



# SAFETY DATA SHEET

Creation Date 22-Sep-2009

Revision Date 26-Nov-2013

Revision Number 6

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

### 1.1. Product identifier

Product Description:	n-Butyl acetate
Cat No. :	B/4951/08, B/4951/15, B/4951/17, B/4951/24, B/4951/27, B/4951/21RSS, B/4951/24RSS, B/4951/25RSS, B/4951/34RSS, B/4951/27RSS
Synonyms	Butyl acetate; Acetic acid, butyl ester; 1-Butyl acetate
CAS-No	123-86-4
EC-No.	204-658-1
Molecular Formula	C6 H12 O2
Reach Registration Number	01-2119485493-29

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

Recommended Use	Laboratory chemicals
Uses advised against	No Information available

### 1.3. Details of the supplier of the safety data sheet

Company	Fisher Scientific UK Bishop Meadow Road, Loughborough, Leicestershire LE11 5RG, United Kingdom
E-mail address	begel.sdsdesk@thermofisher.com

F.A.O.  
QUALITY /  
M.S.

### 1.4. Emergency telephone number

Tel: 01509 231166  
Chemtrec US: (800) 424-9300  
Chemtrec EU: 001 (202) 483-7616

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

#### CLP Classification - Regulation (EC) No 1272/2008

##### Physical hazards

Flammable liquids

Category 3

##### Health hazards

Specific target organ toxicity - (single exposure)

Category 3

##### Environmental hazards

Based on available data, the classification criteria are not met

#### Classification according to EU Directives 67/548/EEC or 1999/45/EC

R-phrase(s)

R10 - Flammable

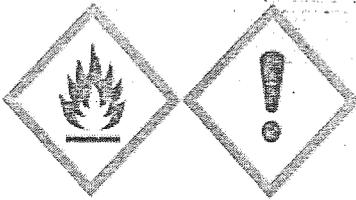
R66 - Repeated exposure may cause skin dryness or cracking

R67 - Vapors may cause drowsiness and dizziness

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

## SECTION 2: HAZARDS IDENTIFICATION

## 2.2. Label elements



Signal Word

Warning

## Hazard Statements

- H226 - Flammable liquid and vapor  
 H336 - May cause drowsiness or dizziness  
 EUH066 - Repeated exposure may cause skin dryness or cracking

## Precautionary Statements

- P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing  
 P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray  
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
 P240 - Ground/Bond container and receiving equipment

## 2.3. Other hazards

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

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

## 3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008	DSD Classification - 67/548/EEC
n-Butyl acetate	123-86-4	EEC No. 204-658-1	>95	STOT SE 3 (H336) Flam. Liq. 3 (H226) EUH066	R10 R66 R67

Reach Registration Number

01-2119485493-29

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

## SECTION 4: FIRST AID MEASURES

## 4.1. Description of first aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Ingestion	Do not induce vomiting. Obtain medical attention.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.

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**Protection of First-aiders** 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**

Breathing difficulties. 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. Symptoms may be delayed.

**SECTION 5: FIREFIGHTING MEASURES****5.1. Extinguishing media****Suitable Extinguishing Media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

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

No information available.

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

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).

**Hazardous Combustion Products**

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>).

**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.

**SECTION 6: ACCIDENTAL RELEASE MEASURES****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges.

**6.2. Environmental precautions**

Should not be released into the environment. See Section 12 for additional ecological information. Do not flush into surface water or sanitary sewer system.

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

Remove all sources of ignition. Soak up with inert absorbent material. Use spark-proof tools and explosion-proof equipment. Keep in suitable, closed containers for disposal. Take precautionary measures against static discharges.

**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. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use explosion-proof equipment. Take precautionary measures against static discharges.

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

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Flammables area.

### 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 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement.

**IRE** - 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority.

Component n-Butyl acetate	<b>European Union</b>	<b>The United Kingdom</b>	<b>France</b>	<b>Belgium</b>	<b>Spain</b>
		STEL: 200 ppm 15 min STEL: 966 mg/m <sup>3</sup> 15 min TWA: 150 ppm 8 hr TWA: 724 mg/m <sup>3</sup> 8 hr	TWA / VME: 150 ppm (8 heures). TWA / VME: 710 mg/m <sup>3</sup> (8 heures). STEL / VLCT: 200 ppm. STEL / VLCT: 940 mg/m <sup>3</sup> .	TWA: 150 ppm 8 uren TWA: 723 mg/m <sup>3</sup> 8 uren STEL: 200 ppm 15 minuten STEL: 964 mg/m <sup>3</sup> 15 minuten	STEL / VLA-EC: 200 ppm (15 minutos). STEL / VLA-EC: 965 mg/m <sup>3</sup> (15 minutos). TWA / VLA-ED: 150 ppm (8 horas) TWA / VLA-ED: 724 mg/m <sup>3</sup> (8 horas)
Component n-Butyl acetate	<b>Italy</b>	<b>Germany</b>	<b>Portugal</b>	<b>The Netherlands</b>	<b>Finland</b>
		TWA: 100 ppm (8 Stunden). MAK TWA: 480 mg/m <sup>3</sup> (8 Stunden). MAK Höhepunkt: 200 ppm Höhepunkt: 960 mg/m <sup>3</sup>	STEL: 200 ppm 15 minutos TWA: 150 ppm 8 horas		TWA: 150 ppm 8 tunteina TWA: 720 mg/m <sup>3</sup> 8 tunteina STEL: 200 ppm 15 minuutteina STEL: 960 mg/m <sup>3</sup> 15 minuutteina
Component n-Butyl acetate	<b>Austria</b>	<b>Denmark</b>	<b>Switzerland</b>	<b>Poland</b>	<b>Norway</b>
	STEL: 100 ppm 15 Minuten STEL: 480 mg/m <sup>3</sup> 15 Minuten TWA: 100 ppm 8 Stunden TWA: 480 mg/m <sup>3</sup> 8 Stunden	TWA: 150 ppm 8 timer TWA: 710 mg/m <sup>3</sup> 8 timer	STEL: 200 ppm 15 Minuten STEL: 960 mg/m <sup>3</sup> 15 Minuten MAK: 100 ppm 8 Stunden MAK: 480 mg/m <sup>3</sup> 8 Stunden		
Component n-Butyl acetate	<b>Bulgaria</b>	<b>Croatia</b>	<b>Ireland</b>	<b>Cyprus</b>	<b>Czech Republic</b>
	TWA: 710.0 mg/m <sup>3</sup> STEL : 950.0 mg/m <sup>3</sup>	TWA: 150 ppm 8 satima. TWA: 274 mg/m <sup>3</sup> 8 satima. STEL: 200 ppm 15 minutama. STEL: 966 mg/m <sup>3</sup> 15 minutama.	TWA: 150 ppm 8 hr. TWA: 710 mg/m <sup>3</sup> 8 hr. STEL: 200 ppm 15 min STEL: 950 mg/m <sup>3</sup> 15 min		TWA: 950 mg/m <sup>3</sup> 8 hodinách. Ceiling: 1200 mg/m <sup>3</sup>

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Component	Estonia	Gibraltar	Greece	Hungary	Iceland
n-Butyl acetate	TWA: 100 ppm 8 tundides. TWA: 500 mg/m <sup>3</sup> 8 tundides. STEL: 150 ppm 15 minutites. STEL: 700 mg/m <sup>3</sup> 15 minutites.		STEL: 200 ppm STEL: 950 mg/m <sup>3</sup> TWA: 150 ppm TWA: 710 mg/m <sup>3</sup>	STEL: 950 mg/m <sup>3</sup> 15 percekben. TWA: 950 mg/m <sup>3</sup> 8 órában.	TWA: 150 ppm 8 klukkustundum. TWA: 700 mg/m <sup>3</sup> 8 klukkustundum. Ceiling: 300 ppm Ceiling: 1400 mg/m <sup>3</sup>

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
n-Butyl acetate	TWA: 200 mg/m <sup>3</sup>				TWA: 150 ppm 8 ore TWA: 715 mg/m <sup>3</sup> 8 ore STEL: 200 ppm 15 minute STEL: 950 mg/m <sup>3</sup> 15 minute

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
n-Butyl acetate	TWA: 50 mg/m <sup>3</sup> STEL: 200 mg/m <sup>3</sup> vapor	Ceiling: 960 mg/m <sup>3</sup> TWA: 100 ppm TWA: 480 mg/m <sup>3</sup>	TWA: 100 ppm 8 urah TWA: 480 mg/m <sup>3</sup> 8 urah STEL: 100 ppm 15 minutah STEL: 480 mg/m <sup>3</sup> 15 minutah	STV: 150 ppm 15 minuter STV: 700 mg/m <sup>3</sup> 15 minuter LLV: 100 ppm 8 timmar. LLV: 500 mg/m <sup>3</sup> 8 timmar.	

**Biological limit values**

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

**Monitoring methods**

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

MDHS70 General methods for sampling airborne gases and vapours

MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography

MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Derived No Effect Level (DNEL) See table for values

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal				
Inhalation	960 mg/m <sup>3</sup>	960 mg/m <sup>3</sup>	480 mg/m <sup>3</sup>	480 mg/m <sup>3</sup>

Predicted No Effect Concentration (PNEC) See values below.

Fresh water	0.18 mg/l
Fresh water sediment	0.981 mg/kg
Marine water	0.018 mg/l
Marine water sediment	0.0981 mg/kg
Water Intermittent	0.36 mg/l
Microorganisms in sewage treatment	35.6 mg/l
Soil (Agriculture)	0.0903 mg/kg

**3.2. Exposure controls**

**Engineering Measures**

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.

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**

Safety glasses with side-shields (European standard - EN 166)

**Hand Protection**

Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Butyl rubber	< 125 minutes	0.63 mm	Level 4	Permeation rate 83 µg/cm <sup>2</sup> /min
Nitrile rubber	< 78 minutes	0.38 mm	Level 3 EN 374	Permeation rate 135 µg/cm <sup>2</sup> /min As tested under EN374-3 Determination of Resistance to Permeation by Chemicals

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 compatibility, 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.

**Skin and body protection**

Wear appropriate protective gloves and clothing to prevent skin exposure

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

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

**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..

**Recommended Filter type:** Organic gases and vapours filter, Type A, Brown, conforming to EN14387.

**Small scale/Laboratory use**

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Valve filtering: EN405 or Half mask: EN140 plus filter, EN 141  
When RPE is used a face piece Fit Test should be conducted.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice

**Environmental exposure controls**

Prevent product from entering drains.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

Appearance	Colorless
Physical State	Liquid.
Odor	sweet
Odor Threshold	7 - 20 ppm
pH	6.2
	5 g/l aq.sol. (20°C)

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<b>Melting Point/Range</b>	-77.9°C / -108.2°F	
<b>Softening Point</b>	No data available	
<b>Boiling Point/Range</b>	127 - 126°C / 260.6 - 258.8°F	
<b>Flash Point</b>	24 - 27°C / 75.2 - 80.6°F	<b>Method</b> - Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106) DIN EN ISO 13736
<b>Evaporation Rate</b>	5.8 (Carbon Tetrachloride = 1.0)	
<b>Flammability (solid,gas)</b>	Not applicable	Liquid
<b>Explosion Limits</b>	<b>Lower</b> 1.2 vol% <b>Upper</b> 7.5 vol%	
<b>Vapor Pressure</b>	13 mbar @ 20 °C	
<b>Vapor Density</b>	4.0 (Air = 1.0)	(Air = 1.0)
<b>Specific Gravity / Density</b>	0.880	
<b>Bulk Density</b>	Not applicable	Liquid
<b>Water Solubility</b>	7 g/L (20°C)	
<b>Solubility in other solvents</b>	No information available.	
<b>Partition Coefficient (n-octanol/water)</b>	<b>Component</b> n-Butyl acetate	<b>log Pow</b> 1.81
<b>Autoignition Temperature</b>	370°C / 698°F	
<b>Decomposition temperature</b>	No data available	
<b>Viscosity</b>	0.69 mPa.s @ 25 °C	
<b>Explosive Properties</b>	Not explosive	(no chemical groups associated with explosive properties) explosive air/vapour mixtures possible (based on the chemical structure of the substance and oxidation states of the constituent elements)
<b>Oxidizing Properties</b>	Not oxidising	

**9.2. Other information**

<b>Molecular Formula</b>	C6 H12 O2
<b>Molecular Weight</b>	116.16

**SECTION 10: STABILITY AND REACTIVITY****10.1. Reactivity**

None known, based on information available.

**10.2. Chemical stability**

Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.
<b>Hazardous Reactions</b>	None under normal processing.

**10.4. Conditions to avoid**

Incompatible products, Excess heat, Keep away from open flames, hot surfaces and sources of ignition.

**10.5. Incompatible materials**

Strong oxidizing agents.

**10.6. Hazardous decomposition products**Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>).

## SECTION 11: TOXICOLOGICAL INFORMATION

## 11.1. Information on toxicological effects

## Product Information

## (a) acute toxicity;

Oral

Based on available data, the classification criteria are not met

Dermal

Based on available data, the classification criteria are not met

Inhalation

Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
n-Butyl acetate	10768 mg/kg ( Rat )	17600 mg/kg ( Rabbit )	390 ppm ( Rat ) 4 h

## (b) skin corrosion/irritation;

Based on available data, the classification criteria are not met

## (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

Based on available data, the classification criteria are not met

## (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;

Category 3

## (i) STOT-repeated exposure;

Based on available data, the classification criteria are not met

Target Organs

Eyes, Respiratory system.

## (j) aspiration hazard;

Based on available data, the classification criteria are not met

## Other Adverse Effects

See actual entry in RTECS for complete information

## Symptoms / effects,

Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

## both acute and delayed

## SECTION 12: ECOLOGICAL INFORMATION

## 12.1. Toxicity

## Ecotoxicity effects

Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
n-Butyl acetate	Lepomis macrochirus: LC50: 100 mg/L/96H Pimephales promelas: LC50:17-19 mg/L/96h	72.8 mg/L EC50 = 24 h	674.7 mg/L EC50 = 72 h	EC50 = 70.0 mg/L 5 min EC50 = 82.2 mg/L 15 min EC50 = 959 mg/L 18 h EC50 = 98.9 mg/L 30 min

## 12.2. Persistence and degradability

Readily biodegradable

## Persistence

Soluble in water, Persistence is unlikely, based on information available.

## Degradation in sewage treatment plant

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

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**12.3. Bioaccumulative potential** Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
n-Butyl acetate	1.81	No data available

**12.4. Mobility in soil**

The product is water soluble, and may spread in water systems. . Will likely be mobile in the environment due to its water solubility. Highly mobile in soils. 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. Other adverse effects****Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**Persistent Organic Pollutant**

This product does not contain any known or suspected substance

**Ozone Depletion Potential**

This product does not contain any known or suspected substance

**SECTION 13: DISPOSAL CONSIDERATIONS****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 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 Catalogue, Waste Codes are not product specific, but application specific.

**Other Information**

Do not dispose of waste into sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be incinerated, when in compliance with local regulations.

**SECTION 14: TRANSPORT INFORMATION****IMDG/IMO**

<b>14.1. UN number</b>	UN1123
<b>14.2. UN proper shipping name</b>	Butyl acetates
<b>14.3. Transport hazard class(es)</b>	3
<b>14.4. Packing group</b>	III

**ADR**

<b>14.1. UN number</b>	UN1123
<b>14.2. UN proper shipping name</b>	Butyl acetates
<b>14.3. Transport hazard class(es)</b>	3
<b>14.4. Packing group</b>	III

**IATA**

<b>14.1. UN number</b>	UN1123
<b>14.2. UN proper shipping name</b>	Butyl acetates
<b>14.3. Transport hazard class(es)</b>	3
<b>14.4. Packing group</b>	III

**14.5. Environmental hazards** No hazards identified

**14.6. Special precautions for user** No special precautions required

n-Butyl acetate

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

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

International Inventories

X = listed

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	CHINA	AICS	KECL
n-Butyl acetate	204-658-1	-		X	X	-	X	X	X	X	X

National Regulations

WGK Classification

WGK Classification Hazardous to water/Class 1

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
n-Butyl acetate	WGK 1	

Component	France - INRS (Tables of occupational diseases)
n-Butyl acetate	Tableaux des maladies professionnelles (TMP) - RG 84

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

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

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

### 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted by the manufacturer/importer

## SECTION 16: OTHER INFORMATION

### Full text of R-phrases referred to under sections 2 and 3

R10 - Flammable

R66 - Repeated exposure may cause skin dryness or cracking

R67 - Vapors may cause drowsiness and dizziness

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

H226 - Flammable liquid and vapor

H336 - May cause drowsiness or dizziness

EUH066 - Repeated exposure may cause skin dryness or cracking

### Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Existing and Evaluated Chemical Substances

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

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japan 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 Industrial Hygiene

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

NOEC - No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

PNEC - Predicted No Effect Concentration

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

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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

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 Compounds

**Key literature references and sources for data**

Suppliers safety data sheet,

Chemadvisor - LOLI,

Merck index,

RTECS

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Creation Date 22-Sep-2009

Revision Date 26-Nov-2013

Revision Summary

Reason for revision Update to Format, (M)SDS sections updated, 4, 8, 9, 11, 12, 15, 16.

**This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**

**Disclaimer**

The information provided on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

**End of Safety Data Sheet**