin

Symptoms related to the physical, chemical and toxicological characteristics

Eyes: See skin summary.

Skin: Contact with the liquid may cause frostbite due to heat lost caused by rapid evaporation. Aerosol jet can reach sub-zero temperatures; exposure to jet can lead to frostbites.

Inhalation: Extreme exposure due to misuse and inhalation abuse may cause central nervous system depression and irregular heart beat.

Ingestion: Highly unlikely under normal use and conditions. See inhalation and skin summaries.

Chronic: Not applicable.

Numerical measures of toxicity (such as acute toxicity estimates)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
1,1-difluoroethane	Not available	Not available	1,500 g/m ³ 4h Rat	Not available

Interactive effects

Skin corrosion/irritation: None known or expected.

Serious eye damage/irritation: None known or expected.

Sensitization (allergic reactions): None known or expected.

Carcinogenicity (risk of cancer): Not classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.

Mutagenicity (risk of heritable genetic effects): No data available.

Reproductive Toxicity (risk to sex functions): No data available.

Teratogenicity (risk of fetus malformation): No data available.

STOT-single exposure: Data does not give rise to classification. At extreme doses, can affect the central nervous system and cardiovascular systems by inhalation. CNS anesthetic effects are based on rat studies with TCLo of 25 pph. Cardiac effects are based on exposure of ≥150,000 ppm in study on dogs. Misuse and inhalation abuse can lead to dizziness, confusion, drowsiness, unconsciousness, irregular heartbeat, heart thumping, apprehension, and weakness.

STOT-repeated exposure: No data available.

Aspiration hazard: Not applicable.

12 Ecological information

Toxicity

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-LuftKlasse 5.2.5

Ecology - water:

Mild water pollutant (surface water). No data available on ecotoxicity.

Persistence and degradability

R152A (75-37-6)

Persistence and degradability

Biodegradability in water: no data available.

Bioaccumulative potential

R152A (75-37-6)

Log Pow

0.75 (Experimental value)

Bioaccumulative potential

Low potential for bioaccumulation (Log Kow < 4).

Mobility in soil

No additional information available.

Other adverse effects

Other information:

Avoid release to the environment.

13 Disposal considerations

Disposal methods

Dispose of contents in accordance with all local, regional, national, and international regulations.

14 Transport information

UN Number

US DOT (ground):

UN1030, 1,1-Difluoroethane, 2.1, Level 1 Aerosol, Limited Quantity

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'.

UN Proper Shipping Name

1,1-Difluoroethane

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
Transport hazard class(es)	
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'.
Overland transport	
Class (ADR):	2 - Gases
Hazard identification number (Kemler No.):	23
Classification code (ADR):	2F
Additional Information:	Certificate No. SU 12300 allows this product to be shipped in accordance with DOT-SP 11516.
Air transport:	
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27):	Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75):	150 kg

15 Regulatory information

Safety, health and environmental regulations specific for the product in question

US Federal Regulations

R152A (75-37-6)

SARA Section 311/312

Hazard Classes: Fire hazard
Sudden release of pressure hazard
Immediate (acute) health hazard

International Regulations

Canada R152A (75-37-6): Products conform to the Canadian Consumer Labeling Regulations.

Europe R152A (200-866-1): Classification and labelling have been determined according to EU Aerosol Directives 94/1/EC and 2008/47/EC and take into account the intended use of the product.

16 Other information

Other information

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