

SAFETY DATA SHEET

According to the Singapore standard SS 586-1-2014

ISSUE DATE: 4/7/2017

VERSION: 1.0

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

1.1. Product identifier

Trade name Waeco Daphne Hermetic Oil 1234yf
SDS Number 217

1.2. Other means of identification

No additional information available.

1.3. Recommended use of the chemical and restrictions on use

Recommended use Compressor oil for air conditioning systems
Restrictions on use None known

1.4. Supplier's details

DOMETIC PTE LTD
18 Boon Lay Way
06-140 Trade Hub 21
Singapore 609966
Tel +65 6795 3177
Fax +65 6862 6620
Mail dometric@dometric.com.sg

1.5. Emergency telephone number

Emergency number +49 (172) 3180-285 (Mo- Fr. 08:00 - 18:00 CET)

2. SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Physical hazards Flammable liquids Not classified
Health hazards Skin sensitisation, Category 1
Environmental hazards Hazardous to the aquatic environment — Acute Hazard, Category 1
Hazardous to the aquatic environment — Chronic Hazard, Category 2

2.2. Label elements

Hazard pictograms



Signal word

Warning

Contains

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-methyl-.omega.-methoxy-

Hazard statements

May cause an allergic skin reaction (H317)
Very toxic to aquatic life (H400)
Toxic to aquatic life with long lasting effects (H411)

Prevention

Avoid release to the environment. (P273)
Wear protective gloves (P280)

Response

If skin irritation or rash occurs: Get medical advice/attention (P333+P313)
Collect spillage (P391)

Supplemental hazard information

Contains epoxy constituents. May produce an allergic reaction

2.3 Other hazards

The mixture contains no substance that fulfils the criteria of a PBT- or vPvB substance.

3. SECTION 3: Composition/information on ingredients**3.1. Substances**

Not applicable.

3.2. Mixtures

Chemical name	Synonyms	Concentration (%)	Formula	CAS- No EC- No Index No
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-methyl-.omega.-methoxy-		50 - < 100		24991-61-5
2,6-di-tert-butyl-p-cresol		0.1 - < 1	C15H24O	128-37-0 204-881-4
Decyloxirane		1 - < 2	C12H24O	2855-19-8 220-667-3
Dodecyloxirane		1 - < 2	C14H28O	3234-28-4 221-781-6
Tris(methylphenyl) phosphate		0.1 - < 1	C21H21O4P	1330-78-5 215-548-8

4. SECTION 4: First aid measures**4.1. Description of first aid measures****First-aid measures general**

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

Inhalation

Remove person to fresh air and keep comfortable for breathing.

Skin contact

Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention.

Eye contact

Rinse immediately with plenty of water. If eye irritation persists: Get medical advice/attention. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion

Do NOT induce vomiting. Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed**Symptoms/effects after skin contact**

May cause an allergic skin reaction.

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

Treat symptomatically.

5. SECTION 5: Fire-fighting measures**5.1. Extinguishing media****Suitable extinguishing media**

Water spray. Dry powder. Carbon dioxide. Foam.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture**Reactivity**

The product is non-reactive under normal conditions of use, storage and transport.

5.3. Special Protective actions for the fire fighters

Firefighting instructions	Move containers from fire area if it can be done without personal risk.
Protection during firefighting	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

No additional information available.

For non-emergency personnel

Emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the MSDS.
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For emergency responders

Protective equipment	Wear recommended personal protective equipment.
Emergency procedures	Keep unnecessary personnel away. For personal protection, see section 8 of the MSDS.

6.2. Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small spills: Take up liquid spill into absorbent material. Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use.
Other information	The product is immiscible with water and will spread on the water surface. Prevent entry into waterways, sewer, basements or confined areas.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For disposal of residues refer to section 13 : "Disposal considerations" .

7. SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Ensure good ventilation of the work station. Avoid contact with skin and eyes. Avoid breathing mist, vapours. Wear personal protective equipment. Protect material from direct sunlight. Observe good industrial hygiene practices.
Hygiene measures	Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Keep cool. Protect from sunlight. Store in a dry place. Store in a closed container.
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7.3. Specific end use(s)

Compressor oil for air conditioning systems.

8. SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available.

8.2. Monitoring

No additional information available.

8.3. Appropriate engineering controls

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

8.4. Personal protective equipment

Materials for protective clothing

Wear suitable protective clothing.

Individual protection measures, such as personal protective equipment (PPE)

Eye protection

Safety glasses with side shields

Skin protection

Hand protection

Nitrile gloves are recommended

Material	Permeation	Thickness (mm)	Penetration	Comments
Nitrile rubber (NBR)		> 0.3 mm		EN 374
Other protective measures				Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
Respiratory protection				Not normally needed. In case of insufficient ventilation, wear suitable respiratory equipment
Thermal hazard protection				Wear appropriate thermal protective clothing, when necessary.
Environmental exposure controls				Inform appropriate managerial or supervisory personnel of all environmental releases.

9. SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear.
Colour	Colourless
Odour	Slight
Odour threshold	No data available.
pH	No data available.
Relative evaporation rate (butylacetate=1)	No data available.
Melting point	Not applicable.
Freezing point	No data available.
Boiling point	No data available.
Flash point	170 °C
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Flammability (solid, gas)	Not applicable.
Vapour pressure	No data available.
Relative vapour density at 20 °C	No data available.
Relative density	No data available.
Density	0.9882 g/cm ³
Solubility	Insoluble.
Log Pow	No data available.
Log Kow	No data available.
Viscosity, kinematic	42.66 mm ² /s @40°C
Viscosity, dynamic	No data available.
Explosive properties	No data available.

Oxidising properties No data available.
Explosive limits No data available.

9.2. Other information

Pour point - 47.5 °C

10. SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Heat. Sparks. Open flame.

10.5. Incompatible materials

Strong oxidizing agents. Strong bases.

10.6. Hazardous decomposition products

Irritating and/or toxic fumes and gases may be emitted upon the products decomposition.

11. SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified
Skin corrosion/irritation	Not classified
Serious eye damage/irritation	Not classified
Respiratory or skin sensitisation	May cause an allergic skin reaction.
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified
Density	0.9882 g/cm ³

12. SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
Acute aquatic toxicity	Very toxic to aquatic life.
Chronic aquatic toxicity	Toxic to aquatic life with long lasting effects.
Acute aquatic toxicity	

Substance / Product	Trophic level	Species	Type	Value	Duration	Remarks
2,6-di-tert-butyl-p-cresol (128-37-0)	crustacea	Daphnia magna	EC50	0.48 mg/l	48 hours	
	Fish	Danio rerio	LC0	> 0.5 mg/l	96 hours	
Decyloxirane (2855-19-	algae	Pseudokirc	EC50	0.056	72 hours	(OECD 201 method)

8)		hnerella subcapitata		mg/l		
	crustacea	Daphnia magna	EC50	0.171 mg/l	48 hours	(OECD 202 method)
Dodecyloxirane (3234-28-4)	algae	Pseudokirchnerella subcapitata	EC50	0.002 mg/l	72 hours	(OECD 201 method)
Tris(methylphenyl) phosphate (1330-78-5)	Fish	Oncorhynchus mykiss (Rainbow trout)	LC50	0.21 - 0.32 mg/l,	96 hours	

Chronic aquatic toxicity

Substance / Product	Trophic level	Species	Type	Value	Duration	Remarks
Dodecyloxirane (3234-28-4)	algae	Pseudokirchnerella subcapitata	NOEC	0.002 mg/l	72 hours	

12.2. Persistence and degradability

Decyloxirane (2855-19-8)

Biodegradation 60 - 70 % 28 d (OECD 301 B)

Dodecyloxirane (3234-28-4)

Biodegradation >= 60 - 70 % (OECD 301 B)

12.3. Bioaccumulative potential

Decyloxirane (2855-19-8)

Log Pow 5.9 @ 25 °C

Dodecyloxirane (3234-28-4)

Log Kow 5.77 @ 25 °C

Tris(methylphenyl) phosphate (1330-78-5)

Log Kow 5.11

12.4. Mobility in soil

No additional information available.

12.5. Results of PBT and vPvB assessment

The mixture contains no substance that fulfils the criteria of a PBT- or vPvB substance.

12.6. Other adverse effects

Ozone Not classified

Other adverse effects No additional information available.

13. SECTION 13: Disposal considerations

Waste treatment methods

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.

Additional information

Dispose in accordance with all applicable regulations.

14. SECTION 14: Transport information

14.1. UN number

UN-No. (IMDG)	3082
UN-No. (IATA)	3082

14.2. Proper Shipping Name

Proper Shipping Name (IMDG)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Proper Shipping Name (IATA)	Environmentally hazardous substance, liquid, n.o.s.

14.3. Transport hazard class(es)

IMDG	
Transport hazard class(es) (IMDG)	9
Danger labels (IMDG)	9

IATA	
Transport hazard class(es) (IATA)	9
Hazard labels (IATA)	9

14.4. Packing group

Packing group (IMDG)	III
Packing group (IATA)	III

14.5. Environmental hazards

Dangerous for the environment	Yes
Marine pollutant	Yes
Other information	No supplementary information available.

14.6. Special precautions for user

UN RTDG

Special provisions (UN RTDG)	274, 331, 335, 375
Limited quantities (UN RTDG)	5L
Excepted quantities (UN RTDG)	E1
Packing instruction (UN RTDG)	P001, IBC03, LP01
Special packing provisions (UN RTDG)	PP1
Portable tank and bulk container special instructions (UN RTDG)	T4
Portable tank and bulk container special provisions (UN RTDG)	TP1, TP29

IMDG

Special provisions (IMDG)	274, 335, 969
Limited quantities (IMDG)	5 L
Packing instructions (IMDG)	P001, LP01
EmS-No. (Fire)	F-A - FIRE SCHEDULE Alfa - GENERAL FIRE SCHEDULE
EmS-No. (Spillage)	S-F - SPILLAGE SCHEDULE Foxtrot - WATER-SOLUBLE MARINE POLLUTANTS
Stowage category (IMDG)	A

IATA

PCA Excepted quantities (IATA)	E1
PCA Limited quantities (IATA)	Y964
PCA limited quantity max net quantity (IATA)	30kgG
PCA packing instructions (IATA)	964
PCA max net quantity (IATA)	450L
CAO packing instructions (IATA)	964

CAO max net quantity (IATA)	450L
Special provisions (IATA)	A97, A158, A197
ERG code (IATA)	9L

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

15. SECTION 15: Regulatory information

15.1. National regulations

No additional information available.

15.2. International Regulations

No additional information available.

16. SECTION 16: Other information

Data sources Singapore Standard SS 586:2014 on Specification on Hazard Communication for Hazardous Chemicals and Dangerous Goods.

Abbreviations and acronyms

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
IATA	International Air Transport Association.
IMDG	International Maritime Dangerous Goods.
PBT	Persistent Bioaccumulative Toxic.
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail.
SDS	Safety Data Sheet.
vPvB	Very Persistent and Very Bioaccumulative.
DNEL	Derived-No Effect Level.
PNEC	Predicted No-Effect Concentration.
OEL	Occupational Exposure Limit.

Training advice Normal use of this product shall imply use in accordance with the instructions on the packaging.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.