

# SAFETY DATA SHEET

**WORMALD NAFS-III**

Infosafe No.: LQBO8  
ISSUED Date : 20/04/2023  
ISSUED by: WORMALD AUSTRALIA PTY LTD

## Section 1 - Identification

### Product Identifier

WORMALD NAFS-III

### Company Name

WORMALD AUSTRALIA PTY LTD (ABN 80 008 399 004)

### Address

91 Derby Street Silverwater  
NSW 2128 Australia

### Telephone/Fax Number

Tel: 133 166

### Emergency Phone Number

133 166

### Emergency Contact Name

John Lynch

### E-mail Address

jlynch@wormald.com.au

### Recommended use of the chemical and restrictions on use

Fire protection agent for total flooding of rooms containing electrical equipment, flammable liquid storage and Class A risks (records rooms and libraries).

## Section 2 - Hazard(s) Identification

### GHS classification of the substance/mixture

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Gases under pressure: Category Liquefied gas

Eye damage/irritation: Category 2B

Sensitisation - skin: Category 1

Carcinogenicity: Category 2

Reproductive Toxicity (effects on or via lactation): Category Additional

Hazardous to the Aquatic Environment - Acute Hazard: Category 2

Hazardous to the Aquatic Environment - Long-Term Hazard: Category 2

Hazardous to the Ozone Layer: Category 1

### Signal Word (s)

WARNING

### Hazard Statement (s)

H280 Contains gas under pressure; may explode if heated.

H320 Causes eye irritation.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H362 May cause harm to breast-fed children.

H411 Toxic to aquatic life with long lasting effects.

H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

AUH044 Risk of explosion if heated under confinement.

**Pictogram (s)**

Gas cylinder, Exclamation mark, Health hazard, Environment



**Precautionary Statement – Prevention**

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P260 Do not breathe dusts or mists.
- P263 Avoid contact during pregnancy and while nursing.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

**Precautionary Statement – Response**

- P308+P313 IF exposed or concerned: Get medical advice/attention.
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P391 Collect spillage.

**Precautionary Statement – Storage**

- P405 Store locked up.
- P410+P403 Protect from sunlight. Store in a well-ventilated place.

**Precautionary Statement – Disposal**

- P501 Dispose of contents/container to an approved waste disposal plant.
- P502 Refer to manufacturer or supplier for information on recovery or recycling.

**Section 3 - Composition and Information on Ingredients**

**Ingredients**

Name	CAS	Proportion
Chlorodifluoromethane	75-45-6	80-<100 %
1-Chloro-1,2,2,2-tetrafluoroethane	2837-89-0	1-<10 %
Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)	306-83-2	1-<5 %
d-Limonene	5989-27-5	1-<5 %

**Section 4 - First Aid Measures**

**Inhalation**

If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms develop and/or persist seek medical attention.

**Ingestion**

Not considered a potential route of exposure.

### **Skin**

Remove all contaminated clothing immediately. Clothing frozen to the skin should be thawed before being removed. Wash affected area thoroughly with soap and water. For Frostbite: Flush affected areas with lukewarm water. Do not use hot water. Treat as thermal burns. Seek IMMEDIATE medical attention.

### **Eye**

If eye tissue is frozen, seek IMMEDIATE medical attention. If tissue is not frozen, immediately irrigate with copious amounts of water for at least 15 minutes. Remove contact lenses. Eyelids to be held open. Seek medical attention.

### **First Aid Facilities**

Eyewash, safety shower and normal washroom facilities.

### **Advice to Doctor**

Treat symptomatically.

### **Other Information**

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

## **Section 5 - Firefighting Measures**

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### **Suitable Extinguishing Media**

Product is a fire extinguishing agent. Use extinguishing agent suitable for type of surrounding fire.

### **Hazards from Combustion Products**

Non combustible material. Thermal decomposition may produce toxic and/or irritating fumes and gases including: carbon monoxide, carbon dioxide, hydrogen chloride and hydrogen fluoride.

### **Specific hazards arising from the chemical**

Cylinders may explode when heated or may become a projectile in a fire. Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result .

### **Hazchem Code**

2TE

### **Decomposition Temperature**

>500°C

### **Precautions in connection with Fire**

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

## **Section 6 - Accidental Release Measures**

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### **Emergency Procedures**

Remove all sources of ignition. Increase ventilation. Evacuate all unprotected personnel. Use self-contained breathing apparatus (S.C.B.A) and full protective clothing to minimise exposure. Allow gas to vent safely to atmosphere, preferably in well ventilated, remote location. Monitor oxygen concentration in confined spaces. Check for leaks using pressure drop test or soapy water on joints and outlets. Shut cylinder valve to stop leak if possible and safe to do so. Check gas concentration to ensure area is safe before removing protective equipment. Damaged gas cylinders should be returned to the supplier.

## **Section 7 - Handling and Storage**

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### **Precautions for Safe Handling**

Use in a well ventilated area. Wear appropriate personal protective equipment and clothing to prevent exposure. Use smallest possible amounts in designated areas with adequate ventilation. Maintain high standards of personal hygiene ie. washing hands prior to eating, drinking, smoking or using toilet facilities. DO NOT enter confined spaces where gas may have collected. Suck back of water into the container must be prevented. Do not allow back feed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Refer to supplier's container handling instructions.

Avoid exposure. Do not handle until all safety precautions have been read and understood.

It is recommended that pregnant or breastfeeding women should not handle this product unless adequate exposure protection can be assured at all times. Female personnel planning pregnancy should be made aware of the potential risks.

### **Conditions for safe storage, including any incompatibilities**

Protect containers against physical damage. Store in a cool, dry, well-ventilated place, low fire risk area. Protect from extremes of temperature and weather. Do not allow any part of a cylinder to be exposed above 38°C. Storage areas should be kept clean and free from flammable materials. Ensure that containers are properly vented to prevent build up of pressure. Ensure that storage conditions comply with applicable local and national regulations.

For information on the design of the storeroom, reference should be made to Australian Standard AS 4332 - The storage and handling of gases in cylinders.

#### **Storage Temperatures**

Store below 38°C

#### **Unsuitable Materials**

DO NOT use aluminium or galvanised containers.

Reacts with metal halides and active metals, eg. sodium (Na), potassium (K), lithium (Li), calcium (Ca), zinc (Zn), powdered aluminium (Al) and aluminium alloys, magnesium (Mg) and magnesium alloys.

May react with brass and steel.

May react explosively with strong oxidisers.

May degrade rubber, and plastics such as methacrylate polymers, polyethylene and polystyrene, paint and coatings.

## **Section 8 - Exposure Controls and Personal Protection**

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#### **Occupational exposure limit values**

No exposure standards have been established for this material. However, the available exposure limits for ingredients are listed below:

Chlorodifluoromethane

TWA: 1000 ppm; 3540 mg/m<sup>3</sup>

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

Source: Safe Work Australia

#### **Biological Monitoring**

No biological limits allocated.

#### **Control Banding**

Not available

#### **Engineering Controls**

This substance is hazardous and should be used with a local exhaust ventilation system, drawing vapours away from workers' breathing zone. If the engineering controls are not sufficient to maintain concentrations of vapours/mists below the exposure standards, suitable respiratory protection must be worn.

Before entering a confined space where asphyxiant is present, check to make sure sufficient Oxygen (19.5%) exists. Refer to relevant regulations for further information concerning ventilation requirements.

#### **Respiratory Protection**

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable type AX filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements.

Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

#### **Eye and Face Protection**

Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations.

Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 (series) - Eye Protectors for Industrial Applications.

#### **Hand Protection**

Wear gloves of impervious material such as nitrile, PVA or viton. Final choice of appropriate gloves will vary according to individual circumstances. i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations.

Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

#### **Thermal Hazards**

No further relevant information available.

### Body Protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

### Other Information

May act as an asphyxiant gas. Asphyxiant gases which when present in an atmosphere in high concentration, lead to reduction of oxygen concentration by displacement or dilution. It is not appropriate to recommend an exposure standard for each simple asphyxiant, rather it should be required that a sufficient oxygen concentration be maintained.

## Section 9 - Physical and Chemical Properties

Properties	Description	Properties	Description
Form	Liquefied Gas	Appearance	Liquefied gas
Colour	Colourless	Odour	Citrus odour
Melting Point	Not available	Boiling Point	-38.3°C
Decomposition Temperature	>500°C	Solubility in Water	Partly miscible
Specific Gravity	1.2	pH	Not applicable
Vapour Pressure	825 kPa	Relative Vapour Density (Air=1)	3.2
Evaporation Rate	Not available	Odour Threshold	Not available
Viscosity	Not available	Volatile Component	100%
Partition Coefficient: n-octanol/water (log value)	Not available	Flash Point	Not available
Flammability	Non flammable	Auto-Ignition Temperature	Not available
Flammable Limits - Lower	Not available	Flammable Limits - Upper	Not available
Explosion Properties	Not available	Oxidising Properties	Not available
Particle Characteristics	Not available		

## Section 10 - Stability and Reactivity

### Reactivity

Reacts with incompatible materials.

### Chemical Stability

Stable under normal conditions of storage and handling.

### Possibility of hazardous reactions

Reacts with incompatible materials.

### Conditions to Avoid

Extremes of temperature and direct sunlight

### Incompatible Materials

DO NOT use aluminium or galvanised containers.

Reacts with metal halides and active metals, eg. sodium (Na), potassium (K), lithium (Li), calcium (Ca), zinc (Zn), powdered aluminium (Al) and aluminium alloys, magnesium (Mg) and magnesium alloys.

May react with brass and steel.

May react explosively with strong oxidisers.

May degrade rubber, and plastics such as methacrylate polymers, polyethylene and polystyrene, paint and coatings.

### Hazardous Decomposition Products

Thermal decomposition may produce toxic and/or irritating fumes and gases including: carbon monoxide, carbon dioxide, hydrogen chloride and hydrogen fluoride.

## Hazardous Polymerization

Will not occur.

## Section 11 - Toxicological Information

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### Toxicology Information

No toxicity data available for this material. The available acute toxicity data for the ingredient is given below.

#### Acute Toxicity - Oral

d-limonene

LD50 (rat): >2000 mg/kg

#### Acute Toxicity - Dermal

d-limonene

LD50 (rabbit): >5000 mg/kg

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

LC50 (rabbit): >2000 mg/kg

#### Acute Toxicity - Inhalation

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

LC50 (rat): 32000 ppm/4h

Chlorodifluoromethane

LC50 (rat): 220000 ppm/4h

#### Ingestion

Ingestion unlikely due to form of product.

#### Inhalation

Inhalation of product vapours may cause irritation of the nose, throat and respiratory system.

May act as an asphyxiant gas. Asphyxiant gases which when present in an atmosphere in high concentration, leads to reduction of oxygen concentration by displacement or dilution. Symptoms include decreased visual acuity, decreased coordination and judgment, headache, dizziness, confusion, drowsiness, fatigue, shortness of breath, muscular weakness, convulsions, unconsciousness, coma and eventually death.

#### Skin

May be irritating to skin. The symptoms may include redness, itching and swelling.

May cause frostbite injuries to skin due to uncontrolled release of compressed gas resulting in redness, tissue destruction. May cause an allergic skin reaction.

#### Eye

Causes eye irritation. On eye contact this product will cause tearing, stinging, blurred vision, and redness.

May cause frostbite injuries to eyes due to uncontrolled release of compressed gas resulting in stinging, tearing, blurred vision and possibly permanent damage to eyes.

#### Respiratory Sensitisation

Not expected to be a respiratory sensitiser.

#### Skin Sensitisation

May cause an allergic skin reaction.

#### Germ Cell Mutagenicity

Not considered to be a mutagenic hazard.

#### Carcinogenicity

Suspected of causing cancer. Classified as a suspected human carcinogen.

d-limonene and chlorodifluoromethane are listed as a Group 3: Not classifiable as to carcinogenicity to humans according to International Agency for Research on Cancer (IARC).

#### Reproductive Toxicity

May cause harm to breast-fed children. Classified as a substance that produces toxic human reproductive or developmental effects on or via lactation.

#### STOT - Single Exposure

Not expected to cause toxicity to a specific target organ.

### **STOT - Repeated Exposure**

Not expected to cause toxicity to a specific target organ.

### **Aspiration Hazard**

Not expected to be an aspiration hazard.

### **Other Information**

This material contains asphyxiant gas, which when present in an atmosphere in high concentrations, lead to a reduction of oxygen concentration by displacement or dilution. It is not appropriate to recommend an exposure standard for each simple asphyxiant, rather it should be required that a sufficient oxygen concentration be maintained. The minimum oxygen content in air should be 19.5 per cent by volume under normal atmospheric pressure. Unconsciousness and death can rapidly ensue in an environment, which is deficient in oxygen.

## **Section 12 - Ecological Information**

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### **Ecotoxicity**

Toxic to aquatic life with long lasting effects.

No ecological data available for this material. The available ecological data for the ingredients is given below:

#### **Persistence and degradability**

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

Persistence Water/Soil: HIGH

Persistence Air: HIGH

1-chloro-1,2,2,2-tetrafluoroethane

Persistence Water/Soil: HIGH

Persistence Air: HIGH

Chlorodifluoromethane

Persistence Water/Soil: LOW

Persistence Air: LOW

d-limonene

Persistence Water/Soil: HIGH

Persistence Air: HIGH

#### **Mobility**

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

Mobility in soil: LOW (KOC = 154.4)

1-chloro-1,2,2,2-tetrafluoroethane

Mobility in soil: LOW (KOC = 154.4)

Chlorodifluoromethane

Mobility in soil: LOW (KOC = 23.74)

d-limonene

Mobility in soil: LOW (KOC = 1324)

#### **Bioaccumulative Potential**

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

Bioaccumulation: LOW (BCF = 36)

1-chloro-1,2,2,2-tetrafluoroethane

Bioaccumulation: LOW (LogKOW = 1.8605)

Chlorodifluoromethane

Bioaccumulation: LOW (LogKOW = 1.08)

d-limonene

Bioaccumulation: HIGH (LogKOW = 4.8275)

### Other Adverse Effects

Not available

### Environmental Protection

Do not discharge this material into waterways, drains and sewers.

#### Acute Toxicity - Fish

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

LC50 (fish): 55.5 mg/l/96h

d-limonene

LC50 (fish): 0.46 mg/l/96h

#### Acute Toxicity - Algae

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

EC50 (Algae or other aquatic plants): 67.8 mg/l/96h

Chlorodifluoromethane

EC50 (Algae or other aquatic plants): 250 mg/l/96h

NOEC(ECx) (Algae or other aquatic plants): 250 mg/l/96h

d-limonene

EC50 (Algae or other aquatic plants): 0.214 mg/l/72h

#### Acute Toxicity - Other Organisms

Ethane, 2,2-dichloro-1,1,1-trifluoro (gas)

EC50 (Crustacea): 17 mg/l/48h

NOEC(ECx) (Crustacea): <2.24 mg/l/48h

Chlorodifluoromethane

EC50 (Crustacea): 433 mg/l/48h

d-limonene

EC50 (Crustacea): 0.307 mg/l/48h

#### Chronic Toxicity - Other Organisms

d-limonene

NOEC(ECx) (Crustacea): 0.05 mg/l/504h

#### Hazardous to the Ozone Layer

Harms public health and the environment by destroying ozone in the upper atmosphere.

## Section 13 - Disposal Considerations

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### Disposal Considerations

Dispose of waste according to applicable local and national regulations. Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes including emptied containers are controlled wastes and should be disposed of in accordance with all applicable local and national regulations.

To minimise personal exposure to the chemical, refer to Section 8 — Exposure controls and personal protection.

## Section 14 - Transport Information

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### Transport Information

This material is classified as Dangerous Goods Division 2.2 Non-flammable Non-toxic Gases.

Dangerous Goods are incompatible in a placard load with any of the following:

- Class 1: Explosives
- Division 2.1 Flammable Gas when the Division 2.2 gas has a subsidiary risk 5.1 except when all are packed in cylinders or pressure drums not exceeding 500L capacity.
- Division 2.3 Toxic Gas when the Division 2.2 gas has a subsidiary risk 5.1 except when all are packed in cylinders or pressure drums not exceeding 500L capacity.
- Division 4.2: Spontaneously combustible substances
- Division 5.2: Organic peroxides



**Marine Transport (IMO/IMDG):**

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Class/Division: 2.2

UN No: 3163

Proper Shipping Name: LIQUEFIED GAS, N.O.S.(Contains chlorodifluoromethane)(d-limonene Marine pollutant)

Packing Group: -

EMS: F-C, S-V

Special Provisions: 274, 392

**Air Transport (ICAO/IATA):**

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

Class/Division: 2.2

UN No: 3163

Proper Shipping Name: Liquefied gas, n.o.s.(Contains chlorodifluoromethane)

Packing Group: -

Packaging Instructions (passenger & cargo): 200

Packaging Instructions (cargo only): 200

Hazard Label: Non-flammable Gas

Special Provisions: -

**ADG U.N. Number**

3163

**ADG Proper Shipping Name**

LIQUEFIED GAS, N.O.S.(Contains chlorodifluoromethane)

**ADG Transport Hazard Class**

2.2

**Hazchem Code**

2TE

**IERG Number**

06

**Special Precautions for User**

Not available

**IMDG Marine pollutant**

Yes

**Transport in Bulk**

Not available

## Section 15 - Regulatory Information

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**Regulatory Information**

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Not classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

**Poisons Schedule**

Not Scheduled

**Montreal Protocol**

Listed

**Stockholm Convention**

Not listed

**Rotterdam Convention**

Not listed

### **International Convention for the Prevention of Pollution from Ships (MARPOL)**

Not available

### **Agricultural and Veterinary Chemicals Act 1994**

Not available

### **Basel Convention**

Not available

## **Section 16 - Any Other Relevant Information**

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### **Date of Preparation**

SDS Created: April 2023

### **Version Number**

1.0

### **Literature References**

Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice.

Standard for the Uniform Scheduling of Medicines and Poisons.

Australian Code for the Transport of Dangerous Goods by Road & Rail.

Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Code of Practice for Supply Diversion into Illicit Drug Manufacture.

National Code of Practice for Chemicals of Security Concern.

Agricultural Compounds and Veterinary Chemicals Act.

International Agency for Research on Cancer (IARC) Monographs.

Montreal Protocol on Substances that Deplete the Ozone Layer.

Stockholm Convention on Persistent Organic Pollutants (POPs).

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

International Air Transport Association (IATA) Dangerous Goods Regulations.

International Maritime Dangerous Goods (IMDG) Code.

Workplace exposure standards for airborne contaminants.

Adopted biological exposure determinants, American Conference of Industrial Hygienists (ACGIH).

Globally Harmonised System of Classification and Labelling of Chemicals (7th revised edition).

Code of Practice: Managing Noise and Preventing Hearing Loss at Work.

## **END OF SDS**

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