

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

Creation Date 06-Apr-2011 Revision Date 01-Feb-2024 Revision Number 5

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

## 1.1. Product identifier

Product Description: <u>Di-n-butyltin dilaurate</u>

Cat No. : 71130

 Index No
 050-030-00-3

 CAS No
 77-58-7

 EC No
 201-039-8

 Molecular Formula
 C32 H65 O4 Sn

REACH registration number -

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

Recommended Use Laboratory chemicals.

Sector of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

**Product category** PC21 - Laboratory chemicals

**Process categories** PROC15 - Use as a laboratory reagent

Environmental release category ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Uses advised against No Information available

1.3. Details of the supplier of the safety data sheet

Company

Avocado Research Chemicals Ltd. (Part of Thermo Fisher Scientific)

Shore Road, Heysham Lancashire, LA3 2XY, United Kingdom

Office Tel: +44 (0) 1524 850506 Office Fax: +44 (0) 1524 850608

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99 **CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

# **SECTION 2: HAZARDS IDENTIFICATION**

#### 2.1. Classification of the substance or mixture

CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

**Physical hazards** 

ALFAA71130

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Based on available data, the classification criteria are not met

#### **Health hazards**

Serious Eye Damage/Eye Irritation

Skin Sensitization

Category 2 (H319)

Category 1 (H317)

Germ Cell Mutagenicity

Reproductive Toxicity

Specific target organ toxicity - (single exposure)

Specific target organ toxicity - (repeated exposure)

Category 1 (H370)

Category 1 (H372)

## **Environmental hazards**

Acute aquatic toxicity

Chronic aquatic toxicity

Category 1 (H400)

Category 1 (H410)

Full text of Hazard Statements: see section 16

#### 2.2. Label elements



## Signal Word

**Danger** 

# **Hazard Statements**

H317 - May cause an allergic skin reaction

H319 - Causes serious eye irritation

H370 - Causes damage to organs

H341 - Suspected of causing genetic defects

H360 - May damage fertility or the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure

H410 - Very toxic to aquatic life with long lasting effects

# **Precautionary Statements**

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

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

P308 + P313 - IF exposed or concerned: Get medical advice/attention

#### Additional EU labelling

Restricted to professional users

#### 2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

Toxic to terrestrial vertebrates

This product does not contain any known or suspected endocrine disruptors

# **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

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#### 3.1. Substances

Component	CAS No	EC No	Weight %	CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567
Dibutyltin dilaurate	77-58-7	EEC No. 201-039-8	>95	Skin Sens. 1 (H317) Eye Irrit. 2 (H319) Muta 2 (H341) Repr. 1B (H360) STOT SE 1 (H370) STOT RE 1 (H372) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
Dibutyltin dilaurate	-	1	-

REACH registration number	-
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Full text of Hazard Statements: see section 16

# **SECTION 4: FIRST AID MEASURES**

## 4.1. Description of first aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is

required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In

the case of contact with eyes, rinse immediately with plenty of water and seek medical

advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical

attention is required.

**Ingestion** Do NOT induce vomiting. Call a physician or poison control center immediately.

**Inhalation** Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth

method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Immediate medical attention is required.

Self-Protection of the First Aider Ensure that medical personnel are aware of the material(s) involved, take precautions to

protect themselves and prevent spread of contamination.

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

May cause allergic skin reaction. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

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

Notes to Physician Treat symptomatically. Symptoms may be delayed.

# **SECTION 5: FIREFIGHTING MEASURES**

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## 5.1. Extinguishing media

#### **Suitable Extinguishing Media**

Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

# Extinguishing media which must not be used for safety reasons

No information available.

#### 5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Do not allow run-off from fire-fighting to enter drains or water courses.

#### **Hazardous Combustion Products**

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Metal oxides, Thermal decomposition can lead to release of irritating gases and vapors.

#### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

# **SECTION 6: ACCIDENTAL RELEASE MEASURES**

#### 6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

#### 6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. Should not be released into the environment.

## 6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

# 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

# **SECTION 7: HANDLING AND STORAGE**

## 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

#### 7.2. Conditions for safe storage, including any incompatibilities

Corrosives area. Store indoors. Keep containers tightly closed in a dry, cool and well-ventilated place.

Technical Rules for Hazardous Substances (TRGS) 510 Class 6.1C Storage Class (LGK) (Germany)

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#### 7.3. Specific end use(s)

Use in laboratories

# **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

## 8.1. Control parameters

## **Exposure limits**

List source(s): UK - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

Component	The United Kingdom	European Union	Ireland
Dibutyltin dilaurate	STEL: 0.2 mg/m <sup>3</sup> 15 min		
	TWA: 0.1 mg/m <sup>3</sup> 8 hr		
	Skin		

#### **Biological limit values**

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

## Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)	
Dibutyltin dilaurate 77-58-7 ( >95 )	Itin dilaurate		(Bormary	DNEL = 0.43mg/kg bw/day	

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)		
Dibutyltin dilaurate 77-58-7 ( >95 )		DNEL = 0.059mg/m <sup>3</sup>		DNEL = 0.02mg/m <sup>3</sup>		

## **Predicted No Effect Concentration (PNEC)**

See values below.

#### 8.2. Exposure controls

# **Engineering Measures**

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

# Personal protective equipment

**Eye Protection** Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material Natural rubber Nitrile rubber Neoprene	Breakthrough time See manufacturers recommendations	Glove thickness	EU standard EN 374	Glove comments (minimum requirement)
PVC Viton (R)				

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Skin and body protection Long sleeved clothing.

Inspect gloves before use.

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

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

Remove gloves with care avoiding skin contamination.

When workers are facing concentrations above the exposure limit they must use **Respiratory Protection** 

appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used

and maintained properly

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits Large scale/emergency use

are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to

EN14387

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure Small scale/Laboratory use

limits are exceeded or if irritation or other symptoms are experienced.

Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN

When RPE is used a face piece Fit Test should be conducted

Prevent product from entering drains. Do not allow material to contaminate ground water **Environmental exposure controls** 

system. Local authorities should be advised if significant spillages cannot be contained.

@ 12 mmHg

Method - No information available

# **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

# 9.1. Information on basic physical and chemical properties

**Physical State** Liquid Viscous liquid

Clear, Light yellow **Appearance** Characteristic Odor **Odor Threshold** No data available

**Melting Point/Range** 16 - 18 °C / 60.8 - 64.4 °F

**Softening Point** No data available **Boiling Point/Range** 205 °C / 401 °F

Flammability (liquid) No data available Liquid

Flammability (solid,gas) Not applicable

**Explosion Limits** No data available

**Flash Point** 149 °C / 300.2 °F **Autoignition Temperature** No data available **Decomposition Temperature** No data available Not applicable рH **Viscosity** No data available

Water Solubility Insoluble

Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

Component log Pow Dibutyltin dilaurate 3.12

**Vapor Pressure** No data available

Density / Specific Gravity 1.05

**Bulk Density** Not applicable Liquid **Vapor Density** No data available (Air = 1.0)

Particle characteristics Not applicable (liquid)

# 9.2. Other information

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Molecular Formula C32 H65 O4 Sn

Molecular Weight 631.57

# **SECTION 10: STABILITY AND REACTIVITY**

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

**Hazardous Polymerization** Hazardous polymerization does not occur.

**Hazardous Reactions** None under normal processing.

10.4. Conditions to avoid

Incompatible products. Excess heat.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Metal oxides. Thermal decomposition can

lead to release of irritating gases and vapors.

# **SECTION 11: TOXICOLOGICAL INFORMATION**

# 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### **Product Information**

(a) acute toxicity;

OralBased on available data, the classification criteria are not metDermalBased on available data, the classification criteria are not metInhalationBased on available data, the classification criteria are not met

Component	Component LD50 Oral		LC50 Inhalation	
Dibutyltin dilaurate	2071 mg/kg ( Rat )	>2000 mg/kg ( Rat )	-	

(b) skin corrosion/irritation; Based on available data, the classification criteria are not met

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

**Respiratory** Based on available data, the classification criteria are not met

Skin Category 1

May cause sensitization by skin contact

(e) germ cell mutagenicity; Category 2

(f) carcinogenicity; Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

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(g) reproductive toxicity; Category 1B

Reproductive Effects Experiments have shown reproductive toxicity effects on laboratory animals.

**Developmental Effects** Developmental effects have occurred in experimental animals.

Category 1 (h) STOT-single exposure;

Results / Target organs Thymus.

(i) STOT-repeated exposure; Category 1

**Target Organs** Immune system, Thymus.

Based on available data, the classification criteria are not met (j) aspiration hazard;

delayed

Symptoms / effects,both acute and Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

#### 11.2. Information on other hazards

**Endocrine Disrupting Properties** 

Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

# **SECTION 12: ECOLOGICAL INFORMATION**

12.1. Toxicity

**Ecotoxicity effects** Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic

environment. Do not allow material to contaminate ground water system. The product

contains following substances which are hazardous for the environment.

Component	Freshwater Fish	Water Flea	Freshwater Algae		
Dibutyltin dilaurate	LC50 = 2 mg/L, 48h (Oryzias latipes)	LC50 = 0.463 mg/L 48h			

Component	Microtox	M-Factor
Dibutyltin dilaurate	EC50 = 0.576 mg/L 30 min	1

12.2. Persistence and degradability Product contains heavy metals. Discharge into the environment must be avoided. Special

pre-treatment is necessary

**Persistence** 

May persist, based on information available.

Degradation in sewage treatment plant

Contains substances known to be hazardous to the environment or not degradable in waste

water treatment plants.

# 12.3. Bioaccumulative potential

May have some potential to bioaccumulate

Component	log Pow	Bioconcentration factor (BCF)		
Dibutyltin dilaurate	3.12	No data available		

# 12.4. Mobility in soil

Spillage unlikely to penetrate soil The product is insoluble and sinks in water The product evaporates slowly Is not likely mobile in the environment due its low water solubility.

Spillage unlikely to penetrate soil

# 12.5. Results of PBT and vPvB

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent

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and very bioaccumulative (vPvB). assessment

12.6. Endocrine disrupting

properties

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors

12.7. Other adverse effects

**Persistent Organic Pollutant Ozone Depletion Potential** 

This product does not contain any known or suspected substance This product does not contain any known or suspected substance

# **SECTION 13: DISPOSAL CONSIDERATIONS**

13.1. Waste treatment methods

Waste from Residues/Unused

**Products** 

Should not be released into the environment. Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in

accordance with local regulations.

Dispose of this container to hazardous or special waste collection point. Contaminated Packaging

**European Waste Catalogue (EWC)** According to the European Waste Catalog, Waste Codes are not product specific, but

application specific.

Other Information Do not flush to sewer. Waste codes should be assigned by the user based on the

application for which the product was used. Do not empty into drains. Do not let this

chemical enter the environment.

# **SECTION 14: TRANSPORT INFORMATION**

## IMDG/IMO

14.1. UN number UN3082

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. 14.2. UN proper shipping name

**Technical Shipping Name** Dibutyltin dilaurate

14.3. Transport hazard class(es)

14.4. Packing group Ш

ADR

14.1. UN number

14.2. UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

**Technical Shipping Name** Dibutyltin dilaurate

14.3. Transport hazard class(es)

III

14.4. Packing group

IATA

14.1. UN number

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. 14.2. UN proper shipping name

Dibutyltin dilaurate **Technical Shipping Name** 

14.3. Transport hazard class(es) Ш

14.4. Packing group

14.5. Environmental hazards Dangerous for the environment

Product is a marine pollutant according to the criteria set by IMDG/IMO

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14.6. Special precautions for user

No special precautions required.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable, packaged goods

# **SECTION 15: REGULATORY INFORMATION**

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

EINECS ELINCS

#### **International Inventories**

China, X = listed, Australia, U.S.A. (TSCA), Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), Korea (KECL), China (IECSC), Japan (ENCS), Philippines (PICCS), Taiwan (TCSI), Japan (ISHL), New Zealand (NZIoC), Japan (ISHL). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

L	Dibutyltin dilaurate	77-58-7	201-039-8	-	1	Χ	X	KE-09969	X	X
	Component	CAS No	TSCA	TSCA In notific Active-l	•	DSL	NDSL	AICS	NZIoC	PICCS
	Dibutyltin dilaurate	77-58-7	X	ACT	IVE	X	-	X	X	X

Legend: X - Listed '-' - Not Listed

Component

**KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

NLP

IECSC

TCSI

KECL

**ENCS** 

ISHL

# Authorisation/Restrictions according to EU REACH

CAS No

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Dibutyltin dilaurate	77-58-7	-	Use restricted. See item 30. (see link for restriction details) Use restricted. See item 75. (see link for restriction details) Use restricted. See item 20. (see link for restriction details)	-

#### **REACH links**

https://echa.europa.eu/substances-restricted-under-reach

# Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident	Seveso III Directive (2012/18/EC) - nt Qualifying Quantities for Safety Report	
		Notification	Requirements	
Dibutyltin dilaurate	77-58-7	Not applicable	Not applicable	

# Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Component	ANNEX I - PART 1 List of chemicals subject to export notification procedure (referred to in Article 8)	ANNEX I - PART 2 List of chemicals qualifying for PIC notification (referred to in Article 11)	ANNEX I - PART 3 List of chemicals subject to the PIC procedure (referred to in Articles 13 and 14)
Dibutyltin dilaurate 77-58-7 ( >95 )	sr — severe restriction  i(2) — industrial chemical for	-	-

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#### Di-n-butyltin dilaurate

public

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0649&qid=1604065742303.

# Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Take note of Directive 94/33/EC on the protection of young people at work

Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

# **National Regulations**

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

**WGK Classification** 

See table for values

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
Dibutyltin dilaurate	WGK3	

Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
Dibutyltin dilaurate 77-58-7 ( >95 )	Prohibited and Restricted Substances		

# 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

# **SECTION 16: OTHER INFORMATION**

#### Full text of H-Statements referred to under sections 2 and 3

H317 - May cause an allergic skin reaction

H319 - Causes serious eye irritation

H370 - Causes damage to organs

H341 - Suspected of causing genetic defects

H360 - May damage fertility or the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

H410 - Very toxic to aquatic life with long lasting effects

# Legend

**CAS** - Chemical Abstracts Service

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

EINECS/ELINCS - European Inventory of Existing Commercial Chemical DSL/NDSL - Canadian Domestic Substances List/Non-Domestic

Substances/EU List of Notified Chemical Substances PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances **KECL** - Korean Existing and Evaluated Chemical Substances Substances List

**ENCS** - Japanese Existing and New Chemical Substances AICS - Australian Inventory of Chemical Substances NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

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

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

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Predicted No Effect Concentration (PNEC)

**Transport Association** 

ATE - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

Ships

ICAO/IATA - International Civil Aviation Organization/International Air

MARPOL - International Convention for the Prevention of Pollution from

**DNEL** - Derived No Effect Level RPE - Respiratory Protective Equipment LC50 - Lethal Concentration 50% NOEC - No Observed Effect Concentration

LD50 - Lethal Dose 50% EC50 - Effective Concentration 50% POW - Partition coefficient Octanol:Water PBT - Persistent, Bioaccumulative, Toxic vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

IMO/IMDG - International Maritime Organization/International Maritime

Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

Key literature references and sources for data

https://echa.europa.eu/information-on-chemicals

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

**Training Advice** 

Chemical incident response training.

Health, Safety and Environmental Department **Prepared By** 

**Creation Date** 06-Apr-2011 **Revision Date** 01-Feb-2024

New emergency telephone response service provider. **Revision Summary** 

# This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.

#### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

# **End of Safety Data Sheet**