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

1.1 Product identifier

Trade name

DESMODUR 44 V 20 L

Substance name	diphenylmethanediisocyanate, isomeres and homologues

Identification numbers

CAS no.	9016-87-9

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

Relevant identified uses of the substance or mixture
Di-/polyisocyanate components for the production of polyurethanes

Uses advised against
Spray applications by final consumers are not supported.
Final consumer uses requiring heating above room temperature prior use, are not supported.
Professional cleaning applications using aprotic polar solvent are not supported.

1.3 Details of the supplier of the safety data sheet

Address
Dan-iso A/S
Løgstørvej 146
9600 Aars

Telephone no.	++45 98664003
e-mail	mail@dan-iso.dk

1.4 Emergency telephone number

In case of transport incidents and other emergencies:
+44 (0) 1235 239 670 (NCEC, National Chemical Emergency Centre)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification in accordance with Regulation (EC) No 1272/2008 (CLP)
Acute Tox. 4; H332
Carc. 2; H351
Eye Irrit. 2; H319
Resp. Sens. 1; H334
Skin Irrit. 2; H315
Skin Sens. 1; H317
STOT RE 2; H373i
STOT SE 3; H335

Note	Specific concentration limits	M-factor (acute)	M-factor (chronic)
-	Resp. Sens. 1; H334: C >= 0.1% Eye Irrit. 2; H319: C >= 5% STOT SE 3; H335: C >= 5% Skin Irrit. 2; H315: C >= 5%	-	-

Classification information
This product is assessed and classified using the methods and criteria below referred to in Article 9 of Regulation (EC) n° 1272/2008:
Physical hazards: determined through assessment data based on the methods or standards referred to in part 2 of Annex I to CLP
Health hazards and environmental hazards: determined through toxicological and ecotoxicological assessment data based on the methods or standards referred to in Part 3 and 4 of Annex I to CLP.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP Regulation)

Product identifier
9016-87-9 (diphenylmethanediisocyanate, isomeres and homologues)

Hazard pictograms


GHS07


GHS08

Signal word
Danger

Hazard statement(s)

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.
H373i	May cause damage to organs through prolonged or repeated exposure if inhaled.

Precautionary statement(s)

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

2.3 Other hazards

In case of respiratory system hypersensitivity (asthma, chronic bronchitis) do not handle this product.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical characterization
Substance name diphenylmethanediisocyanate, isomeres and homologues

Identification numbers
CAS no. 9016-87-9

Components to be mentioned according to Regulation (EU) No. 1907/2006, Annex II, section 3.1

Substance name	Additional information	
CAS / EC / Index / REACH no	**Concentration**	**%**
diphenylmethane-4,4'-di-isocyanante	component	
101-68-8 202-966-0 615-005-00-9 01-2119457014-47	>= 25.00 - < 50.00	%-b.w.
diphenylmethane-2,4'-diisocyanate	component	
5873-54-1 227-534-9 615-005-00-9 01-2119480143-45	< 5.00	%-b.w.
2,2'-methylenediphenyl diisocyanate	component	
2536-05-2 219-799-4 615-005-00-9 01-2119927323-43	< 2.50	%-b.w.

3.2 Mixtures
Not applicable. The product is not a mixture.

3.3 Other information
Any substances in the candidate list (SVHC) in accordance with REACH regulation (EC) 1907/2006 that may be contained in the product are specified in section 15.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
Remove contaminated clothing immediately and dispose of safely.

After inhalation
Remove to fresh air, keep patient warm and at rest. In case of persisting adverse effects consult a physician.

After skin contact
Preferably wash with polyethylene glycol-based cleanser or with plenty of warm water and soap. Consult a doctor if skin irritation persists.

After eye contact
Remove contact lenses. Rinse eye thoroughly under running water keeping eyelids wide open and protecting the unaffected eye (at least 10 to 15 minutes). Seek medical assistance.

After ingestion
Rinse mouth thoroughly with water. Do not induce vomiting. Call a doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed

Effects
The product 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 treatment may be required depending on the degree of exposure and the severity of the symptoms.

4.3 Indication of any immediate medical attention and special treatment needed
No data available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Carbon dioxide; Foam; Extinguishing powder; Fight larger fires with directed water spray.

Unsuitable extinguishing media
High power water jet

5.2 Special hazards arising from the substance or mixture
In the event of fire, the following can be released: Carbon dioxide (CO2); Carbon monoxide (CO); Nitrogen oxides (NOx); Hydrogen cyanide (HCN); In case of fire: danger of pressure build up, which could result in container rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area.

5.3 Advice for firefighters
Use self-contained breathing apparatus. Wear protective clothing. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Refer to protective measures listed in sections 7 and 8.

For emergency responders
Personal protective equipment (PPE) - see section 8.

6.2 Environmental precautions

Do not discharge into the drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

6.3 Methods and material for containment and cleaning up

Cover up with damp, liquid absorbing material (e. g. sawdust, chemical binding material based on calcium silicate hydrate, sand). After 1 hour collect in stainless containers for waste material disposal. Do not seal containers (generation of CO2)! Keep damp and let stand in a secured outdoor location for several days. Dispose according to section 13. Contaminated areas may be cleaned with recommended decontamination agents: - 8-10% sodium carbonate and 2% aqueous liquid soap; - Liquid/yellow soap (potassium soap with ~ 15% anionic surfactants): 20ml; Water: 700ml; Polyethylene glycol (PEG 400): 350ml; - 30% commercial laundry detergent (containing monoethanolamine), 70% water

6.4 Reference to other sections

Information regarding safe handling, see section 7. Information regarding personal protective measures, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Risks inherent to handling the product must be minimised by applying the appropriate protective and preventive measures. Working processes should - so far as possible, according to the state of the art - be designed to rule out bodily contact or the release of hazardous substances. Provide good ventilation at the work area (local exhaust ventilation, if necessary).

General protective and hygiene measures

Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Do not inhale vapours. Avoid contact with eyes and skin. Wash hands before breaks and after work. Store work clothing separately. Remove soiled or soaked clothing immediately.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions

Keep container tightly closed and dry in a cool, well-ventilated place.

Incompatible products

Substances to be avoided, see section 10.

7.3 Specific end use(s)

No data available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values

No	Substance name	CAS no.		EC no.
1	**diphenylmethanediisocyanate, isomeres and homologues**	**9016-87-9**		
	List of approved workplace exposure limits (WELs) / EH40			
	Isocyanates, all (as -NCO) Exept methyl isocyanate			
	WEL short-term (15 min reference period)	0.07	mg/m³	
	WEL long-term (8-hr TWA reference period)	0.02	mg/m³	
	Comments	Sen		
2	**diphenylmethane-4,4'-di-isocyanante**	**101-68-8**		**202-966-0**
	List of approved workplace exposure limits (WELs) / EH40			
	Isocyanates, all (as -NCO) Exept methyl isocyanate			
	WEL short-term (15 min reference period)	0.07	mg/m³	
	WEL long-term (8-hr TWA reference period)	0.02	mg/m³	
	Comments	Sen		
3	**phenyl-isocyanate**	**103-71-9**		**203-137-6**
	List of approved workplace exposure limits (WELs) / EH40			
	Isocyanates, all (as -NCO) Exept methyl isocyanate			
	WEL short-term (15 min reference period)	0.07	mg/m³	

	WEL long-term (8-hr TWA reference period)	0.02	mg/m³
	Comments	Sen	
4	**2,2'-methylenediphenyl diisocyanate**	**2536-05-2**	**219-799-4**
	List of approved workplace exposure limits (WELs) / EH40		
	Isocyanates, all (as -NCO) Exept methyl isocyanate		
	WEL short-term (15 min reference period)	0.07	mg/m³
	WEL long-term (8-hr TWA reference period)	0.02	mg/m³
	Comments	Sen	

DNEL, DMEL and PNEC values

DNEL values (worker)

No	Substance name			CAS / EC no	
	Route of exposure	**Exposure time**	**Effect**	**Value**	
1	**diphenylmethane-4,4'-di-isocyanante**			**101-68-8 202-966-0**	
	inhalative	Long term (chronic)	local	0.05	mg/m³
	inhalative	Short term (acut)	local	0.1	mg/m³
2	**diphenylmethane-2,4'-diisocyanate**			**5873-54-1 227-534-9**	
	inhalative	Long term (chronic)	local	0.05	mg/m³
	inhalative	Short term (acut)	local	0.1	mg/m³
3	**2,2'-methylenediphenyl diisocyanate**			**2536-05-2 219-799-4**	
	dermal	Short term (acut)	systemic	50	mg/kg/day
	dermal	Short term (acut)	local	28.7	mg/cm²
	inhalative	Short term (acut)	systemic	0.1	mg/m³
	inhalative	Short term (acut)	local	0.1	mg/m³
	inhalative	Long term (chronic)	systemic	0.05	mg/m³
	inhalative	Long term (chronic)	local	0.05	mg/m³

DNEL value (consumer)

No	Substance name			CAS / EC no	
	Route of exposure	**Exposure time**	**Effect**	**Value**	
1	**diphenylmethane-4,4'-di-isocyanante**			**101-68-8 202-966-0**	
	inhalative	Long term (chronic)	local	0.025	mg/m³
	inhalative	Short term (acut)	local	0.05	mg/m³
2	**diphenylmethane-2,4'-diisocyanate**			**5873-54-1 227-534-9**	
	inhalative	Long term (chronic)	local	0.025	mg/m³
	inhalative	Short term (acut)	local	0.05	mg/m³
3	**2,2'-methylenediphenyl diisocyanate**			**2536-05-2 219-799-4**	
	oral	Short term (acut)	systemic	20	mg/kg/day
	dermal	Short term (acut)	systemic	25	mg/kg/day
	dermal	Short term (acut)	local	17.2	mg/cm²
	inhalative	Short term (acut)	systemic	0.05	mg/m³
	inhalative	Short term (acut)	local	0.05	mg/m³
	inhalative	Long term (chronic)	systemic	0.025	mg/m³
	inhalative	Long term (chronic)	local	0.025	mg/m³

PNEC values

No	Substance name		CAS / EC no	
	ecological compartment	**Type**	**Value**	
1	**diphenylmethane-4,4'-di-isocyanante**		**101-68-8 202-966-0**	
	water	fresh water	1	mg/L
	water	marine water	0.1	mg/L
	soil	-	1	mg/kg dry weight

	sewage treatment plant	-	1	mg/L
2	**diphenylmethane-2,4'-diisocyanate**		**5873-54-1** **227-534-9**	
	water	marine water	0.1	mg/L
	water	Aqua intermittent	10	mg/L
	soil	-	1	mg/kg dry weight
	sewage treatment plant	-	1	mg/L
3	**2,2'-methylenediphenyl diisocyanate**		**2536-05-2** **219-799-4**	
	water	fresh water		

8.2 Exposure controls

Appropriate engineering controls
Ensure adequate ventilation, local exhaust at the work station if necessary.

Personal protective equipment

Respiratory protection
If workplace exposure limits are exceeded, a respiration protection approved for this particular job must be worn. In case of aerosol, vapour and mist formation, take appropriate measures for breathing protection in the event workplace threshold values are not specified. In case of insufficient ventilation and during spray application respiratory protection necessary. Use fresh air mask; Respiratory protection mask with combination filter A/P2.

Eye / face protection
Safety glasses with side protection shield (EN 166)

Hand protection
Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product. Check in any case suitability of protective glove for the specific workplace conditions (e.g. mechanical resistance, product compatibility, antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Replace immediately protective gloves if worn or damaged. In case of longer-term contact:

Appropriate Material	Polychloroprene		
Material thickness	>=	0.5	mm
Breakthrough time	>=	480	min
Appropriate Material	nitrile rubber		
Material thickness	>=	0.35	mm
Breakthrough time	>=	480	min
Appropriate Material	butyl rubber		
Material thickness	>=	0.5	mm
Breakthrough time	>=	480	min
Appropriate Material	fluorintated rubber		
Material thickness	>=	0.4	mm
Breakthrough time	>=	480	min

Other
Chemical-resistant work clothes.

Environmental exposure controls
No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form/Colour
liquid
brown

Odour
musty

Odour threshold
No data available

pH value
No data available

Boiling point / boiling range			
Value	>	300	°C

Melting point / melting range
No data available

Decomposition point / decomposition range
No data available

Pour point			
Value	<	0	°C

Flash point			
Value	=	226	°C

Ignition temperature			
Value	>	500	°C

Auto-ignition temperature
No data available

Oxidising properties
No data available

Explosive properties
No data available

Flammability (solid, gas)
No data available

Lower flammability or explosive limits
No data available

Upper flammability or explosive limits
No data available

Vapour pressure		
Value	1	hPa
Reference temperature	20	°C
Value	12	hPa
Reference temperature	50	°C
Value	17	hPa
Reference temperature	55	°C

Vapour density
No data available

Evaporation rate
No data available

Relative density
No data available

Density		
Value	1.238	g/cm³
Reference temperature	20	°C

Solubility in water
No data available

Solubility(ies)
No data available

Partition coefficient: n-octanol/water			
No	**Substance name**	**CAS no.**	**EC no.**
1	**diphenylmethane-4,4'-di-isocyanante**	**101-68-8**	**202-966-0**

log Pow		4.51	
Reference temperature		20	°C
Method	OECD 117		
Source	ECHA		

2	diphenylmethane-2,4'-diisocyanate	5873-54-1	227-534-9

log Pow		4.51	
Reference temperature		22	°C
with reference to	pH 7		
Method	OECD 117		
Source	ECHA		

Viscosity			
Value	>=	200	mPa*s
Reference temperature		20	°C
Type	dynamic		

9.2 Other information

Other information
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available.

10.2 Chemical stability

Release of carbon dioxide (CO2) starting from a polymerisation temperature of approximately 200°C.

10.3 Possibility of hazardous reactions

Exothermic reactions are possible in the event of contact with incompatible substances.

10.4 Conditions to avoid

No data available.

10.5 Incompatible materials

Amines; Alcohols; Formation of CO2 upon contact with water, development of overpressure in closed containers is possible. Bursting hazard; Aprotic polar solvents (see section 11).

10.6 Hazardous decomposition products

None if stored, handled and transported properly.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity			
No	**Substance name**	**CAS no.**	**EC no.**
1	**diphenylmethane-4,4'-di-isocyanante**	**101-68-8**	**202-966-0**

LD50	>	2000	mg/kg bodyweight
Species	rat		
Source	ECHA / Read across		

Acute dermal toxicity			
No	**Substance name**	**CAS no.**	**EC no.**
1	**diphenylmethane-4,4'-di-isocyanante**	**101-68-8**	**202-966-0**

LD50	>	9400	mg/kg bodyweight
Species	rabbit		
Method	OECD 402		
Source	ECHA / Read across		

Acute inhalational toxicity
No data available

Skin corrosion/irritation

No	Substance name	CAS no.	EC no.
1	diphenylmethane-4,4'-di-isocyanante	101-68-8	202-966-0

Method	OECD 404
Source	ECHA / Read across
Evaluation	irritant

Serious eye damage/irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No	Substance name	CAS no.	EC no.
1	diphenylmethane-2,4'-diisocyanate	5873-54-1	227-534-9

Source	ECHA
Evaluation/classification	Based on available data, the classification criteria are not met.

Reproduction toxicity

No data available

Carcinogenicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration hazard

No data available

Other information

Industrial cleaning with aprotic polar solvents (meeting the IUPAC definition) may lead to formation of (hazardous) primary aromatic amines (> 0.1%). Primary aromatic amines are chemicals that are regarded as potentially carcinogenic for humans based on animal testing. Some of these chemicals are known human carcinogens.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish (acute)

No data available

Toxicity to fish (chronic)

No data available

Toxicity to Daphnia (acute)

No data available

Toxicity to Daphnia (chronic)

No data available

Toxicity to algae (acute)

No data available

Toxicity to algae (chronic)

No data available

Bacteria toxicity

No data available

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

Bioconcentration factor (BCF)

No	Substance name	CAS no.	EC no.
1	diphenylmethane-2,4'-diisocyanate	5873-54-1	227-534-9

BCF	92 - 200	
Method	OECD 305 E	
Source	ECHA	

Partition coefficient: n-octanol/water			
No	Substance name	CAS no.	EC no.
1	diphenylmethane-4,4'-di-isocyanante	101-68-8	202-966-0

log Pow	4.51	
Reference temperature	20	°C
Method	OECD 117	
Source	ECHA	

2	diphenylmethane-2,4'-diisocyanate	5873-54-1	227-534-9

log Pow	4.51	
Reference temperature	22	°C
with reference to	pH 7	
Method	OECD 117	
Source	ECHA	

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

No data available.

12.6 Other adverse effects

Other adverse effects
Isocyanate reacts with water at the interface forming CO2 and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Disposal of the product should be carried out in accordance with all applicable regulations following consultation with the responsible local authority and the disposal company in an authorised and suitable disposal facility.
Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging

Residuals must be removed from packaging and when emptied completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified by the regional disposer.

SECTION 14: Transport information

14.1 Transport ADR/RID/ADN

The product is not subject to ADR/RID/ADN regulations.

14.2 Transport IMDG

The product is not subject to IMDG regulations.

14.3 Transport ICAO-TI / IATA

The product is not subject to ICAO-TI / IATA regulations.

14.4 Other information

No data available.

14.5 Environmental hazards

Information on environmental hazards, if relevant, please see 14.1 - 14.3.

14.6 Special precautions for user

No data available.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not relevant

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)
In accordance with the REACH regulation (EC) 1907/2006, the product does not contain any substances that are considered as subject to listing in annex XIV, inventory of substances requiring authorisation.

REACH candidate list of substances of very high concern (SVHC) for authorisation
In accordance with article 57 and article 59 of the Reach regulation (EC) 1907/2006, this substance is not considered as subject to listing in annex XIV, inventory of substances requiring authorisation ("Authorization list").

Regulation (EC) No 1907/2006 (REACH) Annex XVII: RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, PREPARATIONS AND ARTICLES	
The product is considered being subject to REACH regulation (EC) 1907/2006 annexe XVII.	No 3
The substance is considered being subject to REACH regulation (EC) 1907/2006 annexe XVII.	

No	Substance name	CAS no.	EC no.	No
1	**2,2'-methylenediphenyl diisocyanate**	**2536-05-2**	**219-799-4**	**56**
2	**diphenylmethane-2,4'-diisocyanate**	**5873-54-1**	**227-534-9**	**56**
3	**diphenylmethane-4,4'-di-isocyanante**	**101-68-8**	**202-966-0**	**56**
4	**diphenylmethanediisocyanate, isomeres and homologues**	**9016-87-9**	**-**	**56**

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances
This substance is not subject to Part 1 or 2 of Annex I

15.2 Chemical safety assessment
A chemical safety assessment has not been carried out.

SECTION 16: Other information

Further information
ISOPA directives for safe loading/unloading, transport and storage of TDI and MDI. See ISOPA website: www.isopa.org (Product Stewardship „Walk the Talk“).
Safety precautions for handling freshly molded polyurethane parts:
Depending on the production parameters, any uncovered surfaces of freshly molded polyurethane parts 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. Therefore, during demolding or other handling of fresh molded parts, protective gloves tested according to DIN-EN 374 (e. g. nitrile rubber >= 0,35 mm thick, breakthrough time >= 480 min, or according to recommendations from glove makers thinner gloves that need to be changed in compliance with breakthrough times more frequently) must be used. Depending on formulation and processing conditions, the requirements may be different from handling of the pure substances. Closed protective clothing is required for the protection of other areas of skin.

Sources of key data used to compile the data sheet:
Regulation (EC) No 1907/2006 (REACH), 1272/2008 (CLP) as amended in each case.
Directives 2000/39/EC, 2006/15/EC, 2009/161/EU, (EU) 2017/164.
National Threshold Limit Values of the corresponding countries as amended in each case.
Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.
The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding section.

This information is based on our present knowledge and experience.
The safety data sheet describes products with a view to safety requirements.
It does not however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.