

# SAFETY DATA SHEET

## 1: IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY UNDERTAKING

Product Name: **ESTOFLEX SOLAR 690 (Part A)**  
Application: Spray applied quick curable polyurea waterproofing  
Company: **Denka Construction Solutions Malaysia Sdn Bhd**  
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## 2: HAZARDS IDENTIFICATION

### A. Hazard Risk Classification

#### 2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]

Carc. 2: H351 Suspected of causing cancer.  
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure through inhalation.  
Resp. Sens. 1: H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
Acute Tox. 4: H332 Harmful if inhaled.  
Eye Irrit. 2: H319 Causes serious eye irritation.  
Skin Sens. 1: H317 May cause an allergic skin reaction.  
Skin Irrit. 2: H315 Causes skin irritation.  
STOT SE 3: H335 May cause respiratory irritation.

#### 2.1.1 Classification according to Regulation 67/548/EEC or 1999/45/EC

Harmful - R 20: Harmful by inhalation.  
Irritant - R 36/37/38: Irritating to eyes, respiratory system and skin.  
Carcinogen category 3 - R 40: Limited evidence of a carcinogenic effect. Sensitizing. - R 42/43: May cause sensitization by inhalation and skin contact.  
Harmful - R 48/20: Harmful - danger of serious damage to health by prolonged exposure through inhalation.

### B. Label elements including precaution statements.

- Symbol:



- Signal word: Danger

- Hazard Risk Statement
  - H351 Suspected of causing cancer.
  - H373 May cause damage to organs through prolonged or repeated exposure through inhalation.
  - H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H332 Harmful if inhaled.
  - H319 Causes serious eye irritation.
  - H317 May cause an allergic skin reaction.
  - H315 Causes skin irritation.
  - H335 May cause respiratory irritation.
  
- Precautionary Statement
  - P260 Do not breathe mist/vapours/spray.
  - P280 Wear protective gloves/protective clothing/eye protection/face protection. P284 In case of inadequate ventilation wear respiratory protection.
  - P302+P352 IF ON SKIN: Wash with plenty of soap and water.
  - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P311 Call a POISON CENTER or doctor/physician.
  
- Special labelling
  - EUH204 Contains isocyanates. May produce an allergic reaction.
  
- Other hazards
  - Further hazards were not determined with the current level of knowledge.

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### 3: COMPOSITION/INFORMATION ON INGREDIENTS

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Ingredients	CAS Number	%
Polyoxy(methyl-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy-, polymer with 1, 1-methylenebisisocyanatobenzene	39420-98-9	60 - 100
4,4'-Methylenediphenyl diisocyanate	101-68-8	13 – 30
4,4'-Methylenediphenyldiisocyanate, Oligomers	25686-28-6	3 – 7
Reaktionsmasse von 4,4-Methylendi (Phenylisocyanat) und o-(p-Isocyanat Benzyl)Phenyl Isocyanat	905-806-4	3 – 7

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## 4: FIRST AID MEASURES

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Description of first aid measure,

**General information** Take off contaminated clothing and wash before reuse.

**Inhalation** Ensure supply of fresh air.  
Remove the victim into fresh air and keep him calm. Consult a doctor immediately.

**Skin contact** In the event of contact with the skin wash immediately with polyethylene glycol, then with plenty of water.  
Consult a doctor if skin irritation persists.

**Eye contact** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy

to do. Continue rinsing.  
Consult a doctor immediately.

**Ingestion** Do not induce vomiting.  
Rinse mouth.  
Consult a doctor immediately.

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

Irritant effects Allergic reactions Redness  
Gastro-intestinal complains. Cough

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

Treat symptomatically.  
Keep under medical supervision for at least 48 hours.

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## 5: FIRE FIGHTING MEASURES

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### Extinguishing media

**Suitable extinguishing media** Foam, dry powder, water spray jet, carbon dioxide

**Extinguishing media that must not be used** Full water jet

### Special hazards arising from the substance or mixture

Unknown risk of formation of toxic pyrolysis products.  
Carbon monoxide (CO)  
Carbon dioxide (CO<sub>2</sub>)  
Nitrogen oxides (NO<sub>x</sub>).  
Isocyanate  
Hydrogen cyanide (HCN).

## **Advice for firefighters**

Do not inhale explosion and/or combustion gases.  
Use self-contained breathing apparatus.  
Cool containers at risk with water spray jet.  
Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

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## **6: ACCIDENTAL RELEASE MEASURES**

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

Ensure adequate ventilation.  
Use personal protective equipment.  
Use breathing apparatus if exposed to vapours/aerosol. Remove persons to safety.  
High risk of slipping due to leakage/spillage of product.

### **Environmental precautions**

Prevent spread over a wide area (e.g. by containment or oil barriers).  
Do not discharge into the drains/surface waters/groundwater.  
In case the product spills into drains/surface waters/groundwater, immediately inform the authorities.

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

Pick up with absorbent material (e.g. sand, universal absorbent, diatomaceous earth).  
Dispose of absorbed material in accordance within the regulations.

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## **7: HANDLING AND STORAGE**

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### **Precautions for safe handling**

Use only in well-ventilated areas.  
Provide suitable vacuuming at the processing area.  
Avoid spilling or spraying in enclosed areas.  
The product is combustible.  
Do not eat, drink, smoke or take drugs at work.  
Take off contaminated clothing and wash before reuse.  
It is recommended to preview eye-wash bottle and showers.  
Wash hands before breaks and after work.  
Use barrier skin cream.

### **Conditions for safe storage, including any incompatibilities**

Prevent penetration into the ground. Keep only in original container.  
Do not store with amines Keep away from water.  
Do not store together with oxidizing agents  
Keep container tightly closed.  
Keep container in a well-ventilated place.  
Keep in a cool place. Store in a dry place.  
Protect from heat/overheating.

## 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

#### Ingredients with occupational exposure limits to be monitored (GB)

Range [%]	Substance
60 - 100	Polyoxy(methyl-1,2-ethanediyl), .alpha.-hydro.-omega.-hydroxy-, polymer with 1,1-methylenebisocyanatobenzene CAS: 39420-98-9, EINECS/ELINCS: Polymer Long-term exposure: 0,02 mg/m <sup>3</sup> , as NCO, Sen Short-term exposure (15-minute): 0,07 mg/m <sup>3</sup>
3 - 7	Reaktionsmasse von 4,4-Methylendi(Phenylisocyanat) und o-(p-Isocyanat Benzyl)Phenyl Isocyanat EINECS/ELINCS: 905-806-4, ECB-Nr.: 01-2119457015-45-XXXX Long-term exposure: 0,02 mg/m <sup>3</sup> , as NCO, Sen Short-term exposure (15-minute): 0,07 mg/m <sup>3</sup>
3 - 7	4,4'-Methylenediphenyldiisocyanate, oligomers CAS: 25686-28-6, EINECS/ELINCS: 500-040-3, ECB-Nr.: 01-2119457013-49-XXXX Long-term exposure: 0,02 mg/m <sup>3</sup> , as NCO, Sen Short-term exposure (15-minute): 0,07 mg/m <sup>3</sup>
13 - 30	4,4'-Methylenediphenyl diisocyanate CAS: 101-68-8, EINECS/ELINCS: 202-966-0, EU-INDEX: 615-005-00-9, ECB-Nr.: 01-2119457014-47-XXXX Long-term exposure: 0,02 mg/m <sup>3</sup> , as NCO, Sen Short-term exposure (15-minute): 0,07 mg/m <sup>3</sup>

### DNEL

Range [%]	Substance
13 - 30	4,4'-Methylenediphenyl diisocyanate, CAS: 101-68-8 Industrial, inhalative, Long-term - local effects: 0,05 mg/m <sup>3</sup> . Industrial, inhalative, Long-term - systemic effects: 0,05 mg/m <sup>3</sup> . Industrial, inhalative, Acute - systemic effects: 0,1 mg/m <sup>3</sup> . Industrial, inhalative, Acute - local effects: 0,1 mg/m <sup>3</sup> . Industrial, dermal, Acute - local effects: 28,7 mg/cm <sup>2</sup> . Industrial, dermal, Acute - systemic effects: 50 mg/kg.

### PNEC

Range [%]	Substance
13 - 30	4,4'-Methylenediphenyl diisocyanate, CAS: 101-68-8 sewage treatment plants (STP), > 1 mg/l. soil, > 1 mg/kg. marine water, > 0,1 mg/l. fresh water, > 1 mg/l.

## Exposure controls

<b>Additional advice on system design</b>	Ensure adequate ventilation on workstation. Using suitable discharges or exhaust ventilation.
<b>Eye protection</b>	Safety glasses
<b>Hand protection</b> glove	The details concerned are recommendations. Please contact the  supplier for further information. Butyl rubber, >480 min (EN 374). Nitrile rubber, >480 min (EN 374). Viton, >480 min (EN 374). Polychloroprene, >480 min (EN 374).
<b>Skin protection</b> <b>Other</b>	Impermeable protective and long-sleeved work clothing. Avoid contact with eyes and skin. Do not breathe vapour/spray. Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity of hazardous substance handled. The resistance of these equipment to chemicals should be ascertained with the respective supplier.
<b>Respiratory protection</b>	Breathing apparatus in the event of high concentrations. Short term: filter apparatus, filter A.
<b>Thermal hazards</b>	No information available.
<b>Delimitation and monitoring of the environmental exposition</b>	Protect the environment by applying appropriate control measures to prevent or limit emissions.

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## 9: PHYSICAL AND CHEMICAL PROPERTIES

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### Information on basic physical and chemical properties

Form	Viscous liquid
Color	yellowish
Odor	characteristic
Odour threshold	not determined
pH-value	not applicable
Boiling point [°C]	not determined
Flash point [°C]	not determined
Flammability [°C]	not applicable
Vapour pressure/gas pressure	not determined
Density [g/ml]	1,09-1,13 (20 °C / 68,0 °F)
Bulk density [kg/m <sup>3</sup> ]	not applicable
Solubility in water	immiscible
Viscosity	600-1000 mPas (25 °C)

## 10: STABILITY AND REACTIVITY

<b>Reactivity</b>	No dangerous reactions known if used as directed. In closed containers rise of pressure.
<b>Chemical stability</b>	Stable under normal ambient conditions (ambient temperature). Polymerization may occur at elevated temperature.
<b>Possibility of hazardous reactions</b>	Reactions with water, with formation of carbon dioxide. Reactions with strong oxidizing agents. Exothermic reaction at: Reactions with alcohols. Reactions with amines.
<b>Conditions to avoid</b>	Strong heating. Water.
<b>Incompatible materials</b>	See SECTION 10.3.
<b>Hazardous decomposition products</b>	In the event of fire: See SECTION 5.

## 11: TOXICOLOGICAL INFORMATION

### Information on toxicological effects

#### Acute toxicity

Range [%]	Substance
3 - 7	4,4'-Methylenediphenyldiisocyanate, oligomers, CAS: 25686-28-6
	NOEC: < 4 mg/m <sup>3</sup> /90d (OECD 413).
	NOEC: 0,2 mg/m <sup>3</sup> (OECD 453).
	LD50, dermal, Rabbit: > 9400 mg/kg.
	LD50, oral, Rat (female): > 5000 mg/kg.
	LC50, inhalative, Rat: 0,49 mg/l/4h.
	NOAEL, Rat: 12 mg/m <sup>3</sup> (OECD 414).
13 - 30	4,4'-Methylenediphenyl diisocyanate, CAS: 101-68-8
	inhalative, Conversion value: 1,5 mg/l/4h (Dust/mist).
	LD50, dermal, Rabbit: > 9400 mg/kg (OECD 402).
	LD50, oral, Rat: > 2000 mg/kg.
	LC50, inhalative, Rat: > 2,24 mg/l/1h (OECD 403).
	LC50, inhalative, Rat: 0,368 mg/l/4h (OECD 403).

**Serious eye damage/irritation**  
**Skin corrosion/irritation**  
**Respiratory or skin sensitization**  
**Specific target organ toxicity — single exposure**  
**Specific target organ toxicity — repeated exposure**  
**Mutagenicity**  
**Reproduction toxicity**  
**Carcinogenicity**  
**General remarks**

Irritant  
 Irritant  
 Sensitizing.  
 STOT SE 3

STOT RE 2

No classification.

No classification.

Limited evidence of a carcinogenic effect.

The following applies to cyanogen compounds/ nitriles in general: utmost caution! Release of hydrocyanic acid is possible - blockade of cellular respiration. Cardiovascular disorders, dyspnoea, unconsciousness. Toxicological data of complete product are not available. The toxicity data listed pertaining to the ingredients are intended for those working in the medicinal professions, experts for occupational health and safety and toxicologists. The toxicity data pertaining to the ingredients were supplied by the manufacturers of raw materials.

## 12: ECOLOGICAL INFORMATION

### Toxicity

Range [%]	Substance
3 - 7	4,4'-Methylenediphenyldiisocyanate, oligomers, CAS: 25686-28-6
	LC50, (96h), fish: > 1000 mg/l (OECD 203).
	EC50, (24h), Daphnia magna: > 1000 mg/l (OECD 202).
	EC50, Bacteria: > 100 mg/l/3h (OECD 209).
	EC50, (72h), Algae: > 1640 mg/l (OECD 201).
	NOEC, (21d), Daphnia magna: > 10 mg/l (OECD 211).
13 - 30	4,4'-Methylenediphenyl diisocyanate, CAS: 101-68-8
	LC50, (96h), Danio rerio: > 1000 mg/l (OECD 203).
	EC50, (3h), Bacteria: > 100 mg/l (OECD 209).
	EC50, (24h), Daphnia magna: > 1000 mg/l (OECD 202).
	NOEC, (21d), Daphnia magna: > 10 mg/l (OECD 202).
	ErC50, (72h), Scenedesmus subspicatus: > 1640 mg/l (OECD 201).

## Persistence and degradability

<b>Behaviour in environment compartments</b>	not determined
<b>Behaviour in sewage plant</b>	not determined
<b>Biological degradability</b>	The product is not biodegradable.
<b>Bioaccumulative potential</b>	logPow: 4,51 (CAS 101-68-8) BCF: 200 (CAS 101-68-8)
<b>Mobility in soil</b>	No information available.
<b>Results of PBT and vPvB assessment</b>	not applicable

## Other adverse effects

The product is insoluble in water.

Ecological data of complete product are not available.

The toxicity data pertaining to the ingredients were supplied by the manufacturers of raw materials.

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## 13: DISPOSAL CONSIDERATIONS

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### Waste treatment methods

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. It is not possible to determine a waste code for this product in accordance with the European Waste Catalogue (EWC) since it is only possible to classify it according to how it is used by the customer. The waste code is to be determined within the EU in liaison with the waste-disposal operator.

<b>Product</b>	Dispose of as hazardous waste. Coordinate disposal with the authorities if necessary.
<b>Waste no. (recommended)</b>	080501*
<b>Contaminated packaging</b>	Uncontaminated packaging may be taken for recycling. Packaging that cannot be cleaned should be disposed of as for product.
<b>Waste no. (recommended)</b>	150110*

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## 14: TRANSPORT INFORMATION

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### UN number

See SECTION 14.2 in accordance with UN shipping name

### UN proper shipping name

<b>Transport by land according to ADR/RID</b>	NO DANGEROUS GOODS
<b>Inland navigation (ADN)</b>	NO DANGEROUS GOODS
<b>Marine transport in accordance with IMDG</b>	NOT CLASSIFIED AS "DANGEROUS GOODS"
<b>Air transport in accordance with IATA</b>	NOT CLASSIFIED AS "DANGEROUS GOODS"
<b>Transport hazard class(es)</b>	See SECTION 14.2 in accordance with UN shipping name
<b>Packing group</b>	See SECTION 14.2 in accordance with UN shipping name

<b>Environmental hazards</b>	See SECTION 14.2 in accordance with UN shipping name
<b>Special precautions for user</b>	Relevant information under SECTION 6 to 8.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	not applicable

## 15: REGULATORY INFORMATION

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

#### EEC-REGULATIONS

1967/548 (1999/45); 1991/689 (2001/118); 1999/13; 2004/42; 648/2004; 1907/2006 (Reach); 1272/2008; 75/324/EEC (2008/47/EC); 453/2010/EC

#### TRANSPORT-REGULATIONS

DOT-Classification, ADR (2013); IMDG-Code (2013, 36. Amdt.); IATA-DGR (2013).

#### NATIONAL REGULATIONS (GB):

EH40/2005 Workplace exposure limits (Second edition, published December 2011).CHIP 3/ CHIP 4

#### - Observe employment restrictions for people

Observe employment restrictions for young people.

Observe employment restrictions for mothers-to-be and nursing mothers.

#### - VOC (1999/13/CE)

not applicable

## 16: OTHER INFORMATION

The data and advice given apply when the product is used for the stated application or applications. The product is not sold as suitable for any other application. Use of the product for applications other than as stated in this sheet may give rise to risks not mentioned in this sheet. The product should not be used than for the stated application or applications without seeking advice from Denka Construction Solutions Malaysia Sdn Bhd.

If this product has been purchased to a third party for use at work, it is the purchaser's duty to take all necessary steps to secure that any person handling or using the product is provided with information in this sheet.

It is the responsibility and duty of the employer to inform employees and others who may be affected of any hazards described to this sheet and of any precautions which should be taken. This sheet does not constitute or substitute for the users own assessment of workplace risk, as required by other health and safety legislation.

**SDS:** Estoflex Solar 690 (Part A)  
**Date Issued:** 30/05/2022  
**Revision** 03



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