

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended

Honeywell

Genetron® 32

000000009907

Version 4.3

Revision Date 20.12.2024

Supersedes 3

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name : Genetron® 32
SDS-number : 000000009907
Type of product : Substance
Remarks : SDS according to Art. 31 of Regulation (EC) 1907/2006.
Chemical name : Difluoromethane
CAS-No. : 75-10-5
REACH Registration Number : no data available

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture : Refrigerant
Formulation/ Blending
Uses advised against : Consumer use

1.3. Details of the supplier of the safety data sheet

Company : Honeywell Advanced Limited Honeywell International, Inc.
One Spencer Dock, North Wall 115 Tabor Road
Quay Morris Plains, NJ 07950-2546
Dublin 1 USA
Ireland
Telephone : +353 1 447 9350
For further information, please contact: : SafetyDataSheet@Honeywell.com

1.4. Emergency telephone number

Emergency telephone number : +1-703-527-3887 (ChemTrec-Transport)
+1-303-389-1414 (Medical)

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Flammable gases Category 1B

H221 Flammable gas.

Gases under pressure Liquefied gas

H280 Contains gas under pressure; may explode if heated.

2.2. Label elements

REGULATION (EC) No 1272/2008

Hazard pictograms



Signal word

: Danger

Hazard statements

: H221
H280

Flammable gas.

Contains gas under pressure; may
explode if heated.

Precautionary statements

: P210

P377

P381

P410 + P403

Keep away from open flames/ hot
surfaces. - No smoking.

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

In case of leakage, eliminate all ignition
sources.

Protect from sunlight. Store in a well-
ventilated place.

Special labelling of certain
products:

: Contains fluorinated greenhouse gases.

2.3. Other hazards

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. The

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substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical name	CAS-No. Index-No. REACH Registration Number EC-No.	Classification 1272/2008	Concentration	Remarks
Difluoromethane	75-10-5 200-839-4	Flam. Gas 1B; H221 Press. Gas ; H280	99,9 %	

3.2. Mixtures

Not applicable

Occupational Exposure Limit(s), if available, are listed in Section 8.

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

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice:

First aider needs to protect himself. Move out of dangerous area. Take off all contaminated clothing immediately.

Inhalation:

Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Use oxygen as required, provided a qualified operator is present. Call a physician. Do not give drugs from adrenaline-ephedrine group.

Skin contact:

After contact with skin, wash immediately with plenty of water. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. If symptoms persist, call a physician.

Eye contact:

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Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Ingestion:

Ingestion is unlikely because of the physical properties and is not expected to be hazardous. As this product is a gas, refer to the inhalation section.

4.2. Most important symptoms and effects, both acute and delayed

No data available

4.3. Indication of any immediate medical attention and special treatment needed

Do not give adrenaline or similar drugs.

See Section 11 for more detailed information on health effects and symptoms.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Contents under pressure.

Flammable.

Flash back possible over considerable distance.

Container may rupture on heating.

Cool closed containers exposed to fire with water spray.

Do not allow run-off from fire fighting to enter drains or water courses.

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Rapid evaporation of the liquid may cause frostbite.

Fire may cause evolution of:

Hydrogen fluoride

Carbon oxides

Halogenated compounds

Carbonyl halides

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5.3. Advice for firefighters

In the event of fire and/or explosion do not breathe fumes.
Wear self-contained breathing apparatus and protective suit.
No unprotected exposed skin areas.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Immediately evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Wear personal protective equipment. Unprotected persons must be kept away. Remove all sources of ignition. Avoid skin contact with leaking liquid (danger of frostbite). Ventilate the area. After release, disperses into the air. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Ensure that the oxygen content is $\geq 19.5\%$.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. The product evaporates readily.

6.3. Methods and materials for containment and cleaning up

Ventilate the area.

6.4. Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling:

Handle with care. Avoid inhalation of vapour or mist. Do not get in eyes, on skin, or on clothing. Wear personal protective equipment. Use only in well-ventilated areas. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking. Protect cylinders from physical damage. Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material. Do not remove screw cap until immediately ready for use. Always replace cap after use.

Advice on protection against fire and explosion:

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Vapours may form explosive mixture with air. Container hazardous when empty. Keep product and empty container away from heat and sources of ignition. The heavy vapours can overcome a considerable distance up to the source of ignition. Take measures to prevent the build up of electrostatic charge. Electrical equipment should be protected to the appropriate standard.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Keep working clothes separately.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers:

Keep containers tightly closed in a dry, cool and well-ventilated place. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Keep away from heat and sources of ignition. Protect cylinders from physical damage. Store away from incompatible substances. Storage rooms must be properly ventilated. Ensure adequate ventilation, especially in confined areas.

7.3. Specific end use(s)

Specific use information:

Restricted to professional users.
For industrial use only.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits:

Components	Basis / Value type	Value / Form of exposure	Exceeding Factor	Remarks
Difluoromethane	HONEYWELL TWA	2.200 mg/m3 1.000 ppm		We are not aware of any national exposure limit.

HONEYWELL - Limit established by Honeywell International Inc.

TWA - Time weighted average

DNEL/ PNEC-Values

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Component	End-use/impact	Exposure duration	Value	Exposure routes	Remarks
Difluoromethane	Workers / Long-term systemic effects		7035 mg/m ³	Inhalation	
Difluoromethane	Consumers / Long-term systemic effects		750 mg/m ³	Inhalation	

Component	Environmental compartment / Value	Remarks
Difluoromethane	Fresh water: 0,142 mg/l	Assessment factor: 1000
Difluoromethane	Fresh water sediment: 0,534 mg/kg dw	

8.2. Exposure controls

Occupational exposure controls

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, 511; safety shoes EN-ISO 20345.
Do not breathe gas.

Personal protective equipment

Respiratory protection:

In case of insufficient ventilation wear suitable respiratory equipment.
Self-contained breathing apparatus (EN 133)

Hand protection:

Protective gloves against cold
(EN 511)

Eye protection:

Safety glasses with side-shields conforming to EN166
Face-shield

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Skin and body protection:
Protective footwear

Environmental exposure controls

Handle in accordance with local environmental regulations and good industrial practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- | | | |
|-------------------------------------|---|---|
| (a) Physical state | : | gaseous |
| (b) Colour | : | colourless |
| (c) Odour | : | slight
sweet
ether-like |
| (d) Melting point/freezing point | : | -136 °C |
| (e) Boiling point/boiling range | : | -51,7 °C |
| (g) Lower and upper explosion limit | : | Lower explosion limit
13 %(V)

Upper explosion limit
33,4 %(V) |
| (h) Flash point | : | Not applicable |
| (i) Auto-ignition temperature | : | 530 °C
at 1.018 hPa |
| (j) Decomposition temperature | : | 250 °C
Decomposition temperature
To avoid thermal decomposition, do not overheat. |
| (k) pH | : | neutral |
| (m) Solubility(ies) | : | Water solubility: |

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1,6 g/l
at 25 °C

(n) Partition coefficient: n-
octanol/water : log Pow 0,21

(o) Vapour pressure : 11.000 hPa
at 10 °C

17.010 hPa
at 25 °C

(p) Density and / or relative
density : 1,002 g/cm³
at 26,7 °C

(q) Relative vapour density : 1,8
(Air = 1.0)

(r) Particle characteristics : No data available

9.2 Other Information

Oxidizing properties : Not applicable: Not expected to have oxidizing properties
based on theoretical evaluation

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

>250 °C

Decomposition temperature

To avoid thermal decomposition, do not overheat.

10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur.

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10.4. Conditions to avoid

Protect from heat/overheating.
Contains gas under pressure; may explode if heated.
Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
Keep away from direct sunlight.
Some risk may be expected of corrosive and toxic decomposition products.

10.5. Incompatible materials

Potassium
Calcium
Finely divided metal powders such as aluminum, magnesium, or zinc.

10.6. Hazardous decomposition products

Halogenated compounds
Hydrogen fluoride
Carbonyl halides
Carbon oxides

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

(a) Acute toxicity

Acute oral toxicity:
study technically not feasible

Acute dermal toxicity:
study technically not feasible

Acute inhalation toxicity:
LC0
Species: Rat
Value: > 520000 ppm
Exposure time: 4 h
Method: OECD Test Guideline 403

Acute toxicity (other routes of administration):
No data available

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(b) Skin corrosion/irritation:

study technically not feasible

(c) Serious eye damage/eye irritation:

study technically not feasible

(d) Respiratory or skin sensitisation:

study technically not feasible

(e) Germ cell mutagenicity:

Test Method: Ames test

Result: negative

Method: OECD Test Guideline 471

Test Method: In vitro gene mutation study in mammalian cells

Cell type: Human lymphocytes

Result: negative

Method: OECD Test Guideline 473

Test Method: In vitro gene mutation study in mammalian cells

Cell type: Chinese hamster lung cells

Result: negative

Method: OECD Test Guideline 473

Test Method: Micronucleus test

Species: Mouse

Cell type: Bone marrow

Method: OECD Test Guideline 474

Result: negative

(f) Carcinogenicity:

Note: No data available

(g) Reproductive toxicity:

Species: Mouse

Route of Application: Inhalation (whole body)

Remarks: REACH dossier "read-across"

Species: Rat

Route of Application: inhalation (gas)

Remarks: REACH dossier "read-across"

Method: OECD Test Guideline 414

Species: Rat

Route of Application: inhalation (gas)

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General Toxicity Maternal: NOAEL: 49.800 ppm

Embryo-foetal toxicity: NOAEL: 49.800 ppm

Species: Rat

Route of Application: inhalation (gas)

General Toxicity Maternal: NOAEL: 49.600 ppm

Embryo-foetal toxicity: NOAEL: 49.600 ppm

Method: OECD Test Guideline 414

Species: Rabbit

Route of Application: inhalation (gas)

General Toxicity Maternal: NOAEL: 50.000 ppm

Embryo-foetal toxicity: NOAEL: 50.000 ppm

(h) STOT-single exposure:

No data available

(i) STOT - repeated exposure:

Species: Rat

Application Route: Inhalation (whole body)

Exposure time: 90 d

NOAEL: 49100 ppm

Method: OECD Test Guideline 413

Note: Subchronic toxicity

Species: Rat

Application Route: Inhalation (whole body)

Exposure time: 28 d

NOAEL: 49500 ppm

Method: OECD Test Guideline 412

Note: Subacute toxicity

(j) Aspiration hazard:

No data available

11.2. Information on other hazards

Endocrine disrupting properties

No data available

Other information:

Difluoromethane. (HFC-32): Cardiac sensitisation threshold (dog): 350000 ppm.

May cause cardiac arrhythmia.

Rapid evaporation of the liquid may cause frostbite.

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SECTION 12: Ecological information

12.1. Toxicity

Toxicity to fish:

LC50

Species: not specified

Value: 1.507 mg/l

Exposure time: 96 h

NOEC

Species: Brachydanio rerio (zebrafish)

Value: 169 mg/l

Exposure time: 30 d

Toxicity to aquatic plants:

EC50

Growth rate

Species: algae

Value: 313 mg/l

Exposure time: 96 h

EC50

Biomass

Species: Pseudokirchneriella subcapitata (green algae)

Value: > 114 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Test substance: REACH dossier "read-across"

EC50

Growth rate

Species: Pseudokirchneriella subcapitata (microalgae)

Value: > 114 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Test substance: REACH dossier "read-across"

Toxicity to aquatic invertebrates:

EC50

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Species: Daphnia (water flea)

Value: 833 mg/l

Exposure time: 48 h

EC50

Immobilization

Species: Daphnia magna (Water flea)

Value: > 97,9 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Test substance: REACH dossier "read-across"

12.2. Persistence and degradability

Biodegradability:

Biodegradation: 5 %

Exposure time: 28 d

Result: Not rapidly biodegradable

Method: OECD 301 D

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

Substance is not persistent, bioaccumulative, and toxic (PBT).

Substance is not very persistent and very bioaccumulative (vPvB).

12.6. Endocrine disrupting properties

No data available

12.7. Other adverse effects

Accumulation in aquatic organisms is unlikely.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product:

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Dispose according to legal requirements. Refer to manufacturer/supplier for information on recovery/recycling.

Packaging:

Legal requirements are to be considered in regard of reuse or disposal of used packaging materials

Further information:

Provisions relating to waste:

EC Directive 2006/12/EC; 2008/98/EEC

Regulation No. 1013/2006

For personal protection see section 8.

SECTION 14: Transport information

14.1 UN number or ID number

ADR/RID:3252

IMDG:3252

IATA:3252

14.2 UN proper shipping name

ADR/RID:DIFLUOROMETHANE

IMDG:DIFLUOROMETHANE

IATA:Difluoromethane

14.3 Transport hazard class(es)

ADR/RID:2.1

IMDG: 2.1

IATA: 2.1

14.4 Packaging group

No data available

14.5 Environmental hazards

ADR/RID:no

Marine pollutant: no

14.6 Special precautions for user

IMDG Code segregation group according chapter 3.1.4.4 : NONE,

14.7 Maritime transport in bulk according to IMO instruments

No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Basis	Value	Remarks
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Directive 2012/18/EC SEVESO III Listed in Regulation : P2: Flammable gases	Quantity: 10 t Quantity: 50 t	
Substances of very high concern (SVHC)		This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of $\geq 0.1\%$ (w/w).
Regulation (EC) No. 1907/2006, Annex XIV		Not listed
Regulation (EC) No. 1907/2006, Annex XVII Number in Regulation: 40		Listed

Global warming potential :
675

Other inventory information

USA. List of Active Substances on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory, as amended
On TSCA Inventory

Australia. Inventory of Industrial Chemicals (AIIC), as amended
On the inventory, or in compliance with the inventory

Canada. Domestic Substances List (DSL), as amended
All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List
On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory

Philippines. Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory

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China. Inventory of Existing Chemical Substances (IECSC)
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
On the inventory, or in compliance with the inventory

Taiwan Chemical Substance Inventory (TCSI)
Not in compliance with the inventory

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

Text of H-statements referred to under heading 3

Difluoromethane : H221 Flammable gas.
H280 Contains gas under pressure; may explode if heated.

Further information

All directives and regulations refer to amended versions.
Vertical lines in the left hand margin indicate a relevant amendment from the previous version.

Abbreviations:

EC European Community
CAS Chemical Abstracts Service
DNEL Derived no effect level
PNEC Predicted no effect level
vPvB Very persistent and very bioaccumulative substance
PBT Persistent, bioaccumulative und toxic substance

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other

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materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user.

This information should not constitute a guarantee for any specific product properties.
