



## SAFETY DATA SHEET

### Altro Flexiflow comfort hardener

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

##### 1.1. Product identifier

**Product name** Altro Flexiflow comfort hardener

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

**Identified uses** PU Hardeners- Industrial flooring, hardener component for polyurethane system

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

**Supplier** Altro Resin Systems Ltd  
Unit 3 Station Rd Industrial Estate  
Maiden Newton  
Dorchester  
Dorset  
DT2 0AE  
Tel: 01300320620  
Fax: 01300321122

info@altro.com

##### 1.4. Emergency telephone number

**Emergency telephone** +44(0)1462480480 (Monday-Friday 09.00-17.00)

#### SECTION 2: Hazards identification

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

###### Classification (EC 1272/2008)

**Physical hazards** Not Classified

**Health hazards** Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Carc. 2 - H351 Acute Tox. 4 - H332 STOT SE 3 - H335 STOT RE 2 - H373

**Environmental hazards** Not Classified

**Classification (67/548/EEC or 1999/45/EC)** Xn;R20,R48/20. Carc. Cat. 3;R40. R42/43. Xi;R36/37/38.

##### 2.2. Label elements

###### Pictogram



**Signal word**

Danger

## Altro Flexiflow comfort hardener

<b>Hazard statements</b>	<p>H315 Causes skin irritation.</p> <p>H317 May cause an allergic skin reaction.</p> <p>H319 Causes serious eye irritation.</p> <p>H332 Harmful if inhaled.</p> <p>H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.</p> <p>H335 May cause respiratory irritation.</p> <p>H351 Suspected of causing cancer.</p> <p>H373 May cause damage to organs through prolonged or repeated exposure.</p>
<b>Precautionary statements</b>	<p>EUH204 Contains isocyanates. May produce an allergic reaction.</p> <p>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.</p> <p>P281 Use personal protective equipment as required.</p> <p>P284 [In case of inadequate ventilation] wear respiratory protection.</p> <p>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P308+P313 IF exposed or concerned: Get medical advice/ attention.</p> <p>P313 Get medical advice/ attention.</p> <p>P314 Get medical advice/ attention if you feel unwell.</p> <p>P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.</p> <p>P501 Dispose of contents/ container to ...</p>
<b>Contains</b>	<p>METHYLENEDIPHENYL DIISOCYANATE, DIPHENYLMETHANEDIISOCYANATE -Isomers &amp; homologues</p>
<b>Supplementary precautionary statements</b>	<p>P201 Obtain special instructions before use.</p> <p>P202 Do not handle until all safety precautions have been read and understood.</p> <p>P260 Do not breathe vapour/ spray.</p> <p>P261 Avoid breathing vapour/spray.</p> <p>P264 Wash contaminated skin thoroughly after handling.</p> <p>P271 Use only outdoors or in a well-ventilated area.</p> <p>P272 Contaminated work clothing should not be allowed out of the workplace.</p> <p>P302+P352 IF ON SKIN: Wash with plenty of water.</p> <p>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.</p> <p>P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P312 Call a POISON CENTER/ doctor if you feel unwell.</p> <p>P321 Specific treatment (see medical advice on this label).</p> <p>P332+P313 If skin irritation occurs: Get medical advice/ attention.</p> <p>P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.</p> <p>P337 If eye irritation persists:</p> <p>P362 Take off contaminated clothing.</p> <p>P363 Wash contaminated clothing before reuse.</p> <p>P403+P233 Store in a well-ventilated place. Keep container tightly closed.</p> <p>P405 Store locked up.</p>

### 2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

## Altro Flexiflow comfort hardener

<b>METHYLENEDIPHENYL DIISOCYANATE</b>	<b>60-100%</b>
CAS number: 26447-40-5	EC number: 247-714-0
<b>Classification</b> Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Carc. 2 - H351 STOT SE 3 - H335 STOT RE 2 - H373	<b>Classification (67/548/EEC or 1999/45/EC)</b> Carc. Cat. 3;R40 Xn;R20,R48/20 Xi;R36/37/38 R42/43
<b>DIPHENYLMETHANEDIISOCYANATE -Isomers &amp; homologues</b>	<b>30-60%</b>
CAS number: 9016-87-9	
<b>Classification</b> Not Classified	<b>Classification (67/548/EEC or 1999/45/EC)</b> Xn;R20. Xi;R36/37/38. R42.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

<b>Inhalation</b>	Remove casualty from exposure ensuring one's own safety whilst doing so. Consult a doctor.
<b>Ingestion</b>	Wash out mouth with water. If conscious, give half a litre of water to drink immediately. Consult a doctor.
<b>Skin contact</b>	Wash immediately with plenty of soap and water
<b>Eye contact</b>	Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination

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

<b>General information</b>	Immediate effects can be expected after short-term exposure.
<b>Inhalation</b>	There may be irritation of the throat with a feeling of tightness in the chest Exposure may cause coughing or wheezing
<b>Ingestion</b>	There may be redness and soreness of the mouth and throat
<b>Skin contact</b>	There may be irritation and redness at the site of contact.
<b>Eye contact</b>	There may be irritation and redness. The eyes may water profusely.

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

<b>Notes for the doctor</b>	No recommendation given, but first aid may still be required in case of accidental exposure, inhalation or ingestion of this chemical. If in doubt, GET MEDICAL ATTENTION PROMPTLY!
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### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

**Suitable extinguishing media** Dry chemical powder. Carbon dioxide. Alcohol resistant foam. Water spray.

## Altro Flexiflow comfort hardener

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

**Specific hazards** In combustion emits toxic fumes of carbon dioxide / carbon monoxide. In combustion emits toxic fumes of hydrogen cyanide. In combustion emits toxic fumes of nitrogen oxides.

### 5.3. Advice for firefighters

**Protective actions during firefighting** Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

## SECTION 6: Accidental release measures

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

**Personal precautions** Refer to section 8 of SDS for personal protection details. Ventilate the area to dispel residual vapours.

### 6.2. Environmental precautions

**Environmental precautions** Do not discharge into drains or rivers. Do not discharge into subsoil/soil.

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

**Methods for cleaning up** Take up with absorbent material (eg. sand, Kieselguhr, universal binder). Transfer to a closable, labelled salvage container for disposal by an appropriate method.

### 6.4. Reference to other sections

**Reference to other sections** Refer to section 8 of SDS.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

**Usage precautions** Ensure there is sufficient ventilation of the area. Avoid the formation or spread of mists in the air.

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

**Storage precautions** Store in cool, well ventilated area. Avoid contact with water or humidity. Keep container tightly closed. If moisture enters isocyanate containers, CO<sub>2</sub> forms and pressure builds up. Protect from temperatures below 20°C and above 35°C.

### 7.3. Specific end use(s)

**Specific end use(s)** No data available.

**Usage description** Must only be kept in original packaging.

## SECTION 8: Exposure Controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

#### **METHYLENEDIPHENYL DIISOCYANATE**

Long-term exposure limit (8-hour TWA): WEL 0.02 mg/m<sup>3</sup>(Sen)

Short-term exposure limit (15-minute): WEL 0.07 mg/m<sup>3</sup>(Sen)

#### **DIPHENYLMETHANEDIISOCYANATE -Isomers & homologues**

Long-term exposure limit (8-hour TWA): WEL 0.02 mg/m<sup>3</sup>(Sen)

Short-term exposure limit (15-minute): WEL 0.07 mg/m<sup>3</sup>(Sen)

WEL = Workplace Exposure Limit

**Ingredient comments** WEL = Workplace Exposure Limits

### 8.2. Exposure controls

## Altro Flexiflow comfort hardener

### Protective equipment



#### Appropriate engineering controls

Ensure there is sufficient ventilation of the area. The floor of the storage room must be impermeable to prevent the escape of liquids.

#### Eye/face protection

Safety glasses with side-shields.

#### Hand protection

Nitrile gloves. Butyl gloves. PVC gloves.

#### Other skin and body protection

Wear chemical protective suit.

#### Respiratory protection

Respiratory protection in case of vapour/aerosol release: Combination filter for gases/ vapours of organic compounds and solid liquid particles. (f.e. EN 14387 Type A-P2)

## SECTION 9: Physical and Chemical Properties

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

Appearance	Yellow-brown liquid
Relative density	1.2 @ 20°C
Solubility(ies)	Soluble in most organic solvents
Viscosity	Non-viscous @ °C

### 9.2. Other information

Other information	Not available.
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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reactivity	Stable under recommended transport or storage conditions.
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### 10.2. Chemical stability

Stability	Stable under normal conditions
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### 10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.
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### 10.4. Conditions to avoid

Conditions to avoid	<15°C
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### 10.5. Incompatible materials

Materials to avoid	Acids. Water. Alcohols. Amines. Bases.
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### 10.6. Hazardous decomposition products

Hazardous decomposition products	In combustion emits toxic fumes.
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## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute toxicity - oral

## Altro Flexiflow comfort hardener

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 2,000.0

**Species** Rat

**Notes (oral LD<sub>50</sub>)** Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Experimental/calculated data:  
LD50 rat (oral): > 2,000 mg/kg (Directive 84/449/EEC, B.1) Of moderate toxicity after short-term inhalation. Virtually nontoxic after a single skin contact. Virtually nontoxic after a single ingestion.

### Acute toxicity - dermal

**Acute toxicity dermal (LD<sub>50</sub> mg/kg)** 9,400.0

**Species** Rabbit

**Notes (dermal LD<sub>50</sub>)** Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Experimental/calculated data:  
LD50 rabbit (dermal): > 9,400 mg/kg Of moderate toxicity after short-term inhalation. Virtually nontoxic after a single skin contact. Virtually nontoxic after a single ingestion.

### Skin corrosion/irritation

#### **Animal data**

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Assessment of irritating effects: Irritating to eyes and skin. Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Experimental/calculated data:  
Skin corrosion/irritation rabbit: Irritant. (OECD Guideline 404) Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Experimental/calculated data:  
Serious eye damage/irritation rabbit: non-irritant (OECD Guideline 405)  
The European Union (EU) has classified this substance with 'Irritating to eyes'.(R36).

### Respiratory sensitisation

**Respiratory sensitisation** guinea pig: respiratory sensitizing

### Skin sensitisation

**Skin sensitisation** Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Experimental/calculated data:  
Buehler test guinea pig: skin sensitizing The substance may cause sensitization of the respiratory tract. Sensitization after skin contact possible. Studies in animals suggest that dermal exposure may lead to pulmonary sensitization. However, the relevance of this result for humans is unclear.

### Germ cell mutagenicity

#### **Genotoxicity - in vivo**

Assessment of mutagenicity:  
The chemical structure does not suggest such an effect.

### Carcinogenicity

#### **Carcinogenicity**

Assessment of carcinogenicity:  
A carcinogenic effect cannot safely be ruled out.  
Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Assessment of carcinogenicity: Indication of possible carcinogenic effect in animal tests. However, the relevance of this result for humans is unclear.

### Reproductive toxicity

#### **Reproductive toxicity - fertility**

Assessment of reproduction toxicity:  
The chemical structure does not suggest such an effect.

## Altro Flexiflow comfort hardener

**Reproductive toxicity - development**      Assessment of teratogenicity:  
The chemical structure does not suggest such an effect. The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

### Specific target organ toxicity - single exposure

**STOT - single exposure**      Causes temporary irritation of the respiratory tract.

### Specific target organ toxicity - repeated exposure

**STOT - repeated exposure**      Repeated inhalation exposure may affect certain organs. Repeated exposure to the substance by dermal administration leads to effects similar to those found after single exposure. Repeated exposure to the substance by oral administration leads to effects similar to those found after single exposure.

### Aspiration hazard

**Aspiration hazard**      Not anticipated to present an aspiration hazard, based on chemical structure.

**Inhalation**      There may be irritation of the throat with a feeling of tightness in the chest. Exposure may cause coughing or wheezing.

**Ingestion**      There may be soreness and redness of the mouth and throat.

**Skin contact**      There may be irritation and redness at the site of contact.

**Eye contact**      There may be irritation and redness. The eyes may water profusely.

## SECTION 12: Ecological Information

### 12.1. Toxicity

**Toxicity**      Assessment of aquatic toxicity:  
There is a high probability that the product is not acutely harmful to aquatic organisms.  
Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
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. There is a high probability that the product is not chronically harmful to aquatic organisms.  
The product may hydrolyse. The test result maybe partially due to degradation products. The product has not been tested. The statement has been derived from products of a similar structure or composition.

**Acute toxicity - fish**      LC<sub>50</sub>, 96 hours: > 1,000 mg/l, Fish

**Acute toxicity - aquatic invertebrates**      Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Aquatic invertebrates:  
EC50 (24 h) > 1,000 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

**Acute toxicity - aquatic plants**      , 72 hours: 1640 mg/l, Scenedesmus subspicatus

**Acute toxicity - microorganisms**      , 3 hours: > 100 mg/l, Activated sludge

### 12.2. Persistence and degradability

**Persistence and degradability**      Hydrolyzes to form water-insoluble compounds. Experience shows this product to be inert and non-degradable. Poorly biodegradable. The product is unstable in water. The elimination data also refer to products of hydrolysis.

## Altro Flexiflow comfort hardener

### 12.3. Bioaccumulative potential

**Bioaccumulative potential** Does not significantly accumulate in organisms. BCF: 200, Cyprinus carpio (Common carp)

### 12.4. Mobility in soil

**Mobility** Adsorption to solid soil phase is not expected

### 12.5. Results of PBT and vPvB assessment

**Results of PBT and vPvB assessment** According to Annex XIII of Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria.

### 12.6. Other adverse effects

**Other adverse effects** The product does not contain substances that are listed in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**Disposal methods** Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

**Waste class** Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

## SECTION 14: Transport information

**General** The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

### 14.1. UN number

Not applicable.

### 14.2. UN proper shipping name

Not applicable.

### 14.3. Transport hazard class(es)

**Transport labels**

### 14.4. Packing group

Not applicable.

### 14.5. Environmental hazards

**Environmentally hazardous substance/marine pollutant**  
No.

### 14.6. Special precautions for user

Not applicable.

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

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

## SECTION 15: Regulatory information



## Altro Flexiflow comfort hardener

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

<b>National regulations</b>	The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).
<b>EU legislation</b>	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 Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.
<b>Guidance</b>	Workplace Exposure Limits EH40. CHIP for everyone HSG(108). Safety Data Sheets for Substances and Preparations. Approved Classification and Labelling Guide (Sixth edition) L131.

### 15.2. Chemical safety assessment

A chemical safety assessment has not been carried out for the substance or the Mixture by the supplier.

### **SECTION 16: Other information**

<b>Revision date</b>	12/09/2016
<b>Revision</b>	2
<b>SDS number</b>	21301
<b>Risk phrases in full</b>	R20 Harmful by inhalation. R36/37/38 Irritating to eyes, respiratory system and skin. R40 Limited evidence of a carcinogenic effect. R42 May cause sensitisation by inhalation. R42/43 May cause sensitisation by inhalation and skin contact. R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.
<b>Hazard statements in full</b>	H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H332 Harmful if inhaled. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335 May cause respiratory irritation. H351 Suspected of causing cancer. H373 May cause damage to organs through prolonged or repeated exposure.