



Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.10.2018

Version number 2

Revision: 15.10.2018

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

- **1.1 Product identifier**
- **Trade name: ICEMA® R145/75**
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
- **Product category** PC1 Adhesives, sealants
- **Application of the substance / the mixture** Adhesives
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
H.B. Fuller, Isar-Rakoll, S.A.
Estrada Nacional 13
PT-4486-851 Mindelo - Vila do Conde
+351 229 288 200
EU-MSDS@hbfuller.com
- **Informing department:** Regulatory Department
- **1.4 Emergency telephone number:**
NCEC emergency service
+44 (0) 1235 239 670 (24 hours)

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sens. 1 H317 May cause an allergic skin reaction.
Carc. 2 H351 Suspected of causing cancer.
STOT SE 3 H335 May cause respiratory irritation.
STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS07 GHS08

- **Signal word** Danger
- **Hazard-determining components of labelling:**
diphenylmethane-4,4'-di-isocyanate
diphenylmethanediisocyanate, isomeres and homologues
benzoyl chloride
- **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.

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*H335 May cause respiratory irritation.**H373 May cause damage to organs through prolonged or repeated exposure.***Precautionary statements***P260 Do not breathe dust/fume/gas/mist/vapours/spray.**P280 Wear protective gloves/protective clothing/eye protection/face protection.**P284 [In case of inadequate ventilation] wear respiratory protection.**P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**P405 Store locked up.**P501 Dispose of contents/container in accordance with local/regional/national/international regulations.***Additional information:***Contains isocyanates. May produce an allergic reaction.***2.3 Other hazards****Results of PBT and vPvB assessment***PBT: Not applicable.**vPvB: Not applicable.*

SECTION 3: Composition/information on ingredients

3.2 Chemical characterisation: Mixtures*Description: Polyurethane***Dangerous components:**

CAS: 9016-87-9 EC number: 618-489-9	diphenylmethanediisocyanate, isomeres and homologues Resp. Sens. 1, H334; Carc. 2, H351; STOT RE 2, H373; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; STOT SE 3, H335	10-20%
CAS: 101-68-8 EINECS: 202-966-0 Reg.nr.: 01-2119457014-47-0000	diphenylmethane-4,4'-di-isocyanate Resp. Sens. 1, H334; Carc. 2, H351; STOT RE 2, H373; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; STOT SE 3, H335	10-20%
CAS: 6425-39-4 Reg.nr.: 01-2119969278-20-0000	2,2'-dimorpholinyl diethyl ether Eye Irrit. 2, H319	1-5%
CAS: 98-88-4 EINECS: 202-710-8 Reg.nr.: 01-2119487138-29-xxxx	benzoyl chloride Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Sens. 1, H317	0.1-1%

Additional information For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures**General information***Instantly remove any clothing soiled by the product.**Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.**After inhalation Supply fresh air and call for doctor for safety reasons.***After skin contact***Instantly wash with water and soap and rinse thoroughly.**If skin irritation continues, consult a doctor.**After eye contact Rinse opened eye for several minutes under running water. Then consult doctor.**After swallowing Do not induce vomiting; instantly call for medical help.*

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- **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents**
Use fire fighting measures that suit the environment.
Water haze
Foam
Fire-extinguishing powder
Carbon dioxide
- **5.2 Special hazards arising from the substance or mixture**
Can be released in case of fire
Nitrous vitriol gases
Isocyanate fumes and traces of hydrogen cyanide.
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained breathing apparatus.
- **Additional information**
Collect contaminated fire fighting water separately. It must not enter drains.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
- **6.2 Environmental precautions:** Do not allow to enter drainage system, surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
- **6.4 Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
Take note of emission threshold.
Use solvent-proof equipment.
- **Information about protection against explosions and fires:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and containers:** Prevent any penetration into the ground.
- **Information about storage in one common storage facility:** Not required.

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- **Further information about storage conditions:**
Protect from heat and direct sunlight.
Store in cool, dry conditions in original sealed container
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **8.1 Control parameters**

- **Components with limit values that require monitoring at the workplace:**

9016-87-9 diphenylmethanediisocyanate, isomeres and homologues

WEL	Short-term value: 0.07 mg/m ³ Long-term value: 0.02 mg/m ³ Sen; as -NCO
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101-68-8 diphenylmethane-4,4'-di-isocyanate

WEL	Short-term value: 0.07 mg/m ³ Long-term value: 0.02 mg/m ³ Sen; as -NCO
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- **DNELs**

DIPHENYLMETHANDIISOCYANATE (CAS 101-68-8):

Worker (short term):

DNEL dermal – systemic effects: 50 mg/kg bw/day

DNEL inhalation – systemic effects: 0,1 mg/m³ air

DNEL dermal - local effects: 28,7 mg/cm²

DNEL inhalation - local effects: 0,1 mg/m³ air

Worker (long term) :

DNEL dermal – systemic effects: no quantitative risk assessment possible

DNEL inhalation – systemic effects: 0,05 mg/m³ air

DNEL dermal - local effects: no quantitative risk assessment possible

DNEL inhalation - local effects: 0,05 mg/m³ air

- **PNECs**

DIPHENYLMETHANDIISOCYANATE (CAS 101-68-8):

Diphenylmethan-4,4'-diisocyanat

Fresh water: > 1 mg/l

Marine wasser: > 0,1 mg/l

Sediment: Not relevant

Soil: > 1 mg/kg dry weight

STP: > 1 mg/l

Oral: Not relevant

- **Additional information:** The lists that were valid during the compilation were used as basis.

- **8.2 Exposure controls**

- **Personal protective equipment**

- **General protective and hygienic measures**

The usual precautionary measures should be adhered to general rules for handling chemicals.

Keep away from foodstuffs, beverages and food.

Take off immediately all contaminated clothing

Wash hands during breaks and at the end of the work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

- **Breathing equipment:** Use breathing protection in case of insufficient ventilation.

- **Recommended filter device for short term use:** Combination filter A-P2

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- **Protection of hands:**



Protective gloves.

Solvent resistant gloves

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**



Tightly sealed safety glasses.

- **Body protection:** Protective work clothing.

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form:	Liquid
Colour:	According to product specification
Odour:	Characteristic
Odour threshold:	Not determined.

- **pH-value:** Not determined.

- **Change in condition**

Melting point/freezing point:	Not determined
Initial boiling point and boiling range:	208 °C (DIN 53171)

- **Flash point:** 200 °C (DIN 53213)

- **Inflammability (solid, gaseous)** Not applicable.

- **Decomposition temperature:** Not determined.

- **Self-inflammability:** Product is not selfigniting.

- **Explosive properties:** Product is not explosive.

- **Critical values for explosion:**

Lower:	Not determined.
Upper:	Not determined.

- **Vapour pressure at 20 °C:** 10 hPa (DIN 51640)

- **Density at 20 °C** 1.09 g/cm³ (DIN 51757)

- **Relative density** Not determined.

- **Vapour density** Not determined.

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· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix
· Partition coefficient: n-octanol/water:	Not determined.
· Viscosity: dynamic at 20 °C: kinematic:	5120 mPas (Brookfield (ISO 2555)) Not determined.
· Solvent content: Organic solvents:	0.0 %
· Solids content:	100.0 % (ISO 3251)
· 9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.

- **LD/LC50 values that are relevant for classification:**

101-68-8 diphenylmethane-4,4'-di-isocyanate

Oral	LD50	4700 mg/kg (rat)
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9016-87-9 diphenylmethanediisocyanate, isomeres and homologues

Oral	LD50	> 15000 mg/kg (rat)
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6425-39-4 2,2'-dimorpholinyl diethyl ether

Oral	LD50	> 2000 mg/kg (rat)
Dermal	LD50	> 3000 mg/kg (rabbit)

- **Primary irritant effect:**
- **Skin corrosion/irritation**
Causes skin irritation.
- **Serious eye damage/irritation**
Causes serious eye irritation.
- **Respiratory or skin sensitisation**
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity**
Suspected of causing cancer.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.

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- **STOT-single exposure**
May cause respiratory irritation.
- **STOT-repeated exposure**
May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

· 12.1 Toxicity

· Aquatic toxicity:

101-68-8 diphenylmethane-4,4'-di-isocyanate

LC50/96h > 1000 mg/l (Brachydanio rerio)

EC50/24h 0.35 mg/l (Daphnia magna)

9016-87-9 diphenylmethanediisocyanate, isomeres and homologues

EC50/24h > 1000 mg/l (Daphnia magna)

LC0/96h > 1000 mg/l (Brachydanio rerio)

EC50/3h > 100 mg/l (activated sludge)

· 12.2 Persistence and degradability

9016-87-9 diphenylmethanediisocyanate, isomeres and homologues

Bio.Abbaubark./28 d | 0 % (-)

· **12.3 Bioaccumulative potential** No further relevant information available.

· **12.4 Mobility in soil** No further relevant information available.

· Additional ecological information:

· General notes:

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.

Do not allow product to reach ground water, water bodies or sewage system.

· 12.5 Results of PBT and vPvB assessment

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

· Recommendation

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Must be specially treated under adherence to official regulations.

· European waste catalogue

08 00 00	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS
08 04 00	wastes from MFSU of adhesives and sealants (including waterproofing products)
08 04 09*	waste adhesives and sealants containing organic solvents or other hazardous substances

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- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---|---|
| <ul style="list-style-type: none"> · 14.1 UN-Number · ADR, ADN, IMDG, IATA | Void |
| <ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR, ADN, IMDG, IATA | Void |
| <ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR, ADN, IMDG, IATA · Class | Void |
| <ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA | Void |
| <ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: | No |
| <ul style="list-style-type: none"> · 14.6 Special precautions for user | Not applicable. |
| <ul style="list-style-type: none"> · 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code | Not applicable. |
| <ul style="list-style-type: none"> · Transport/Additional information: | Not dangerous according to the above specifications. |
| <ul style="list-style-type: none"> · ADR · Remarks: | No dangerous good in accordance to the ADR-regulations. |
| <ul style="list-style-type: none"> · UN "Model Regulation": | Void |

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 56a
- **National regulations**
- **Technical instructions (air):**

Class	Share in %
I	25-50
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
- **VOC (EU) %** 0.00 %
- **Code MAL** 4-3
- **VOC (EU)** 0.0 g/l
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

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SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**

H302 Harmful if swallowed.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

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.

- **Contact:** EU-MSDS@hbfuller.com

- **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

Resp. Sens. 1: Respiratory sensitisation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

Carc. 2: Carcinogenicity – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

- *** Data compared to the previous version altered.**

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Annex: Exposure scenario

- **Short title of the exposure scenario**
diphenylmethane-4,4'-di-isocyanate (CAS 101-68-8)
Professional and Industrial use of Adhesives
INDURSTRIAL USE IN RIGID FOAM, COATINGS, ADHESIVES AND SEALANTS
- **Sector of Use** SU3 *Industrial uses: Uses of substances as such or in preparations at industrial sites*
- **Product category** PC1 *Adhesives, sealants*
- **Process category**
 PROC1 *Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.*
 PROC2 *Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions*
 PROC3 *Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition*
 PROC4 *Chemical production where opportunity for exposure arises*
 PROC5 *Mixing or blending in batch processes*
 PROC7 *Industrial spraying*
 PROC8a *Transfer of substance or mixture (charging and discharging) at non-dedicated facilities*
 PROC8b *Transfer of substance or mixture (charging and discharging) at dedicated facilities*
 PROC9 *Transfer of substance or mixture into small containers (dedicated filling line, including weighing)*
 PROC10 *Roller application or brushing*
 PROC13 *Treatment of articles by dipping and pouring*
 PROC14 *Tabletting, compression, extrusion, pelletisation, granulation*
 PROC15 *Use as laboratory reagent*
- **Environmental release category**
 ERC2 *Formulation into mixture*
 ERC3 *Formulation into solid matrix*
 ERC5 *Use at industrial site leading to inclusion into/onto article*
 ERC6c *Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)*
- **Description of the activities / processes covered in the Exposure Scenario**
See section 1 of the annex to the Safety Data Sheet.
- **Conditions of use**
- **Duration and frequency**
5 workdays/week.
8hrs (full working shift).
- **Environment**
Indoor and outdoor applications
Avoid contact to soil and / or ground water during application
- **Physical parameters**
- **Physical state** *Fluid*
- **Concentration of the substance in the mixture** *The substance is main component.*
- **Used amount per time or activity** *12000 annual tons per plant*
- **Other operational conditions**
- **Other operational conditions affecting environmental exposure** *No special measures required.*
- **Other operational conditions affecting worker exposure**
Ensure adequate ventilation, especially in closed rooms.
Avoid contact with eyes.
Avoid contact with the skin.
Avoid long-term or repeated skin contact.
Avoid breathing particles.
- **Other operational conditions affecting consumer exposure during the use of the product**
Not applicable.

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- **Risk management measures**

- At product temperatures below 40°C for pure MDI or below 45°C for other MDI based substances: Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

- At product temperatures above 40°C for pure MDI or above 45°C for other MDI based substances: Same as above, and:

- Provide extract ventilation to points where emissions occur or Provide extract ventilation to material transfer points and other openings or

- Handle in a fume cupboard or under extract ventilation or demonstrate, e.g. by workplace monitoring, that exposures are below the relevant worker DNEL values for acute and long-term.

- **Worker protection**

- The usual precautionary measures should be adhered to general rules for handling chemicals.

- Keep away from foodstuffs, beverages and food.

- Take off immediately all contaminated clothing

- Wash hands during breaks and at the end of the work.

- Do not inhale gases / fumes / aerosols.

- Avoid contact with the eyes and skin.

- Use breathing protection in case of insufficient ventilation.

- **Organisational protective measures**

- Keep good industrial hygiene.

- Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.

- No special measures required.

- **Technical protective measures** Ensure that suitable extractors are available on processing machines

- **Personal protective measures**

- Do not inhale dust / smoke / mist.

- Avoid contact with the skin.

- Avoid contact with the eyes.

- Tightly sealed safety glasses.

- Use breathing protection in case of insufficient ventilation.

- Protective gloves.

- **Environmental protection measures**

- **Water** No special measures required.

- **Disposal measures** Ensure that waste is collected and contained.

- **Disposal procedures**

- Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **Waste type** Partially emptied and uncleaned packaging

- **Exposure estimation**

- **Worker (dermal)** The calculated value is smaller than the DNEL.

- **Worker (inhalation)** The calculated value is smaller than the DNEL.

- **Consumer** Not relevant for this Exposure Scenario.