

ALFAAA11226

## 4,4'-Difluorobenzhydryl chloride

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

|                                         |                                                                                                                                                                                                                                                                    |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 产品说明:<br>Product Description:           | 4,4'-二氟二苯基氧甲烷<br>4,4'-Difluorobenzhydryl chloride                                                                                                                                                                                                                  |
| Cat No. :<br>Synonyms                   | A11226<br>1,1'-(Chloromethylene)bis(4-fluorobenzene); 4,4'-Difluorobenzhydrylchloride;<br>4,4'-Difluorodiphenylmethylchloride                                                                                                                                      |
| CAS No<br>Molecular Formula             | 27064-94-4<br>C13 H9 Cl F2                                                                                                                                                                                                                                         |
| Supplier                                | Avocado Research Chemicals Ltd.<br>(Part of Thermo Fisher Scientific)<br>Shore Road, Heysham<br>Lancashire, LA3 2XY,<br>United Kingdom<br>Office Tel: +44 (0) 1524 850506<br>Office Fax: +44 (0) 1524 850608                                                       |
| Emergency Telephone Number              | For information <b>US</b> call: 001-800-227-6701 / <b>Europe</b> call: +32 14 57 52 11<br>Emergency Number <b>US</b> :001-201-796-7100 / <b>Europe</b> : +32 14 57 52 99<br><b>CHEMTREC</b> Tel. No. <b>US</b> :001-800-424-9300 / <b>Europe</b> :001-703-527-3887 |
| E-mail address                          | begel.sdsdesk@thermofisher.com                                                                                                                                                                                                                                     |
| Recommended Use<br>Uses advised against | Laboratory chemicals.<br>No Information available                                                                                                                                                                                                                  |

### SECTION 2. HAZARD IDENTIFICATION

|                                                                                                                                                                               |                            |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------|
| Physical State<br>Liquid                                                                                                                                                      | Appearance<br>Light yellow | Odor<br>Odorless |
| <b>Emergency Overview</b><br>Combustible liquid. Harmful if swallowed. Causes skin irritation. Moisture sensitive. Lachrymator (substance which increases the flow of tears). |                            |                  |

#### Classification of the substance or mixture

|                           |            |
|---------------------------|------------|
| Flammable liquids.        | Category 4 |
| Acute Oral Toxicity       | Category 4 |
| Skin Corrosion/Irritation | Category 2 |

#### Label Elements



**Signal Word****Warning****Hazard Statements**

H227 - Combustible liquid  
H302 - Harmful if swallowed  
H315 - Causes skin irritation

**Precautionary Statements****Prevention**

P270 - Do not eat, drink or smoke when using this product  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
P264 - Wash face, hands and any exposed skin thoroughly after handling

**Response**

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P330 - Rinse mouth  
P332 + P313 - If skin irritation occurs: Get medical advice/attention  
P337 + P313 - If eye irritation persists: Get medical advice/attention  
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish  
P362 + P364 - Take off contaminated clothing and wash it before reuse

**Storage**

P403 + P235 - Store in a well-ventilated place. Keep cool

**Disposal**

P501 - Dispose of contents/ container to an approved waste disposal plant

**Physical and Chemical Hazards**

Combustible material.

**Health Hazards**

Harmful if swallowed. Causes skin irritation. Lachrymator (substance which increases the flow of tears).

**Environmental hazards**

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Will likely be mobile in the environment due to its volatility. The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces.

**Other Hazards**

Lachrymator (substance which increases the flow of tears)  
This product does not contain any known or suspected endocrine disruptors.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Component                                  | CAS No     | Weight % |
|--------------------------------------------|------------|----------|
| 1,1'-(Chloromethylene)bis[4-fluorobenzene] | 27064-94-4 | 98       |

**SECTION 4. FIRST AID MEASURES****Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

**Skin Contact**

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention.

**Inhalation**

Remove from exposure, lie down. Remove to fresh air.

**Ingestion**

Clean mouth with water. Get medical attention.

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**Most important symptoms and effects**

Difficulty in breathing. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

**Self-Protection of the First Aider**

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**Notes to Physician**

Treat symptomatically. Symptoms may be delayed.

**SECTION 5. FIRE-FIGHTING MEASURES****Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water mist may be used to cool closed containers.

**Extinguishing media which must not be used for safety reasons**

No information available.

**Specific Hazards Arising from the Chemical**

Combustible material. Flammable. Containers may explode when heated.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**SECTION 6. ACCIDENTAL RELEASE MEASURES****Personal Precautions**

Remove all sources of ignition. Take precautionary measures against static discharges.

**Environmental Precautions**

See Section 12 for additional Ecological Information.

**Methods for Containment and Clean Up**

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition.

Refer to protective measures listed in Sections 8 and 13.

**SECTION 7. HANDLING AND STORAGE****Handling**

Avoid contact with skin and eyes. Do not breathe mist/vapors/spray. Keep away from open flames, hot surfaces and sources of ignition.

**Storage**

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat, sparks and flame. Keep containers tightly closed in a dry, cool and well-ventilated place.

**Specific Use(s)**

Use in laboratories

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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## Control Parameters

## Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. MDHS70 General methods for sampling airborne gases and vapours MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

## Exposure Controls

## Engineering Measures

Ensure adequate ventilation, especially in confined areas. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

## Personal protective equipment

**Eye Protection** Wear safety glasses with side shields (or goggles) (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material | Breakthrough time                 | Glove thickness | EU standard | Glove comments        |
|----------------|-----------------------------------|-----------------|-------------|-----------------------|
| Viton (R)      | See manufacturers recommendations | -               | EN 374      | (minimum requirement) |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection** Long sleeved clothing

**Respiratory Protection** No protective equipment is needed under normal use conditions.

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

**Small scale/Laboratory use** Maintain adequate ventilation

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls** No information available.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** Light yellow  
**Physical State** Liquid

**Odor** Odorless  
**Odor Threshold** No data available  
**pH** No information available

**Melting Point/Range** No data available  
**Softening Point** No data available

**Boiling Point/Range** 88 °C / 190.4 °F

**Flash Point** 81 °C / 177.8 °F

@ 0.1 MBAR

**Method** - No information available

**SAFETY DATA SHEET****4,4'-Difluorobenzhydryl chloride**

|                                                |                          |                                        |
|------------------------------------------------|--------------------------|----------------------------------------|
| <b>Evaporation Rate</b>                        | No data available        |                                        |
| <b>Flammability (solid,gas)</b>                | Not applicable           | Liquid                                 |
| <b>Explosion Limits</b>                        | No data available        |                                        |
| <b>Vapor Pressure</b>                          | No data available        |                                        |
| <b>Vapor Density</b>                           | 8.23                     | (Air = 1.0)                            |
| <b>Specific Gravity / Density</b>              | 1.250                    |                                        |
| <b>Bulk Density</b>                            | Not applicable           | Liquid                                 |
| <b>Water Solubility</b>                        | REACTS                   |                                        |
| <b>Solubility in other solvents</b>            | No information available |                                        |
| <b>Partition Coefficient (n-octanol/water)</b> |                          |                                        |
| <b>Autoignition Temperature</b>                | No data available        |                                        |
| <b>Decomposition Temperature</b>               | No data available        |                                        |
| <b>Viscosity</b>                               | No data available        |                                        |
| <b>Explosive Properties</b>                    |                          | explosive air/vapour mixtures possible |
| <b>Oxidizing Properties</b>                    | No information available |                                        |
| <b>Molecular Formula</b>                       | C13 H9 Cl F2             |                                        |
| <b>Molecular Weight</b>                        | 238.66                   |                                        |

**SECTION 10. STABILITY AND REACTIVITY**

|                                         |                                                                                                                                                                                           |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Stability</b>                        | Stable under normal conditions. Moisture sensitive.                                                                                                                                       |
| <b>Hazardous Reactions</b>              | No information available.                                                                                                                                                                 |
| <b>Hazardous Polymerization</b>         | No information available.                                                                                                                                                                 |
| <b>Conditions to Avoid</b>              | Incompatible products. Exposure to moist air or water. Keep away from open flames, hot surfaces and sources of ignition.                                                                  |
| <b>Materials to avoid</b>               | Strong oxidizing agents.                                                                                                                                                                  |
| <b>Hazardous Decomposition Products</b> | Thermal decomposition can lead to release of irritating gases and vapors. Carbon monoxide (CO). Carbon dioxide (CO <sub>2</sub> ). Gaseous hydrogen fluoride (HF). Hydrogen chloride gas. |

**SECTION 11. TOXICOLOGICAL INFORMATION****Product Information**

|                                               |                                                           |
|-----------------------------------------------|-----------------------------------------------------------|
| <b>(a) acute toxicity;</b>                    |                                                           |
| <b>(b) skin corrosion/irritation;</b>         | Category 2                                                |
| <b>(c) serious eye damage/irritation;</b>     | No data available                                         |
| <b>(d) respiratory or skin sensitization;</b> |                                                           |
| <b>Respiratory</b>                            | No data available                                         |
| <b>Skin</b>                                   | No data available                                         |
| <b>(e) germ cell mutagenicity;</b>            | No data available                                         |
| <b>(f) carcinogenicity;</b>                   | No data available                                         |
|                                               | There are no known carcinogenic chemicals in this product |

|                                           |                                                                                                                     |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| (g) reproductive toxicity;                | No data available                                                                                                   |
| (h) STOT-single exposure;                 | No data available                                                                                                   |
| (i) STOT-repeated exposure;               | No data available                                                                                                   |
| Target Organs                             | No information available.                                                                                           |
| (j) aspiration hazard;                    | No data available                                                                                                   |
| Other Adverse Effects                     | The toxicological properties have not been fully investigated.                                                      |
| Symptoms / effects,both acute and delayed | Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting |

**SECTION 12. ECOLOGICAL INFORMATION**

|                                                                                              |                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ecotoxicity effects                                                                          | Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants.                                                                                   |
| Persistence and Degradability<br>Persistence                                                 | Persistence is unlikely, based on information available.                                                                                                                                                      |
| Bioaccumulative Potential                                                                    | Bioaccumulation is unlikely                                                                                                                                                                                   |
| Mobility in soil                                                                             | The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces Will likely be mobile in the environment due to its volatility Disperses rapidly in air                   |
| Endocrine Disruptor Information<br>Persistent Organic Pollutant<br>Ozone Depletion Potential | This product does not contain any known or suspected endocrine disruptors<br>This product does not contain any known or suspected substance<br>This product does not contain any known or suspected substance |

**SECTION 13. DISPOSAL CONSIDERATIONS**

|                                     |                                                                                                                                                                        |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste from Residues/Unused Products | Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations. |
| Contaminated Packaging              | Dispose of this container to hazardous or special waste collection point.                                                                                              |
| Other Information                   | Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.                                          |

**SECTION 14. TRANSPORT INFORMATION**

|                                |               |
|--------------------------------|---------------|
| <u>Road and Rail Transport</u> | Not Regulated |
| <u>IMDG/IMO</u>                | Not regulated |

## 4,4'-Difluorobenzhydryl chloride

**IATA** Not regulated**Special Precautions for User** No special precautions required**SECTION 15. REGULATORY INFORMATION****International Inventories**

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

| Component                                   | The Inventory of Hazardous Chemicals (2015 Edition) | List of dangerous goods GB 12268 - 2012 | TCSI | IECSC | EINECS    | TSCA | DSL | PICCS | ENCS | ISHL | AICS | KECL |
|---------------------------------------------|-----------------------------------------------------|-----------------------------------------|------|-------|-----------|------|-----|-------|------|------|------|------|
| 1,1'-(Chloromethylene) bis[4-fluorobenzene] | -                                                   | -                                       |      | -     | 248-201-4 | -    | -   | -     | -    |      | -    | -    |

**National Regulations****SECTION 16. OTHER INFORMATION**

**Prepared By** Health, Safety and Environmental Department  
**Revision Date** 25-Apr-2024  
**Revision Summary** New emergency telephone response service provider.

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Chemical incident response training.

**Legend**

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer

**PNEC** - Predicted No Effect Concentration

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**ADR** - European Agreement Concerning the International Carriage of

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

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Dangerous Goods by Road

**OECD** - Organisation for Economic Co-operation and Development  
**BCF** - Bioconcentration factor**MARPOL** - International Convention for the Prevention of Pollution from Ships**ATE** - Acute Toxicity Estimate**VOC** - (Volatile Organic Compound)**Key literature references and sources for data**<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Disclaimer**

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 materials or in any process, unless specified in the text

**End of Safety Data Sheet**