

1. Product and company identification

Product identifier

Trade name: 617P32 - Hardener for Pedilen Flexible Foams

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

Dept. 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

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) and SIMDUT in Canada.

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	Content	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 respiratory protection when in the presence of vapor, dust, and 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 silicate hydrate). 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 or spray. 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	NIOSH: Ceiling	0.2 mg/m ³ ; 0.02 ppm
		OSHA: Ceiling	0.2 mg/m ³ ; 0.02 ppm
		USA: ACGIH: TWA	0.005 ppm
		USA: NIOSH: TWA	0.05 mg/m ³ ; 0.005 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: >= 0,35 mm
Polychloroprene-Layer thickness: >= 0,50 mm
Butyl caoutchouc (butyl rubber)-Layer thickness: >= 0,50 mm
Fluororubber (Viton)-Layer thickness: >= 0,40 mm
natural rubber-Layer thickness: >= 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 or spray.
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.

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 value: 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.

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: Brachydanio rerio (zebra-fish) 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.

Contaminated packaging

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

14. Transport information

USA: Department of Transportation (DOT)

Identification number: NA3082
 Proper shipping name: NA 3082, UN 13082, Other regulated substances, liquid, n.o.s.
 Hazard class or Division: 9
 Packing Group: III
 Labels: 9
 Symbols: D G
 Special provisions: A189, 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

Further information

No dangerous good in sense of these transport regulations.

15. Regulatory information

National regulations - U.S. Federal Regulations

4,4'-Methylenediphenyl diisocyanate: TSCA Inventory: listed
 TSCA HPVC: not listed
 Carcinogen Status:
 IARC Rating: Group 3
 OSHA Carcinogen: not listed
 NTP Rating: not listed
 Clean Air Act:
 Hazardous Air Pollutants: Code XOY
 SOCMI 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

Phenyl isocyanate: TSCA Inventory: listed
 TSCA HPVC: not listed
 TSCA: 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 - Great Britain

Hazchem-Code: -

16. Other information

Text for labeling: Contains 70 - 80 % 4,4'-Methylenediphenyl diisocyanate, 20 - 30 % 4,4'-Methylenediphenyl diisocyanate, oligomers. Safety data sheet available on request.

SAFETY DATA SHEET

in accordance with 29 CFR 1910.1200 and ANSI standard Z400.1-2010

Revision date: 3/22/2018

Version: 13

Language: en-US

Date of print: 5/24/2018

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Material number 617P32

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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

Reason of change:

Changes in section 1.3: Corporate headquarters

Date of first version:

5/1/1994

Department issuing data sheet

Contact person:

see section 1: Dept. 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.