

1. Product and company identification

Product identifier

Trade name: 617P32 - Hardener for Pedilen Flexible Foams

This safety data sheet pertains to the following products:
617P32=0.865 = Härter für Pedilen-Weichschaum

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

General use: Curing agent, Di-/poly-isocyanate component to produce polyurethanes.
Reserved for industrial and professional use.

Details of the supplier of the safety data sheet

Company name: Otto Bock Health Care
Street/POB-No.: 3820 W. Great Lakes Drive
Postal Code, city: Salt Lake City, UT 84120
USA
WWW: www.ottobockus.com
Telephone: +1 (801) 956-2400
Telefax: +1 (801) 956-2401
Department responsible for information: Quality Department,
Telephone: +1 (801) 954-2304 (7 AM – 3 PM, Mountain Time),
Email: USRegulatory@ottobock.com
Additional information: Corporate headquarters:
Ottobock SE & Co. KGaA
Max-Näder-Straße 15
Duderstadt
Germany

Emergency phone number

CHEMTREC, Telephone: +1 (800) 424-9300
Transport:
CONSULTANK Lutz Harder GmbH (Contract QUALI003)
Telephone: +49 (0)178-4337434 (from USA: 01149 178 4337434)

2. Hazards identification

Emergency overview

Appearance: Form: liquid
Color: yellowish
Odor: weak characteristic
Classification: Acute Toxicity - inhalative - Category 4. Skin Irritation - Category 2. Eye Irritation - Category 2A. Respiratory Sensitizer - Category 1. Sensitization - skin - Category 1. Carcinogenicity - Category 2. Specific Target Organ Toxicity (Single Exposure) - Category 3. Specific Target Organ Toxicity (Repeated Exposure) - Category 2.

Hazard symbols:



Signal word:

Danger

Hazard statements:

Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation.
Suspected of causing cancer.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements:

Do not breathe vapors.
Wear protective gloves/protective clothing/eye protection/face protection.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
If experiencing respiratory symptoms: Call a doctor.

Regulatory status

This material is considered hazardous by the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards not otherwise classified

Persons with over-sensitive breath ways (e.g. asthma, chronic bronchitis) are not allowed to use the product due to safety regulations.
Vapors and aerosols are the main dangers to the respiratory tract.
At approximately 392 °F, polymerization and CO₂ splitting.
see section 11: Toxicological information

3. Composition / Information on ingredients

Chemical characterization: Di-/poly-isocyanate component to produce polyurethanes.

Relevant ingredients:

CAS No.	Designation	Concentration	Classification
CAS 101-68-8	4,4'-Methylenediphenyl diisocyanate	70 - 80 %	Acute Toxicity - inhalative - Category 4. Skin Irritation - Category 2. Eye Irritation - Category 2A. Respiratory Sensitizer - Category 1. Sensitization - skin - Category 1. Carcinogenicity - Category 2. Specific Target Organ Toxicity (Single Exposure) - Category 3. Specific Target Organ Toxicity (Repeated Exposure) - Category 2.
CAS 25686-28-6	4,4'-Methylenediphenyl diisocyanate, oligomers	20 - 30 %	Acute Toxicity - inhalative - Category 4. Skin Irritation - Category 2. Eye Irritation - Category 2A. Respiratory Sensitizer - Category 1. Sensitization - skin - Category 1. Carcinogenicity - Category 2. Specific Target Organ Toxicity (Single Exposure) - Category 3. Specific Target Organ Toxicity (Repeated Exposure) - Category 2.

Additional information: Contains Phenyl isocyanate (in traces). The maximum workplace exposure limits are, where necessary, listed in section 8.

4. First aid measures

General information:	Remove immediately any soiled or soaked clothing and shoes for decontamination and disposal.
In case of inhalation:	Move victim to fresh air; if necessary, provide artificial respiration or oxygen. Do not allow victim to become chilled. Keep victim warm. Seek medical treatment in case of troubles. If victim is at risk of losing consciousness, position and transport on their side.
Following skin contact:	Immediately clean with water and soap and, if available, apply a generous amount of polyethylene glycol 400. Follow up by applying skin cream. Seek medical aid in case of troubles.
After eye contact:	Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.
After swallowing:	Do not induce vomiting. Immediately get medical attention.

Most important symptoms/effects, acute and delayed

May cause allergy or asthma symptoms or breathing difficulties if inhaled. Harmful if inhaled.
Irritant. May cause an allergic skin reaction.
Symptoms: Cough, shortage of breath, Formation of oedema (swelling).
Symptoms may occur with delay.

Information to physician

Treatment of the acute irritation or bronchial narrowing is mainly symptomatic. Depending on the scale of exposition, as well as aches and pains resulting, long-term medical care may be required.

5. Fire fighting measures

Flash point/flash point range:

> 482 °F (DIN 2719, 1013 hPa)

Auto-ignition temperature: No data available

Suitable extinguishing media:

Water spray jet, alcohol resistant foam, dry chemical powder, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

Strong water jet.

Specific hazards arising from the chemical

In case of fire may be liberated: Isocyanate vapors, traces of hydrogen cyanide, nitrous fumes, carbon monoxide

Protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus.
chemical protection clothing.

Additional information:

Do not allow water used to extinguish fire to enter drains, ground or waterways.
Heating will lead to pressure increase: Danger of bursting and explosion.
Cool endangered containers with water spray and, if possible, remove from danger zone.

6. Accidental release measures

Personal precautions:

Provide adequate ventilation. Wear protective equipment.
Wear breathing apparatus if exposed to vapors/dusts/aerosols.
Avoid contact with skin and eyes.
Remove persons not involved upwind.

Environmental precautions:

Do not allow to penetrate into soil, waterbodies or drains.
If necessary, notify appropriate authorities.

Methods for clean-up:

Cover with moist liquid binding material (e.g. sand, chemical agent with calcium silicahydrate). After approximately 1 hour, mechanically collect in an open waste container (CO2 build-up).
Keep moist and allow to rest in a secure open air area for 7 to 14 days. Waste product may then be disposed of in accordance with local, state, and federal regulations.

7. Handling and storage

Handling

Advices on safe handling:

Wear protective equipment. Avoid contact with skin and eyes.
Do not breathe vapor/aerosol. Provide adequate ventilation. Vent high concentrations of aerosols and/or fumes from the work area.

Storage

Requirements for storerooms and containers:

Keep container dry.
Keep containers tightly closed and at a temperature between 59 °F and 104 °F.
Protect from exposure to heat, direct sunlight, and cold.
Do not allow the product to enter the ground.

Hints on joint storage:

Keep away from food and drinks.
Do not store together with alcohols, amines, alkalis or acids.

8. Exposure controls / personal protection

Exposure guidelines

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
101-68-8	4,4'-Methylenediphenyl diisocyanate	USA: ACGIH: TWA	0.005 ppm
		USA: NIOSH: Ceiling	0.2 mg/m ³ ; 0.02 ppm
		USA: NIOSH: TWA	0.05 mg/m ³ ; 0.005 ppm
		USA: OSHA: Ceiling	0.2 mg/m ³ ; 0.02 ppm
103-71-9	Phenyl isocyanate	USA: ACGIH: STEL	0.015 ppm
		USA: ACGIH: TWA	0.005 ppm

Engineering controls

Provide adequate ventilation. Vent high concentrations of aerosols and/or fumes from the work area.

See also information in chapter 7, section storage.

Personal protection equipment (PPE)

Eye/face protection: Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010

Skin protection: Wear suitable protective clothing.

Protective gloves according to OSHA Standard - 29 CFR: 1910.138

Glove material:

Nitrile rubber-Layer thickness: $\geq 0,35$ mm

Polychloroprene-Layer thickness: $\geq 0,50$ mm

Butyl caoutchouc (butyl rubber)-Layer thickness: $\geq 0,50$ mm

Fluororubber (Viton)-Layer thickness: $\geq 0,40$ mm

natural rubber-Layer thickness: $\geq 0,50$ mm

breakthrough time: >480 min. Use gloves only once.

Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Respiratory protection: Respiratory protection must be worn whenever the TLV (WEL) levels have been exceeded. Use breathing protection with splashing medium. combination filter according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2

General hygiene considerations:

Avoid contact with skin and eyes. Do not breathe vapor/aerosol.
Keep away from food, drink and animal feedingstuffs.
Wash hands before breaks and after work.
Remove immediately any soiled or soaked clothing and shoes for decontamination and disposal.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance:	Form: liquid Color: yellowish
Odor:	weak characteristic
Odor threshold:	No data available
pH:	No data available
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	> 572 °F (DIN 53171, 1013 hPa)
Flash point/flash point range:	> 482 °F (DIN 2719, 1013 hPa)
Evaporation rate:	No data available
Flammability:	No data available
Explosion limits:	No data available
Vapor pressure:	at 68 °F: 7 hPa (EG A4) at 122 °F: 21 hPa (EG A4) at 131 °F: 25 hPa (EG A4)
Vapor density:	No data available
Density:	at 68 °F: 1.217 g/mL (DIN 51757)
Water solubility:	at 59 °F: immiscible
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Thermal decomposition:	No data available
Viscosity, dynamic:	at 68 °F: 54.3 mPa*s (DIN 53019)
Ignition temperature:	> 932 °F (DIN 51794)
Drop point/drop range:	-16.6 °F (DIN ISO 3016)

10. Stability and reactivity

Reactivity:	refer to section 10.3
Chemical stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions:	At approximately 392 °F, polymerization and CO2 splitting.

Conditions to avoid:	Reacts with water, forming carbon dioxide, producing bursting hazard in closed containers due to build-up of pressure. Use caution when opening containers under pressure.
Incompatible materials:	Reactions with alcohols, amines, liquid acids and bases.
Hazardous decomposition products:	In case of fire: Isocyanate vapors, traces of hydrogen cyanide, nitrous fumes, carbon monoxide
Thermal decomposition:	No data available

11. Toxicological information

Toxicological tests

Toxicological effects:	Acute toxicity (oral): Lack of data. Acute toxicity (dermal): Lack of data. Acute toxicity (inhalative): Acute Toxicity - inhalative - Category 4 = Harmful if inhaled. Skin corrosion/irritation: Skin Irritation - Category 2 = Causes skin irritation. Serious eye damage/irritation: Eye Irritation - Category 2A = Causes serious eye irritation. Sensitisation to the respiratory tract: Respiratory Sensitizer - Category 1 = May cause allergy or asthma symptoms or breathing difficulties if inhaled. Skin sensitisation: Sensitization - skin - Category 1 = May cause an allergic skin reaction. Germ cell mutagenicity/Genotoxicity: Lack of data. Carcinogenicity: Carcinogenicity - Category 2 = Suspected of causing cancer. Reproductive toxicity: Lack of data. Effects on or via lactation: Lack of data. Specific target organ toxicity (single exposure): Specific Target Organ Toxicity (Single Exposure) - Category 3 = May cause respiratory irritation. Specific target organ toxicity (repeated exposure): Specific Target Organ Toxicity (Repeated Exposure) - Category 2 = May cause damage to organs through prolonged or repeated exposure. Aspiration hazard: Lack of data.
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Other information:

Information about 4,4'-Methylenediphenyl diisocyanate:

LD50 Rat, oral: > 2000 mg/kg; LC50 Rat, inhalative: 368 mg/m³/4h;

LC50 Rat, inhalative: 196 ml/m³/h; LC50 Rat, inhalative: 490 mg/m³/4h (Aerosol);

Eye irritation: mild irritant-Produces for a short time a weak reddening and tumefaction of the conjunctiva as well as a weak, reversible rendering turbid of the cornea.

(Concentration of the saturated vapor, 25°C: 0,09 mg/m³.)

In case of aerosol concentrations exceeding the allowable OEL/TLV-levels by more than factor 2:

Irritation of nose, throat, lung, throat dryness, chest pressure.

A long-term studie with rats over two years with mechanically produced, inhalable aerosols (aerodyn. diametre of 95% under 5 µm) of polymer MDI (PMDI) and concentrations of 0.2, 1.0 and 6.0 mg PMDI/m³ showed the following results: 6,0 mg PMDI/m³:

The group of animals exposed to the highest concentration suffered an increased incidence of lung tumours, persistent inflammatory changes to the nose, respiratory tract and lungs, and yellowish deposits in the respiratory tract and lungs.

The animals in the 1.0 mg/m³ group exhibited slight irritation and inflammatory changes to the nose, respiratory tract and lungs, but did not develop lung tumours and/or deposits.

Animals in the 0.2 mg/m³ group suffered no irritation: this concentration was therefore deemed to constitute the 'no-effect level'.

Information about 4,4'-Methylenediphenyl diisocyanate, oligomers:

LD50 Rat, oral: > 2000 mg/kg; LC50 Rat, inhalative: 490 mg/m³/4h (Aerosol)

Symptoms

In case of inhalation: Cough, shortage of breath, Formation of oedema (swelling).

Symptoms may occur with delay.

Irritation of nose, throat, lung.

After eye contact:

Produces for a short time a weak reddening and tumefaction of the conjunctiva as well as a weak, reversible rendering turbid of the cornea.

12. Ecological information

Ecotoxicity

Aquatic toxicity:

Information about 4,4'-Methylenediphenyl diisocyanate:

Algae toxicity: IC50 Desmodesmus subspicatus: 1,5 mg/ l/72 h.

Daphnia toxicity: EC50 Daphnia magna: 0,35 mg/l/24 h.

Information about 4,4'-Methylenediphenyl diisocyanate, oligomers:

Daphnia toxicity: EC50: > 1000 mg/l/24h (OECD 202)

Fish toxicity: Danio rerio (zebrafish) LC0: > 1000 mg/l/96 h. (OECD 203)

Effects in sewage plants:

Information about 4,4'-Methylenediphenyl diisocyanate and

4,4'-Methylenediphenyl diisocyanate, oligomers:

Bacterial toxicity: EC50 > 100 mg/l/3 h (OECD 209)

Mobility in soil

No data available

Persistence and degradability

Further details: Information about 4,4'-Methylenediphenyl diisocyanate:
Biodegradation: 0 %/28 d. Product is biodegradable with difficulty.
Forms carbon dioxide and turns into a hard and insoluble by-product (poly urea) on the water's edge. This reaction is intensified by surface-active substances (e.g. liquid soaps) or water soluble solvents. Based upon current knowledge, poly urea is inert and will not decompose.

Additional ecological information

General information: Do not allow to enter into ground-water, surface water or drains.

13. Disposal considerations

Product

Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.

Package

Recommendation: Dispose of waste according to applicable legislation.
Non-contaminated packages may be recycled.

14. Transport information

UN number

ADR/RID, IMDG, IATA-DGR: not applicable

UN proper shipping name

ADR/RID, IMDG, IATA-DGR: Not restricted

Transport hazard class(es)

ADR/RID, IMDG, IATA-DGR: not applicable

Packing group

ADR/RID, IMDG, IATA-DGR: not applicable

Environmental hazards

Marine pollutant: no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No data available

USA: Department of Transportation (DOT)

Identification number: NA3082
Proper shipping name: NA 3082, Other regulated substances, liquid, n.o.s. (4,4'-Methylenediphenyl diisocyanate, 4,4'-Methylenediphenyl diisocyanate, oligomers)
Hazard class or Division: 9
Packing Group: III
Labels: 9
Symbols: D G
Special Provisions: IB3, T2, TP1
Packaging – Exceptions: 155
Packaging – Non-bulk: 203
Packaging – Bulk: 241
Quantity limitations – Passenger aircraft / rail: No limit
Quantity limitations – Cargo only: No limit
Vessel stowage – Location: A



Sea transport (IMDG)

Proper shipping name: Not restricted
Marine pollutant: no

Air transport (IATA)

Proper shipping name: Not restricted

15. Regulatory information

National regulations - U.S. Federal Regulations

4,4'-Methylenediphenyl diisocyanate: TSCA Inventory: listed
Carcinogen Status:
IARC Rating: Group 3
OSHA Carcinogen: not listed
NTP Rating: not listed
Clean Air Act:
CAA Hazardous Air Pollutants: yes
CAA SOCM Chemical: yes
Other Environmental Laws:
CERCLA: RQ 5000 lbs.
SARA Title III - Section 313, Toxic Release: Conc. 1.0% / Threshold Standard
NIOSH Recommendations:
Occupational Health Guideline: 0413
4,4'-Methylenediphenyl diisocyanate, oligomers: TSCA Inventory: listed
Phenyl isocyanate: TSCA Inventory: listed

National regulations - U.S. State Regulations

4,4'-Methylenediphenyl diisocyanate: California Proposition 65 code: -
Delaware Air Quality Management List:
DRQ: 5000 - RQ State: Federal Regulations Apply
Idaho Air Pollutant List:
Title 585: -, Title 586: -
Main Hazardous Air Pollutants:
Me 2005: HAP - Hap Rpt: 200
Massachusetts Haz. Substance codes: 2,4 F8 F9
Minnesota Haz. Substance:
Codes: ANO - Ratings: 12.36 - Status: Air Pollutant
New York List of Hazardous Substances:
RQ-Air: 1 - RQ-Land: 1 - Note: No Note Associated with this chemical.
Pennsylvania Haz. Substance code: E
Washington Air Contaminant:
Ceiling: 0,02 ppm - 0,2 mg

National regulations - Canada

4,4'-Methylenediphenyl diisocyanate: DSL: listed
4,4'-Methylenediphenyl diisocyanate, oligomers: DSL: listed
Phenyl isocyanate: DSL: listed

National regulations - Great Britain

Hazchem-Code: -

16. Other information

Text for labeling:

Contains 70 - 80 % 4,4'-Methylenediphenyl diisocyanate, 20 - 30 %
4,4'-Methylenediphenyl diisocyanate, oligomers.
Contains 4,4'-Methylenediphenyl diisocyanate and 4,4'-Methylenediphenyl diisocyanate,
oligomers.
See information supplied by the manufacturer.

Hazard rating systems:



NFPA Hazard Rating:
Health: 2 (Moderate)
Fire: 1 (Slight)
Reactivity: 3 (Serious)
HMIS Version III Rating:
Health: 2 (Moderate) - Chronic effects
Flammability: 1 (Slight)
Physical Hazard: 3 (Serious)
Personal Protection: X = Consult your supervisor

HEALTH	*	2
FLAMMABILITY		1
PHYSICAL HAZARD		3
X		

Abbreviations and acronyms:

Acute Toxicity: Acute toxicity
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
AS/NZS: Australian Standards/New Zealand Standards
Carcinogenicity: Carcinogenicity
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
CLP: Classification, Labelling and Packaging
DMEL: Derived minimal effect level
DNEL: Derived no-effect level
EC: European Community
EC50: Effective Concentration 50%
EmS: Emergency Response Procedures for Ships Carrying Dangerous Goods
EN: European Standard
EQ: Excepted quantities
Eye Irritation: Eye irritation
IATA: International Air Transport Association
IATA-DGR: International Air Transport Association – Dangerous Goods Regulations
IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50: Inhibition Concentration 50%
IMDG Code: International Maritime Dangerous Goods Code
IMO: International Maritime Organization
LC50: Median lethal concentration
LD50: Lethal dose 50%
MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships
MFSU: Manufacture, formulation, supply and use
OEL: Occupational Exposure Limit Value
OSHA: Occupational Safety and Health Administration
PBT: Persistent, bioaccumulative and toxic
PNEC: Predicted no-effect concentration
Respiratory Sensitizer: Sensitisation to the respiratory tract
RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail
Sensitization - skin: Skin sensitisation
Skin Irritation: Skin irritation
STOT RE: Specific target organ toxicity - repeated exposure
STOT SE: Specific target organ toxicity - single exposure
TLV: Threshold Limit Value
TRGS: Technical Rules for Hazardous Substances
vPvB: Very persistent and very bioaccumulative
WEL: Workplace Exposure Limit

Reason of change: Changes in section 2: EUH204

Date of first version: 5/1/1994

Department issuing data sheet

Contact person: see section 1: Department responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.