

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier****Trade name: FLUOROALCOHOL N1****1.2 Relevant identified uses of the substance or mixture and uses advised against:**

No further relevant information available.

1.3 Details of the supplier of the safety data sheet**Manufacturer/Supplier:**

DAIKIN INDUSTRIES, LTD. CHEMICALS DIVISION:

Umeda Center Bldg., 4-12, Nakazaki-Nishi 2-chome, Kita-Ku, Osaka, JAPAN

Phone: (+81) 6-6373-4345 Fax: (+81) 6-6373-4281

Further information obtainable from: <http://www.daikin.com/>**1.4 Emergency telephone number:**

Japan: +81-6-6349-7521

China: +86-512-5-232-0949, +86-21-34151689

South Korea: +82-2-568-1722

Americas: +1-256-306-5000

Europe: +49-211-179 225-0

*** SECTION 2: Hazard identification****2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

Flam. Liq. 3 H226 Flammable liquid and vapour.



Acute Tox. 3 H331 Toxic if inhaled.



STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.



Eye Dam. 1 H318 Causes serious eye damage.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008:**

The substance is classified and labelled according to the CLP regulation.

Signal word: Danger**Precautionary statements:**

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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Trade name: *FLUOROALCOHOL N1**** SECTION 3: Composition/information on ingredients****Information on ingredients:**

CAS: 76-37-9 2,2,3,3-tetrafluoropropan-1-ol 100%
Acute Tox. 3, H331
STOT RE 1, H372
Eye Dam. 1, H318

SECTION 4: First aid measures**4.1 Description of first aid measures****General information:** Seek immediate medical advice.**After inhalation:** Supply fresh air; consult doctor in case of complaints.**After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

Remove contaminated clothes immediately.

After eye contact: Rinse opened eye for several minutes under running water.**After swallowing:** If symptoms persist consult a doctor.**4.2 Most important symptoms and effects, both acute and chronic:** No further relevant information available.**Information for doctor:**

Vapors and fumes liberated during hot processing with this material may cause flu-like symptoms (chills, fever and, sometimes, cough) that may not occur until several hours after exposure and typically pass within about 36 to 48 hours.

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

No further relevant information available.

SECTION 5: Firefighting measures**5.1 Extinguishing media****Suitable extinguishing agents:**

Water spray

Fire-extinguishing powder

Foam

CO₂**5.2 Special hazards arising from the substance or mixture:**

Formation of toxic gases is possible during heating or in case of fire.

Receptacle may explode when heated.

5.3 Advice for firefighters: Remove receptacles from area of fire if possible.**Protective equipment:**

Wear fully protective suit.

Wear self-contained breathing apparatus and protective suit.

Do not inhale explosion gases or combustion gases.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures:** Wear protective clothing.**6.2 Environmental precautions:** Do not allow to enter sewers/surface or ground water.**6.3 Methods and material for containment and cleaning up:**

For a small amount of leakage: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders) or collect in an empty container that can be sealed tightly.

6.4 Reference to other sections:

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7: Handling and storage**7.1 Precautions for safe handling:**

Use only in well ventilated areas.

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Keep away from heat and direct sunlight.
Handle with care. Avoid jolting, friction and impact.

Information about fire - and explosion protection:

Protect against electrostatic charges.
Keep ignition sources away - Do not smoke.
Prevent impact and friction.

7.2 Conditions for safe storage, including any incompatibilities:**Storage****Requirements to be met by storerooms and receptacles:**

Make floor, wall and columns of the storage location fire-resistant construction. Make beams noncombustible construction.

Information about storage in one common storage facility: Store away from foodstuffs.

Further information about storage conditions:

Protect from heat and direct sunlight.
Store in cool, dry conditions in well sealed receptacle.
Store locked up.

7.3 Specific end use(s): No further relevant information available.

SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities: No further data; see item 7.

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace: Not required.

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls**Personal protective equipment****General protective and hygienic measures:**

Wash hands before breaks and at the end of work.
Keep away from tobacco products.
Do not eat or drink while working.

Respiratory protection:

Use respiratory protective device with filters for organic and acid gas (or airline respirators in some cases) if formation of toxic gases is possible while the product is heated.

Protection of hands:

Protective gloves

Material of gloves: Rubber

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Safety glasses

Body protection: Protective work clothing

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties****General Information****Appearance**

Form:	Liquid
Colour:	Colourless
Odour:	Aromatic
pH-value:	No further information available.

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Melting point/freezing point:	-15 °C
Initial boiling point and boiling range:	109-110 °C (760mmHg)
Flash point:	47.5 °C
Explosive properties:	No further information available.
Explosion limits:	
Lower explosive limit:	4.8 Vol %
Upper explosive limit:	24 Vol %
Vapour pressure:	No further information available.
Density at 20 °C:	1.4853 g/cm ³
Solubility in / Miscibility with water:	Soluble.
Partition coefficient: n-octanol/water:	0.61 log POW
9.2 Other information:	No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity No further relevant information available.

10.2 Chemical stability

Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions:

Reacts with peroxides and other radical forming substances.

Reacts with amines.

Reacts with sodium metal.

10.4 Conditions to avoid: Keep away from heat, sparks, flame, high temperature.

10.5 Incompatible materials: Oxidizing agents

10.6 Hazardous decomposition products: Fluorophosgene in contact with naked flame or red hot objects.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

LC50 2hr mouse =8600mg/m³

Ames negative

Chromosome aberrations negative

Acute toxicity

Toxic if inhaled.

LD/LC50 values relevant for classification:

CAS: 76-37-9 2,2,3,3-tetrafluoropropan-1-ol

Inhalative LC50 8600 mg/m³ (Mouse) (2h)

Primary irritant effect

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/irritation

Causes serious eye damage.

after inhalation: No further information available.

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Other information (about experimental toxicology):

No further information available.

Chromosomal Aberration Study in vivo - Negative

Subacute to chronic toxicity No further information available.

CMR effects

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicity Based on available data, the classification criteria are not met.

STOT-single exposure Based on available data, the classification criteria are not met.

STOT-repeated exposure

Causes damage to organs through prolonged or repeated exposure.

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Aspiration hazard Based on available data, the classification criteria are not met.

SECTION 12: Ecological information**12.1 Toxicity**

Aquatic toxicity: No further relevant information available.

12.2 Persistence and degradability:

This product will persist in the environment. Handle with care in case of accidental release or disposal.

Other information: The product is slightly biodegradable.

12.3 Bioaccumulative potential: No further relevant information available.

12.4 Mobility in soil: No further relevant information available.

Ecotoxicological effects: no data

Additional ecological information:

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

12.5 Results of PBT and vPvB assessment**PBT:**

No further relevant information available.

Not applicable.

vPvB:

No further relevant information available.

Not applicable.

12.6 Other adverse effects: No further relevant information available.

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Recommendation:**

Wear appropriate protective devices.

Disposal must be made according to official regulations.

Landfill disposal is recommended.

In case of incineration, the temperature must be higher than 800 °C.

Treat exhaust gas such as HF in a suitable way.

Uncleaned packaging**Recommendation:**

Empty contaminated packagings thoroughly.

Disposal must be made according to official regulations.

SECTION 14: Transport information**14.1 UN-Number:**

ADR, IMDG, IATA

UN1993

14.2 UN proper shipping name:

ADR:

1993 FLAMMABLE LIQUID, N.O.S.

IMDG, IATA

FLAMMABLE LIQUID, N.O.S.

14.3 Transport hazard class(es):

ADR, IMDG, IATA



Class:

3 Flammable liquids.

14.4 Packing group:

ADR, IMDG, IATA

III

14.5 Environmental hazards:

Marine pollutant:

No

14.6 Special precautions for user:

Warning: Flammable liquids.

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14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

Transport/Additional information:

ADR

Limited quantities (LQ): 5L

UN "Model Regulation": UN1993, FLAMMABLE LIQUID, N.O.S. 3, III

* SECTION 15: Regulatory information

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

Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labelled according to the CLP regulation.

Hazard pictograms



GHS02 GHS05 GHS06 GHS08

Signal word Danger

Hazard-determining components of labelling:

2,2,3,3-tetrafluoropropan-1-ol

Hazard statements

H226 Flammable liquid and vapour.

H331 Toxic if inhaled.

H318 Causes serious eye damage.

H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

P303+P361+P353 **IF ON SKIN (or hair):** Take off immediately all contaminated clothing. Rinse skin with water/shower.

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15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

The product is for the industrial use only. We do not guarantee the safety in case the product is used for the other purposes. When using the product for health-care application or food/feed application, consult us in advance.

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS: EHS Department

Contact: <http://www.daikin.com/>

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 3: Acute toxicity – Category 3

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Eye Dam. 1: Serious eye damage/eye irritation – Category 1

STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

**** Data compared to the previous version altered.***