

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

Creation Date 12-Jan-2010 Revision Date 24-Jan-2024 Revision Number 3

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

#### 1.1. Product identifier

Product Description: <u>tert-Butyl peroxybenzoate</u>

Cat No. : A17373

**Synonyms** TBPB; Trigonox C; tert-Butyl perbenzoate

 CAS No
 614-45-9

 EC No
 210-382-2

 Molecular Formula
 C11 H14 O3

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** 

ALFAAA17373

#### tert-Butyl peroxybenzoate

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Organic peroxides

Health hazards

Acute Inhalation Toxicity - Vapors
Skin Corrosion/Irritation
Skin Sensitization

Environmental hazards

Acute aquatic toxicity

Type C (H242)

Category 4 (H332)
Category 2 (H315)
Category 2 (H315)
Category 1 (H317)

Category 1 (H317)

Full text of Hazard Statements: see section 16

#### 2.2. Label elements



# Signal Word

Danger

### **Hazard Statements**

H242 - Heating may cause a fire

H315 - Causes skin irritation

H332 - Harmful if inhaled

H317 - May cause an allergic skin reaction

H400 - Very toxic to aquatic life

Combustible liquid

#### **Precautionary Statements**

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

P411 - Store at temperatures not exceeding 25 °C/77 °F

P234 - Keep only in original packaging

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

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

#### 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**

# 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
tert-Butyl peroxybenzoate	614-45-9	EEC No. 210-382-2	>95	Org. Perox CD (H242)

# tert-Butyl peroxybenzoate

		Skin Irrit. 2 (H315)
		Acute Tox. 4 (H332)
		Skin Sens. 1 (H317)
		Aquatic Acute 1 (H400)

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
tert-Butyl peroxybenzoate	-	1	-

REACH registration number	_
REACTI registration number	

Full text of Hazard Statements: see section 16

# **SECTION 4: FIRST AID MEASURES**

#### 4.1. Description of first aid measures

General Advice If symptoms persist, call a physician. Show this safety data sheet to the doctor in

attendance.

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

medical attention.

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

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

**Inhalation** Remove to fresh air. If breathing is difficult, give oxygen. 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. Get

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medical attention.

**Self-Protection of the First Aider** Use personal protective equipment as required.

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

May cause allergic skin reaction. Difficulty in breathing. 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: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

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

Notes to Physician Treat symptomatically.

# **SECTION 5: FIREFIGHTING MEASURES**

#### 5.1. Extinguishing media

#### **Suitable Extinguishing Media**

Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

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

Do not use halon type extinguisher.

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

May ignite combustibles (wood paper, oil, clothing, etc.). Risk of explosion by shock, friction, fire or other sources of ignition. Containers may explode when heated. Combustible material. Do not allow run-off from fire-fighting to enter drains or water courses.

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#### **Hazardous Combustion Products**

Carbon monoxide (CO), Carbon dioxide (CO2), benzoic acid, Acetone, Benzene.

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

#### 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. See Section 12 for additional Ecological Information. Avoid release to the environment. Collect spillage.

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

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Keep away from clothing and other combustible materials. Remove all sources of ignition.

#### 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. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Keep away from clothing and other combustible materials. Keep away from open flames, hot surfaces and sources of ignition.

#### **Hygiene Measures**

When using do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing.

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

Do not store near combustible materials. Keep at temperatures between 10°C and 25 °C. Store indoors. Keep away from heat, sparks and flame. Protect from direct sunlight. Keep container tightly closed in a dry and well-ventilated place.

Technical Rules for Hazardous Substances (TRGS) 510 Class 5.2 Storage Class (LGK) (Germany)

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

Use in laboratories

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

#### 8.1. Control parameters

#### **Exposure limits**

List source(s):

#### **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)

Workers; See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
tert-Butyl peroxybenzoate				DNEL = 6.25mg/kg
614-45-9 (>95)				bw/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
tert-Butyl peroxybenzoate 614-45-9 ( >95 )				DNEL = 4mg/m <sup>3</sup>

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

See values below.

Component	Fresh water	Fresh water	Water Intermittent	Microorganisms in	Soil (Agriculture)
		sediment		sewage treatment	
tert-Butyl peroxybenzoate	PNEC = $8.8\mu g/L$	PNEC = 0.24 mg/kg	PNEC = 8µg/L	PNEC = 0.6mg/L	PNEC =
614-45-9 (>95)		sediment dw	, ,		0.043mg/kg soil dw

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
tert-Butyl peroxybenzoate	$PNEC = 0.88 \mu g/L$	PNEC =			
614-45-9 (>95)		0.024mg/kg			
		sediment dw			

#### 8.2. Exposure controls

#### **Engineering Measures**

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

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

#### Personal protective equipment

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

Hand Protection Protective gloves

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

**Skin and body protection** Wear appropriate protective gloves and clothing to prevent skin exposure.

#### 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)

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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.

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

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

are exceeded or if irritation or other symptoms are experienced

Small scale/Laboratory use Maintain adequate ventilation

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

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

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

#### 9.1. Information on basic physical and chemical properties

Physical State Liquid

Appearance Yellow Odor aromatic

Odor ThresholdNo data availableMelting Point/Range8 °C / 46.4 °FSoftening PointNo data available

**Boiling Point/Range** 75 - 76 °C / 167 - 168.8 °F @ 0.2 mmHg **Flammability (liquid)** Combustible liquid On basis of test data

Flammability (solid,gas) Not applicable Liquid

Explosion Limits No data available

Flash Point 93 °C / 199.4 °F Method - No information available

Autoignition Temperature 400 °C / 752 °F

**Decomposition Temperature** 60 °C **Self-Accelerating Decomposition** 60 °C

**Temperature (SADT)** 

**pH** No information available

Viscosity 6 mPa.s (20°C)
Water Solubility Immiscible

Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

Component log Pow

tert-Butyl peroxybenzoate 3.0 **Vapor Pressure** 0.04 kPa @ 50 °C

Density / Specific Gravity 1.040

Bulk Density
Not applicable
Liquid
Vapor Density
6.7 (Air = 1.0)
(Air = 1.0)

Particle characteristics Not applicable (liquid)

#### 9.2. Other information

Molecular Formula C11 H14 O3 Molecular Weight 194.23

**Explosive Properties** explosive air/vapour mixtures possible

# **SECTION 10: STABILITY AND REACTIVITY**

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10.2. Chemical stability

May cause fire. Risk of explosion by shock, friction, fire or other sources of ignition.

10.3. Possibility of hazardous reactions

Hazardous PolymerizationNo information available.Hazardous ReactionsNo information available.

10.4. Conditions to avoid

Incompatible products. Excess heat. Combustible material. Temperatures above 25°C.

Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents. Acids. Bases. Reducing Agent. Heavy metals.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO2). benzoic acid. Acetone. Benzene.

# **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 met

Inhalation Category 4

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
tert-Butyl peroxybenzoate	4838 mg/kg (Rat)	3817 mg/kg (Rabbit)	>1.01 mg/L/4h (Rat)

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Based on available data, the classification criteria are not met

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

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

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Based on available data, the classification criteria are not met

(h) STOT-single exposure; Based on available data, the classification criteria are not met

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs None known.

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

**Other Adverse Effects** The toxicological properties have not been fully investigated. See actual entry in RTECS for

complete information

delayed

Symptoms / effects, both acute and 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. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

#### 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. The product contains following substances which are

hazardous for the environment.

Component	Freshwater Fish	Water Flea	Freshwater Algae
tert-Butyl peroxybenzoate	LC50: 8.6 mg/L/96h (Poecilia		EC50: 0.8 mg/L/72h
	reticulata)		

	Component	Microtox	M-Factor
Ī	tert-Butyl peroxybenzoate		1

12.2. Persistence and degradability Readily biodegradable

**Persistence** 

Persistence is unlikely, 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 Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)	
tert-Butyl peroxybenzoate	3.0	No data available	

The product contains volatile organic compounds (VOC) which will evaporate easily from all 12.4. Mobility in soil

surfaces Will likely be mobile in the environment due to its volatility. Disperses rapidly in

air

12.5. Results of PBT and vPvB

assessment

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

and very bioaccumulative (vPvB).

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**

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13.1. Waste treatment methods

Waste from Residues/Unused

**Products** 

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of this container to hazardo

Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and

empty container away from heat and sources of ignition.

**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. Can be landfilled or incinerated, when in compliance with local regulations. Do not let this chemical enter the environment. Do not

empty into drains.

# **SECTION 14: TRANSPORT INFORMATION**

#### IMDG/IMO

**14.1. UN number** UN3103

14.2. UN proper shipping name ORGANIC PEROXIDE TYPE C, LIQUID

Technical Shipping Name tert-Butyl peroxybenzoate

14.3. Transport hazard class(es) 5.2

14.4. Packing group

ADR

**14.1. UN number** UN3103

14.2. UN proper shipping name ORGANIC PEROXIDE TYPE C, LIQUID

Technical Shipping Name tert-Butyl peroxybenzoate

14.3. Transport hazard class(es) 5.2

14.4. Packing group

**IATA** 

<u>14.1. UN number</u> UN3103

14.2. UN proper shipping name ORGANIC PEROXIDE TYPE C, LIQUID

Technical Shipping Name tert-Butyl peroxybenzoate

14.3. Transport hazard class(es) 5.2

14.4. Packing group

Dangerous for the environment

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

14.6. Special precautions for user No special precautions required.

14.7. Maritime transport in bulk according to IMO instruments

14.5. Environmental hazards

Not applicable, packaged goods

# **SECTION 15: REGULATORY INFORMATION**

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

#### International Inventories

#### tert-Butyl peroxybenzoate

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(AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
tert-Butyl peroxybenzoate	614-45-9	210-382-2	-	-	X	X	KE-02166	Χ	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
tert-Butyl peroxybenzoate	614-45-9	Х	ACTIVE	Х	-	Х	X	Х

Legend: X - Listed '-' - Not Listed KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

#### Authorisation/Restrictions according to EU REACH

Not applicable

	Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	J	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Г	tert-Butyl peroxybenzoate	614-45-9	-	-	-

#### Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) -	Seveso III Directive (2012/18/EC) -
		Qualifying Quantities for Major Accident	Qualifying Quantities for Safety Report
		Notification	Requirements
tert-Butyl peroxybenzoate	614-45-9	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

Not applicable

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 .

# **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		
tert-Butyl peroxybenzoate	WGK2			

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
tert-Butyl peroxybenzoate	Prohibited and Restricted		
614-45-9 ( >95 ) Substances			

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

H242 - Heating may cause a fire H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H332 - Harmful if inhaled

H400 - Very toxic to aquatic life

#### Legend

**CAS** - Chemical Abstracts Service

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

WEL - Workplace Exposure Limit

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

**DNEL** - Derived No Effect Level

RPE - Respiratory Protective Equipment LC50 - Lethal Concentration 50% NOEC - No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

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.

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

**Creation Date** 12-Jan-2010 **Revision Date** 24-Jan-2024

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

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** 

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

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Inventory

Substances List

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

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

Predicted No Effect Concentration (PNEC)

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50% POW - Partition coefficient Octanol:Water vPvB - very Persistent, very Bioaccumulative

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

MARPOL - International Convention for the Prevention of Pollution from

Ships

ATE - Acute Toxicity Estimate VOC - (Volatile Organic Compound)