

# Material Safety Data Sheet

Page 1 of 9

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: Fitting foam for Pipe Insulation  
Application: Foaming of district heating joints  
Date: 04.06.2010  
Supplier: Dan-Iso A/S  
Løgstørvej 146 - Haubro  
DK-9600 Aars  
Denmark  
Emergency phone No.: +45 9866 4003

## 2. HAZARDS IDENTIFICATION

### Component B:

Highly flammable.

### Component A:

Harmful by inhalation. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact.

For their own protection, persons who suffer from hypersensitivity of the respiratory tract (e.g. asthmatics and chronic bronchitis sufferers) should avoid handling this product. Symptoms affecting the respiratory tract can also occur several hours after overexposure. Vapours and aerosols are the primary risk to the respiratory tract.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-number	EEC No.	%	Classification
<b>Desmodur 44 V 20 L (Component A):</b>				
Diphenylmethane-diisocyanate, isomers and homologues*	9016-87-9		100	Xn; R20 Xi; R36/37/38 R42/43
<b>BAYTHERM 27HK04 (SHAKE II) (Component B):</b>				
Cyclopentane	287-92-3	206-016-6	<10	F; R11 R52/53
N,N-dimethylcyclohexylamine	202-715-5	98-94-2	< 1	R10, C; R34 Xn; R20/21/22 N; R51/53

\*Classification/labelling analogues to Index No. 615-005-00-9

# Material Safety Data Sheet

Page 2 of 9

---

## 4. FIRST-AID MEASURES

General	Take off immediately all contaminated clothing.
Inhalation	Take the person into fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required.
Skin contact	After contact with skin, wash immediately with a cleanser based polyethylene glycol or with plenty of warm water and soap. Consult a doctor in the event of a skin reaction.
Eye contact	Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long period of time (at least 10 min.) Contact an ophthalmologist.
Ingestion	DO NOT induce the patient to vomit, medical advice is required.
Information for the physician	Component A irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation or bronchial constriction is primarily symptomatic. Extended medical care may be necessary, depending on the extent of the exposure and the symptoms.

---

## 5. FIRE-FIGHTING MEASURES

Extinguishing media:	CO <sub>2</sub> , foam, dry powder; in cases of larger fires, water spray should be used.
Unsuitable extinguishing media:	Water (High volume)
Specific hazards:	In case of fire, formation of carbon monoxide, nitrogen oxide, isocyanate vapour, and traces of hydrogen cyanide is possible. Firemen have to wear self-contained breathing apparatus. Do not let enter contaminated extinguishing water into the soil, groundwater or surface waters. Fire in vicinity poses risk of pressure build-up and rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area.

---

## 6. ACCIDENTAL RELEASE MEASURES

Put on protective equipment (see chapter 8).

Ensure adequate ventilation/exhaust ventilation. Keep unauthorized persons away.

Do not empty into drains.

Remove mechanically; cover remainders with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO<sub>2</sub>!). Keep damp in a safe ventilated area for several days.

For further disposal measures see chapter 13.

---



# Material Safety Data Sheet

Page 4 of 9

Protection and hygienic measures

Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work. Store work clothes and street clothes separately. Decontaminate, destroy and dispose of soiled protective clothing (see Section 13).

Safety precautions for handling freshly moulded polyurethane parts: see section 16.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

	Component A	Component B
	Reference	Reference
Form	Liquid	Liquid
Colour	Brown	Clear, yellowish
Odour	Earthy, musty	Slightly
Pour point	< 0°C DIN ISO 3016	
Initial boiling point	> 300°C at 1013 hPa	> 48°C at 1013 hPa (cyclopentane)
Density	~ 1,23 g/cm <sup>3</sup> at 20°C DIN 51757	~ 1,06 g/cm <sup>3</sup> at 20°C
Vapour pressure	1 hPa at 20°C 12 hPa at 50°C	345 hPa at 20°C (cyclopentane)
Diphenyl-methane-diisocyanate	< 0,00001 mbar at 20°C	
Viscosity	~ 200 mPas at 20°C DIN 53019	~ 600 mPas at 23°C
Solubility in water	Insoluble, reacts	
pH value	Not applicable	Not determined
Flash point	> 200°C	-5°C
Ignition temperature	> 400°C DIN 51794	380°C (cyclopentane)
Explosive limits	Limits not determined	1,1 – 8,7 % (cyclopentane)

## 10. STABILITY AND REACTIVITY

Thermal decomposition

Component A:

Polymerises at about 200 °C with evolution of CO<sub>2</sub>

Component B:

No decomposition when used properly.

Hazardous decomposition products

No hazardous decomposition products when stored and handled correctly.

Exothermic reaction

Component A:

Exothermic reaction with amines and alcohols; reacts with water forming CO<sub>2</sub>, in closed containers risk of bursting owing to increase of pressure.

Component B:

No hazardous reaction when used as directed.

# Material Safety Data Sheet

Page 5 of 9

---

## 11. TOXICOLOGICAL INFORMATION

Component A:

Data on diphenylmethane-diisocyanate, isomers and homologues

Acute toxicity:

LD50 oral, rat (female): >15000 mg/kg

LC50 inhalation, rat: 490 mg as aerosol/m<sup>3</sup>, 4,0 h of exposure.

Concentration of the saturated vapour of

Diphenylmethane-4,4'-di-isocyanate

(MDI) at 25 °C: 0,09 mg/m<sup>3</sup>

Effect on the eyes: irritant

Effect on the skin: irritant

Effect on the respiratory tract: irritant

Long-term inhalation study of tech. diphenylmethane diisocyanate (PMDI) carried out using mechanically produced, inhalable PMDI aerosols.

Aerodynamic diameter: 95 % below 5 µm

Concentrations: 0,2 ; 1,0 and 6,0 mg/m<sup>3</sup>

Animal groups: 120 rats in each (60 female, 60 male) Results after clinical and histopathological examination of the animals:

0,2 mg aerosols/m<sup>3</sup>: No irritation of the respiratory tract or lungs – "no effect level" (NOEL).

1,0 mg aerosols/m<sup>3</sup>: Slight irritation of and inflammatory changes to the nose, respiratory tract and lungs. No lung tumours.

6,0 mg aerosols/m<sup>3</sup>: More severe irritation of and chronic inflammatory changes to the nose, respiratory tract and lungs. Accumulation of a yellow substance in the lungs. 8 benign (statistically increased) and 1 malignant (statistically insignificant) lung tumours were found.

The overall increased incidence of lung tumours only in the group which received the highest concentration is closely attributed to the chronic irritation of and the inflammatory changes to the respiratory organs and to the accumulation of the yellow substance in the lungs of the animals.

Preparation – Irritating/corrosive effects:

Effect on the eyes: Causes slight temporary reddening and swelling of the conjunctiva and slight reversible clouding of the cornea. In high concentrations vapour of product has irritating effects on eyes and mucous membranes.

Effect on the skin: Irritant. In case of longer contact with skin, tanning and irritating effects are possible.

Effect on the respiratory tract: In high concentrations vapour of product has irritating effects on eyes and mucous membranes.

Special properties/effects:

---

# Material Safety Data Sheet

Page 6 of 9

Experience on humans: Irritation of the mucous membranes in the nose, throat and lungs, dryness of the throat, pressure on the chest, sometimes accompanied by breathing difficulties and headaches. Delayed appearance the symptoms and allergic reaction in susceptible persons possible.

Sensitisation: May cause sensitization by inhalation.

Dermal sensitisation: not evaluable since experimental results are contradictory.

Component B:

Toxicological studies at the preparation are not available.

Preparation – Irritating/corrosive effects:

Effect on the eyes: nonirritant

Effect on the skin: nonirritant

The dangerous constituents of preparation have been tested with the following results:

Data on cyclopentane

Acute toxicity:

LD50 oral, rat: >5000 mg/kg

LC50 inhalation, rat: >25,3 mg/l, 4,0 h of exposure

Effect on the eyes: nonirritant

Effect on the skin: nonirritant

General: repeated or prolonged contact may cause irritation and dermatitis  
Inhalation of highly concentrated vapors causes irritation of the respiratory tract and may have a narcotic effect. Aspiration may cause pneumonia.

## 12. ECOLOGICAL INFORMATION

Component A

Do not allow to escape into waters, wastewater or soil.

Behaviour in open waters: Immiscible in water.

Reacts with water at the interface producing CO<sub>2</sub> and forming a solid and insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by water soluble solvents. Previous experience shows that polyurea is inert and non-degradable.

Data on diphenylmethane-diisocyanate, isomers and homologues

Biodegradability: 0 %, i.e. not degradable.

Degradation rate in 28 days.

(Method: respirometer test)

Acute fish toxicity: LC<sub>0</sub> = >1000 mg/l

Test species: Brachydanio rerio (Zebra barbel)

Duration of test: 96 h

Acute bacteria toxicity: EC<sub>50</sub> = >100 mg/l

Tested on activated sludge microorganism.

Duration of test: 3 h

# Material Safety Data Sheet

Page 7 of 9

Acute toxicity for daphnia: EC50 = >1000 mg/l

Test species: Daphnia magna

Duration of test: 24 h

Component B

Ecotoxicological studies at the preparation are not available.

Data on cyclopentane

Biodegradability: >70 %, i.e. readily biodegradable.

Degradation rate in 28 days.

(Method: OECD – respirometer test)

Acute fish toxicity: LC0 = >100 mg/l

Test species: Oncorhynchus kisutch

Acute toxicity for daphnia: EC50 = >10 mg/l

Test species: Daphnia magna

## 13. DISPOSAL CONSIDERATIONS

Dispose in accordance with applicable international, national and local laws, ordinances and statutes.

For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

## 14. TRANSPORT INFORMATION

Component A

RID/ADR: -- UN: NODG PG: --

IMDG Code: -- UN: NODG PG: -- MPO: --

ICAO/IATA: -- UN: NRES PG: --

Declaration for land shipment: --

Declaration for sea shipment: --

Declaration for shipment by air: --

Other information:

Not dangerous cargo. Irritating to skin and eyes. Avoid temperatures below +10 °C. Avoid heat above +50 °C. Keep dry. Keep away from foodstuffs, acids and alkalis.

Component B

RID/ADR: 3 UN: 1993 PG: II

Warning sign: Hazard no. 33 UN No.: 1993

IMDG Code: 3 UN: 1993 PG: II EmS No: F-E, S-E MPO: NO

ICAO/IATA: 3 UN: 1993 PG: II

Declaration for land shipment: FLAMMABLE LIQUID, N.O.S (CYCLOPENTAN, N,N-DIMETHYLCYCLOHEXYLAMIN)

Declaration for sea shipment: FLAMMABLE LIQUID, N.O.S (CYCLOPENTAN, N,N-DIMETHYLCYCLOHEXYLAMIN)

Declaration for shipment by air: FLAMMABLE LIQUID, N.O.S (CYCLOPENTAN, N,N-DIMETHYLCYCLOHEXYLAMIN)

Limited quantity regulations applicable in accordance with chapter 3.4 RID/ADR in compliance with threshold value

Other information:

Highly flammable, flash point -5 °C. Intense smelling. Keep separated from foodstuffs.

# Material Safety Data Sheet

Page 8 of 9

---

## 15. REGULATORY INFORMATION

Component A

Labelling in accordance with Annex I of directive 67/548/EEC and its amendments and adaptations:

Symbol: Xn, hazard description: harmful



Contains: diphenylmethane–diisocyanate, isomers and homologues

R 20: Harmful by inhalation.

R 36/37/38: Irritating to eyes, respiratory system and skin.

R 42/43: May cause sensitization by inhalation and skin contact.

S 23: Do not breathe vapour/spray.

S 36/37: Wear suitable protective clothing and gloves.

S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

---

Component B

Labeling in accordance with the EEC directives:

Symbol: F, hazard description: highly flammable



R 11: Highly flammable.

S 16: Keep away from sources of ignition – No smoking.

S 23: Do not breathe vapour/spray

S 33: Take precautionary measures against static discharges.

S 35: This material and its container must be disposed of in a safe way.

S 51: Use only in well ventilated areas.

Any existing national regulations on the handling of solvents must be observed.

---



# Material Safety Data Sheet

Page 9 of 9

---

## 16. OTHER INFORMATION

Text of all R phrases referred to in sections 2 and 3:

Component A:

R 20: Harmful by inhalation.

R 36/37/38: Irritating to eyes, respiratory system and skin.

R 42/43: May cause sensitization by inhalation and skin contact.

Component B:

R 34 Causes burns.

R 10 Flammable.

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R 11 Highly flammable.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

ISOPA Guidelines for safe loading/unloading, transport and storage of TDI and MDI.

ISOPA Order No.: PSC-0005-GUIDL

Safety precautions for handling freshly molded polyurethane parts:

Depending on the production parameters, any uncovered surfaces of polyurethane moldings produced using this raw material may contain traces of substances (e. g. starting and reaction products, catalysts, release agents) with hazardous characteristics.

Skin contact with traces of these substances must be avoided. When demoulding or otherwise handling freshly molded polyurethane parts, protective textile gloves must be worn as a minimum. Their palm and finger areas should preferably be coated on the outside with nitrile rubber, PVC or polyurethane. Protective gloves should be changed daily. The wearing of protective clothing suited to the conditions normally encountered when handling freshly molded polyurethane parts is recommended.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The above details do not imply any guarantee concerning composition, properties or performance.

---