

SAFETY DATA SHEET

Version 18.0

Issue Date 10/15/2018

1. PRODUCT AND COMPANY INFORMATION

- 1.1 Product Identifier:** OBEX Perfect Patch Part A
Chemical Family: Aromatic Isocyanates Synonyms: Diphenylmethane Diisocyanate
- 1.2 Relevant Identified Uses of the Substance or Mixture:** Polyurethane component industrial chemicals. Suitable for use in industrial sector, construction industry, chemical industry
- 1.3 Supplier of the SDS:** OBEX Co. | 680 G St. Ste. C | Jacksonville, OR 97530 | Phone: 844-265-3535 | www.obexco.com
- 1.4 Emergency Phone Number: For Hazardous Materials [or Dangerous Goods] Incident Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night 1-800-424-9300 / +1 703-527-3887**

2. HAZARDS IDENTIFICATION

2.1 GHS Classification of the substance or mixture:

Acute toxicity, dermal (Category 5), H312
Skin corrosion/irritation (Category 2), H315
Skin sensitizer (Category 1B), H317
Respiratory sensitization (Category 1), H332
Serious eye damage/eye irritation (Category 2B), H318
Carcinogenicity (Category 2), H351
Acute toxicity, inhalation (Category 4), H373
Specific target organ toxicity, single exposure (Category 3), Respiratory tract irritation, H335
Specific target organ toxicity, single exposure (Category 2), Inhalation H373
Aquatic Chronic (Category 3), H412; ; Aquatic Acute (Category 3), H402

2.2 GHS Label elements, including precautionary statements:

2.2.1 Hazard Pictogram:

GHS08
GHS07



2.2.2 Signal Word:

Danger

2.2.3 Hazard statements:

H303 + H333: May be harmful if swallowed or if inhaled
H312: Harmful if in contact with skin
H315 + H317: May cause skin irritation or an allergic skin reaction
H318 + H320: Causes eye irritation and serious eye damage
H335 + H332: Harmful if inhaled and may cause respiratory irritation
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H351: Suspected of causing cancer.
H373: May cause damage to olfactory organs through prolonged or repeated inhalation exposure.
H402 + H412: Harmful to aquatic life with long lasting effects.

2.2.4 Precautionary statements:

P210+P202: Obtain special instructions prior to use; do not handle until all safety precautions have been read and understood.
P260 + 261: Do not breath dust/gas/mist/vapors, avoid breathing mist.
P264: Wash skin thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release into the environment.
P280: Wear protective gloves/protective clothing/eye protection.
P284: In case of inadequate ventilation wear respiratory protection.
P301+312: IF SWALLOWED: Rinse mouth. Call a doctor/ physician if you feel unwell.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P332 + P333 + P313: If skin irritation or rash occurs, get medical attention/advice.
P333 + P363: If skin irritation or rash occurs, wash contaminated clothing before re-use.
P304 + P312: IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.
P304 + P340: IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P311 + P314: IF EXPOSED OR CONCERNED: Call a POISON CENTER or doctor/physician. Seek medical attention or advice if you feel unwell.

P337 + P311: If eye irritation persists, call a POISON CENTER or doctor/physician.

P391+ P501 Collect spillage and always dispose of contents/container in accordance with local/regional/national international regulations. Dispose of contents/container to hazardous or special waste collection point.

P403 + P405 + P233: Store in a well-ventilated place, locked up. Keep container tightly closed.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS: Contains Isocyanates. Inhalation of isocyanate mists or vapors may cause respiratory irritation, breathlessness, chest discomfort and reduced pulmonary function. Overexposure well above the PEL may result in bronchitis, bronchial spasms and pulmonary edema. Long-term exposure to isocyanates has been reported to cause lung damage, including reduced lung function which may be permanent. Acute or chronic overexposure to isocyanates may cause sensitization in some individuals, resulting in allergic respiratory reactions including wheezing, shortness of breath and difficulty breathing. Animal tests indicate that skin contact may play a role in causing respiratory sensitization.

2.4 Unknown Acute Toxicity: No data available.

3. COMPOSITION INFORMATION ON INGREDIENTS

3.1 Substances:

Component	Product Identifier	Concentration	GHS Classification
P-MDI	CAS# 9016-87-9	>= 25.0 - < 50.0 %	See Section 2.1 for details
Diphenylmethane-4,4'-diisocyanate (MDI)	CAS#10168-8	>= 25.0 - < 50.0 %	See Section 2.1 for details
Propanoic acid, 2-methyl-,2,2-dimethyl-1-1-(1-methylethyl)-1,3-propanediyl ester	CAS# 6846-50-0	>= 10.0 - < 15.0 %	See Section 2.1 for details
Methylenediphenyl diisocyanate	CAS# 26447-40-5	>= 1.0 - < 5.0 %	See Section 2.1 for details
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro.-omega.-hydroxypoly(oxy-1,2-ethanediyl)	CAS# 57636-09-6	>= 1.0 - < 3.0 %	See Section 2.1 for details
1,3-Diazetidine-2,4-dione, 1,3-bis[4-[(4-isocyanatophenyl)methyl]phenyl]-	CAS# 17589-24-1	>= 0.3 - < 1.0 %	See Section 2.1 for details

4. FIRST AID MEASURES

4.1 Description of first aid measures: General advice: Use with adequate ventilation. Remove contaminated clothing. Consult a physician if any irritation persists. **If inhaled:** Inhalation may potentially cause irritation of mucous membranes. Move to fresh air. If irritation persists, contact a physician. **In case of skin contact:** Wash with plenty of warm soapy water. Avoid prolonged or repeated contact with skin. Remove contaminated clothing, preferably under a safety shower, and wash contaminated clothing before re-use. Promptly seek medical attention. **In case of eye contact:** Immediately flush with water liberally for at least 15 minutes. Remove contact lenses if present and easy to do so. Promptly seek medical attention. **If swallowed:** Give plenty of water to drink. Promptly seek medical attention. DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed: Symptoms: See labeling section 2.2.
Hazards: Symptoms can appear later. Information on: Diphenylmethane-4,4'-diisocyanate (MDI) Hazards: Respiratory sensitization may result in allergic (asthma-like) signs in the lower respiratory tract including wheezing, shortness of breath and difficulty breathing, the onset of which may be delayed. Repeated inhalation of high concentrations may cause lung damage, including reduced lung function, which may be permanent. Substances eliciting lower respiratory tract irritation may worsen the asthma-like reactions that may be produced by product exposures.

4.3 Indication of any immediate medical attention and special treatment needed: Promptly seek medical attention if exposure occurs. Treat exposure symptomatically.

5. FIREFIGHTING MEASURES

5.1 Suitable Extinguishing Media: For large fires use water spray, alcohol-resistant foam, carbon dioxide (CO2), or dry chemicals.

5.2 Special hazards arising from the substance or mixture: Hazards during fire-fighting: nitrous gases, fumes/smoke, isocyanate, vapor.

5.3 Advice for firefighters: Protective equipment for fire-fighting: Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

5.4 Further information: Keep containers cool by spraying with water if exposed to fire. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

6.2 Environmental precautions: Do not discharge into drains/surface waters/groundwater.

6.3 Methods and materials for containment and cleaning up: **For small amounts:** Absorb isocyanate with suitable absorbent material (see § 40 CFR, sections 260, 264 and 265 for further information). Shovel into open container. Do not make container pressure tight. Move container to a well-ventilated area (outside). Spill area can be decontaminated with the following recommended decontamination solution: Mixture of 90 % water, 8 % concentrated ammonia, 2 % detergent. Add at a 10 to 1 ratio. Allow to stand for at least 48 hours to allow escape of evolved carbon dioxide.

For large amounts: If temporary control of isocyanate vapor is required, a blanket of protein foam or other suitable foam (available from most fire departments) may be placed over the spill. Transfer as much liquid as possible via pump or vacuum device into closed but not sealed containers for disposal. For residues: The following measures should be taken for final cleanup: Wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes.

6.4 Reference to other sections: For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling: Provide suitable exhaust ventilation at the processing machines. Ensure thorough ventilation of stores and work areas. Avoid aerosol formation. When handling heated product, vapors of the product should be ventilated, and respiratory protection used. Wear respiratory protection when spraying. Danger of bursting when sealed gastight. Protect against moisture. If bulging of drum occurs, transfer to well ventilated area, puncture to relieve pressure, open vent and let stand for 48 hours before resealing. Protection against fire and explosion: No explosion proofing necessary.

7.2 Conditions for safe storage, including any incompatibilities: Keep away from water. Segregate from foods and animal feeds. Segregate from acids and bases. Segregate from bases. Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4301 (V2). Formation of CO₂ and build up of pressure possible. Keep container tightly closed and in a well-ventilated place. Outage of containers should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Storage temperature: 80 - 95°F (27 - 35 °C) Protect against moisture.

7.3 Specific end use(s): See section 1.2.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Measures and Engineering Controls:

Components with occupational exposure limits:		
Diphenylmethane-4,4'- diisocyanate (MDI)	OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³ ; CLV 0.02 ppm 0.2 mg/m ³
	ACGIH TLV	TWA value 0.005 ppm
P-MDI	OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³ ; CLV 0.02 ppm 0.2 mg/m ³
	ACGIH TLV	TWA value 0.005 ppm

Advice on system design: Provide local exhaust ventilation to maintain recommended P.E.L.

8.2 Individual Protection Measures: Respiratory protection: When workers are facing concentrations above the occupational exposure limits they must use appropriate certified respirators. When atmospheric levels may exceed the occupational exposure limit (PEL or TLV) NIOSH-certified air-purifying respirators equipped with an organic vapor sorbent and particulate filter can be used as long as appropriate precautions and change out schedules are in place. For emergency or non-routine, high exposure situations, including confined space entry, use a NIOSH- certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions. **Hand protection:** Chemical resistant protective gloves should be worn to prevent all skin contact. Suitable materials may include, chloroprene rubber (Neoprene), nitrile rubber (Buna N), chlorinated polyethylene, polyvinylchloride (Pylox), butyl rubber, depending upon conditions of use. **Eye protection:** Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists. **Body protection:** Cover as much of the exposed skin as possible to prevent all skin contact. Suitable materials may include, saran-coated material, depending upon conditions of use. **General safety and hygiene measures:** Wear protective clothing as necessary to prevent contact. Eye wash fountains and safety showers must be easily accessible. Observe the appropriate PEL or TLV value. Wash soiled clothing immediately. Contaminated equipment or clothing should be cleaned after each use or disposed of.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Physical and Chemical Properties:

Appearance: liquid	Upper/lower flammability or explosive limits: For liquids not relevant for classification and labelling. The lower explosion point may be 41 - 59°F (5 - 15 °C) below the flash point.
Odor: slight	Vapor pressure 0.01 mmHg 77°F (25.00 °C)

Odor threshold: not applicable	Vapor density (AIR=1): No applicable information available
pH: not applicable	Density: 9.4400 lb/USg 77°F (25.00 °C)
Color: Brown	Flammability: Not Flammable
Melting point/freezing point: < 0°C (32°F)	Solubility/Miscibility in water: Reacts with water.
Initial boiling point: 392°F (200.00 °C)	Partition coefficient: n-octanol/water: not applicable
Flash point: 390°F (198.90°C) Closed Cup	Auto-ignition temperature: >482°F (> 250 °C)
Self-ignition temperature: not self-igniting.	Viscosity, dynamic: 200.000 mPa.s 77°F (25.00 °C)
Solubility (qualitative/quantitative): No applicable information available	Viscosity, kinematic: No applicable information available.
Evaporation rate: Value can be approximated from Henry's Law Constant or vapor pressure.	Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

10. STABILITY AND REACTIVITY

- 10.1 General:** The product is stable if stored and handled as prescribed/indicated.
- 10.2 Conditions to Avoid:** Avoid moisture
- 10.3 Incompatible Material:** Acids, amines, alcohols, water, Alkalines, strong bases, Substances/products that react with isocyanates.
- 10.4 Hazardous decomposition products::** carbon monoxide, carbon dioxide, nitrogen oxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapors **Thermal decomposition:** No decomposition if stored and handled as prescribed/indicated.
- 10.5 Possibility of hazardous reactions:** Reacts with water, with formation of carbon dioxide. Risk of bursting. Reacts with alcohols. Reacts with acids. Reacts with alkalies. Reacts with amines. Risk of exothermic reaction. Risk of polymerization. Contact with certain rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.

11. TOXICOLOGICAL INFORMATION

- 11.1 Likely routes of exposure:** Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.
- 11.2 Acute Toxicity/Effects:** Inhalation of vapors may cause irritation of the mucous membranes of the nose, throat or trachea, breathlessness, chest discomfort, difficult breathing and reduced pulmonary function. Inhalation exposure well above the PEL may result additionally in eye irritation, headache, chemical bronchitis, asthma-like findings or pulmonary edema. Isocyanates have also been reported to cause hypersensitivity pneumonitis, which is characterized by flu-like symptoms, the onset of which may be delayed.

Chemical	Oral	Inhalation	Dermal	Skin	Eye
Diphenylmethane-4,4'-diisocyanate (MDI)	Type of value: LD50 Species: rat (male/female) Value: > 2,000 mg/kg (Directive 84/449/EEC, B.1)	Type of value: LC50 Species: rat (male/female) Value: 2.0 mg/l (OECD Guideline 403) An aerosol was tested.	Type of value: LD50 Species: rabbit (male/female) Value: > 9,400 mg/kg	Species: rabbit Result: Irritating. Method: Draize test	Species: rabbit Result: Irritating Method: Draize test

- 11.3 Sensitization:** Sensitization after skin contact possible. The substance may cause sensitization of the respiratory tract. As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the PEL/TLV. These symptoms, which include chest tightness, wheezing, cough, shortness of breath, or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material, or even as a result of vapour- only exposure. Animal tests indicate that skin contact may play a role in causing respiratory sensitization.

Chemical	Buehler test	Mouse Local Lymph Node Assay (LLNA)	Other:
Diphenylmethane-4,4'-diisocyanate (MDI)	Species: guinea pig Result: sensitizing	Species: mouse Result: sensitizing Can cause skin sensitization	Species: guinea pig Result: sensitizing Studies in animals suggest that dermal exposure may lead to pulmonary sensitization. However, the relevance of this result for humans is unclear.

11.4 Chronic Toxicity/Effects: Repeated dose toxicity: The substance may cause damage to the olfactory epithelium after repeated inhalation. The substance may cause damage to the lung after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

Chemical			
Diphenylmethane-4,4'-diisocyanate (MDI)	Species: Experimental/ calculated data: rat (Wistar) (male/female) Inhalation 2 yrs, 6 hr/day 0, 0.2, 1, 6 mg/m ³ , olfactory epithelium	NOAEL: 0.2 mg/ m ³ LOAEL: 1 mg/ m ³	The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure. Repeated inhalative uptake of the substance did not cause damage to the reproductive organs.

11.5 Genetic toxicity: The substance was mutagenic in various bacterial test systems; however, these results could not be confirmed in tests with mammals.

Chemical	Genetic toxicity in vitro:	Genetic toxicity in vivo:
Diphenylmethane-4,4'-diisocyanate (MDI)	OECD Guideline 471 Ames-test Salmonella typhimurium: with and without metabolic activation ambiguous	OECD Guideline 474 Micronucleus assay rat (male) Inhalation negative No clastogenic effect reported.

11.6 Carcinogenicity: Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure. Experimental/calculated data: OECD Guideline 453 rat Inhalation 0, 0.2, 1, 6 mg/m³. Result: Lung tumors

11.7 Reproductive toxicity: Repeated inhalative uptake of the substance did not cause damage to the reproductive organs.

11.8 Teratogenicity: The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

11.9 Development: The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals. OECD Guideline 414 rat Inhalation 0, 1, 4, 12 mg/m³ NOAEL Mat.: 4 mg/m³. NOAEL Teratog.: 4 mg/m³.

11.10 Symptoms of Exposure: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Eye irritation, skin irritation, allergic symptoms

11.11 Medical conditions aggravated by overexposure: The isocyanate component is a respiratory sensitizer. It may cause allergic reaction leading to asthma- like spasms of the bronchial tubes and difficulty in breathing. Medical supervision of all employees who handle or come into contact with isocyanates is recommended. Contact may aggravate pulmonary disorders. Persons with history of respiratory disease or hypersensitivity should not be exposed to this product. Preemployment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum) are suggested. Persons with asthmatic conditions, chronic bronchitis, other chronic respiratory diseases, recurrent eczema or pulmonary sensitization should be excluded from working with isocyanates. Once a person is diagnosed as having pulmonary sensitization (allergic asthma) to isocyanates, further exposure is not recommended.

12. ECOLOGICAL INFORMATION

12.1 Aquatic Toxicity: Acutely harmful for aquatic organisms. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from the properties of the individual components.

12.1.1 Toxicity to fish: Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3- propanediyl ester LC50 (96 h) > 1.55 mg/l, Pimephales promelas

12.1.2 Aquatic invertebrates: Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3- propanediyl ester EC50 (48 h) > 1.46 mg/l, daphnia

12.2 Persistence and degradability: Assessment biodegradation and elimination (H₂O): Poorly biodegradable. The product is unstable in water. The elimination data also refer to products of hydrolysis. **Elimination information:** 0 % BOD of the ThOD (28 d) (OECD Guideline 302 C) (aerobic, activated sludge) Poorly biodegradable. **Information on Stability in Water** In contact with water the substance will hydrolyse slowly. (Hydrolysis): t_{1/2} 20 h (25 °C)

12.3 Bioaccumulative potential: Significant accumulation in organisms is not to be expected. **Bioconcentration factor:** 200 (28 d), Cyprinus carpio (OECD Guideline 305 E)

12.4 Mobility in soil: The substance will not evaporate into the atmosphere from the water surface. Absorption to solid soil phase is not expected.

12.5 Other adverse effects: No data available

13.	DISPOSAL CONSIDERATIONS
13.1	Safe Handling and Methods of disposal of waste residues, including disposal of any contaminated package: Dispose of in a licensed facility. Do not discharge substance/product into sewer system. Large quantities should be recovered. Collect small quantities in waste metal drums and seal for removal to an approved landfill and/or disposal in accordance with local, state, and federal regulations.
13.2	Safe Handling: Follow steps at section 8 for disposal, including using a ventilation system and wearing protective gloves and goggles.
14.	TRANSPORT INFORMATION
14.1	UN number: NA
14.2	Land Transport: US DOT: Not classified as dangerous good under transport regulations
14.3	Sea Transport: IMDG: Not classified as a dangerous good under transport regulations
14.4	Air Transport: IATA/ICAO: Not classified as a dangerous good under transport regulations
14.5	Transport hazard class(es): NA
14.6	Packing group: NA
14.7	Marine pollutant: No data available
14.8	Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): NA
14.9	Special precautions: DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Please refer to Section 15 of this SDS for the RQ for this product.
15.	REGULATORY INFORMATION
15.1	Federal Regulations:
15.1.1	Registration status: Chemical TSCA, US released / listed
15.1.2	EPCRA 311/312 (Hazard categories): Acute; Chronic; Fire
15.1.3	EPCRA 313: CAS# 101-68-8 Diphenylmethane-4,4'-diisocyanate (MDI) CAS# 9016-87-9 P-MDI
15.1.4	CERCLA RQ CAS# 101-68-8 Diphenylmethane-4,4'-diisocyanate (MDI) 5000 LBS CAS# 9016-87-9 P-MDI 5000 LBS
15.2	State regulations: State RTK
	MA, NJ, PA CAS# 9016-87-9 P-MDI
	MA, NJ, PA CAS# 101-68-8 Diphenylmethane-4,4'-diisocyanate (MDI)
	NJ CAS# 26447-40-5 Methylenediphenyl diisocyanate
16.	OTHER INFORMATION
16.1	NFPA Hazard Classification: Health: 2 Flammability: 1 Reactivity: 1 Other: N/A
16.2	HMIS III rating: Health : 2 Flammability: 1 Physical Hazard: 1
16.3	Disclaimer: The facts and recommendations contained herein are based on our own research and the research of others, and are believed to be accurate. No guarantee of their accuracy is made as we cannot cover every possible application for our products, nor anticipate variations encountered in manufacturing equipment and methods. OBEX urges users of this product to evaluate its suitability and compliance with all applicable laws and regulations.
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