



# SAFETY DATA SHEET

## SPECIALTY ELECTRONIC MATERIALS UK LIMITED

Safety Data Sheet according to Regulation (EC) No 1907/2006 - Annex II

**Product name:** BETAPRIME™ 5500

**Revision Date:** 14.12.2022

**Version:** 19.0

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SPECIALTY ELECTRONIC MATERIALS UK LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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

#### 1.1 Product identifier

**Product name:** BETAPRIME™ 5500

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

**Identified uses:** A primer - For use in automotive applications.

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

##### COMPANY IDENTIFICATION

SPECIALTY ELECTRONIC MATERIALS UK  
LIMITED  
KINGS COURT, LONDON ROAD  
STEVENAGE  
England  
SG1 2NG  
UNITED KINGDOM

**Manufacturer** DuPont Specialty Products GmbH & Co. KG

**Customer Information Number:**

00800-3876-6838

SDSQuestion-EU@dupont.com

#### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +(44)-870-8200418

**Local Emergency Contact:** +(44)-870-8200418

### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008:**

Flammable liquids - Category 2 - H225

Eye irritation - Category 2 - H319

Respiratory sensitisation - Category 1 - H334

Specific target organ toxicity - single exposure - Category 3 - H336

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008:

### Hazard pictograms



Signal word: DANGER

### Hazard statements

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H336 May cause drowsiness or dizziness.

### Precautionary statements

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

P233 Keep container tightly closed.

P261 Avoid breathing mist or vapours.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a  
+ P312 POISON CENTER/ doctor if you feel unwell.

P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

### Supplemental information

EUH066 Repeated exposure may cause skin dryness or cracking.

----- As from 24 August 2023 adequate training is required before industrial or professional use.

**Contains** Methyl ethyl ketone; 3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate; 4,4'-methylenediphenyl diisocyanate; Dimethylbis((1-oxoneodecyl)oxy)stannane

## 2.3 Other hazards

Static-accumulating flammable liquid.

## Endocrine disrupting properties (human health):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## Endocrine disrupting properties (environment):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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


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**3.2 Mixtures**

This product is a mixture.

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
<b>CASRN</b> 78-93-3 <b>EC-No.</b> 201-159-0 <b>Index-No.</b> 606-002-00-3 <b>REACH No</b> 01-2119457290-43	Methyl ethyl ketone	Flam. Liq. 2 - H225 Eye Irrit. 2 - H319 STOT SE 3 - H336 EUH066	Oral ATE: 2,193 mg/kg Inhalation ATE: 32 mg/l (vapour) Dermal ATE: > 8,049 mg/kg	> 50.0 - < 60.0 %
<b>CASRN</b> 4435-53-4 <b>EC-No.</b> 224-644-9 <b>Index-No.</b> - <b>REACH No</b> 01-2119548364-36	3-Methoxy-1-butyl acetate	Not classified	Oral ATE: 4,210 mg/kg	< 10.0 %
<b>CASRN</b> 101-68-8 <b>EC-No.</b> 202-966-0 <b>Index-No.</b> 615-005-00-9 <b>REACH No</b> 01-2119457014-47	4,4'-methylenediphenyl diisocyanate	Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Carc. 2 - H351 STOT SE 3 - H335 STOT RE 2 - H373	Eye Irrit.2; H319:C >= 5 % STOT SE3; H335:C >= 5 % Skin Irrit.2; H315:C >= 5 % Resp. Sens.1; H334:C >= 0.1 % Oral ATE: > 2,000 mg/kg Inhalation ATE: 1.5 mg/l (dust/mist) Dermal ATE: > 9,400 mg/kg	> 0.1 - < 1.0 %
<b>CASRN</b> 4098-71-9	3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl	Acute Tox. 1 - H330 Skin Irrit. 2 - H315	Resp. Sens.1; H334:C >= 0.5 % Skin Sens.1; H317:C >= 0.5 %	> 0.1 - < 0.5 %

<b>EC-No.</b> 223-861-6 <b>Index-No.</b> 615-008-00-5 <b>REACH No</b> 01-2119490408-31	isocyanate; isophorone di-isocyanate	Eye Irrit. 2 - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 STOT SE 3 - H335 Aquatic Chronic 2 - H411	Oral ATE: 4,825 mg/kg  Inhalation ATE: 0.04 mg/l (dust/mist)  Dermal ATE: > 7,000 mg/kg	
<b>CASRN</b> 68928-76-7 <b>EC-No.</b> 273-028-6 <b>Index-No.</b> - <b>REACH No</b> -	Dimethylbis((1-oxoneodecyl)oxy)stannane	Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Skin Sens. 1A - H317 Aquatic Chronic 3 - H412	Oral ATE: 892 mg/kg	> 0.01 - < 0.1 %

If present in this product, any not classified components disclosed above for which no country specific OEL value(s) is(are) indicated under Section 8, are being disclosed as voluntarily disclosed components.

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin contact:** Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands.

**Eye contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

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

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

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

**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives

may be of help. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. If you are sensitized to diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

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## SECTION 5: FIREFIGHTING MEASURES

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### 5.1 Extinguishing media

**Suitable extinguishing media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Unsuitable extinguishing media:** Do not use direct water stream. Straight or direct water streams may not be effective to extinguish fire.

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

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** Container may vent and/or rupture due to fire. Electrically ground and bond all equipment. Flammable mixtures of this product are readily ignited even by static discharge. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Flammable mixtures may exist within the vapor space of containers at room temperature. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water may not be effective in extinguishing fire. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Evacuate area. Only trained and properly protected personnel must be involved in clean-up operations. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. For large spills, warn public of downwind explosion hazard. Check area with combustible gas detector before reentering area. Ground and bond all containers and handling equipment. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**6.2 Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**6.3 Methods and materials for containment and cleaning up:** Contain spilled material if possible. Absorb with materials such as: Cat litter. Sand. Sawdust. Ground and bond all containers and handling equipment. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

**6.4 Reference to other sections:** References to other sections, if applicable, have been provided in the previous sub-sections.

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## SECTION 7: HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use only with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Ignition sources can include and are not limited to pilot lights, flames, smoking, sparks, heaters, electrical equipment, and static discharges. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Never use air pressure for transferring product unless a risk assessment has been conducted that includes consideration of the flammability of the product. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### **Advice on general occupational hygiene**

Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. Ensure that eye flushing systems and safety showers are located close to the working place.

**7.2 Conditions for safe storage, including any incompatibilities:** Minimize sources of ignition, such as static build-up, heat, spark or flame. Keep container closed. Flammable mixtures may exist within the vapor space of containers at room temperature.

### **Storage stability**

**Storage temperature:**

&gt; 5 - &lt; 25 °C

**7.3 Specific end use(s):** Information on specific end use(s) of this product may be provided in a technical data sheet/annex to the SDS (if available).

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
Methyl ethyl ketone	ACGIH	TWA	200 ppm
	Further information: CNS impair: Central Nervous System impairment; URT irr: Upper Respiratory Tract irritation; PNS impair: Peripheral Nervous System impairment; BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)		
	ACGIH	STEL	300 ppm
	Further information: CNS impair: Central Nervous System impairment; URT irr: Upper Respiratory Tract irritation; PNS impair: Peripheral Nervous System impairment; BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)		
	2000/39/EC	TWA	600 mg/m3 200 ppm
	Further information: Indicative		
	2000/39/EC	STEL	900 mg/m3 300 ppm
	Further information: Indicative		
	GB EH40	TWA	600 mg/m3 200 ppm
	Further information: Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		
	GB EH40	STEL	899 mg/m3 300 ppm
	Further information: Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		
4,4'-methylenediphenyl diisocyanate	ACGIH	TWA	0.005 ppm
	Further information: resp sens: Respiratory sensitization		
	GB EH40	TWA	0.02 mg/m3 , NCO
	Further information: 53+54: Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers.; 55: Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. For substances that can cause occupational asthma, COSHH requires that exposure be reduced as low as is reasonably practicable. Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.; Sen: Capable of causing occupational asthma.; 56: The 'Sen'		

	notation in the list of WELs has been assigned only to those substances which may cause occupational asthma.		
	GB EH40	STEL	0.07 mg/m3 , NCO
	Further information: 53+54: Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers.; 55: Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. For substances that can cause occupational asthma, COSHH requires that exposure be reduced as low as is reasonably practicable. Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.; Sen: Capable of causing occupational asthma.; 56: The 'Sen' notation in the list of WELs has been assigned only to those substances which may cause occupational asthma.		
3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone diisocyanate	ACGIH	TWA	0.005 ppm
	Further information: resp sens: Respiratory sensitization		
	GB EH40	TWA	0.02 mg/m3 , NCO
	Further information: 53+54: Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers.; 55: Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. For substances that can cause occupational asthma, COSHH requires that exposure be reduced as low as is reasonably practicable. Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.; Sen: Capable of causing occupational asthma.; 56: The 'Sen' notation in the list of WELs has been assigned only to those substances which may cause occupational asthma.		
	GB EH40	STEL	0.07 mg/m3 , NCO
	Further information: 53+54: Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range		



	in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers.; 55: Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. For substances that can cause occupational asthma, COSHH requires that exposure be reduced as low as is reasonably practicable. Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.; Sen: Capable of causing occupational asthma.; 56: The 'Sen' notation in the list of WELs has been assigned only to those substances which may cause occupational asthma.		
Dimethylbis((1-oxoneodecyl)oxy)stannane	ACGIH	TWA	0.1 mg/m3 , Tin
	Further information: A4: Not classifiable as a human carcinogen; Skin: Danger of cutaneous absorption		
	ACGIH	STEL	0.2 mg/m3 , Tin
	Further information: A4: Not classifiable as a human carcinogen; Skin: Danger of cutaneous absorption		
	GB EH40	TWA	0.1 mg/m3 , Tin
	Further information: Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		
	GB EH40	STEL	0.2 mg/m3 , Tin
	Further information: Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		

**Biological occupational exposure limits**

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Methyl ethyl ketone	78-93-3	butan-2-one	Urine	After shift	70 micromol per litre	GB EH40 BAT
		methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI
4,4'-methylenediphenyl diisocyanate	101-68-8	urinary diamine (Isocyanate s)	Urine	At the end of the period of exposure	1 µmol/mol creatinine	GB EH40 BAT
3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate	4098-71-9	urinary diamine (Isocyanate s)	Urine	At the end of the period of exposure	1 µmol/mol creatinine	GB EH40 BAT

**Derived No Effect Level**

Methyl ethyl ketone

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	1161 mg/kg bw/day 41 2 mg/kg bw/day	600 mg/m <sup>3</sup>	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	106 mg/m <sup>3</sup>	31 mg/kg bw/day	n.a.	n.a.

4,4'-methylenediphenyl diisocyanate

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
50 mg/kg bw/day	0.1 mg/m <sup>3</sup>	28.7 mg/cm <sup>2</sup>	0.1 mg/m <sup>3</sup>	n.a.	0.05 mg/m <sup>3</sup>	n.a.	0.05 mg/m <sup>3</sup>

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
25 mg/kg bw/day	0.05 mg/m <sup>3</sup>	20 mg/kg bw/day	17.2 mg/cm <sup>2</sup>	0.05 mg/m <sup>3</sup>	n.a.	0.025 mg/m <sup>3</sup>	n.a.	n.a.	0.025 mg/m <sup>3</sup>

**Predicted No Effect Concentration**

Methyl ethyl ketone

Compartment	PNEC
Fresh water	55.8 mg/l
Marine water	55.8 mg/l
Intermittent use/release	55.8 mg/l
Sewage treatment plant	709 mg/l
Fresh water sediment	284.74 mg/kg
Marine sediment	284.7 mg/kg
Soil	22.5 mg/kg
Oral (Secondary Poisoning)	1000 mg/kg food

4,4'-methylenediphenyl diisocyanate

Compartment	PNEC
Fresh water	1 mg/l
Marine water	0.1 mg/l
Intermittent use/release	10 mg/l

Soil	1 mg/kg dry weight (d.w.)
Sewage treatment plant	1 mg/l

## 8.2 Exposure controls

**Engineering controls:** Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. The odor and irritancy of this material are inadequate to warn of excessive exposure.

### Individual protection measures

**Eye/face protection:** Use chemical goggles.

#### Skin protection

**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Viton. Avoid gloves made of: Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use chemical protective clothing resistant to this material, when there is any possibility of skin contact.

**Respiratory protection:** Atmospheric levels should be maintained below the exposure guideline. When atmospheric levels may exceed the exposure guideline, use an approved air-purifying respirator equipped with an organic vapor sorbent and a particle filter. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure air-supplying respirator (air line or self-contained breathing apparatus). For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply.

### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

<b>Physical state</b>	liquid
<b>Colour</b>	Black
<b>Odour</b>	Characteristic <b>Odour Threshold</b> No test data available
<b>Melting point/freezing point</b>	Melting point/range: No test data available  Freezing point: No test data available
<b>Boiling point or initial boiling point and boiling range</b>	Boiling point/boiling range: 80 °C Method: Estimated.
<b>Flammability</b>	<b>Gases/Solids</b> Flammable liquid <b>Gases/Solids</b>  <b>Liquids</b>  <b>Liquids</b> Static-accumulating flammable liquid.
<b>Lower explosion limit and upper explosion limit / flammability limit</b>	<b>Lower explosion limit / Lower flammability limit</b> 8 % vol Method: Estimated.  <b>Upper explosion limit / Upper flammability limit</b> 11.5 % vol Estimated.
<b>Flash point</b>	-10 °C Method: DIN 51755 (closed cup)
<b>Auto-ignition temperature</b>	400 °C Method: Estimated.
<b>Decomposition temperature</b>	<b>Thermal decomposition</b> No test data available
<b>pH</b>	Substance/mixture is non-soluble (in water).
<b>Viscosity</b>	<b>Viscosity, kinematic</b> No test data available

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	<b>Viscosity, dynamic</b> No test data available
<b>Solubility(ies)</b>	<b>Water solubility</b> Not applicable
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Vapour pressure</b>	150 hPa (20 °C) Method: Estimated.
<b>Density and / or relative density</b>	<b>Relative Density (water = 1)</b> 0.95 Method: Supplier
<b>Relative vapour density</b>	2.5 Method: Estimated.
<b>Particle characteristics</b>	Not applicable

## 9.2 Other information

<b>Explosives</b>	No test data available
<b>Oxidizing properties</b>	No test data available
<b>Evaporation rate</b>	No test data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## SECTION 10: STABILITY AND REACTIVITY

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**10.1 Reactivity:** No dangerous reaction known under conditions of normal use.

**10.2 Chemical stability:** Stable under recommended storage conditions. See Storage, Section 7.

**10.3 Possibility of hazardous reactions:** Polymerization will not occur.

**10.4 Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose. Avoid static discharge.

**10.5 Incompatible materials:** Avoid contact with: Acids. Bases. Oxidizers.

**10.6 Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

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

#### Acute toxicity

##### Acute toxicity (Acute oral toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### Acute toxicity (Acute dermal toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### Acute toxicity (Acute inhalation toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Acute toxicity estimate, 4 Hour, dust/mist, > 5 mg/l Calculation method

#### Skin corrosion/irritation

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

#### Serious eye damage/eye irritation

Eye irritation, Category 2

H319: Causes serious eye irritation.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

#### Respiratory or skin sensitisation

Respiratory sensitisation, Category 1

H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Germ cell mutagenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Carcinogenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Reproductive toxicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Toxicity to reproduction assessment :

Product test data not available. Refer to component data.

Assessment Teratogenicity:

Product test data not available. Refer to component data.

**STOT - single exposure**

Specific target organ toxicity - single exposure, Category 3

H336: May cause drowsiness or dizziness.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**STOT - repeated exposure**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Aspiration Hazard**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**COMPONENTS INFLUENCING TOXICOLOGY:**

**Methyl ethyl ketone**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, 2,193 mg/kg

**Acute toxicity (Acute dermal toxicity)**

LD50, Rabbit, > 8,049 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

LC50, Mouse, 4 Hour, vapour, 32 mg/l

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause moderate skin irritation with local redness.

Repeated contact may cause moderate skin irritation with local redness.

May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause pain disproportionate to the level of irritation to eye tissues.

May cause moderate eye irritation which may be slow to heal.

May cause moderate corneal injury.

Vapor may cause eye irritation experienced as mild discomfort and redness.

**Respiratory or skin sensitisation**

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were negative.

**Carcinogenicity**

Available data are inadequate to evaluate carcinogenicity.

**Reproductive toxicity**

Toxicity to reproduction assessment :

For similar material(s): In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**STOT - single exposure**

May cause drowsiness or dizziness.

Route of Exposure: Inhalation

Target Organs: Nervous system

**STOT - repeated exposure**

Methyl ethyl ketone has caused liver effects in laboratory animals exposed by inhalation to high concentrations.

Methyl ethyl ketone is probably not neurotoxic in itself but it potentiates the neurotoxicity of methyl-n-butyl ketone and n-hexane.

**Aspiration Hazard**

May be harmful if swallowed and enters airways.



**3-Methoxy-1-butyl acetate**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, 4,210 mg/kg

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

The LC50 has not been determined.

**Skin corrosion/irritation**

Prolonged contact may cause skin irritation with local redness.  
May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause slight eye irritation.  
May cause slight corneal injury.

**Respiratory or skin sensitisation**

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro mutagenicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

No relevant data found.

**Aspiration Hazard**

Based on available information, aspiration hazard could not be determined.

**4,4'-methylenediphenyl diisocyanate**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute dermal toxicity)**

LD50, Rabbit, > 9,400 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 1 Hour, dust/mist, 2.24 mg/l

Acute toxicity estimate, dust/mist, 1.5 mg/l Acute toxicity estimate according to Regulation (EC) No. 1272/2008

**Skin corrosion/irritation**

Prolonged contact may cause moderate skin irritation with local redness.  
Repeated contact may cause moderate skin irritation with local redness.  
May stain skin.

**Serious eye damage/eye irritation**

May cause moderate eye irritation.  
May cause slight temporary corneal injury.

**Respiratory or skin sensitisation**

Skin contact may cause an allergic skin reaction.  
Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.

May cause allergic respiratory reaction.

MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized.

Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

**Germ cell mutagenicity**

Genetic toxicity data on MDI are inconclusive. MDI was weakly positive in some in vitro studies; other in vitro studies were negative. Animal mutagenicity studies were predominantly negative.

**Carcinogenicity**

Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m<sup>3</sup>) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**STOT - single exposure**

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

**STOT - repeated exposure**

Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate****Acute toxicity (Acute oral toxicity)**

LD50, Rat, 4,825 mg/kg

**Acute toxicity (Acute dermal toxicity)**

LD50, Rat, > 7,000 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, male and female, 4 Hour, dust/mist, 0.04 mg/l

**Skin corrosion/irritation**

Prolonged contact may cause severe skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

Effects may be slow to heal.

**Serious eye damage/eye irritation**

May cause severe eye irritation.

May cause severe corneal injury.

Effects may be slow to heal.

Vapor or mist may cause eye irritation.

**Respiratory or skin sensitisation**

Has caused allergic skin reactions in humans.

Once an individual is sensitized, reexposure to very small amounts of vapor, mist or liquid isophorone diisocyanate may cause an allergic skin reaction.

May cause allergic respiratory reaction.

Reexposure to extremely low isocyanate concentrations may cause allergic respiratory reactions in individuals already sensitized.

Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

May cause respiratory irritation.

**STOT - repeated exposure**

Decreased lung function has been associated with overexposure to isocyanates.

**Aspiration Hazard**

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

**Dimethylbis((1-oxoneodecyl)oxy)stannane**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, 892 mg/kg

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

The LC50 has not been determined.

**Skin corrosion/irritation**

Brief contact may cause skin irritation with local redness.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

**Respiratory or skin sensitisation**

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

Not mutagenic in Ames Test

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Available data are inadequate to determine single exposure specific target organ toxicity.

**STOT - repeated exposure**

No relevant data found.

**Aspiration Hazard**

No aspiration toxicity classification

## 11.2. Information on other hazards

### Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### Further information

No data available

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## SECTION 12: ECOLOGICAL INFORMATION

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*Ecotoxicological information appears in this section when such data is available.*

### 12.1 Toxicity

#### Methyl ethyl ketone

##### **Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 2,993 mg/l, OECD Test Guideline 203

##### **Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), static test, 48 Hour, 308 mg/l, OECD Test Guideline 202

##### **Acute toxicity to algae/aquatic plants**

ErC50, Pseudokirchneriella subcapitata (microalgae), static test, 96 Hour, Growth rate inhibition, 2,029 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 96 Hour, 1,240 mg/l, OECD Test Guideline 201

#### 3-Methoxy-1-butyl acetate

##### **Acute toxicity to fish**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

LC50, Danio rerio (zebra fish), semi-static test, 96 Hour, 7.1 mg/l

##### **Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 24 Hour, 360 mg/l

LC50, crustacean Chaetogammarus marinus, 96 Hour, 128 mg/l

##### **Acute toxicity to algae/aquatic plants**

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, > 70 mg/l, OECD Test Guideline 201 or Equivalent

##### **Toxicity to bacteria**

EC50, Bacteria, 16 Hour, > 1,000 mg/l

#### **4,4'-methylenediphenyl diisocyanate**

##### **Acute toxicity to fish**

The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species.

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

Based on information for a similar material:

LC50, Danio rerio (zebra fish), static test, 96 Hour, > 1,000 mg/l, OECD Test Guideline 203 or Equivalent

##### **Acute toxicity to aquatic invertebrates**

Based on information for a similar material:

EC50, Daphnia magna (Water flea), static test, 24 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

##### **Acute toxicity to algae/aquatic plants**

Based on information for a similar material:

NOEC, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, 1,640 mg/l, OECD Test Guideline 201 or Equivalent

##### **Toxicity to bacteria**

Based on information for a similar material:

EC50, activated sludge, static test, 3 Hour, Respiration rates., > 100 mg/l

##### **Toxicity to soil-dwelling organisms**

EC50, Eisenia fetida (earthworms), Based on information for a similar material:, 14 d, > 1,000 mg/kg

##### **Toxicity to terrestrial plants**

EC50, Avena sativa (oats), Growth inhibition, 1,000 mg/l

EC50, Lactuca sativa (lettuce), Growth inhibition, 1,000 mg/l

#### **3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate**

##### **Acute toxicity to fish**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

For this family of materials:

The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species.

LC50, Leuciscus idus (Golden orfe), static test, 48 Hour, 1.8 mg/l

##### **Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), 24 Hour, 84 mg/l

##### **Acute toxicity to algae/aquatic plants**

EC50, alga Scenedesmus sp., 72 Hour, Biomass, 119 mg/l

##### **Toxicity to bacteria**

EC10, Bacteria, 6 Hour, 554 mg/l

**Dimethylbis((1-oxoneodecyl)oxy)stannane****Acute toxicity to aquatic invertebrates**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

EC50, Daphnia magna (Water flea), 48 Hour, 39 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 7.6 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, 1.2 mg/l, OECD Test Guideline 201

**Toxicity to bacteria**

For similar material(s):

EC50, Bacteria, 3 Hour, Respiration rates., 14 mg/l

**12.2 Persistence and degradability****Methyl ethyl ketone**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Not applicable

**Biodegradation:** 98 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D or Equivalent

**3-Methoxy-1-butyl acetate**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

10-day Window: Pass

**Biodegradation:** > 90 %

**Exposure time:** 12 d

**Method:** OECD Test Guideline 301E or Equivalent

10-day Window: Not applicable

**Biodegradation:** > 95 %

**Exposure time:** 20 d

**Method:** OECD Test Guideline 302B or Equivalent

10-day Window: Not applicable

**Biodegradation:** 63.5 %

**Exposure time:** 14 d

**Method:** OECD Test Guideline 301C or Equivalent

**Theoretical Oxygen Demand:** 1.97 mg/mg

**Photodegradation**

**Atmospheric half-life:** 0.57 d

**Method:** Estimated.

**4,4'-methylenediphenyl diisocyanate**

**Biodegradability:** In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric

environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.

10-day Window: Not applicable

**Biodegradation:** 0 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 302C or Equivalent

### **3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate**

**Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions. For this family of materials: In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.

10-day Window: Fail

**Biodegradation:** 62 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301E or Equivalent

### **Dimethylbis((1-oxoneodecyl)oxy)stannane**

**Biodegradability:** Material is not readily biodegradable according to OECD/EEC guidelines.

**Biodegradation:** 0 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301B or Equivalent

## **12.3 Bioaccumulative potential**

### **Methyl ethyl ketone**

**Bioaccumulation:** Bioaccumulation is unlikely. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 0.3 at 40 °C Measured

### **3-Methoxy-1-butyl acetate**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 1.01 Estimated.

### **4,4'-methylenediphenyl diisocyanate**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Reacts with water. In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

**Bioconcentration factor (BCF):** 92 Cyprinus carpio (Carp) 28 d

### **3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate**

**Bioaccumulation:** For this family of materials: In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

**Partition coefficient: n-octanol/water(log Pow):** 4.75 Estimated.

### **Dimethylbis((1-oxoneodecyl)oxy)stannane**



**Partition coefficient: n-octanol/water(log Pow): 5.503**

## 12.4 Mobility in soil

### Methyl ethyl ketone

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc): 3.8 Estimated.**

### 3-Methoxy-1-butyl acetate

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc): 10 Estimated.**

### 4,4'-methylenediphenyl diisocyanate

In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

### 3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate

For this family of materials:

In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

**Partition coefficient (Koc): 36000 Estimated.**

### Dimethylbis((1-oxoneodecyl)oxy)stannane

No relevant data found.

## 12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### Methyl ethyl ketone

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

### 4,4'-methylenediphenyl diisocyanate

This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

### 3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

### Dimethylbis((1-oxoneodecyl)oxy)stannane

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

## 12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 12.7 Other adverse effects

### Methyl ethyl ketone

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**3-Methoxy-1-butyl acetate**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**4,4'-methylenediphenyl diisocyanate**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Dimethylbis((1-oxoneodecyl)oxy)stannane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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**SECTION 13: DISPOSAL CONSIDERATIONS**

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**13.1 Waste treatment methods**

This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water. Incineration under approved, controlled conditions using incinerators suitable or designed for the disposal of hazardous chemical wastes, is the preferred method for disposal.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

**Treatment and disposal methods of used packaging:** Empty containers should be recycled or otherwise disposed of by an approved waste management facility. **CONTAMINATED PACKAGING:** Any disposal of contaminated packaging and washings must be in accordance with State, Territory and/or Local government regulations. After container has been cleaned and labelling has been removed, empty containers can be sent for recycling or disposal. If the container is to be reconditioned, the reconditioning company should be made aware of the nature of the original contents.

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**SECTION 14: TRANSPORT INFORMATION**

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**Classification for ROAD and Rail transport (ADR/RID):**

<b>14.1 UN number or ID number</b>	UN 1139
<b>14.2 UN proper shipping name</b>	COATING SOLUTION
<b>14.3 Transport hazard class(es)</b>	3
<b>14.4 Packing group</b>	II
<b>14.5 Environmental hazards</b>	Not considered environmentally hazardous based on available data.
<b>14.6 Special precautions for user</b>	Special Provision 640D

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Hazard Identification Number: 33

**Classification for SEA transport (IMO-IMDG):**

14.1 UN number or ID number	UN 1139
14.2 UN proper shipping name	COATING SOLUTION
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	Not considered as marine pollutant based on available data.
14.6 Special precautions for user	EmS: F-E, S-E
14.7 Maritime transport in bulk according to IMO instruments	Consult IMO regulations before transporting ocean bulk

**Classification for AIR transport (IATA/ICAO):**

14.1 UN number or ID number	UN 1139
14.2 UN proper shipping name	Coating solution
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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**SECTION 15: REGULATORY INFORMATION**

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**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****REACH Regulation (EC) No 1907/2006**

This product contains only components that have been either pre-registered, registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

**Restrictions on the manufacture, placing on the market and use:**

The following substance/s contained in this product is/are subject through Annex XVII of REACH regulation to restrictions on the manufacture, placing on the market and use when present in certain dangerous substances, mixtures and articles. Users of this product have to comply with the restrictions placed upon it by the aforementioned provision.

CAS-No.: 101-68-8	Name: 4,4'-methylenediphenyl diisocyanate
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Restriction status: listed in REACH Annex XVII

Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction Number on the list: 56, 74

CAS-No.: 4098-71-9	Name: 3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate
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Restriction status: listed in REACH Annex XVII

Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction Number on the list: 74

CAS-No.: 68928-76-7	Name: Dimethylbis((1-oxodecyl)oxy)stannane
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Restriction status: listed in REACH Annex XVII

Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction Number on the list: 20

**Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.**

Listed in Regulation: FLAMMABLE LIQUIDS

Number in Regulation: P5c

5,000 t

50,000 t

**Further information**

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

**15.2 Chemical safety assessment**

Not applicable

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**SECTION 16: OTHER INFORMATION**

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

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008**

Flam. Liq. - 2 - H225 - Based on product data or assessment

Eye Irrit. - 2 - H319 - Calculation method

Resp. Sens. - 1 - H334 - Calculation method

STOT SE - 3 - H336 - Calculation method

**Revision**

Identification Number: 287116 / A670 / Issue Date: 14.12.2022 / Version: 19.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

2000/39/EC	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	ACGIH - Biological Exposure Indices (BEI)
GB EH40	UK. EH40 WEL - Workplace Exposure Limits
GB EH40 BAT	UK. Biological monitoring guidance values
STEL	Short term exposure limit
TWA	Limit Value - eight hours
Acute Tox.	Acute toxicity
Aquatic Chronic	Long-term (chronic) aquatic hazard
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
Resp. Sens.	Respiratory sensitisation
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitisation
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

**Full text of other abbreviations**

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships;

n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

#### Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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