

# MATERIAL SAFETY DATA SHEET

## SolarSharc® Coating Solution



Version1

Date: 23/08/2018

### 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY

#### 1.1. Product Identifier

**Product name:** SolarSharc®

**Product code** SMS35 HMDZ

**REACH registration No:** A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline

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

- For R&D purposes only
- Provided the substance is handled in accordance with the provisions of this safety data sheet there are no known restrictions on use

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

- Company: TWI Ltd
- Address: Granta Park, Great Abington, Cambridge CB21 6AL.  
[www.twi.co.uk](http://www.twi.co.uk)
- Telephone: +44 (0)1223 899000
- Fax: +44 (0)1223 892588
- Emergency telephone number: +44 (0)1223 899000 (opening hours: M-F 8:30 -17:00)

### 2. HAZARDS IDENTIFICATION

#### 2.1. Classification of the substance or mixture(\*)

##### 2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP\*\*)

Hazard class and hazard category	Hazard statements
Flammable liquids, Category 2	H225
Flammable liquids (Category 3)	H226
Acute toxicity, Category 4	H302
Skin corrosion (category 1C)	H314
Skin irritation (category 2)	H315
Skin sensitisation (category 1)	H317
Serious eye damage, Category 1	H318
Specific target organ toxicity - single exposure (Category 3)	H335
Specific target organ toxicity - single exposure (Category 3), Central nervous system,	H336
Chronic aquatic toxicity, Category 3	H412

Signal word: Danger

##### 2.1.2. Additional information

Caution – substance not yet fully tested.

(\*) Product not fully tested. Classification has been derived considering N-butyl Acetate the main and organic polysilazane compound, silica, N-propyl Trimethoxy(propyl)silane, 3-aminopropyltriethoxysilane, Dibutyltin dilaurate and Toluene as minor components.

## 2.2. Label elements

### 2.2.1. Labelling according to Regulation (EC) No 1272/2008 (CLP\*\*)

Hazard Pictograms:



#### Hazard Statement

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	Causes serious eye irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H412	Harmful to aquatic life with long lasting effects.

#### Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing dust/fume/ gas/mist/vapours/spray.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 +P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

### 3.1. Substances

Hazardous ingredients	Conc.	CAS	EINECS/EC-No	Symbols	Risk phrases
Organic polysilazane compound	≥30<40wt%	475645-84-2			H: H225 H302 H314 H412 P: ***
Silicon dioxide nanoparticles, amorphous, hexamethyldisilazane treated	≥1<5 wt%	68909-20-6			
Silicon (IV) oxide nanoparticles (silicon dioxide)	≥0.1<0.5 wt%	112926-00-8 7631-86-9			H: H315, H319, H335 P: P305 + P351 +P338***
3-aminopropyltriethoxysilane	≥1<3 wt%	919-30-2	213-048-4		H: H302, H314, H318, H317 P: P260, P280, P301 + P312 + P330, P303 + P361 + P353, P305 + P351 +P338, P304 + P340 + P310, ***
n-Butyl acetate	50-60 wt%	123-86-4	204-658-1		H: 226, H336 P: P210, P370 + P378***
Toluene	≥0.3<1 wt%	108-88-3	203-625-9		H: H225, H361, H304, H373, H315, H336, P: P260, P280,

#### 4. FIRST AID MEASURES

##### 4.1. Description of first aid measures

<b>Skin contact</b>	Wash off immediately with plenty of soap and copious amounts of water. Remove contaminated clothing. Seek medical attention if irritation or symptoms persist.
<b>Eye contact</b>	Rinse immediately with copious amounts of water for 15 minutes occasionally lifting the upper and lower eyelids; also assure adequate flushing by separating the eyelids with fingers. Seek medical attention.
<b>Inhalation</b>	Remove the exposed person to fresh air. If not breathing, give artificial respiration. Seek medical attention.
<b>Ingestion</b>	DO NOT INDUCE VOMITING. If swallowed wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Seek medical advice.
<b>Self-protection of the first aider</b>	No data available

##### 4.2. Most important symptoms and effects

Irritation, Headache, Cough, Has a degreasing effect on the skin, Narcotic effects.

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

No data available

#### 5. FIRE FIGHTING MEASURES

##### 5.1. Extinguishing media

**Suitable extinguish media:** Carbon dioxide (CO<sub>2</sub>). Dry chemical. Alcohol resistant foam.

**Unsuitable extinguish media:** No data available

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

Carbon oxides, silicon oxides, Nitrogen oxides (NO<sub>x</sub>)..

**Hazardous combustion product:** Burning produces irritating, toxic and obnoxious fumes.

##### 5.3. Advise for firefighters

Protective equipment: Self-contained breathing apparatus. Wear protective clothing.

#### 6. ACCIDENTAL RELEASE MEASURES

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

###### 6.1.1. For non-emergency personnel

Ensure adequate ventilation of the working area. Avoid breathing vapours, mist or gas. Wear suitable protective equipment. Eliminate all sources of ignition. Evacuate personnel to a safe area. Avoid dust formation. Beware of vapours accumulating to form explosive concentrations.

For personal protection see section 8.

###### 6.1.2. For emergency responders

For personal protection, see section 8.

##### 6.2 Environmental precautions:

Do not allow product to enter drains. Prevent further spillage if safe. Advise local authorities if large spills cannot be contained. Discharge into the environment must be avoided.

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

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Avoid dust formation. Transfer all contaminated material to suitable, labelled closed containers for disposal and dispose of them according to local regulations. Clean spillage area thoroughly with plenty of water and ensure adequate ventilation. For dried spills. Do not brush. Do not use compressed air or a standard vacuum cleaner. If vacuum cleaning is the only means available, use a dedicated high-efficiency particulate air (HEPA\*)-filtered vacuum cleaning intended for use in industrial or laboratory settings.

## 7. HANDLING AND STORAGE

### 7.1. Precautions for safe handling

- **Protective measurement**  
Avoid contact with eyes, skin and clothing. Avoid inhalation and ingestion and ensure adequate ventilation of the working area.
- **Measures to prevent fire:**  
Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge.
- **Measures to prevent aerosol and dust generation:**  
Minimise dust generation and accumulation.
- **Measures to protect the environment:**  
No data available
- **Advice on general occupational hygiene:**  
Use the minimum quantity of material required for a particular experiment/process. Minimise the number of people potentially exposed and the potential exposure time.

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

- **Technical measures and storage conditions:**  
Keep in a cool, dry well-ventilated area. Keep containers tightly closed and correctly labelled. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Open container periodically in order to release pressure which may be generated (ammonia).
- **Requirements for storage rooms and vessels:**  
Keep in a cool, dry well-ventilated area. Keep containers tightly closed and correctly labelled. Protect against light. Do not store at temperatures above 25 °C.

**Storage class (TRGS 510): Flammable liquids:**

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1. Control parameters

No regulatory exposure limits for silicon oxide nanoparticles.

DNEL\*\* and PNEC\*\* have not been derived for the product.

#### Components with work place control parameters

Component	CAS-No	Value Form of exposure	Control parameters	Basis
n-Butyl acetate	123-86-4	STEL	200 ppm 966 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
		TWA	150 ppm 724 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
		AGW	62 ppm 300 mg/m <sup>3</sup>	DE TRGS 900. Category short-time exposure : 2;(I).
	Remarks	AGS: Commission for dangerous substances When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child		
Component	CAS-No	Value Form of exposure	Control parameters	Basis

Toluene	108-88-3	AGW	50 ppm 190 mg/m <sup>3</sup>	DE TRGS 900 Category short-time exposure : 4;(II).
	Remarks	DFG: Senate commission for the review of compounds at the work place dangerous for the health (MAK commission). European Union (The EU has established a limit value: deviations in value and peak limit are possible) Skin Absorption When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child.		
		AGW	200 mg/m <sup>3</sup>	DE TRGS 900 Category short-time exposure : 2;(II)
	Remarks	Group-AGW: Group exposure limit for hydrocarbon solvent mixtures Commission for dangerous substances See also No. 2.9 of the TRGS 900		

### Biological occupational exposure limits

Component	CAS-No	Control parameters	Sampling time	Basis
toluene	108-88-3	CLA-TD-4283: 600 µg/l (Blood)	Immediately after exposition or after working hours	TRGS 903

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:	
n-butyl acetate:	End Use: Workers Exposure routes: Inhalation Potential health effects: Acute effects Value: 960 mg/m <sup>3</sup> End Use: Workers Exposure routes: Inhalation Potential health effects: Chronic effects Value: 480 mg/m <sup>3</sup> End Use: Consumers Exposure routes: Inhalation Potential health effects: Acute effects Value: 859,7 mg/m <sup>3</sup> End Use: Consumers Exposure routes: Inhalation Potential health effects: Chronic effects Value: 102,34 mg/m <sup>3</sup>
Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:	
n-butyl acetate:	Fresh water Value: 0,18 mg/l Marine water Value: 0,018 mg/l Fresh water sediment Value: 0,981 mg/kg Marine sediment Value: 0,0981 mg/kg Soil Value: 0,0903 mg/kg

## 8.2. Exposure controls

### 8.2.1. Appropriate engineering controls:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure adequate ventilation of the working area.

### 8.2.2. Personal protection equipment:

Eye and face protection

Approved safety goggles tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU)..

Skin protection	Use suitable protective clothing according to the concentration and amount of dangerous substances, and to the specific work-place. Flame retardant antistatic protective clothing. Protective clothing Category 3, type 3 - liquid-tight. Protective clothing Category 3, type 4 - spray-tight.
Hand protection	Chemical resistant gloves satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Break through time: > 10 min Glove thickness: $\geq 0,5$ mm. In case of contact through splashing. Solvent-resistant gloves (butyl-rubber)
Respiratory protection	Wear suitable respiratory equipment when necessary. Combination filter A2 B2 E2 K2 Hg/P3, to standard DIN EN371/372. Dust mask should conform to EN 143 fitted with a P3 particle filter. Control parameters 6mg/m <sup>3</sup> – inhalable dust. 2.4mg/m <sup>3</sup> - respirable dust (TWA:EH40 WEL)
Thermal hazards	NA

### 8.2.3. Environmental exposure control

No data available. Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

a) Appearance:	Liquid, colourless or with a slight blue colouring
b) Average size of dispersed particles	40nm
c) Odour:	NA
d) Odour threshold:	NA
e) pH:	NA
f) Melting point/freezing point;	NA
g) Initial boiling point and: boiling range:	125°C (Information applies to solvent)
h) Flash point:	NA
i) Evaporation rate:	NA
j) Flammability (solid, gas):	NA
k) Upper/lower flammability or explosive limits:	NA
l) Vapour pressure:	NA
m) Vapour density;	NA
n) Relative density:	NA
o) Solubility(ies);	NA
p) Partition coefficient: n-octanol/water;	NA
q) Auto-ignition temperature;	420°C (Information refers to solvent)
r) Decomposition temperature;	NA
s) Viscosity;	NA
t) Explosive properties;	NA
u) Oxidising properties.	NA

## 10. STABILITY AND REACTIVITY

### 10.1. Chemical stability

Stable under normal conditions.

The material can slowly hydrolyze in the presence of water to form hydrogen and ammonia gases and condensed siloxane.

### 10.2. Possibility of hazardous reactions

Hazardous decomposition products: oxides of silicon, Hydrogen Ammonia.

Reacts with moisture, water, alcohols and amines to produce ammonia.

### 10.3. Conditions to avoid

Heat, flames and sparks.

Extremes of temperature and direct sunlight.

### 10.4. Materials to avoid

Acids, base and oxidising agents, Halogenated compounds.

## 11. TOXICOLOGICAL INFORMATION

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## 11.1. Information on toxicological effect

No data available as product

### Acute toxicity:

#### **n-Butyl acetate (123-86-4)**

LD50 Oral - Rat - female - 10,760 mg/kg

(OECD Test Guideline 423)

LC50 Inhalation - Rat - male and female - 4 h - > 21 mg/l

(OECD Test Guideline 403)

LD50 Dermal - Rabbit - male and female - > 14,112 mg/kg

(OECD Test Guideline 402)

#### **Organic polysilazane compound (475645-84-2)**

LD50: > 300 - 2.000 mg/kg, Rat, OECD 423, Observation time: 14 d

#### **Silicon dioxide, amorphous, hexamethyldisilazane treated (68909-20-6)**

LD50 oral rat: > 5000 mg/kg

#### **Silica, amorphous (7631-86-9)**

LD50 oral rat: > 5000 mg/kg

LD50 dermal rabbit: > 2000 mg/kg /

LC50 inhalation rat (mg/l): > 2.2 mg/l (Exposure time: 1 h),

LC0 inhalation rat (mg/l): > 0.14 mg/L air (analytical) (Exposure time: 4 h)

#### **3-aminopropyltriethoxysilane (919-30-2)**

Acute Toxicity Estimate (ATE): 500 mg/kg, Converted acute toxicity point estimate

### Skin corrosion/irritation:

#### **n-Butyl acetate (123-86-4)**

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

#### **Organic polysilazane compound (475645-84-2)**

Rabbit, Result: Causes burns., OECD 404, Exposure time: 1 h

#### **3-aminopropyltriethoxysilane (919-30-2)**

Rabbit, Classification: Corrosive

### Serious eye damage/irritation

#### **n-Butyl acetate (123-86-4)**

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

#### **3-aminopropyltriethoxysilane (919-30-2)**

Rabbit, Classification: Risk of serious damage to eyes.

### Respiratory or skin sensitisation:

#### **3-aminopropyltriethoxysilane (919-30-2)**

Guinea pig, Result: Causes Sensitisation. Classification: May cause sensitisation by skin contact.

#### **Toluene (108-88-3)**

Guinea pig maximization test, Guinea pig, Result: No evidence of sensitizing properties., Classification:

Does not cause skin sensitisation., Directive 67/548/EEC, Annex V, B.6., GLP: yes

### Germ cell mutagenicity:

#### **n-Butyl acetate (123-86-4)**

Ames test

S. typhimurium

Result: negative

#### **Organic polysilazane compound (475645-84-2)**

Genotoxicity in vitro: Ames test, with and without metabolic activation, Result: negative, Mutagenicity

(Escherichia coli - reverse mutation assay)

### Carcinogenicity:

#### **n-Butyl acetate (123-86-4)**

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

#### **Silica, amorphous (7631-86-9)**

Rat - Inhalation

Tumorigenic: Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration: Tumors.

IARC: No component of this product presents at levels greater than or equal to 0.1% is identified as

probable, possible or confirmed human carcinogen by IARC.  
Genotoxicity in vivo - rat - Intratracheal  
Unscheduled DNA synthesis.

**Reproductive toxicity:**

**n-Butyl acetate (123-86-4)**

Developmental Toxicity - Rat – Inhalation

No adverse effect has been observed in chronic toxicity tests.

**STOT\*\*-single exposure;**

**n-Butyl acetate (123-86-4)**

May cause drowsiness or dizziness. - Central nervous system

## 12. ECOLOGICAL INFORMATION

### Ecological information

No data available as product

### Toxicity

**n-Butyl acetate (123-86-4)**

Toxicity to fish: flow-through test LC50 - Pimephales promelas (fathead minnow) - 18 mg/l - 96h (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates: static test EC50 - Daphnia (water flea) - 44 mg/l -48 h

Toxicity to algae static test EC50 - Desmodesmus subspicatus (Scenedesmus subspicatus) - 674.7 mg/l - 72 h

**Organic polysilazane compound (475645-84-2)**

Toxicity to fish: LC50 (Danio rerio (zebra fish)): 57,1 mg/l. Exposure time: 96 h. Method: OECD 203.

**Silica, amorphous (7631-86-9)**

LC50 fish 1: 5000 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static]).

EC50 Daphnia 1: 1000 mg/l (Exposure time: 48 h - Species: Ceriodaphnia dubia)

### Persistence and degradability

**n-Butyl acetate (123-86-4)**

Biodegradability aerobic - Exposure time 28 d

Result: 83 % - Readily biodegradable

(OECD Test Guideline 301D)

### Bioaccumulative potential

**n-Butyl acetate (123-86-4)**

Remarks: Does not accumulate in organism.

**Silica, amorphous (7631-86-9)**

BCF fish 1: (no bioaccumulation expected)

### Mobility in soil

No data available

### Results of PBT\*\* and vPvB\*\* assessment

**n-Butyl acetate (123-86-4)**

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

### Other adverse effects

No data available

### Additional information

**n-Butyl acetate (123-86-4)**

Harmful to aquatic life.



## 13. DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

#### 13.1.1. Product / Packaging disposal:

Do not mix with aqueous wastes or wastes containing protic substances.

For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used. Contaminated packaging should be treated as for the substance / preparation.

#### 13.1.2. Other disposal recommendations:

Dispose of this product and all contaminated materials in compliance with all local and national regulations and should be taken to a suitable and authorized waste disposal site.

Waste treatment methods coating solution :Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

To avoid the presence of free nanomaterials fully cure the material at room temperature or up to 100°C and dispose of the solids.

Waste that contains nanomaterials that are free or risk being released into the atmosphere should be disposed of as potentially hazardous waste. Precautions should be taken to prevent accidental release of dust.

Any materials or equipment that have come into contact with the product and all debris resulting from the clean-up of a spillage or accidental release, should be handled in the same way as the product itself.

## 14. TRANSPORT INFORMATION

### 14.1. UN number

UN-No.: 2924

### 14.2. UN proper shipping name

FLAMMABLE LIQUID, CORROSIVE, N.O.S. BUTYL ACETATES MIXTURE (Organic polysilazane compound, n-Butyl acetate).

### 14.3. Transport hazard class(es)

Class: 3,

### 14.4. Packing group

Packaging group: II

### 14.5. Environmental hazards

ADR/RID: yes

IMDG Marine pollutant: yes

IATA: no

### 14.6. Special precautions for user

It is recommended to package for transport in sealed, robust, labelled containers inside a secondary containment capable of withstanding foreseeable impacts.

## 15. REGULATORY INFORMATION

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

SARA\*\* 313 - Synthetic amorphous silica is not listed on the SARA 313.

TSCA\*\* (USA), AICS\*\* (Australia), DSL\*\* (Canada) Synthetic amorphous silica is listed in TSCA, AICS, DSL under CAS N<sup>o</sup>7631-86-9 silicon dioxide

Identification According To EEC Directives Synthetic amorphous silica is not classified as dangerous according to the rules of 67/548/EEC as amended by 92/32/EEC.

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Caution - substance not yet fully tested.

## 15.2. Chemical Safety Assessment

A full chemical risk assessment has not been undertaken for this substance.

## 16. OTHER INFORMATION

### (\*\*) Abbreviations and acronyms

CLP	Classification, Labelling and Packaging
HEPA	High-Efficiency Particulate Air
DNEL	Derived No Effect Level for substances
PNEC	Predicted No Effect Concentration
STOT	Specific target organ toxicity
PBT	Persistence, Bioaccumulative and Toxic
vPvB	very Persistent, very Bioaccumulative
SARA	Superfund Amendments and Reauthorization Act
TSCA	The Toxic Substances Control Act
AICS	Australian Inventory of Chemical Substance
DSL	Domestic Substances List

### (\*\*\*) H-STATEMENTS

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

### (\*\*\*) P-STATEMENT

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P261	Avoid breathing dust/fume/ gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P312 + P330,	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P310,	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	In case of fire: Use dry powder or dry sand to extinguish.
P370 + P378	In case of fire: Use dry powder or dry sand to extinguish.

### Literature and data sources

- Safety Data Sheet polysilazane. Revision Date 14.07.2016
- Safety Data Sheet n-Butyl acetate sigma-aldrich. Version 5.4 Revision Date 01.12.2015.
- Material Safety Data Sheet Silicon(IV) Oxide, nanopowder from Luroderra.
- Safety Data Sheet Toluene, Sigma Aldrich. Version 8.0 Revision Date 21.09.2017.

- Safety Data Sheet (3-Aminopropyl)triethoxysilane, Sigma Aldrich. Version 5.8 Revision Date 17.07.2017.
- REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
- REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council.
- European Chemical Agency. Guidance on the compilation of safety data sheets Version 3.1 November 2015.

#### **Further information**

The information provided herein is believed to be correct but shall be used only as a guide. The information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. It does not represent any guarantee of the properties of the product and may not be valid for such product used in combination with any other products or in any other process. TWI Ltd. will not be held liable for any damages resulting from handling or from contact with the above product.

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