SAFETY DATA SHEET

Decanal

According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.

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

1.1. Product identifier

Product name Decanal

Product number 8300, 8301, 8305, 8310, 8319, 8351, 8355, 8357, 8359, 8350, 8300-AU, 8300-BE, 8300-BR, 8300-CN, 8300-FR, 8300-DE, 8300-ID, 8300-IT, 8300-JP, 8300-KR, 8300-MY, 8300-MX, 8300-NL, 8300-PL, 8300-ES, 8300-CH, 8300-TR, 8300-GB, 8300-US, 8301-AU, 8301-BE, 8301-BR, 8301-CN, 8301-FR, 8301-DE, 8301-ID, 8301-IT, 8301-JP, 8301-KR, 8301-MY, 8301-MX, 8301-NL, 8301-PL, 8301-ES, 8301-CH, 8301-TR, 8301-GB, 8301-US, 8305-AU, 8305-BE, 8305-BR, 8305-CN, 8305-FR, 8305-DE, 8305-ID, 8305-IT, 8305-JP, 8305-KR, 8305-MY, 8305-MX, 8305-NL, 8305-PL, 8305-ES, 8305-CH, 8305-TR, 8305-GB, 8305-US, 8310-AU, 8310-BE, 8310-BR, 8310-CN, 8310-FR, 8310-DE, 8310-ID, 8310-IT, 8310-JP, 8310-KR, 8310-MY, 8310-MX, 8310-NL, 8310-PL, 8310-ES, 8310-CH, 8310-TR, 8310-GB, 8310-US, 8319-AU, 8319-BE, 8319-BR, 8319-CN, 8319-FR, 8319-DE, 8319-ID, 8319-IT, 8319-JP, 8319-KR, 8319-MY, 8319-MX, 8319-NL, 8319-PL, 8319-ES, 8319-CH, 8319-TR, 8319-GB, 8319-US, 8351-AU, 8351-BE, 8351-BR, 8351-CN, 8351-FR, 8351-DE, 8351-ID, 8351-IT, 8351-JP, 8351-KR, 8351-MY, 8351-MX, 8351-NL, 8351-PL, 8351-ES, 8351-CH, 8351-TR, 8351-GB, 8351-US, 8355-AU, 8355-BE, 8355-BR, 8355-CN, 8355-FR, 8355-DE, 8355-ID, 8355-IT, 8355-JP, 8355-KR, 8355-MY, 8355-MX, 8355-NL, 8355-PL, 8355-ES, 8355-CH, 8355-TR, 8355-GB, 8355-US, 8357-AU, 8357-BE, 8357-BR, 8357-CN, 8357-FR, 8357-DE, 8357-ID, 8357-IT, 8357-JP, 8357-KR, 8357-MY, 8357-MX, 8357-NL, 8357-PL, 8357-ES, 8357-CH, 8357-TR, 8357-GB, 8357-US, 8359-AU, 8359-BE, 8359-BR, 8359-CN, 8359-FR, 8359-DE, 8359-ID, 8359-IT, 8359-JP, 8359-KR, 8359-MY, 8359-MX, 8359-NL, 8359-PL, 8359-ES, 8359-CH, 8359-TR, 8359-GB, 8359-US, 8350-AU, 8350-BE, 8350-BR, 8350-CN, 8350-FR, 8350-DE, 8350-ID, 8350-IT, 8350-JP, 8350-KR, 8350-MY, 8350-MX, 8350-NL, 8350-PL, 8350-ES, 8350-CH, 8350-TR, 8350-GB, 8350-US

Synonyms; trade names Aldehyde C10, Decyl Aldehyde, 1-Decanal

REACH registration number 01-2119967771-26-0002

CAS number 112-31-2

EC number 203-957-4

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

Identified uses Flavour and fragrance ingredient. Pharmaceutical intermediate. Industrial applications.

Uses advised against No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Decanal

Supplier

Tennants Fine Chemicals
Macclesfield Road (Head Office)
Leek
Staffordshire
ST13 8LD
UK

Tennants Fine Chemicals PTE Limited
163 Tras Street
#03-01
Lin Huat Building
Singapore (079024)

+44 (0) 1538 392180
sdsadvice@tennantsfinechemicals.com

1.4. Emergency telephone number

Emergency telephone

+44 (0) 1273 289454
+44 1865 407333
Can assist with advice on Spillage and further information on SDS content.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Eye Irrit. 2 - H319

Environmental hazards Aquatic Chronic 3 - H412

2.2. Label elements

EC number 203-957-4

Hazard pictograms

Signal word Warning

Hazard statements

H319 Causes serious eye irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

P264 Wash contaminated skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
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.
P501 Dispose of contents/ container in accordance with national regulations.

2.3. Other hazards

This substance is not classified as PBT or vPvB according to current EU criteria.

SECTION 3: Composition/information on ingredients

3.1. Substances

Decanal

Decanal		**~99%**
CAS number: 112-31-2	EC number: 203-957-4	REACH registration number: 01-2119967771-26-0002
Classification Eye Irrit. 2 - H319 Aquatic Chronic 3 - H412		
Dec-1-ene		**0.2%**
CAS number: 872-05-9	EC number: 212-819-2	
Octanal		**0.2%**
CAS number: 124-13-0	EC number: 204-683-8	
Decanol		**0.1%**
CAS number: 36729-58-5	EC number: 253-173-1	
3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol		**0 - 0.1%**
CAS number: 10191-41-0	EC number: 233-466-0	
DL-α-Tocopherol		

Product name	Decanal
REACH registration number	01-2119967771-26-0002
CAS number	112-31-2
EC number	203-957-4
Chemical formula	$C_{10}H_{20}O$

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	Get medical attention immediately. Show this Safety Data Sheet to the medical personnel.
Inhalation	Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Place unconscious person on their side in the recovery position and ensure breathing can take place.
Ingestion	Rinse mouth thoroughly with water. Remove any dentures. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Place unconscious person on their side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.
Skin contact	Rinse with water.

Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

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

General information	See Section 11 for additional information on health hazards. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged inhalation of high concentrations may damage respiratory system.
Ingestion	Gastrointestinal symptoms, including upset stomach. Fumes from the stomach contents may be inhaled, resulting in the same symptoms as inhalation.
Skin contact	Prolonged contact may cause dryness of the skin.
Eye contact	Irritating to eyes.

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

Notes for the doctor	Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
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

Specific hazards	Containers can burst violently or explode when heated, due to excessive pressure build-up.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours.

5.3. Advice for firefighters

Protective actions during firefighting	Avoid breathing fire gases or vapours. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapours and protect men stopping the leak. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.
Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage. Ensure procedures and training for emergency decontamination and disposal are in place. Do not touch or walk into spilled material.

6.2. Environmental precautions

Environmental precautions Slightly soluble in water. Aquatic toxicity is unlikely to occur. However, large or frequent spills may have hazardous effects on the environment. Absorb spillage with non-combustible, absorbent material. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Any absorbent material used to mop up a spill must be thoroughly wetted and disposed of in a closed metal container. Approach the spillage from upwind. Small Spillages: Absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. Large Spillages: If leakage cannot be stopped, evacuate area. Flush spilled material into an effluent treatment plant, or proceed as follows. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labelled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. The contaminated absorbent may pose the same hazard as the spilled material. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimise spills. Keep container tightly sealed when not in use. Avoid the formation of mists. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment.

Advice on general occupational hygiene Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store away from incompatible materials (see Section 10). Store in accordance with local regulations. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Bund storage facilities to prevent soil and water pollution in the event of spillage. The storage area floor should be leak-tight, jointless and not absorbent. Store IBCs away from direct sunlight and heat.

Storage class Miscellaneous hazardous material storage.

Further Information Suitable storage material – 316 Stainless Steel. Suitable seals - Perfluoroelastomer (Kalrez). Suitable gaskets – graphite supported on 316 Stainless steel or asbestos free aramid fibre composite. Store in a demarcated bunded area to prevent release to drains and/or watercourses.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

Decanal

8.1. Control parameters

Ingredient comments

No exposure limits known for ingredient(s).

DNEL

Workers - Inhalation; Long term systemic effects: 24.9 mg/m³
Workers - Dermal; Long term systemic effects: 7 mg/kg/day
General population - Inhalation; Long term systemic effects: 6.1 mg/m³
General population - Dermal; Long term systemic effects: 3.5 mg/kg/day
General population - Oral; Long term systemic effects: 3.5 mg/kg/day

PNEC

Fresh water; 0.00117 mg/l
marine water; 0.000117 mg/l
Intermittent release; 0.0117 mg/l
Sediment (Freshwater); 0.0046 mg/kg
Sediment (Marinewater); 0.00046 mg/kg
STP; 3.16 mg/l
Soil; 0.0147 mg/kg
Oral; 313 mg/kg

8.2. Exposure controls

Appropriate engineering controls

Provide adequate ventilation. Personal, workplace environment or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Use process enclosures, local exhaust ventilation or other engineering controls as the primary means to minimise worker exposure. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimise exposure.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with European Standard EN166. Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

Other skin and body protection

Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.

Hygiene measures

Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Preventive industrial medical examinations should be carried out. Warn cleaning personnel of any hazardous properties of the product.

Respiratory protection	Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is 'CE'-marked. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with European Standard EN14387. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140. Wear a full facepiece respirator fitted with the following cartridge: Organic vapour filter.
Environmental exposure controls	Keep container tightly sealed when not in use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Clear liquid.
Colour	Colourless.
Odour threshold	Not determined.
pH	Not determined.
Melting point	-3.6°C/25.5°F OECD 102.
Initial boiling point and range	215.85°C/420.53°F @ 101.3 kPa OECD 103.
Flash point	93°C / 199°F Method: Pensky-Martens closed cup. ISO 2719.
Evaporation rate	Not determined.
Evaporation factor	Not determined.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	Not determined.
Other flammability	The product is not flammable.
Vapour pressure	8.2 Pa @ 20°C/68°F OECD 104.
Vapour density	Not determined.
Relative density	0.828 @ 20°C/68°F OECD 109.
Solubility(ies)	29.4 mg/l water @ 20°C/68°F OECD 105.
Partition coefficient	log Kow: 3.5 OECD 117.
Auto-ignition temperature	200°C/392°F
Decomposition Temperature	Not determined.
Viscosity	2.3 cSt @ 20°C/68°F 1.6 cSt @ 40°C/104°F OECD 114.
Explosive properties	There are no chemical groups present in the product that are associated with explosive properties. Endpoint waived according to REACH Annex VII, IX or XI.
Oxidising properties	There are no chemical groups present in the product that are associated with oxidising properties. Endpoint waived according to REACH Annex VII, IX or XI.

9.2. Other information

Other information	Electrical Conductivity: 0.067 µS/cm Gas Group and Temperature Class: Group IIB Class T4.

Decanal

Molecular weight	156.27

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Upon exposure to air, slowly oxidises to acid.

10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	The following materials may react with the product: Oxidising agents.

10.4. Conditions to avoid

Conditions to avoid	Avoid excessive heat for prolonged periods of time. Containers can burst violently or explode when heated, due to excessive pressure build-up.

10.5. Incompatible materials

Materials to avoid	No specific material or group of materials is likely to react with the product to produce a hazardous situation.

10.6. Hazardous decomposition products

Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	33,320.0
Species	Rat
Notes (oral LD_{50})	14 days Weight of evidence.
ATE oral (mg/kg)	33,320.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	4,173.0
Species	Rabbit
Notes (dermal LD_{50})	Weight of evidence.
ATE dermal (mg/kg)	4,173.0

Acute toxicity - inhalation

Notes (inhalation LC_{50})	Scientifically unjustified.

Skin corrosion/irritation

Animal data	Dose: 0.5 ml, 4 hours, Rabbit Erythema/eschar score: Well defined erythema (2). Fully reversible within 11 days. Oedema score: Very slight oedema - barely perceptible (1). Fully reversible within 11 days. Not irritating. OECD 404.

Serious eye damage/irritation

Decanal

Serious eye damage/irritation	Dose: 0.1 ml, < 14 days, Rabbit Cornea score: 0 Iris score: 0 Conjunctivae score: 2 Chemosis score: 2 Irritating. OECD 405.

Respiratory sensitisation

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

Skin sensitisation

Skin sensitisation	Patch test - Human: Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro	Gene mutation: Negative.
Genotoxicity - in vivo	Chromosome aberration: Negative. OECD 474.

Carcinogenicity

Carcinogenicity	No information available.
IARC carcinogenicity	None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility	One-generation study - NOAEL 200 mg/kg/day, Oral, Rat P Weight of evidence. Read-across data.
Reproductive toxicity - development	Scientifically unjustified.

Specific target organ toxicity - single exposure

STOT - single exposure	Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	NOAEL 20000 ppm, Oral, Rat OECD 408.

Aspiration hazard

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

General information	The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged inhalation of high concentrations may damage respiratory system.
Ingestion	Gastrointestinal symptoms, including upset stomach. Fumes from the stomach contents may be inhaled, resulting in the same symptoms as inhalation.
Skin contact	Prolonged contact may cause dryness of the skin.
Eye contact	Irritating to eyes.
Route of exposure	Ingestion Inhalation Skin and/or eye contact
Target organs	No specific target organs known.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - fish	LC_{50}, 96 hours: 1.45 mg/l, Oncorhynchus mykiss (Rainbow trout) OECD 203.

Decanal

Acute toxicity - aquatic invertebrates	EC_{50}, 24 hours: 2.36 mg/l, Daphnia magna EC_{50}, 48 hours: 1.17 mg/l, Daphnia magna OECD 202.
Acute toxicity - aquatic plants	EC_{50}, 72 hours: 4.5 mg/l, Pseudokirchneriella subcapitata NOEC, 72 hours: 0.759 mg/l, Pseudokirchneriella subcapitata OECD 201.
Acute toxicity - microorganisms	EC_{50}, 3 hours: 70 mg/l, Activated sludge NOEC, 3 hours: 31.6 mg/l, Activated sludge OECD 209.

Chronic aquatic toxicity

Chronic toxicity - fish early life stage	Scientifically unjustified. Endpoint waived according to REACH Annex VII, IX or XI.
Chronic toxicity - aquatic invertebrates	Scientifically unjustified. Endpoint waived according to REACH Annex VII, IX or XI.

12.2. Persistence and degradability

Persistence and degradability	The substance is readily biodegradable.
Stability (hydrolysis)	Scientifically unjustified.
Biodegradation	Water - Degradation 18%: 1 day Water - Degradation 50%: 7 days Water - Degradation 76%: 21 days Water - Degradation 82%: 28 days OECD 301 F.

12.3. Bioaccumulative potential

Bioaccumulative potential	BCF: 190, Fish BCFBAF™ v3.01.
Partition coefficient	log Kow: 3.5 OECD 117.

12.4. Mobility in soil

Mobility	The product is partly soluble in water and may spread in the aquatic environment.
Adsorption/desorption coefficient	Soil - Log Koc: 2.9 @ 35°C/95°F OECD 121.
Surface tension	59.9 - 60.1 mN/m @ 18.2 ± 0.5°C/64.8 ± 0.8°F OECD 115.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects	None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Decanal

General information	The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.
Disposal methods	Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Waste packaging should be collected for reuse or recycling. Incineration or landfill should only be considered when recycling is not feasible.

SECTION 14: Transport information

Road transport notes	Not regulated.
Rail transport notes	Not regulated.
Air transport notes	Not regulated.

14.1. UN number

UN No. (ADR/RID)	-
UN No. (IMDG)	UN3082
UN No. (ICAO)	-
UN No. (ADN)	-

14.2. UN proper shipping name

Proper shipping name (ADR/RID)	-
Proper shipping name (IMDG)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DECANAL)
Proper shipping name (ICAO)	-
Proper shipping name (ADN)	-

14.3. Transport hazard class(es)

ADR/RID class	-
ADR/RID classification code	-
ADR/RID label	-
IMDG class	9
ICAO class/division	-
ADN class	-

Transport labels

14.4. Packing group

ADR/RID packing group	-
IMDG packing group	III
ICAO packing group	-
ADN packing group	-

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

14.6. Special precautions for user

EmS	F-A, S-F
ADR transport category	-
Emergency Action Code	-
Hazard Identification Number (ADR/RID)	-

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

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

SECTION 15: Regulatory information

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

National regulations	Health and Safety at Work etc. Act 1974 (as amended). The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"]. EH40/2005 Workplace exposure limits.
EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Commission Regulation (EU) No 2015/830 of 28 May 2015. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

Inventories

EU - EINECS/ELINCS
EINECS

Canada - DSL/NDSL
DSL

US - TSCA
Present.

Decanal

US - TSCA 12(b) Export Notification
Not listed.

Australia - AICS
Present.

Japan - ENCS
Present.

Korea - KECI
Present.

China - IECSC
Present.

Philippines – PICCS
Present.

New Zealand - NZIOC
Present.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road. ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail. IATA: International Air Transport Association. ICAO: Technical Instructions for the Safe Transport of Dangerous Goods by Air. IMDG: International Maritime Dangerous Goods. CAS: Chemical Abstracts Service. ATE: Acute Toxicity Estimate. LC_{50}: Lethal Concentration to 50 % of a test population. LD_{50}: Lethal Dose to 50% of a test population (Median Lethal Dose). EC_{50}: 50% of maximal Effective Concentration. PBT: Persistent, Bioaccumulative and Toxic substance. vPvB: Very Persistent and Very Bioaccumulative.
Classification abbreviations and acronyms	Eye Irrit. = Eye irritation
Classification procedures according to Regulation (EC) 1272/2008	Eye Irrit. 2 - H319, Aquatic Chronic 3 - H412: On basis of test data., Expert judgement., Weight of evidence.
Training advice	Read and follow manufacturer's recommendations. Only trained personnel should use this material.
Revision date	05/02/2018
Revision	1.1
SDS number	45
Hazard statements in full	H319 Causes serious eye irritation. H412 Harmful to aquatic life with long lasting effects.

Decanal

Exposure scenario
Formulation of fragrance compounds (compounding) to prepare concentrate

Identification

Product name	Decanal
REACH registration number	01-2119967771-26-0002
CAS number	112-31-2
EC number	203-957-4
Es reference	ES 1
Supplier	Tennants Fine Chemicals Macclesfield Road (Head Office) Leek Staffordshire ST13 8LD UK Tennants Fine Chemicals PTE Limited 163 Tras Street #03-01 Lin Huat Building Singapore (079024) +44 (0) 1538 392180 sdsadvice@tennantsfinechemicals.com

1. Title of exposure scenario

Main title	Formulation of fragrance compounds (compounding) to prepare concentrate
Process scope	Formulation of personal care products. The substance is mixed with fragrances, solvents and other chemicals in an industrial setting.
Environment	
	Industrial use of substance, including formulating activities
Environmental release category	ERC2 Formulation into mixture
SPERC	IFRA 2.1b.v1 IFRA 2.1a
Worker	
	Mixing or blending in a batch process (closed or open) Transfer of chemicals Filling containers Laboratory activities

Formulation of fragrance compounds (compounding) to prepare concentrate

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Environmental release category	ERC2 Formulation into mixture

Product characteristics

Physical state	Liquid
Vapour pressure	8.2 Pa @ 25°C
Concentration details	Covers concentrations up to 100 %. Formulated products are non-viscous / slightly viscous liquids, containing solvents

Amounts used

Annual amount per site: 500 tonnes
Amount per use: 4000 kg/day

Frequency and duration of use

Emission days: 200 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from wide dispersive use (regional only): 2.5%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 (Default)
Other factors	Wastewater emissions generated from equipment cleaning with water.

Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Degradation (%): 90

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Limit release rate to air to 2.5 kg/day.
Water	Limit release rate to waste water to 0.4 kg/day.

Formulation of fragrance compounds (compounding) to prepare concentrate

Any drainage or washings, including collection of spilled material must be collected for disposal either as hazardous waste or as waste water after checking in relation to local discharge consents. Assumed no on-site treatment processes. No specific controls for extract ventilation required.

2. Conditions of use affecting exposure (Workers - Health 1)

Control of workers exposure

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC5 Mixing or blending in batch processes
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC15 Use as laboratory reagent.

Product characteristics

Physical state

Liquid

Vapour pressure

8.2 Pa @ 25°C

Concentration details

Maximum concentration after dilution for use: 100 %

The substance is mixed with fragrances, solvents and other chemicals in an industrial setting. Characteristics of other components may influence exposure.

Amounts used

Maximum daily site tonnage: 4000 kg
Annual site tonnage: 500 tonnes

Frequency and duration of use

PROC 1 2 3 5 8a
Covers daily exposure up to 4hours

PROC 8b 9
Covers daily exposure up to 1hour

PROC 15
Covers daily exposure up to 15minutes

Other given operational conditions affecting workers exposure

Setting

Indoor use.

Temperature

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Room size

Confined space.

Ventilation rate

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Technical conditions and measures at process level (source) to prevent release

Formulation of fragrance compounds (compounding) to prepare concentrate

Technical protective measures Store finished products in closed containers (e.g. bulk tanks, drums, cans). Dedicated facility

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Established management systems would include general industrial hygiene practice e.g.:

- information and training of workers on prevention of exposure/accidents
- procedures for control of personal exposure (hygiene measures)
- regular cleaning of equipment and floors, extended workers instruction-manuals
- procedures for process control and maintenance,
- personal protection measures

Risk management measures

Use suitable eye protection.
For exposure up to 8 hours, wear gloves made of the following material:
Polyvinyl chloride (PVC).
Gloves should comply with the requirements of EN 374.

Unsuitable glove material:
Rubber (natural, latex).

Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected.
Wear suitable coveralls to prevent exposure to the skin.

With normal handling, no respiratory personal protection (breathing apparatus) is necessary.
If risk of vapour generation
Wear a full facepiece respirator fitted with the following cartridge:
Organic vapour filter.

3. Exposure estimation (Environment 1)

Environmental release category ERC2 Formulation into mixture

Assessment method EUSES v2.1

Environmental exposure Fresh water: Exposure 0.001 mg/l, PNEC 0.011 mg/l, RCR 0.9
STP: Exposure 0.1 mg/l, PNEC 3.2 mg/l, RCR 0.03

4. Guidance to check compliance with the exposure scenario (Environment 1)

Environmental factors and days released have been scaled from the original CSR to reflect more accurate working practices. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Formulation of fragrance compounds (compounding) to prepare concentrate

Exposure

PROC 1 2
Worker - inhalation, long-term - systemic: Exposure 0.01 mg/m³, DNEL 24.9 mg/m³, RCR 0.0016
Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.009

PROC3
Worker - inhalation, long-term - systemic: Exposure 6 mg/m³, DNEL 24.9 mg/m³, RCR <1
Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.2

PROC5
Worker - inhalation, long-term - systemic: Exposure 6 mg/m³, DNEL 24.9 mg/m³, RCR <1
Worker - dermal, long-term - systemic: Exposure 2.74 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.7

PROC8a
Worker - inhalation, long-term - systemic: Exposure 6 mg/m³, DNEL 24.9 mg/m³, RCR <1
Worker - dermal, long-term - systemic: Exposure 1.65 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.5

PROC8b
Worker - inhalation, long-term - systemic: Exposure 6 mg/m³, DNEL 24.9 mg/m³, RCR <1
Worker - dermal, long-term - systemic: Exposure 2.74 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.8

PROC9
Worker - inhalation, long-term - systemic: Exposure 3.9 mg/m³, DNEL 24.9 mg/m³, RCR 0.65
Worker - dermal, long-term - systemic: Exposure 0.8 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.2

PROC15
Worker - inhalation, long-term - systemic: Exposure 1.9 mg/m³, DNEL 24.9 mg/m³, RCR 0.32
Worker - dermal, long-term - systemic: Exposure 0.15 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.05

4. Guidance to check compliance with the exposure scenario (Health 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e. RCRs > 1), additional RMM or a site-specific chemical safety assessment is required. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Formulation of fragrances into end products (formulating)

Identification

Product name Decanal

REACH registration number 01-2119967771-26-0002

CAS number 112-31-2

EC number 203-957-4

Es reference ES 2

Supplier

Tennants Fine Chemicals
Macclesfield Road (Head Office)
Leek
Staffordshire
ST13 8LD
UK

Tennants Fine Chemicals PTE Limited
163 Tras Street
#03-01
Lin Huat Building
Singapore (079024)

+44 (0) 1538 392180
sdsadvice@tennantsfinechemicals.com

1. Title of exposure scenario

Main title Formulation of fragrances into end products (formulating)

Process scope Formulation of cleaning products or personal care products for professional or consumer use. The substance is mixed with fragrances, solvents and other chemicals in an industrial setting.

Environment

Industrial use of substance, including formulating activities

Environmental release category ERC2 Formulation into mixture

Worker

Mixing or blending in a batch process (closed or open) Transfer of chemicals Filling containers Production of solid products Laboratory activities

Formulation of fragrances into end products (formulating)

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14 Tabletting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Environmental release category	ERC2 Formulation into mixture
	Indoor use.

Product characteristics

Physical state	Liquid
Vapour pressure	8.2 hPa @ 25°C
Concentration details	Concentration of substance in product: ≤25%
	Formulated products are solid or liquid products

Amounts used

Fraction of Regional tonnage used locally: 1

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (after typical onsite RMMs): 2.5%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01% (Estimated)

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 (Default)
Other factors	Wastewater emissions generated from equipment cleaning with water.

Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 50%

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Limit release rate to waste water to 0.4 kg/day.

Formulation of fragrances into end products (formulating)

Any drainage or washings, including collection of spilled material must be collected for disposal either as hazardous waste or as waste water after checking in relation to local discharge consents. Assumed no on-site treatment processes. No specific controls for extract ventilation required.

2. Conditions of use affecting exposure (Workers - Health 1)

Control of workers exposure

Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC5 Mixing or blending in batch processes
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC14 Tabletting, compression, extrusion, pelletisation, granulation
PROC15 Use as laboratory reagent.

Product characteristics

Physical state

Liquid

Vapour pressure

8.2 Pa @ 25°C

Concentration details

Concentration of substance in product: ≤25%

Mixed with solvents and other substances to make liquid products. Characteristics of other components may influence exposure.

Amounts used

Maximum daily site tonnage: 4000 kg

Frequency and duration of use

PROC 1 2 3 5 8a 14
Covers daily exposure up to 4hours

PROC 8b 9
Covers daily exposure up to 1hour

PROC 15
Covers daily exposure up to 15minutes

Other given operational conditions affecting workers exposure

Setting

Indoor use.

Temperature

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Room size

Confined space. Avoid using in room size less than 300 m³.

Ventilation rate

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Technical conditions and measures at process level (source) to prevent release

Formulation of fragrances into end products (formulating)

Technical protective measures Store finished products in closed containers (e.g. bulk tanks, drums, cans). Dedicated facility
Final product going into small containers for consumer use

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Established management systems would include general industrial hygiene practice e.g.:

- information and training of workers on prevention of exposure/accidents
- procedures for control of personal exposure (hygiene measures)
- regular cleaning of equipment and floors, extended workers instruction-manuals
- procedures for process control and maintenance,
- personal protection measures

Risk management measures

Use suitable eye protection.
For exposure up to 8 hours, wear gloves made of the following material:
Polyvinyl chloride (PVC).
Gloves should comply with the requirements of EN 374.

Unsuitable glove material:
Rubber (natural, latex).

Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected.
Wear suitable coveralls to prevent exposure to the skin.

With normal handling, no respiratory personal protection (breathing apparatus) is necessary.
If risk of vapour generation
Wear a full facepiece respirator fitted with the following cartridge:
Organic vapour filter.

3. Exposure estimation (Environment 1)

Environmental release category ERC2 Formulation into mixture

Assessment method EUSES v2.1

Environmental exposure Fresh water - intermittent: Exposure 0.001 mg/l, PNEC 0.011 mg/l, RCR 0.9
STP: Exposure 0.1 mg/l, PNEC 3.2 mg/l, RCR 0.03

4. Guidance to check compliance with the exposure scenario (Environment 1)

Environmental factors and days released have been scaled from the original CSR to reflect more accurate working practices. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Formulation of fragrances into end products (formulating)

Exposure

PROC 1 2
Worker - inhalation, long-term - systemic: Exposure 0.01 mg/m³, DNEL 24.9 mg/m³, RCR 0.002
Worker - dermal, long-term - systemic: Exposure 0.02 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.006

PROC3
Worker - inhalation, long-term - systemic: Exposure 3.5 mg/m³, DNEL 24.9 mg/m³, RCR 0.6
Worker - dermal, long-term - systemic: Exposure 0.41 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.1

PROC5
Worker - inhalation, long-term - systemic: Exposure 6 mg/m³, DNEL 24.9 mg/m³, RCR <1
Worker - dermal, long-term - systemic: Exposure 1.65 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.5

PROC8a
Worker - inhalation, long-term - systemic: Exposure 3.9 mg/m³, DNEL 24.9 mg/m³, RCR 0.6
Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.5

PROC8b
Worker - inhalation, long-term - systemic: Exposure 3.9 mg/m³, DNEL 24.9 mg/m³, RCR 0.6
Worker - dermal, long-term - systemic: Exposure 1.65 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.5

PROC9
Worker - inhalation, long-term - systemic: Exposure 0.65 mg/m³, DNEL 24.9 mg/m³, RCR 0.1
Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.2

PROC14
Worker - inhalation, long-term - systemic: Exposure 1 mg/m³, DNEL 24.9 mg/m³, RCR 0.2
Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.1

PROC15
Worker - inhalation, long-term - systemic: Exposure 1.9 mg/m³, DNEL 24.9 mg/m³, RCR 0.3
Worker - dermal, long-term - systemic: Exposure 0.21 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.1

4. Guidance to check compliance with the exposure scenario (Health 1)

Formulation of fragrances into end products (formulating)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e. RCRs > 1), additional RMM or a site-specific chemical safety assessment is required. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Industrial / Professional use of fragrance products

Identification

Product name	Decanal
REACH registration number	01-2119967771-26-0002
CAS number	112-31-2
EC number	203-957-4
Es reference	ES 3
Supplier	Tennants Fine Chemicals Macclesfield Road (Head Office) Leek Staffordshire ST13 8LD UK Tennants Fine Chemicals PTE Limited 163 Tras Street #03-01 Lin Huat Building Singapore (079024) +44 (0) 1538 392180 sdsadvice@tennantsfinechemicals.com

1. Title of exposure scenario

Main title	Industrial / Professional use of fragrance products
Process scope	Use of fragrance products by professional users in industrial and non-industrial settings at up to 1%. Uses include all cleaning products.
Environment	
	Wide dispersive use.
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
Worker	
	Cleaning products, spraying Transfer of chemicals Filling containers
Process category	PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Industrial / Professional use of fragrance products

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

(open systems) (closed systems)

Product characteristics

Physical state

Solid or Liquid

Concentration details

Concentration of substance in product: <1%

Amounts used

Fraction of Regional tonnage used locally: 1

Environmental factors not influenced by risk management measures

Other factors

Wastewater emissions generated from equipment cleaning with water.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Any drainage or washings, including collection of spilled material must be collected for disposal either as hazardous waste or as waste water after checking in relation to local discharge consents.

Conditions and measures related to external treatment of waste for disposal

Assumption for this use is that all material is lost to waste water.

2. Conditions of use affecting exposure (Workers - Health 1)

Control of workers exposure

Process category

PROC7 Industrial spraying
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Product characteristics

Concentration details

Concentration of substance in product: <1%

Amounts used

Daily amount per site: 600 kg
Annual amount per site: 150 tonnes

Frequency and duration of use

Covers daily exposure up to 1hour

Spraying Low application rate (0.03 - 0.3 l/minute) Moderate application rate (0.3 - 3 l/minute)

Other given operational conditions affecting workers exposure

Setting

Indoor/outdoor use.

Temperature

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Ventilation rate

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Organisational measures to prevent/limit releases, dispersion and exposure

Industrial / Professional use of fragrance products

Organisational measures

Established management systems would include general industrial hygiene practice e.g.:

- information and training of workers on prevention of exposure/accidents
- procedures for control of personal exposure (hygiene measures)
- regular cleaning of equipment and floors, extended workers instruction-manuals
- procedures for process control and maintenance,
- personal protection measures

Risk management measures

Use suitable eye protection.

3. Exposure estimation (Environment 1)

Environmental release category

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

Quantitative assessment not reported.

3. Exposure estimation (Health 1)

Assessment method

Used ECETOC TRA model.

Exposure

PROC7
Worker - inhalation, long-term - systemic: Exposure 0.26 mg/m³, DNEL 24.9 mg/m³, RCR 0.04
Worker - dermal, long-term - systemic: Exposure 0.043 mg/kg/day, DNEL 7 mg/kg/day, RCR 0.01

PROC 8a 9
Considered low risk.

4. Guidance to check compliance with the exposure scenario (Health 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e. RCRs > 1), additional RMM or a site-specific chemical safety assessment is required. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Consumer use of fragrance products

Identification

Product name	Decanal
REACH registration number	01-2119967771-26-0002
CAS number	112-31-2
EC number	203-957-4
Es reference	ES 4
Supplier	Tennants Fine Chemicals Macclesfield Road (Head Office) Leek Staffordshire ST13 8LD UK Tennants Fine Chemicals PTE Limited 163 Tras Street #03-01 Lin Huat Building Singapore (079024) +44 (0) 1538 392180 sdsadvice@tennantsfinechemicals.com

1. Title of exposure scenario

Main title	Consumer use of fragrance products
Process scope	Use of fragrance products by the consumer in non-industrial settings. Uses include all cleaning products. Cosmetic use covered by Cosmetic Regulation.
Environment	
	Wide dispersive use.
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
Non-industrial	
	Cleaning products, spraying

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Control of environmental exposure (Non-industrial)

Consumer use of fragrance products

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

Product characteristics

Physical state	Liquid or Solid
Concentration details	Concentration of substance in product: <1%

Amounts used

Fraction of Regional tonnage used locally: 1

Conditions and measures related to external treatment of waste for disposal

Assumption for this use is that all material is lost to waste water.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Concentration details	Concentration of substance in product: <1%

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor/outdoor use.
Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

3. Exposure estimation (Environment 1)

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

Quantitative assessment not reported.

3. Exposure estimation (Health 1)

Consumer exposure modelling suggests exposure to be within limits assumed by DNELs.

4. Guidance to check compliance with the exposure scenario (Health 1)

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e. RCRs > 1), additional RMM or a site-specific chemical safety assessment is required. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.