

## Material Safety Date Sheet

Preparation date: Jan/02/2018

Page 1 of 4

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : Polyamide 6 with Glass-fiber (BK)
Manufacturer/supplier identification: No.183, Zihciang 4th street, Wuchi District, Taichung City 435, Taiwan
Emergency telephone No./Fax No: +886-4-26380168 /+886-4-26380167

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT NAME : Polyamide 6 with Glass-fiber (BK)			
Synonyms: Nylon 6, Polycaprolactam			
CAS No. : 25038-54-4			
Component:			
	Material	CAS No.	%
	Polyamide 6	25038-54-4	>50
	Glass-fiber	65997-17-13	<50
	Carbon black	1333-86-4	< 2

### 3. HAZARDS IDENTIFICATION

There are known or expected hazards associated with handling this product, this and all industrial chemicals should be handled with caution. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling.

### 4. HEALTH HAZARD AND FIRST AID INFORMATION

EFFECTS OF OVEREXPOSURE	
INHALATION:	Thermal processing fumes/vapors or dusts may irritate the mucous membranes of the nose and throat.
SKIN CONTACT:	Pellets or dusts in contact with skin may cause irritation. Hot or molten polymer can burn the skin.
EYE CONTACT:	Contact with powders or dusts may cause mechanical irritation. Thermal processing fumes/vapors may irritate the eyes.

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INGESTION:	Ingestion is not a likely route of exposure. Ingestion of product may cause gastrointestinal discomfort.
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EMERGENCY FIRST AID PROCEDURES	
INHALATION:	Move to the place with fresh air. If breathing continues difficult, send to take medical treatment.
EYES:	Flush eyes with running water .If irritation develops persists, obtain medical attention.
SKIN:	For irritation, flush the skin with cool running water. Wash the affected area with mild soap and water If hot or molten polymer burns the skin, immerse the burned area in cold running water and obtain medical attention immediately.
INGESTION:	If product is ingested, seek medical attention.

### 5. FIRE FIGHTING PROCEDURE

FLASH POINT: unavailable
UPPER EXPLOSION LIMIT: unavailable
LOWER EXPLOSION LIMIT: unavailable
AUTOIGNITION TEMPERATURE: unavailable
SENSITIVITY/SPARKS: unknown
SENSITIVITY/STATIC ELECTRICITY: unknown
EXTINGUISHING MEDIA: Water spray, carbon dioxide, dry chemical or foam
<b>FIRE AND EXPLOSION HAZARDS:</b> Finely divided polyamide dusts, when dispersed in air may pose a dust explosion hazard. All material handling equipment that may generate dust clouds of the product should have properly designed explosion relief/suppression systems.
<b>FIRE-FIGHTING EQUIPMENT:</b> Wear full protective clothing and self-contained breathing apparatus with full facepiece. Combustion products may include toxic fumes.

### 6. ACCIDENTAL RELEASE MEASURES

Persons not wearing protective equipment should be excluded from the area of the spill until clean up has been completed .Shovel spilled material into containers. Thoroughly sweep up residual material.
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**7. HANDLING AND STORAGE**

Keep in closed or covered containers when not in use. Store in cool dry place with adequate ventilation.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

RESPIRATORY PROTECTION: Not required under normal conditions of use.

SKIN PROTECTION: Wear protective gloves.

EYE PROTECTION: Protective eye wear or safety glasses recommended.

ENGINEERING CONTROLS: Fumes from thermal processing equipment should be ventilated from the work area.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE: Clear to beige solid pellets

ODOR: Possible slight organic odor

BOILING POINT: Not Applicable

MELTING POINT: 226°C

PH: Not Applicable

PH DATD: Not Applicable

VAPOR PRESSURE(mm Hg ): Not Applicable

VAPOR DENSITY: Not Applicable

SPECIFIC GRAVITY: 1.25-1.62

SOLUBILITY in WATER: Insoluble

BULK DENSITY: 0.6-1.0

PERCENT VOLATILES(volume): Not determined

**10. STABILITY AND REACTIVITY**

STABILITY(conditions to avoid):

Stable under normal conditions.

INCOMPATIBILITIES(materials to avoid):

Avoid contact with acids, and oxidizing agents.

DECOMPOSITION ;

Thermal decomposition products include: carbon monoxide, carbon dioxide, oxides of nitrogen and other nitrogen compounds such as hydrogen cyanide. Decomposition begins at 310°C.

HAZARDOUS POLYMERIZATION:

Can not occur.

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**11. TOXICOLOGICAL INFORMATION**

Oral LD50 (rat) : >10,000mg/kg.
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**12. ECOLOGICAL INFORMATION**

No date available.
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**13. DISPOSAL CONSIDERATIONS**

Deposit in a landfill in accordance with applicable local, state and Federal regulations. This material, if disposed of, is not considered a hazardous waste under current definitions.
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**14. TRANSPORT INFORMATION**

Not regulated by current DOT, IMO or ICAO regulations.
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**15. REGULATORY INFORMATION****TSCA INFFORMATION:**

All components in this product are in compliance with TSCA Inventory requirements.
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**SARA 313 INFORMATION:**

SARA requires submission of annual reports of release of toxic chemicals that appear in 40CFR 372. This information must be included in all MSDS that are copied and distributed for this material.
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**CALIFORNIA PROPOSITION 65:**

This product is not, to the best of our knowledge, subject to the labeling requirements under California Proposition 65.
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**FDA STATUS:**

This product is approved for use under 21CFR 177.1390 and 177.1500, subject to certain limitations.
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**16. OTHER INFORMATION**

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.
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EDITOR TITILE : General Manager
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EDITOR NAME:Cliff Chen Chun-Hung
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## Safety data sheet

Page: 1/11

BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

Date of print 08.03.2017

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

#### 1.1. Product identifier

## ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL

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

Recommended use: Polymer, for industrial processing only

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

Company:

BASF SE  
67056 Ludwigshafen  
GERMANY

Telephone: +49 621 60-0  
E-mail address: global.info@basf.com

#### 1.4. Emergency telephone number

International emergency number:  
Telephone: +49 180 2273-112

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### SECTION 2: Hazards Identification

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

According to Regulation (EC) No 1272/2008 [CLP]

No need for classification according to GHS criteria for this product.

Page: 2/11

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Date / Revised: 07.03.2017

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## 2.2. Label elements

According to Regulation (EC) No 1272/2008 [CLP]

The product does not require a hazard warning label in accordance with GHS criteria.

## 2.3. Other hazards

According to Regulation (EC) No 1272/2008 [CLP]

No specific dangers known, if the regulations/notes for storage and handling are considered.

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## SECTION 3: Composition/Information on Ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Chemical nature

Compound based on: polyoxymethylene copolymerizate (POM)

additives

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## SECTION 4: First-Aid Measures

### 4.1. Description of first aid measures

Avoid contact with the skin, eyes and clothing.

If inhaled:

If formaldehyde vapour is inhaled, remove person to fresh air and keep warm, if necessary summon physician. Inhale corticosteroid dose aerosol.

On skin contact:

Burns caused by molten material require hospital treatment.

On contact with eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek medical attention.

On ingestion:

Rinse mouth and then drink plenty of water. If difficulties occur: Seek medical attention.

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

Page: 3/11

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Date / Revised: 07.03.2017

Version: 2.0

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Symptoms: No significant reaction of the human body to the product known.

Hazards: No hazard is expected under intended use and appropriate handling.

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

Treatment: Treat symptomatically.

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**SECTION 5: Fire-Fighting Measures****5.1. Extinguishing media**

Suitable extinguishing media:  
water spray, foam, dry powder

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

carbon monoxide, formaldehyde...%

Formation of further decomposition and oxidation products depends upon the fire conditions. Under special fire conditions traces of other toxic substances are possible.

**5.3. Advice for fire-fighters**

Further information:

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

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**SECTION 6: Accidental Release Measures**

High risk of slipping due to leakage/spillage of product.

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

No special precautions necessary.

**6.2. Environmental precautions**

No special precautions necessary.

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

For small amounts: Sweep/shovel up.

For large amounts: Sweep/shovel up.

**6.4. Reference to other sections**

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

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**SECTION 7: Handling and Storage****7.1. Precautions for safe handling**

Avoid inhalation of dusts/mists/vapours. Provide suitable exhaust ventilation at the processing machines.

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Protection against fire and explosion:  
Containers should be grounded against electrostatic charge.

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

Suitable materials for containers: Low density polyethylene (LDPE), High density polyethylene (HDPE), Carbon steel (Iron)

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## SECTION 8: Exposure Controls/Personal Protection

### 8.1. Control parameters

#### Components with DNEL

50-00-0: formaldehyde...%

worker: Short-term exposure - systemic and local effects, Inhalation: 0.75 mg/m<sup>3</sup>, 0.6 ppm

worker: Long-term exposure - systemic and local effects, Inhalation: 0.375 mg/m<sup>3</sup>, 0.3 ppm

worker: Long-term exposure- systemic effects, dermal: 240 mg/kg

consumer: Long-term exposure- systemic effects, oral: 4.1 mg/kg

consumer: Long-term exposure- systemic effects, dermal: 102 mg/cm<sup>2</sup>

consumer: Long-term exposure - local effects, dermal: 0.012 mg/cm<sup>2</sup>

consumer: Long-term exposure- systemic effects, Inhalation: 3.2 mg/m<sup>3</sup>

consumer: Long-term exposure - local effects, Inhalation: 0.1 mg/m<sup>3</sup>

### 8.2. Exposure controls

#### Personal protective equipment

Respiratory protection:

Breathing protection if breathable aerosols/dust are formed. Wear respiratory protection if ventilation is inadequate. Combination filter for gases/vapours of organic, inorganic, acid inorganic, alkaline compounds and toxic particles (e. g. EN 14387 Type ABEK-P3)

Hand protection:

Use additional heat protection gloves when handling hot molten masses (EN 407), e.g. of textile or leather.

Eye protection:

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

#### General safety and hygiene measures

Avoid inhalation of vapour. After use of gloves apply skin-cleaning agents and skin cosmetics.

#### Environmental exposure controls



Page: 5/11

BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

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For information regarding environmental exposure controls, see Section 6.

**SECTION 9: Physical and Chemical Properties****9.1. Information on basic physical and chemical properties**

Form:	granules	
Colour:	various, depending on the colourant	
Odour:	product specific	
Odour threshold:	not applicable	
pH value:	not applicable	
melting range:	160 - 175 °C	(DIN EN ISO 3146)
Boiling range:	The substance / product decomposes therefore not determined.	
Sublimation point:	No applicable information available.	
Flash point:	not applicable	
Evaporation rate:	The product is a non-volatile solid.	
Flammability:	not self-igniting	
Flammability of Aerosol Products:	not applicable, the product does not form flammable aerosoles	
Lower explosion limit:	For solids not relevant for classification and labelling.	
Upper explosion limit:	For solids not relevant for classification and labelling.	
Ignition temperature:	320 - 340 °C	(ASTM D1929)
Vapour pressure:	not applicable	
Density:	1.4 g/cm <sup>3</sup> (20 °C)	(DIN 53479)
Relative density:	Study does not need to be conducted.	
Relative vapour density (air):	not applicable	
Solubility in water:	insoluble	
Partitioning coefficient n-octanol/water (log Kow):	not applicable	
Self ignition:	not self-igniting	

Page: 6/11

BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

Date of print 08.03.2017

Thermal decomposition: > 240 °C  
To avoid thermal decomposition, do not overheat. May decompose violently. Gaseous products of degradation can be given off if the product is greatly overheated.

Viscosity, kinematic: not applicable, the product is a solid

Explosion hazard: not explosive

Fire promoting properties: not fire-propagating

## 9.2. Other information

Self heating ability: It is not a substance capable of spontaneous heating according to UN transport regulations class 4.2.

Bulk density: 850 kg/m<sup>3</sup>

Grain size distribution 10 µm (Volumetric Distribution, other (measured))

## SECTION 10: Stability and Reactivity

### 10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

### 10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

### 10.3. Possibility of hazardous reactions

Do not process with PVC or other plastics containing halogenated flame retardants.

### 10.4. Conditions to avoid

Temperature: > 240 °C

### 10.5. Incompatible materials

Substances to avoid:  
inorganic acids, organic acids

### 10.6. Hazardous decomposition products

Possible decomposition products:  
carbon monoxide, formaldehyde...%, Carbon dioxide, Water

## SECTION 11: Toxicological Information

### 11.1. Information on toxicological effects

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BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

Date of print 08.03.2017

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#### Acute toxicity

Assessment of acute toxicity:

Contact with molten product may cause thermal burns.

#### Irritation

Assessment of irritating effects:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

Experimental/calculated data:

Serious eye damage/irritation: May cause mechanical irritation.

#### Respiratory/Skin sensitization

Assessment of sensitization:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

#### Germ cell mutagenicity

Assessment of mutagenicity:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

#### Carcinogenicity

Assessment of carcinogenicity:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

#### Reproductive toxicity

Assessment of reproduction toxicity:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

#### Specific target organ toxicity (single exposure)

Assessment of STOT single:

not applicable

#### Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

Page: 8/11

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BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

Date of print 08.03.2017

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Aspiration hazard

No aspiration hazard expected.

Other relevant toxicity information

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

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**SECTION 12: Ecological Information****12.1. Toxicity**

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

**12.2. Persistence and degradability**Assessment biodegradation and elimination (H<sub>2</sub>O):

The product is virtually insoluble in water and can thus be separated from water mechanically in suitable effluent treatment plants.

**12.3. Bioaccumulative potential**

Bioaccumulation potential:

The product will not be readily bioavailable due to its consistency and insolubility in water.

**12.4. Mobility in soil**

Assessment transport between environmental compartments:

Adsorption in soil: Study scientifically not justified.

**12.5. Results of PBT and vPvB assessment**

The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative).

**12.6. Other adverse effects**

The product does not contain substances that are listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

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**SECTION 13: Disposal Considerations**

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BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

Date of print 08.03.2017

### 13.1. Waste treatment methods

Check for possible recycling.

Incinerate in suitable incineration plant, observing local authority regulations.

Contaminated packaging:

Packs must be completely emptied.

Completely emptied packagings can be given for recycling.

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## SECTION 14: Transport Information

### Land transport

#### ADR

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

#### RID

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

### Inland waterway transport

#### ADN

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

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BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

Date of print 08.03.2017

Transport in inland waterway vessel

Not evaluated

**Sea transport**

IMDG

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

**Air transport**

IATA/ICAO

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

**14.1. UN number**

See corresponding entries for "UN number" for the respective regulations in the tables above.

**14.2. UN proper shipping name**

See corresponding entries for "UN proper shipping name" for the respective regulations in the tables above.

**14.3. Transport hazard class(es)**

See corresponding entries for "Transport hazard class(es)" for the respective regulations in the tables above.

**14.4. Packing group**

See corresponding entries for "Packing group" for the respective regulations in the tables above.

**14.5. Environmental hazards**

See corresponding entries for "Environmental hazards" for the respective regulations in the tables above.

Page: 11/11

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BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 07.03.2017

Version: 2.0

Product: **ULTRAFORM\* N2320 003 AT UNCOLORED POLYACETAL**

(ID no. 30665475/SDS\_GEN\_EU/EN)

Date of print 08.03.2017

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**14.6. Special precautions for user**

See corresponding entries for "Special precautions for user" for the respective regulations in the tables above.

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

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

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**SECTION 15: Regulatory Information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Prohibitions, Restrictions and Authorizations

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**SECTION 16: Other Information**

In addition to the information given in the safety data sheet we refer to the product specific 'Technical Information'.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

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Vertical lines in the left hand margin indicate an amendment from the previous version.

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## Safety data sheet

Page: 1/9

BASF Safety data sheet  
Date / Revised: 26.01.2018  
Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

### 1. Substance/preparation and manufacturer/supplier identification

#### **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Other means of identification: /

Use: Polymer

Manufacturer/supplier:

BASF SE  
67056 Ludwigshafen  
GERMANY

Contact address:

BASF Taiwan Ltd.  
16th Floor, No. 87, Sung Chiang Road  
Taipei 10486  
TAIWAN  
Telephone: +886 2 2518-7737  
Telefax number: +886 2 2518-7704  
E-mail address: qifeng.lee@basf.com

Emergency information:

台灣緊急連絡電話  
0800-002-119  
International emergency number:  
Telephone: +49 180 2273-112

### 2. Hazard identification

Classification of the substance and mixture:  
No need for classification according to GHS criteria for this product.



Page: 2/9

BASF Safety data sheet  
Date / Revised: 26.01.2018  
Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

Label elements and precautionary statement:

The product does not require a hazard warning label in accordance with GHS criteria.

Other hazards which do not result in classification:

No specific dangers known, if the regulations/notes for storage and handling are considered.

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### 3. Composition/information on ingredients

State of matter: solid

#### **Chemical nature**

Preparation based on: polyamide (PA 6)

additives

No particular hazards known.

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### 4. First-Aid Measures

General advice:

Avoid contact with the skin, eyes and clothing.

If inhaled:

If difficulties occur after dust has been inhaled, remove to fresh air and seek medical attention.

On skin contact:

Wash thoroughly with soap and water. Burns caused by molten material require hospital treatment.

On contact with eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek medical attention.

On ingestion:

Rinse mouth and then drink plenty of water. If difficulties occur: Seek medical attention.

Note to physician:

Symptoms: No significant reaction of the human body to the product known.

Hazards: No hazard is expected under intended use and appropriate handling.

Treatment: Treat symptomatically.

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### 5. Fire-Fighting Measures

Suitable extinguishing media:

water spray, foam, dry powder

Specific hazards:

At temperatures of > 320 °C can be emitted: ammonia, aqueous solution, carbon monoxide, carbon dioxide, caprolactam, hydrogen cyanide, nitriles

Page: 3/9

BASF Safety data sheet

Date / Revised: 26.01.2018

Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

Under special fire conditions traces of other toxic substances are possible. Formation of further decomposition and oxidation products depends upon the fire conditions.

Special protective equipment:  
Wear a self-contained breathing apparatus.

Special extinguishing Procedure:  
Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

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## 6. Accidental Release Measures

Personal precautions:  
No special precautions necessary.

Environmental precautions:  
No special precautions necessary.

Methods for cleaning up or taking up:  
For small amounts: Pick up with suitable appliance and dispose of.  
For large amounts: Pick up with suitable appliance and dispose of.

Additional information: High risk of slipping due to leakage/spillage of product.

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## 7. Handling and Storage

### Handling

Protection against fire and explosion:  
Take precautionary measures against static discharges.

### Storage

Suitable materials for containers: Low density polyethylene (LDPE), High density polyethylene (HDPE), Aluminium, Carbon steel (Iron)

Storage stability:  
Protect against moisture.

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## 8. Exposure controls and personal protection

### Components with occupational exposure limits

The limit values will not be achieved if the product is processed proper and suitable ventilation is provided.

BASF Safety data sheet  
Date / Revised: 26.01.2018  
Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

#### Personal protective equipment

##### Respiratory protection:

Breathing protection if breathable aerosols/dust are formed. Wear respiratory protection if ventilation is inadequate. Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2)

##### Hand protection:

Use additional heat protection gloves when handling hot molten masses (EN 407), e.g. of textile or leather.

##### Eye protection:

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

##### Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

##### General safety and hygiene measures:

No special precautions necessary. After use of gloves apply skin-cleaning agents and skin cosmetics.

## 9. Physical and Chemical Properties

Form:	granules	
Colour:	various, depending on the colourant	
Odour:	odourless	
Odour threshold:	not applicable	
pH value:	not applicable	
Melting temperature:	approx. 220 °C	(DIN 53765)
Boiling point:	The substance / product decomposes therefore not determined.	
Sublimation point:	No applicable information available.	
Flash point:	not applicable	
Evaporation rate:	The product is a non-volatile solid.	
Flammability (solid/gas):	not self-igniting	
Lower explosion limit:	For solids not relevant for classification and labelling.	

BASF Safety data sheet  
 Date / Revised: 26.01.2018  
 Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

Upper explosion limit:	For solids not relevant for classification and labelling.	
Ignition temperature:	> 400 °C	(ASTM D1929)
Thermal decomposition:	> 320 °C	(TGA)
Self ignition:	not self-igniting	
Self heating ability:	It is not a substance capable of spontaneous heating according to UN transport regulations class 4.2.	
Explosion hazard:	not explosive	
Fire promoting properties:	not fire-propagating	
Vapour pressure:	not applicable	
Density:	1.00 - 1.20 g/cm3 (20 °C)	(EN ISO 1183-1)
Relative density:	Study does not need to be conducted.	
Bulk density:	500 - 800 kg/m3	
Relative vapour density (air):	not applicable	
Solubility in water:	insoluble	
Partitioning coefficient n-octanol/water (log Pow):	not applicable	
Viscosity, dynamic:	not applicable, the product is a solid	
Viscosity, kinematic:	not applicable, the product is a solid	

## 10. Stability and Reactivity

Conditions to avoid:  
 Temperature: > 320 °C

Thermal decomposition: > 320 °C (TGA)

Substances to avoid:  
 No substances known that should be avoided.

Hazardous reactions:  
 No hazardous reactions known.  
 The product is chemically stable.

Page: 6/9

BASF Safety data sheet  
Date / Revised: 26.01.2018  
Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

Hazardous decomposition products:  
ammonia, aqueous solution, carbon monoxide, carbon dioxide, caprolactam, hydrogen cyanide nitriles

## 11. Toxicological Information

### Acute toxicity

Assessment of acute toxicity:  
Contact with molten product may cause thermal burns.

### Irritation

Assessment of irritating effects:  
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

Experimental/calculated data:  
Serious eye damage/irritation: May cause mechanical irritation.

### Respiratory/Skin sensitization

Assessment of sensitization:  
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

### Germ cell mutagenicity

Assessment of mutagenicity:  
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

### Carcinogenicity

Assessment of carcinogenicity:  
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

### Reproductive toxicity

Assessment of reproduction toxicity:  
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

### Specific target organ toxicity (single exposure):

Assessment of STOT single:  
not applicable

### Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

Page: 7/9

BASF Safety data sheet  
Date / Revised: 26.01.2018  
Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

#### **Aspiration hazard**

No aspiration hazard expected.

#### **Other relevant toxicity information**

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

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## **12. Ecological Information**

### **Ecotoxicity**

Assessment of aquatic toxicity:  
The product has not been tested. The statement has been derived from the structure of the product. There is a high probability that the product is not acutely harmful to aquatic organisms.

### **Mobility**

Assessment transport between environmental compartments:  
Study scientifically not justified.

### **Persistence and degradability**

Assessment biodegradation and elimination (H<sub>2</sub>O):  
The product is virtually insoluble in water and can thus be separated from water mechanically in suitable effluent treatment plants.

### **Bioaccumulation potential**

Bioaccumulation potential:  
The product will not be readily bioavailable due to its consistency and insolubility in water.

---

## **13. Disposal Considerations**

Check for possible recycling.  
Incinerate in suitable incineration plant, observing local authority regulations.

Contaminated packaging:  
Packs must be completely emptied.  
Completely emptied packagings can be given for recycling.

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## **14. Transport Information**

### **Domestic transport:**

Not classified as a dangerous good under transport regulations

Page: 8/9

BASF Safety data sheet  
Date / Revised: 26.01.2018  
Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

**Further information**

Domestic regulations for transport: Please follow Road Safety Rule

**Sea transport**

IMDG

Not classified as a dangerous good under transport regulations

**Air transport**

IATA/ICAO

Not classified as a dangerous good under transport regulations

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**15. Regulatory Information****Regulations of the European union (Labelling)**

The product does not require a hazard warning label in accordance with EC Directives.

**Other regulations****Registration Status according to TCSCA (Toxic Chemical Substances Control Act):**

All components of this product are preregistered or registered or exempted.

OCCUPATIONAL SAFETY AND HEALTH ACT, REGULATION OF ROAD SAFETY, and METHODS AND FACILITIES STANDARDS FOR THE STORAGE, CLEARANCE AND DISPOSAL OF INDUSTRIAL WASTE always need to be followed

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**16. Other Information**

Recommended use: Polymer, for industrial processing only

Literature references: BASF EHS data

Organization that prepared the SDS: BASF Taiwan Ltd.

Address/telephone: 16th Floor, No. 87, Sung Chiang Rd., 10486 Taipei, Taiwan / +886 2 2518-7737

Person that prepared the SDS: Wei Lin Li weilin.li@basf.com

Creation date of the SDS: please refer to page head

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Vertical lines in the left hand margin indicate an amendment from the previous version.

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Page: 9/9

BASF Safety data sheet

Date / Revised: 26.01.2018

Product: **ULTRAMID® B3S BLACK 00464 POLYAMIDE**

Version: 1.0

---

(30045493/SDS\_GEN\_TW/EN)

Date of print 08.05.2018

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.



**SAFETY DATA SHEET****HUNTSMAN**

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**SUPRASEC® 2082**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	2018/01/09	400001000103	2016/07/13
			Date of first issue: 2016/07/13

**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : SUPRASEC® 2082

Chemical nature : -

**Recommended use of the chemical and restrictions on use**

Recommended use : Component of a Polyurethane System.

**Manufacturer or supplier's details**

Company : Huntsman (Taiwan) Ltd.

Address : No. 19, Gongye 3rd Rd., Guanyin Dist., Taoyuan City, 32853  
Taiwan, R. O. C

Telephone : (03) 483-8616

Telefax : (03) 483-9324

E-mail address : Global\_Product\_EHS\_HPU@huntsman.com

Emergency telephone number : EUROPE: +32 35 75 1234  
USA: +1 800 424 9300  
ASIA: +65 6542 9595  
China: +86 20 39377888  
+86 532 83889090  
India: + 91 22 42 87 5333  
Australia: 1 800 786 152  
New Zealand: 0 800 767 437**2. HAZARDS IDENTIFICATION****GHS Classification**

Acute toxicity (Inhalation) : Category 4

Skin corrosion/irritation : Category 2

Serious eye damage/eye  
irritation : Category 2B

Respiratory sensitisation : Category 1

Skin sensitisation : Category 1

Specific target organ toxicity -  
single exposure : Category 3 (Respiratory system)**GHS label elements**

**SAFETY DATA SHEET****HUNTSMAN**

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**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Hazard pictograms



Signal word

: Danger

Hazard statements

: H315 + H320 Causes skin and eye irritation.  
 H317 May cause an allergic skin reaction.  
 H332 Harmful if inhaled.  
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 H335 May cause respiratory irritation.

Precautionary statements

: **Prevention:**  
 P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
 P264 Wash skin thoroughly after handling.  
 P271 Use only outdoors or in a well-ventilated area.  
 P272 Contaminated work clothing should not be allowed out of the workplace.  
 P280 Wear protective gloves.  
 P284 Wear respiratory protection.  
**Response:**  
 P302 + P352 IF ON SKIN: Wash with plenty of water.  
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
 P337 + P313 If eye irritation persists: Get medical advice/ attention.  
 P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.  
 P362 + P364 Take off contaminated clothing and wash it before reuse.  
**Storage:**  
 P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
 P405 Store locked up.  
**Disposal:**  
 P501 Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Other hazards which do not result in classification**

None known.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

SDS\_TW-PU – EN – 400001000103

2 / 25

**SAFETY DATA SHEET****HUNTSMAN**

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**SUPRASEC® 2082**

Version 1.1      Revision Date: 2018/01/09      SDS Number: 400001000103      Date of last issue: 2016/07/13  
 Date of first issue: 2016/07/13

Chemical Name	CAS-No.	Concentration (% w/w)
4,4'-methylenediphenyl diisocyanate	101-68-8	30 - 60
1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol	150449-03-9	30 - 60
Diphenylmethanediisocyanate	9016-87-9	13 - 30
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	0.1 - 1

**4. FIRST AID MEASURES**

General advice : Move out of dangerous area.  
 Do not leave the victim unattended.  
 Get medical attention immediately if symptoms occur.  
 Show this safety data sheet to the doctor in attendance.

**First aid measures for different exposure routes**

If inhaled : If breathed in, move person into fresh air.  
 Call a physician or poison control centre immediately.  
 Keep patient warm and at rest.  
 Keep respiratory tract clear.  
 If breathing is difficult, give oxygen.  
 If breathing is irregular or stopped, administer artificial respiration.  
 If unconscious, place in recovery position and seek medical advice.  
 Consult a physician immediately if symptoms such as shortness of breath or asthma are observed.  
 A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitised persons.  
 The exposed person may need to be kept under medical surveillance for 48 hours.  
 LC50 (rat) : ca. 490 mg/m<sup>3</sup> (4 hours) : using experimentally produced respirable aerosol having aerodynamic diameter <5microns.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.  
 Take off contaminated clothing and shoes immediately.  
 Wash contaminated clothing before reuse.  
 Thoroughly clean shoes before reuse.  
 Call a physician if irritation develops or persists.  
 An MDI study has demonstrated that a polyglycol-based skin cleanser (such as D-Tam<sup>TM</sup>, PEG-400) or corn oil may be more effective than soap and water.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
 If easy to do, remove contact lens, if worn.  
 Protect unharmed eye.  
 Keep eye wide open while rinsing.  
 If eye irritation persists, consult a specialist.

**SAFETY DATA SHEET****HUNTSMAN**

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**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

- If swallowed : Gently wipe or rinse the inside of the mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Keep respiratory tract clear. Keep at rest. If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person. Take victim immediately to hospital. If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Severe allergic skin reactions, bronchospasm and anaphylactic shock  
This product is a respiratory irritant and potential respiratory sensitizer: repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitisation.  
Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing.  
The onset of the respiratory symptoms may be delayed for several hours after exposure.  
A hyper-reactive response to even minimal concentrations of MDI may develop in sensitised persons.
- Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.  
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  
If potential for exposure exists refer to Section 8 for specific personal protective equipment.  
First Aid responders should pay attention to self-protection and use the recommended protective clothing
- Notes to physician : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.  
  
The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

**5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry powder
- Unsuitable extinguishing media : Water may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous.
- Specific hazards during : Do not allow run-off from fire fighting to enter drains or water

SDS\_TW-PU – EN – 400001000103

4 / 25

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

- firefighting : courses.  
The pressure in sealed containers can increase under the influence of heat.  
Exposure to decomposition products may be a hazard to health.
- Hazardous combustion products : Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.
- Specific extinguishing methods : Cool containers/tanks with water spray.  
Standard procedure for chemical fires.  
Due to reaction with water producing CO<sub>2</sub>-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed.  
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Prevent fire extinguishing water from contaminating surface water or the ground water system.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

**6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions, protective equipment and emergency procedures : Immediately evacuate personnel to safe areas.  
Use personal protective equipment.  
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.  
Ensure adequate ventilation.  
Keep people away from and upwind of spill/leak.  
Only qualified personnel equipped with suitable protective equipment may intervene.  
For additional precautions and advice on safe handling, see section 7.  
Never return spills in original containers for re-use.  
Make sure that there is a sufficient amount of neutralizing/absorbent material near the storage area.  
The danger areas must be delimited and identified using relevant warning and safety signs.  
Treat recovered material as described in the section "Disposal considerations".  
For disposal considerations see section 13.
- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.  
Do not allow material to contaminate ground water system.  
Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
Local authorities should be advised if significant spillages cannot be contained.

SDS\_TW-PU – EN – 400001000103

5 / 25

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up :

- : Clean-up methods - small spillage
- Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
- Clean contaminated surface thoroughly.
- Sweep up or vacuum up spillage and collect in suitable container for disposal.
- Neutralize small spillages with decontaminant.
- The compositions of liquid decontaminants are given in Section 16.
- Remove and dispose of residues.
- Clean-up methods - large spillage
- If the product is in its solid form:
- Spilled MDI flakes should be picked up carefully.
- The area should be vacuum cleaned to remove remaining dust particles completely.
- If the product is in its liquid form:
- Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
- Leave to react for at least 30 minutes.
- Shovel into open-top drums for further decontamination.
- Wash the spillage area with water.
- Test atmosphere for MDI vapour.
- Keep in suitable, closed containers for disposal.

**7. HANDLING AND STORAGE****Handling**

Technical measures : Ensure that eyewash stations and safety showers are close to the workstation location.

Local/Total ventilation : Use only with adequate ventilation.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : For personal protection see section 8.

- Avoid formation of aerosol.
- Do not breathe vapours or spray mist.
- Do not breathe vapours/dust.
- Do not swallow.
- Do not get in eyes or mouth or on skin.
- Do not get on skin or clothing.
- Avoid exposure - obtain special instructions before use.
- Smoking, eating and drinking should be prohibited in the application area.
- Provide sufficient air exchange and/or exhaust in work rooms.
- Keep container closed when not in use.
- Open drum carefully as content may be under pressure.
- Dispose of rinse water in accordance with local and national regulations.

**SAFETY DATA SHEET****HUNTSMAN**

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**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

**Storage**

Conditions for safe storage : Keep containers tightly closed in a dry, cool and well-ventilated place.  
Keep in properly labelled containers.  
Observe label precautions.  
Protect from moisture.  
Electrical installations / working materials must comply with the technological safety standards.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Materials to avoid : Acids  
Amines  
Bases  
Metals  
water

Further information on storage stability : No decomposition if stored and applied as directed.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
4,4'-methylenediphenyl diisocyanate	101-68-8	CEIL	0.02 ppm 0.2 mg/m <sup>3</sup>	TW OEL
Further information: Cat. 3, Type 1 designated chemical substance				
		TWA	0.005 ppm	ACGIH

**Personal protective equipment**

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.  
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.  
In emergency, non-routine and unknown exposure situations, including confined space entries, a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply, should be used.

Hand protection  
Remarks : The suitability for a specific workplace should be discussed

SDS\_TW-PU – EN – 400001000103

7 / 25

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

with the producers of the protective gloves.  
Protective gloves should be worn when handling freshly made polyurethane products to avoid contact with trace residual materials which may be hazardous in contact with skin.

Use chemical resistant gloves classified under Standard EN374: protective gloves against chemicals and microorganisms. Examples of glove materials that might provide suitable protection include: Butyl rubber, Chlorinated polyethylene, Polyethylene, Ethyl vinyl alcohol copolymers laminated ("EVAL"), Polychloroprene (Neoprene\*), Nitrile/butadiene rubber ("nitrile" or "NBR"), Polyvinyl chloride ("PVC" or "vinyl"), Fluoroelastomer (Viton\*).

When prolonged or frequently repeated contact may occur, a glove with protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN374) is recommended.

When only brief contact is expected, a glove with protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN374) is recommended.  
Contaminated gloves should be decontaminated and disposed of.

Notice: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to : other chemicals that may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as instructions/specifications provided by the glove supplier.

- Eye protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.  
Chemical splash goggles.  
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.  
Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.  
Ensure that eyewash stations and safety showers are close to the workstation location.
- Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.  
Recommended:  
Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C' ,  
Tyvek Pro 'F' disposable coverall.
- Protective measures : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing  
The type of protective equipment must be selected according



**SAFETY DATA SHEET****HUNTSMAN**

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**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

to the concentration and amount of the dangerous substance at the specific workplace.

Ensure that eye flushing systems and safety showers are located close to the working place.

**Hygiene measures**

- : Handle in accordance with good industrial hygiene and safety practice.  
Wash face, hands and any exposed skin thoroughly after handling.  
Remove contaminated clothing and protective equipment before entering eating areas.  
When using do not eat, drink or smoke.  
Contaminated work clothing should not be allowed out of the workplace.  
Wash hands before breaks and immediately after handling the product.  
Wash hands before breaks and at the end of workday.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

- Appearance : liquid
- Colour : brown
- Odour : No data is available on the product itself.
- Odour Threshold : No data is available on the product itself.
- pH : No data is available on the product itself.
- Freezing point : No data is available on the product itself.
- Melting point : No data is available on the product itself.
- Boiling point/boiling range : No information available.
- Flash point : 204 °C  
Method: closed cup
- Evaporation rate : No data is available on the product itself.
- Flammability (solid, gas) : No data is available on the product itself.
- Flammability (liquids) : No data is available on the product itself.
- Upper explosion limit / Upper flammability limit : No data is available on the product itself.
- Lower explosion limit / Lower flammability limit : No data is available on the product itself.
- Vapour pressure : No data is available on the product itself.
- Relative vapour density : No data is available on the product itself.

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Relative density : 1.23

Density : 1.23 g/cm<sup>3</sup> (25 °C)

Solubility(ies)  
Water solubility : No data is available on the product itself.

Solubility in other solvents : No data is available on the product itself.

Partition coefficient: n-octanol/water : No data is available on the product itself.

Auto-ignition temperature : No data is available on the product itself.

Thermal decomposition : No data is available on the product itself.

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity  
Viscosity, dynamic : 260 - 420 mPa.s (25 °C)

Explosive properties : No data is available on the product itself.

Oxidizing properties : No data is available on the product itself.

Particle size : No data is available on the product itself.

**10. STABILITY AND REACTIVITY**

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

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Reaction with water (moisture) produces CO<sub>2</sub>-gas.  
Exothermic reaction with materials containing active hydrogen groups.  
The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents.  
MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface.  
A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.

Conditions to avoid : Extremes of temperature and direct sunlight.  
Exposure to air or moisture over prolonged periods.

Incompatible materials : Acids  
Amines  
Bases  
Metals  
water

SDS\_TW-PU – EN – 400001000103

10 / 25

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Hazardous decomposition products : Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.

**11. TOXICOLOGICAL INFORMATION**

Exposure routes : No data is available on the product itself.

Symptoms of Overexposure : Severe allergic skin reactions, bronchospasm and anaphylactic shock

**Acute toxicity****Components:**

4,4'-methylenediphenyl diisocyanate:

Acute oral toxicityComponents : LD50 (Rat, male): > 10,000 mg/kg  
Method: OECD Test Guideline 401

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Acute oral toxicityComponents : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425

Diphenylmethanediisocyanate:

Acute oral toxicityComponents : LD50 (Rat, male): > 10,000 mg/kg  
Method: OECD Test Guideline 401

4,4'-Methylenediphenyl diisocyanate, oligomers:

Acute oral toxicityComponents : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425

Acute inhalation toxicity - Product : Acute toxicity estimate: 1.41 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

**Components:**

4,4'-methylenediphenyl diisocyanate:

Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg  
Method: OECD Test Guideline 402

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg  
Method: OECD Test Guideline 402

Diphenylmethanediisocyanate:

SDS\_TW-PU – EN – 400001000103

11 / 25

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg  
Method: OECD Test Guideline 402

Acute toxicity (other routes of administration) : No data available

**Skin corrosion/irritation****Product:**

Remarks: May cause skin irritation and/or dermatitis.

**Serious eye damage/eye irritation****Product:**

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin.

**Respiratory or skin sensitisation****Product:**

Remarks: Causes sensitisation.

**Components:**

4,4'-methylenediphenyl diisocyanate:

Assessment: May cause sensitisation by inhalation and skin contact.

Diphenylmethanediisocyanate:

Assessment: May cause an allergic skin reaction., May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Chronic toxicity****Germ cell mutagenicity****Components:**

4,4'-methylenediphenyl diisocyanate:

Genotoxicity in vitro : Concentration: 200 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: Directive 67/548/EEC, Annex, B.13/14  
Result: negative

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Genotoxicity in vitro : Concentration: ca 5000 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

Diphenylmethanediisocyanate:

Genotoxicity in vitro : Concentration: 200 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: Directive 67/548/EEC, Annex, B.13/14  
Result: negative

4,4'-Methylenediphenyl diisocyanate, oligomers:

SDS\_TW-PU – EN – 400001000103

12 / 25

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Genotoxicity in vitro : Concentration: ca 50 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

**Components:**

4,4'-methylenediphenyl diisocyanate:

Genotoxicity in vivo : Application Route: Inhalation  
Exposure time: 3 Weeks  
Dose: 118 mg/m3  
Method: OECD Test Guideline 474  
Result: negative

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Genotoxicity in vivo : Application Route: Inhalation  
Exposure time: 3 Weeks  
Dose: 118 mg/m3  
Method: OECD Test Guideline 474  
Result: negative

Diphenylmethanediisocyanate:

Genotoxicity in vivo : Application Route: Inhalation  
Result: Not classified due to inconclusive data.

Application Route: Inhalation  
Exposure time: 3 Weeks  
Dose: 113 mg/m3  
Method: OECD Test Guideline 474  
Result: negative

4,4'-Methylenediphenyl diisocyanate, oligomers:

Genotoxicity in vivo : Application Route: Inhalation  
Exposure time: 3 Weeks  
Dose: 118 mg/m3  
Method: OECD Test Guideline 474  
Result: negative

**Carcinogenicity****Product:**

Remarks: Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in a chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m3 and no effects at 0.2 mg/m3. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur.

Carcinogenicity - Assessment : No data available

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

**Reproductive toxicity****Components:**

Diphenylmethanediisocyanate:  
Effects on fertility : Species: Rat, male and female  
Application Route: Inhalation  
Method: OECD Test Guideline 414  
Remarks: No significant adverse effects were reported

**Components:**

4,4'-methylenediphenyl diisocyanate:  
Effects on foetal development : Species: Rat, female  
Application Route: Inhalation  
General Toxicity Maternal: No observed adverse effect level: 4 mg/m<sup>3</sup>  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:  
Species: Rat, male and female  
Application Route: Inhalation  
General Toxicity Maternal: No observed adverse effect level: 4 mg/m<sup>3</sup>  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Diphenylmethanediisocyanate:  
Species: Rat, male and female  
Application Route: Inhalation  
General Toxicity Maternal: 4 mg/m<sup>3</sup>  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

4,4'-Methylenediphenyl diisocyanate, oligomers:  
Species: Rat, male and female  
Application Route: Inhalation  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

Reproductive toxicity - Assessment : No data available

**STOT - single exposure****Components:**

4,4'-methylenediphenyl diisocyanate:  
Exposure routes: Inhalation  
Target Organs: Respiratory Tract  
Assessment: May cause respiratory irritation.

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:  
Exposure routes: Inhalation  
Target Organs: Respiratory Tract

SDS\_TW-PU – EN – 400001000103

14 / 25

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Diphenylmethanediisocyanate:  
Exposure routes: Inhalation  
Target Organs: Respiratory Tract  
Assessment: May cause respiratory irritation.

4,4'-Methylenediphenyl diisocyanate, oligomers:  
Exposure routes: Inhalation  
Target Organs: Respiratory Tract  
Assessment: May cause respiratory irritation.

**STOT - repeated exposure**

No data available

**Repeated dose toxicity****Components:**

4,4'-methylenediphenyl diisocyanate:  
Species: Rat, male and female  
NOEC: 0.2 mg/m<sup>3</sup>  
Exposure time: 2 yr  
Number of exposures: 5 d  
Method: OECD Test Guideline 453

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:  
Species: Rat, male and female  
NOEC: 0.2 mg/m<sup>3</sup>  
Test atmosphere: dust/mist  
Exposure time: 2 yr  
Number of exposures: 5 d  
Method: OECD Test Guideline 453

Species: Rat, male and female  
NOEC: 1 mg/m<sup>3</sup>  
Test atmosphere: dust/mist  
Exposure time: 2,160 h  
Number of exposures: 5 d  
Method: OECD Test Guideline 413

Diphenylmethanediisocyanate:  
Species: Rat, male and female  
NOEC: 0.2 mg/m<sup>3</sup>  
Test atmosphere: dust/mist  
Exposure time: 2 yr  
Number of exposures: 5 d  
Method: OECD Test Guideline 453

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

4,4'-Methylenediphenyl diisocyanate, oligomers:  
 Species: Rat, male and female  
 NOEC: 0.2 mg/m<sup>3</sup>  
 Test atmosphere: dust/mist  
 Exposure time: 2 yr  
 Number of exposures: 5 d  
 Method: OECD Test Guideline 453

Repeated dose toxicity - Assessment : No data available

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information****Product:**

Remarks: No data available

**12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

4,4'-methylenediphenyl diisocyanate:  
 Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l  
 Exposure time: 96 h

SDS\_TW-PU – EN – 400001000103

16 / 25



**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Test Type: static test  
Method: OECD Test Guideline 203

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:  
Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

Diphenylmethanediisocyanate:  
Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

LC0: > 1,000 mg/l  
Exposure time: 96 h

4,4'-Methylenediphenyl diisocyanate, oligomers:  
Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

**Components:**

4,4'-methylenediphenyl diisocyanate:  
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 24 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:  
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 24 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

Diphenylmethanediisocyanate:  
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 24 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

4,4'-Methylenediphenyl diisocyanate, oligomers:  
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 24 h  
Test Type: static test  
Test substance: Fresh water

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Method: OECD Test Guideline 202

**Components:**

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 201

Diphenylmethanediisocyanate:

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 201

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l  
 Exposure time: 72 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : No data available

Toxicity to fish (Chronic toxicity) : No data available

**Components:**

4,4'-methylenediphenyl diisocyanate:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): >= 10 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 211

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Brachydanio rerio (zebrafish)): >= 10 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 211

Diphenylmethanediisocyanate:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): >= 10 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Test substance: Fresh water

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	2018/01/09	400001000103	2016/07/13
			Date of first issue: 2016/07/13

Method: OECD Test Guideline 211

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Brachydanio rerio (zebrafish)): >= 10 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : No data available

**Components:**

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l  
 Exposure time: 3 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 209

Diphenylmethanediisocyanate:

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l  
 Exposure time: 3 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 209

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l  
 Exposure time: 3 h  
 Test Type: static test  
 Test substance: Fresh water  
 Method: OECD Test Guideline 209

**Components:**

4,4'-methylenediphenyl diisocyanate:

Toxicity to soil dwelling organisms : NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg  
 Exposure time: 336 h  
 Method: OECD Test Guideline 207

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Toxicity to soil dwelling organisms : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg  
 Exposure time: 336 h  
 Method: OECD Test Guideline 207

Diphenylmethanediisocyanate:

Toxicity to soil dwelling organisms : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg  
 Exposure time: 336 h  
 Method: OECD Test Guideline 207

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to soil dwelling organisms : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg  
 Exposure time: 336 h

SDS\_TW-PU – EN – 400001000103

19 / 25

**SUPRASEC® 2082**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	2018/01/09	400001000103	2016/07/13
			Date of first issue: 2016/07/13

Method: OECD Test Guideline 207

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment  
Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:**

4,4'-methylenediphenyl diisocyanate:

Biodegradability : Inoculum: Domestic sewage  
Concentration: 30 mg/l  
Result: Not biodegradable  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: Inherent Biodegradability: Modified MITI Test (II)

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Biodegradability : Inoculum: Domestic sewage  
Concentration: 30 mg/l  
Result: Not biodegradable  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: Inherent Biodegradability: Modified MITI Test (II)

Diphenylmethanediisocyanate:

Biodegradability : Inoculum: Domestic sewage  
Concentration: 30 mg/l  
Result: Not biodegradable  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: Inherent Biodegradability: Modified MITI Test (II)

4,4'-Methylenediphenyl diisocyanate, oligomers:

Biodegradability : Inoculum: Domestic sewage  
Concentration: 30 mg/l  
Result: Not biodegradable  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: Inherent Biodegradability: Modified MITI Test (II)

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

**Components:**

4,4'-methylenediphenyl diisocyanate:

Stability in water : Degradation half life(DT50): 20 hrs (25 °C)  
Remarks: Fresh water

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Stability in water : Method: No information available.  
GLP: yes  
Remarks: see user defined free text

Method: No information available.

GLP: no

Remarks: see user defined free text

Diphenylmethanediisocyanate:

Stability in water : Degradation half life(DT50): 0.8 d (25 °C)  
Method: No information available.  
Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available

**Bioaccumulative potential****Components:**

4,4'-methylenediphenyl diisocyanate:

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 200  
Remarks: Bioaccumulation is unlikely.

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	2018/01/09	400001000103	2016/07/13
			Date of first issue: 2016/07/13

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Bioaccumulation : Species: Cyprinus carpio (Carp)  
 Bioconcentration factor (BCF): 200  
 Remarks: Bioaccumulation is unlikely.

Diphenylmethanediisocyanate:

Bioaccumulation : Species: Cyprinus carpio (Carp)  
 Bioconcentration factor (BCF): 200  
 Remarks: Bioaccumulation is unlikely.

4,4'-Methylenediphenyl diisocyanate, oligomers:

Bioaccumulation : Species: Cyprinus carpio (Carp)  
 Bioconcentration factor (BCF): 200  
 Remarks: Bioaccumulation is unlikely.

**Components:**

4,4'-methylenediphenyl diisocyanate:

Partition coefficient: n-octanol/water : log Pow: 4.51 (20 °C)  
 pH: 7  
 Method: OECD Test Guideline 117

1,3-Butanediol, polymer with 1,1'-methylenebis[isocyanatobenzene], [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] and 1,2-propanediol:

Partition coefficient: n-octanol/water : log Pow: 15.98 (20 °C)  
 GLP: no

4,4'-Methylenediphenyl diisocyanate, oligomers:

Partition coefficient: n-octanol/water : log Pow: 8.56 (20 °C)

**Mobility in soil**

Mobility : No data available

Distribution among environmental compartments : No data available

Stability in soil : No data available

**Other adverse effects**

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

**Hazardous to the ozone layer**

SDS\_TW-PU – EN – 400001000103

22 / 25

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version 1.1	Revision Date: 2018/01/09	SDS Number: 400001000103	Date of last issue: 2016/07/13 Date of first issue: 2016/07/13
----------------	------------------------------	-----------------------------	---

Ozone-Depletion Potential : Not applicable

Additional ecological information - Product  
Global warming potential (GWP) : No data available  
: No data available

**13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

**14. TRANSPORT INFORMATION****International Regulations****IATA**

Not regulated as dangerous goods

**IMDG**

Not regulated as dangerous goods

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Special precautions for user**

Remarks : 49CFR: no dangerous good in non-bulk packaging

**15. REGULATORY INFORMATION****National regulatory information**

Regulations on Labelling and Hazard Communication of Hazardous Chemicals  
Regulations on Occupational Safety and Health Facilities  
Standards for the Storage, Cleanup, Handling and Disposal of Industrial Waste  
Standards of Permissible Exposure Limits in Workplace  
Public Hazardous Materials and Flammable Pressurized Gases Establishment Standards and  
Safety Control Regulations: Quantity subject to control

**Other international regulations**

The components of this product are reported in the following inventories:

SDS\_TW-PU – EN – 400001000103

23 / 25

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**SUPRASEC® 2082**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	2018/01/09	400001000103	2016/07/13
			Date of first issue: 2016/07/13

CH INV	:	The formulation contains substances listed on the Swiss Inventory
DSL	:	All components of this product are on the Canadian DSL
AICS	:	On the inventory, or in compliance with the inventory
NZIoC	:	not determined
ENCS	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	On the inventory, or in compliance with the inventory

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**16. OTHER INFORMATION****Further information**

Revision Date	:	2018/01/09
Name of organization that prepared the SDS	:	Huntsman (Taiwan) Ltd.
Address and phone number of organization that prepared the SDS	:	No. 19, Gongye 3rd Rd., Guanyin Dist., Taoyuan City, 32853 Taiwan, R. O. C (03) 483-8616
Title of person who prepared the SDS	:	Manager, Jennifer Tsang
Other information	:	Liquid decontaminants (percentages by weight or volume) : Decontaminant 1 : *- sodium carbonate : 5 - 10 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 % Decontaminant 2 : *- concentrated ammonia solution : 3 - 8 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 % Decontaminant 1 reacts slower with diisocyanates but is more environmentally friendly than decontaminant 2. Decontaminant 2 contains ammonia. Ammonia presents health hazards. (See supplier safety information.)
Date format	:	yyyy/mm/dd
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
TW OEL	:	Standards of Permissible Exposure Limits in Workplace
ACGIH / TWA	:	8-hour, time-weighted average
TW OEL / CEIL	:	Ceiling Permissible Density

SDS\_TW-PU – EN – 400001000103

24 / 25



**SAFETY DATA SHEET****HUNTSMAN**

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**SUPRASEC® 2082**

Version	Revision Date:	SDS Number:	Date of last issue: 2016/07/13
1.1	2018/01/09	400001000103	Date of first issue: 2016/07/13

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

**SAFETY DATA SHEET****HUNTSMAN**

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**DALTORIM® JA 80270**

Version 1.1      Revision Date: 2018/02/02      SDS Number: 400001019809      Date of last issue: 2015/10/30  
 Date of first issue: 2015/10/30

**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : DALTORIM® JA 80270

Chemical nature : -

**Recommended use of the chemical and restrictions on use**

Recommended use : Component of a Polyurethane System.

**Manufacturer or supplier's details**

Company : Huntsman (Taiwan) Ltd.

Address : No. 19, Gongye 3rd Rd., Guanyin Dist., Taoyuan City, 32853  
Taiwan, R. O. C

Telephone : (03) 483-8616

Telefax : (03) 483-9324

E-mail address : Global\_Product\_EHS\_HPU@huntsman.com

Emergency telephone number : EUROPE: +32 35 75 1234  
USA: +1 800 424 9300  
ASIA: +65 6542 9595  
China: +86 20 39377888  
+86 532 83889090  
India: + 91 22 42 87 5333  
Australia: 1 800 786 152  
New Zealand: 0 800 767 437

**2. HAZARDS IDENTIFICATION****GHS Classification**

Specific target organ toxicity - single exposure : Category 2 (Kidney, Central nervous system)

Specific target organ toxicity - repeated exposure (Oral) : Category 2 (Kidney, Central nervous system, Liver)

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H371 May cause damage to organs (Kidney, Central nervous system).  
H373 May cause damage to organs (Kidney, Central nervous system, Liver) through prolonged or repeated exposure if

## SAFETY DATA SHEET

**HUNTSMAN**

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**DALTORIM® JA 80270**

Version 1.1      Revision Date: 2018/02/02      SDS Number: 400001019809      Date of last issue: 2015/10/30  
 Date of first issue: 2015/10/30

swallowed.

Precautionary statements : **Prevention:**  
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
 P264 Wash skin thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
**Response:**  
 P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor.  
**Storage:**  
 P405 Store locked up.  
**Disposal:**  
 P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards which do not result in classification**

None known.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

Chemical Name	CAS-No.	Concentration (% w/w)
Ethylene glycol	107-21-1	3 - 7

**4. FIRST AID MEASURES**

General advice : Move out of dangerous area.  
 Show this safety data sheet to the doctor in attendance.  
 Treat symptomatically.  
 Get medical attention if symptoms occur.

**First aid measures for different exposure routes**

If inhaled : If inhaled, remove to fresh air.  
 Get medical attention if symptoms occur.

In case of skin contact : Wash with water and soap as a precaution.

In case of eye contact : Flush eyes with water as a precaution.  
 Remove contact lenses.  
 Protect unharmed eye.  
 Keep eye wide open while rinsing.  
 If eye irritation persists, consult a specialist.

If swallowed : Induce vomiting immediately and call a physician.  
 Keep respiratory tract clear.  
 Never give anything by mouth to an unconscious person.  
 If symptoms persist, call a physician.  
 Take victim immediately to hospital.

**SAFETY DATA SHEET****HUNTSMAN**

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**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

Most important symptoms and effects, both acute and delayed : None known.

Notes to physician : Treat symptomatically.  
Treatment with ethyl alcohol is indicated if toxic ingestion is suspected or if there is metabolic acidosis following ingestion of this product. Administer ethyl alcohol sufficient to maintain blood ethyl alcohol levels of above 100 mg/dL.

4-Methylpyrazole (Fomepizole, Antizole) is also a recognized antidote for this product.

**5. FIREFIGHTING MEASURES**

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : No information available.

Hazardous combustion products : Carbon oxides

Specific extinguishing methods : No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Refer to protective measures listed in sections 7 and 8.

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).  
Keep in suitable, closed containers for disposal.

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1      Revision Date: 2018/02/02      SDS Number: 400001019809      Date of last issue: 2015/10/30  
 Date of first issue: 2015/10/30

**7. HANDLING AND STORAGE****Handling**

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : Do not breathe vapours/dust.  
 Avoid exposure - obtain special instructions before use.  
 Avoid contact with skin and eyes.  
 For personal protection see section 8.  
 Smoking, eating and drinking should be prohibited in the application area.  
 Dispose of rinse water in accordance with local and national regulations.

**Storage**

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
 Observe label precautions.  
 Keep in properly labelled containers.

Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.

Further information on storage stability : Stable under normal conditions.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Ethylene glycol	107-21-1	TWA (Mist)	10 mg/m <sup>3</sup>	TW OEL
		STEL (Mist)	15 mg/m <sup>3</sup>	TW OEL
		CEIL (Vapour)	50 ppm 127 mg/m <sup>3</sup>	TW OEL
		C (Aerosol only)	100 mg/m <sup>3</sup>	ACGIH

**Personal protective equipment**

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Hand protection  
 Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water  
 Tightly fitting safety goggles

Skin and body protection : Impervious clothing

**SAFETY DATA SHEET****HUNTSMAN**

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**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	: liquid
Colour	: white
Odour	: No data is available on the product itself.
Odour Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Freezing point	: No data is available on the product itself.
Melting point	: No data is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: > 100 °C Method: open cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: No data is available on the product itself.
Relative vapour density	: No data is available on the product itself.
Relative density	: No data is available on the product itself.
Density	: 1.035 g/cm <sup>3</sup> (25 °C)
Solubility(ies)	
Water solubility	: No data is available on the product itself.
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

Auto-ignition temperature : No data is available on the product itself.

Thermal decomposition : No data is available on the product itself.

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity  
Viscosity, dynamic : 950 - 1,000 mPa.s ( 25 °C)

Explosive properties : No data is available on the product itself.

Oxidizing properties : No data is available on the product itself.

Particle size : No data is available on the product itself.

**10. STABILITY AND REACTIVITY**

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

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No hazards to be specially mentioned.

Conditions to avoid : None known.

Incompatible materials : None known.

Hazardous decomposition products : No hazardous decomposition products are known.

Hazardous decomposition products : carbon monoxide  
carbon dioxide

**11. TOXICOLOGICAL INFORMATION**

Exposure routes : No data is available on the product itself.

Symptoms of Overexposure : None known.

**Acute toxicity**

Acute oral toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg  
Method: Calculation method

Acute inhalation toxicity : No data available

**Components:**

Ethylene glycol:  
Acute dermal toxicity : LD50 (Mouse, male and female): > 3,500 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

Acute toxicity (other routes of : No data available

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

administration)

**Skin corrosion/irritation****Components:**

Ethylene glycol:  
Species: Rabbit  
Exposure time: 20 h  
Result: No skin irritation

**Serious eye damage/eye irritation****Components:**

Ethylene glycol:  
Result: Mild eye irritation

**Respiratory or skin sensitisation****Components:**

Ethylene glycol:  
Test Type: Maximisation Test  
Exposure routes: Skin  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Not a skin sensitizer.

Assessment: No data available

**Chronic toxicity****Germ cell mutagenicity****Components:**

Ethylene glycol:  
Genotoxicity in vitro : Test Type: reverse mutation assay  
Test system: Salmonella tryphimurium and E. coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

**Components:**

Ethylene glycol:  
Genotoxicity in vivo : Test Type: dominant lethal test  
Species: Rat (male and female)  
Cell type: Germ  
Application Route: Oral  
Dose: 40/200/1000 mg/kg  
Result: negative

**Carcinogenicity****Components:**

Ethylene glycol:  
Species: Rat, male and female  
Application Route: Oral



**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

Exposure time: 24 month(s)  
Dose: 40/200/1000 mg/kg  
Frequency of Treatment: 7 d/Weeks daily  
NOAEL: 1,000 mg/kg bw/day

Result: negative

Species: Mouse, male and female  
Application Route: Oral  
Exposure time: 103 weeks  
Frequency of Treatment: 7 d/Weeks daily  
NOAEL: 1,500 mg/kg bw/day

Result: negative

Carcinogenicity - Assessment : No data available

**Reproductive toxicity****Components:**

Ethylene glycol:  
Effects on fertility : Species: Mouse, male and female  
Application Route: Oral  
Dose: 40/200/1000 milligram per kilogram  
Frequency of Treatment: 7 days/week  
General Toxicity - Parent: No-observed-effect level: 1,000 mg/kg body weight  
General Toxicity F1: No-observed-effect level: 1,000 mg/kg body weight

Species: Rat, male and female  
Application Route: Oral  
Dose: 40/200/1000 milligram per kilogram  
Frequency of Treatment: 7 days/week  
General Toxicity - Parent: No observed adverse effect level: 1,000 mg/kg body weight

**Components:**

Ethylene glycol:  
Effects on foetal development : Test Type: Embryo-foetal development  
Species: Rat, female  
Application Route: Oral  
Duration of Single Treatment: 336 h  
Frequency of Treatment: 7 days/week  
General Toxicity Maternal: No observed adverse effect level: 250 mg/kg body weight  
Developmental Toxicity: No observed adverse effect level: 250 mg/kg body weight  
Method: No information available.  
Result: No teratogenic effects

Reproductive toxicity - Assessment : No data available

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

**STOT - single exposure****Components:**

Ethylene glycol:

Target Organs: Kidney, Central nervous system

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 2.

**STOT - repeated exposure****Components:**

Ethylene glycol:

Exposure routes: Ingestion

Target Organs: Kidney, Central nervous system, Liver

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

**Repeated dose toxicity****Components:**

Ethylene glycol:

Species: Rat, male

NOEL: 150 mg/kg/d

Application Route: oral (feed)

Exposure time: 16 Weeks

Number of exposures: 7 d/weeks

Dose: 50/150/500/1000 mg/kg bw

Method: OECD Test Guideline 408

Species: Rat, male and female

NOAEL: 200 mg/kg/d

Application Route: oral (gavage)

Exposure time: 33 d

Number of exposures: 7 d/weeks

Dose: 220/660/2000 mg/kg bw

Method: Chronic toxicity

Target Organs: Kidney

Species: Mouse, male and female

NOAEL: 12500 ppm

Application Route: oral (feed)

Exposure time: 13 Weeks

Dose: 3200/6300/12500/25000/50000 pp

Method: Subchronic toxicity

Species: Rat, male

NOAEL: 150 mg/kg/d

Application Route: oral (feed)

Exposure time: 52 Weeks

Number of exposures: 7 d/weeks

Dose: 50/150/300/400 mg/kg/bw

Method: OECD Test Guideline 452

Species: Dog, male

NOAEL: ca. 2200 mg/kg

SDS\_TW-PU – EN – 400001019809

9 / 16

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	2018/02/02	400001019809	2015/10/30
			Date of first issue: 2015/10/30

Application Route: Skin contact  
Exposure time: 4 Weeks  
Number of exposures: 7 d/ weeks  
Dose: 0,5/2,0/8,0 ml/kg bw  
Method: OECD Test Guideline 410

Species: Dog, male  
NOAEL: ca. 2200 - 4400 mg/kg  
Application Route: Skin contact  
Exposure time: 4 Weeks  
Number of exposures: 7 d/weeks  
Dose: 2,0/4,0 ml/kg bw  
Method: OECD Test Guideline 410

Repeated dose toxicity - : No data available  
Assessment

**Aspiration toxicity**

No data available

**Experience with human exposure**

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information**

Ingestion: No data available

**SAFETY DATA SHEET****HUNTSMAN**

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**DALTORIM® JA 80270**

Version	Revision Date:	SDS Number:	Date of last issue:
1.1	2018/02/02	400001019809	2015/10/30
			Date of first issue: 2015/10/30

**12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:**

Ethylene glycol:  
Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 72,860 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water

**Components:**

Ethylene glycol:  
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

**Components:**

Ethylene glycol:  
Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (algae)): 6,500 - 13,000 mg/l  
Exposure time: 96 h  
Test Type: static test

M-Factor (Acute aquatic toxicity) : No data available

**Components:**

Ethylene glycol:  
Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 32,000 mg/l  
Exposure time: 7 d  
Test Type: static test  
Test substance: Fresh water

**Components:**

Ethylene glycol:  
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (Water flea)): 8,590 mg/l  
Exposure time: 7 d  
Test Type: semi-static test  
Test substance: Fresh water

M-Factor (Chronic aquatic toxicity) : No data available

**Components:**

Ethylene glycol:  
Toxicity to microorganisms : EC20 (activated sludge): > 1,995 mg/l  
Exposure time: 30 min  
Test Type: static test  
Test substance: Fresh water

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

Method: ISO 8192

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment  
Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:**

Ethylene glycol:  
Biodegradability : Test Type: aerobic  
Inoculum: activated sludge  
Result: Readily biodegradable.  
Biodegradation: 90 - 100 % (Dissolved organic carbon (DOC))  
Exposure time: 10 d  
Method: OECD Test Guideline 301A

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

Stability in water : No data available

Photodegradation : No data available

SDS\_TW-PU – EN – 400001019809

12 / 16

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

Impact on Sewage Treatment : No data available

**Bioaccumulative potential**

Bioaccumulation : No data available

**Components:**

Ethylene glycol:  
Partition coefficient: n-octanol/water : log Pow: -1.36

**Mobility in soil**

Mobility : No data available

**Components:**

Ethylene glycol:  
Distribution among environmental compartments : Adsorption/Soil  
Medium: Soil  
Koc: 0 - 1  
Method: Calculation method

Stability in soil : No data available

**Other adverse effects**

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

**Hazardous to the ozone layer**

Ozone-Depletion Potential : Not applicable

Additional ecological information : No data available

Global warming potential (GWP) : No data available

**13. DISPOSAL CONSIDERATIONS****Disposal methods**

SDS\_TW-PU – EN – 400001019809

13 / 16

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

- Waste from residues : Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.  
Dispose of as hazardous waste in compliance with local and national regulations.  
Dispose of contents/ container to an approved waste disposal plant.
- Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

**14. TRANSPORT INFORMATION****International Regulations****IATA**

Not regulated as dangerous goods

**IMDG**

Not regulated as dangerous goods

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Special precautions for user**

Not applicable

**15. REGULATORY INFORMATION****National regulatory information**

Regulations on Labelling and Hazard Communication of Hazardous Chemicals  
Regulations on Occupational Safety and Health Facilities  
Standards for the Storage, Cleanup, Handling and Disposal of Industrial Waste  
Standards of Permissible Exposure Limits in Workplace

**Other international regulations****The components of this product are reported in the following inventories:**

- CH INV : The formulation contains substances listed on the Swiss Inventory
- DSL : All components of this product are on the Canadian DSL
- AICS : Not in compliance with the inventory
- NZIoC : Not in compliance with the inventory
- ENCS : Not in compliance with the inventory
- KECI : On the inventory, or in compliance with the inventory

SDS\_TW-PU – EN – 400001019809

14 / 16

**SAFETY DATA SHEET****HUNTSMAN**

Enriching lives through innovation

**DALTORIM® JA 80270**

Version 1.1	Revision Date: 2018/02/02	SDS Number: 400001019809	Date of last issue: 2015/10/30 Date of first issue: 2015/10/30
----------------	------------------------------	-----------------------------	---

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : On the inventory, or in compliance with the inventory

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**16. OTHER INFORMATION****Further information**

Sources of key data used to compile the Safety Data Sheet : Information taken from reference works and the literature.

Revision Date : 2018/02/02

Name of organization that prepared the SDS : Huntsman (Taiwan) Ltd.

Address and phone number of organization that prepared the SDS : No. 19, Gongye 3rd Rd., Guanyin Dist., Taoyuan City, 32853 Taiwan, R. O. C (03) 483-8616

Title of person who prepared the SDS : Manager, Jennifer Tsang

Date format : yyyy/mm/dd

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

TW OEL : Standards of Permissible Exposure Limits in Workplace

ACGIH / C : Ceiling limit

TW OEL / TWA : 8-hour time weighted average

TW OEL / STEL : time weighted average for short term exposure

TW OEL / CEIL : Ceiling Permissible Density

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

SDS\_TW-PU – EN – 400001019809

15 / 16



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