

Permabond®

Engineering Adhesives

SAFETY DATA SHEET

Permabond UV681

1. Identification

Product identifier

Product name Permabond UV681

Recommended use of the chemical and restrictions on use

Application Adhesive. Sealant.

Details of the supplier of the safety data sheet

Supplier Permabond LLC
14 Robinson Street
Pottstown, PA 19464
USA
Telephone: 732-868-1372 or 800-640-7599
Website: www.permabond.com



chemical-concepts.com

800.220.1966

410 Pike Road • Huntingdon Valley, PA 19006

Emergency telephone number

Emergency telephone Medical: Poison Control Center 866-827-6282 (toll free) or 303-389-1109 Transport: CHEMTREC 800-424-9300

2. Hazard(s) identification

Classification of the substance or mixture

OSHA Regulatory Status Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Physical hazards Not Classified

Health hazards Skin Corr. 1C - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317 Repr. 1B - H360Df STOT SE 3 - H335

Label elements

Hazard symbols



Signal word

Danger

Hazard statements

H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H360Df May damage the unborn child. Suspected of damaging fertility.
H335 May cause respiratory irritation.

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Precautionary statements

P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe vapor/ spray.
 P261 Avoid breathing vapor/ spray.
 P264 Wash contaminated skin thoroughly after handling.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing must not be allowed out of the workplace.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
 P302+P352 If on skin: Wash with plenty of water.
 P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
 P304+P340 If inhaled: Remove person to fresh air and keep 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+P313 If exposed or concerned: Get medical advice/ attention.
 P310 Immediately call a poison center/ doctor.
 P312 Call a poison center/ doctor if you feel unwell.
 P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P362+P364 Take off contaminated clothing and wash it before reuse.
 P363 Wash contaminated clothing before reuse.
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
 Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Contains

ISOBORNYL ACRYLATE, TETRAHYDROFURFURYL ACRYLATE, TRIS(2-HYDROXYETHYL)ISOCYANURATE TRIACRYLATE, 1,1,1-TRIMETHYLOLPROPANE TRI(3-MERCAPTOPROPIONATE, HEXAMETHYLENE DIACRYLATE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Other hazards

None under normal conditions.

3. Composition/information on ingredients

Mixtures

ISOBORNYL ACRYLATE	30-60%
CAS number: 5888-33-5	
Classification	
Skin Irrit. 2 - H315	
Eye Irrit. 2A - H319	
Skin Sens. 1 - H317	
STOT SE 3 - H335	
Not relevant.	

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URETHANE ACRYLATE OLIGOMER 10-30% CAS number: 73297-29-7 REACH registration exemption – POLYMER
Classification Skin Irrit. 2 - H315 Eye Irrit. 2A - H319
TETRAHYDROFURFURYL ACRYLATE 10-30% CAS number: 2399-48-6
Classification Acute Tox. 4 - H302 Skin Corr. 1C - H314 Eye Dam. 1 - H318 Skin Sens. 1B - H317 Repr. 1B - H360Df Not relevant.
TRIS(2-HYDROXYETHYL)ISOCYANURATE TRIACRYLATE 5-10% CAS number: 40220-08-4
Classification Eye Dam. 1 - H318 Skin Sens. 1B - H317 Not relevant.
1,1,1-TRIMETHYLOLPROPANE TRI(3-MERCAPTOPROPIONATE) 5-10% CAS number: 33007-83-9
Classification Acute Tox. 4 - H302 Skin Sens. 1 - H317 Not relevant.
HEXAMETHYLENE DIACRYLATE 1-5% CAS number: 13048-33-4
Classification Skin Irrit. 2 - H315 Eye Irrit. 2A - H319 Skin Sens. 1 - H317 Not relevant.

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**DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE
OXIDE**

1-5%

CAS number: 75980-60-8

Classification

Skin Sens. 1B - H317

Repr. 2 - H361f

Not relevant.

The full text for all hazard statements is displayed in Section 16.

Composition comments Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. First-aid measures

Description of first aid measures

Inhalation	Move the exposed person to fresh air. Get medical attention if symptoms are severe or persist.
Ingestion	Do not induce vomiting unless under the direction of medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing. Wash contaminated clothing before reuse.
Eye contact	Remove any contact lenses and open eyelids wide apart. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes and get medical attention.

Most important symptoms and effects, both acute and delayed

Inhalation	May cause respiratory irritation.
Ingestion	May cause chemical burns in mouth and throat.
Skin contact	Chemical burns. May cause allergic skin reaction.
Eye contact	Causes serious eye damage.

Indication of immediate medical attention and special treatment needed

Notes for the doctor No specific recommendations. Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media Water spray, foam, dry powder or carbon dioxide.

Special hazards arising from the substance or mixture

Hazardous combustion products Burning produces irritating, toxic and obnoxious fumes. Carbon monoxide, carbon dioxide, and unknown hydrocarbons.

Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

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Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet.

Environmental precautions

Environmental precautions Avoid discharge into drains.

Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with sand or other inert absorbent. Collect and place in suitable waste disposal containers and seal securely.

Reference to other sections For personal protection, see Section 8. For waste disposal, see section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions Avoid contact with skin, eyes and clothing. Use only in well-ventilated areas. Keep container tightly sealed when not in use. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage precautions Store in closed original container at temperatures between 2°C and 7°C. Protect against direct sunlight. Never return unused material to storage receptacle.

Specific end uses(s)

Usage description Adhesive. Sealant.

8. Exposure controls/Personal protection

Exposure controls

Appropriate engineering controls Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection Use safety goggles and face shield in case of splash risk.

Hand protection Nitrile rubber or Viton™ gloves are recommended. Cotton or other absorbent gloves should not be worn.

Other skin and body protection Employee must wear appropriate protective clothing and equipment to prevent any possibility of skin contact with this substance.

Hygiene measures Wash at the end of each work shift and before eating, smoking and using the toilet.

Respiratory protection No specific recommendations. Respiratory protection may be required if excessive airborne contamination occurs. Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance Liquid.

Color Colorless.

Odor Acrylic

Odor threshold Not available.

pH Not relevant.

Melting point Not available.

Initial boiling point and range Not applicable.

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Flash point	>93°C (199.94°F)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1.1
Solubility(ies)	Insoluble in water. Soluble in the following materials: Organic solvents.
Partition coefficient	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	≈100 mPa s @ 23°C
Oxidizing properties	Not available.
Other information	Not relevant.
Volatile organic compound	Not available. <2 %, 20 grams/liter (Estimated)

10. Stability and reactivity

Reactivity	The following materials may react with the product: Strong oxidizing agents.
Stability	Stable at normal ambient temperatures and when used as recommended. Polymerizes when heated.
Possibility of hazardous reactions	Polymerization may occur at elevated temperature or in the presence of incompatible materials
Conditions to avoid	Do not store near heat sources or expose to high temperatures. Protect against direct sunlight.
Materials to avoid	Strong oxidizing agents. Strong reducing agents.
Hazardous decomposition products	Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified organic compounds.

11. Toxicological information

Information on toxicological effects

Toxicological effects	The toxicological properties of this product have not been fully evaluated. Use of good industrial hygiene practices is required. Avoid direct contact with skin or eyes. Do not ingest or inhale.
<u>Skin corrosion/irritation</u>	
Skin corrosion/irritation	May cause serious chemical burns to the skin.
<u>Serious eye damage/irritation</u>	
Serious eye damage/irritation	Risk of serious damage to eyes.

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Respiratory sensitization

Respiratory sensitization Based on available data the classification criteria are not met.

Skin sensitization

Skin sensitization May cause sensitisation by skin contact.

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Genotoxicity - in vivo Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity No component of this product present at levels great than or equal to 0.1% is identified as a known carcinogen.

Reproductive toxicity

Reproductive toxicity - fertility Contains a substance/a group of substances which may damage fertility. Contains a substance/a group of substances which may damage the unborn child.

Specific target organ toxicity - single exposure

STOT - single exposure May cause respiratory irritation.

Target organs Respiratory tract

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Based on available data the classification criteria are not met.

Aspiration hazard

Aspiration hazard Based on available data the classification criteria are not met.

Inhalation Irritating to respiratory system.

Ingestion May cause chemical burns in mouth and throat.

Skin Contact This product is strongly irritating. Prolonged contact may cause burns.

Eye contact Causes serious eye damage.

Acute and chronic health hazards Causes severe skin burns and eye damage. May cause skin sensitization or allergic reactions in sensitive individuals. May cause respiratory irritation.

Route of exposure Inhalation Skin and/or eye contact

Target Organs Eyes Skin Respiratory tract

Toxicological information on ingredients.

ISOBORNYL ACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 5,000.0

Species Rat

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 3,000.0

Species Rabbit

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Acute toxicity - inhalation

Notes (inhalation LC₅₀) No information available.

Skin corrosion/irritation

Skin corrosion/irritation Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Not irritating.

Skin sensitization

Skin sensitization Local Lymph Node Assay (LLNA) - : Sensitizing.

Germ cell mutagenicity

Genotoxicity - in vitro Genome mutation: Negative.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility Two-generation study - NOEC 0.092 mg/l, Inhalation, Rat P

Reproductive toxicity - development Developmental toxicity: - NOAEL: 500 mg/kg/day, Oral, Rat

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

URETHANE ACRYLATE OLIGOMER

Skin corrosion/irritation

Skin corrosion/irritation Irritating to skin.

Serious eye damage/irritation

Serious eye damage/irritation Irritating to eyes.

TETRAHYDROFURFURYL ACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 928.0

Species Rat

Acute toxicity - dermal

Notes (dermal LD₅₀) No information available.

Skin corrosion/irritation

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Animal data	Method: OECD 404, Rabbit Corrosive.
<u>Serious eye damage/irritation</u>	
Serious eye damage/irritation	Method: OECD 405, Rabbit Causes serious eye damage.
<u>Skin sensitization</u>	
Skin sensitization	No information available.
<u>Germ cell mutagenicity</u>	
Genotoxicity - in vitro	Chromosome aberration: Negative.
<u>Carcinogenicity</u>	
Carcinogenicity	No information available.
<u>Reproductive toxicity</u>	
Reproductive toxicity - fertility	Screening - NOAEL >300 mg/kg/day, Oral, Rat P May damage fertility.
Reproductive toxicity - development	May damage the unborn child.
<u>Specific target organ toxicity - single exposure</u>	
STOT - single exposure	No information available.
<u>Specific target organ toxicity - repeated exposure</u>	
STOT - repeated exposure	No information available.
<u>Aspiration hazard</u>	
Aspiration hazard	No information available.
<u>TRIS(2-HYDROXYETHYL)ISOCYANURATE TRIACRYLATE</u>	
<u>Acute toxicity - oral</u>	
Acute toxicity oral (LD₅₀ mg/kg)	2,500.0
Species	Rat
<u>Acute toxicity - dermal</u>	
Notes (dermal LD₅₀)	No information available.
<u>Acute toxicity - inhalation</u>	
Notes (inhalation LC₅₀)	No information available.
<u>Skin corrosion/irritation</u>	
Skin corrosion/irritation	Not irritating.
<u>Serious eye damage/irritation</u>	
Serious eye damage/irritation	Irreversible effect.
<u>Skin sensitization</u>	
Skin sensitization	Local Lymph Node Assay (LLNA) - Mouse: Sensitizing.
<u>Carcinogenicity</u>	

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Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility No information available.

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard Not applicable.

1,1,1-TRIMETHYLOLPROPANE TRI(3-MERCAPTOPROPIONATE)

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 1,800.0

Species Rat

Acute toxicity - dermal

Notes (dermal LD₅₀) No information available.

Acute toxicity - inhalation

Notes (inhalation LC₅₀) No information available.

Skin corrosion/irritation

Animal data Method: OECD 404, Rabbit Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Method: OECD 405, Rabbit Not irritating.

Skin sensitization

Skin sensitization Local Lymph Node Assay (LLNA) - Mouse: Sensitizing.

Germ cell mutagenicity

Genotoxicity - in vitro Gene mutation: Negative.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility Screening - NOAEL 20 mg/kg/day, Oral, Rat P

Reproductive toxicity - development Developmental toxicity: - NOAEL: 1600 mg/kg/day, Oral, Rat

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

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STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

HEXAMETHYLENE DIACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 5,000.0

Species Rat

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 3,650.0

Species Rabbit

Skin corrosion/irritation

Animal data Method: OECD 404, Rabbit Irritating.

Serious eye damage/irritation

Serious eye damage/irritation Method: OECD 405, Rabbit Moderately irritating.

Skin sensitization

Skin sensitization Guinea pig maximization test (GPMT) - Guinea pig: Sensitizing.

Germ cell mutagenicity

Genotoxicity - in vitro Gene mutation: Negative.

Genotoxicity - in vivo Chromosome aberration: Negative.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility Screening - NOAEL 750 mg/kg/day, Oral, Rat P

Reproductive toxicity - development Developmental toxicity: - NOAEL: 750 mg/kg/day, Oral, Rat

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Acute toxicity - oral

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Acute toxicity oral (LD₅₀ mg/kg)	5,000.0
Species	Rat
<u>Acute toxicity - dermal</u>	
Acute toxicity dermal (LD₅₀ mg/kg)	2,000.1
Species	Rat
<u>Acute toxicity - inhalation</u>	
Notes (inhalation LC₅₀)	No information available.
<u>Skin corrosion/irritation</u>	
Skin corrosion/irritation	Not irritating.
<u>Serious eye damage/irritation</u>	
Serious eye damage/irritation	Not irritating.
<u>Skin sensitization</u>	
Skin sensitization	Local Lymph Node Assay (LLNA) - Mouse: Sensitizing.
<u>Germ cell mutagenicity</u>	
Genotoxicity - in vitro	Gene mutation: Negative.
<u>Carcinogenicity</u>	
Carcinogenicity	No data available.
<u>Reproductive toxicity</u>	
Reproductive toxicity - fertility	Possible risk of adverse reproductive effects.
Reproductive toxicity - development	Developmental toxicity: - NOAEL: 150 mg/kg, Oral, Rat
<u>Specific target organ toxicity - single exposure</u>	
STOT - single exposure	No information available.
<u>Specific target organ toxicity - repeated exposure</u>	
STOT - repeated exposure	NOAEL 50 mg/kg/day, Oral, Rat
<u>Aspiration hazard</u>	
Aspiration hazard	No data available.

12. Ecological information

Toxicity No data available.

Bioaccumulative potential

Partition coefficient Not available.

13. Disposal considerations

Waste treatment methods

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General information Empty containers may contain product residue; follow SDS and label warnings even after they have been emptied.

Disposal methods Dispose of according to Federal, State and local governmental regulations.

14. Transport information

UN Number

UN No. (IMDG)	1760
UN No. (ICAO)	1760
UN No. (DOT)	UN1760

UN proper shipping name

Proper shipping name (International)	CORROSIVE LIQUID, N.O.S., (contains Tetrahydrofurfuryl acrylate)
Proper shipping name (IMDG)	CORROSIVE LIQUID, N.O.S. (contains Tetrahydrofurfuryl acrylate)
Proper shipping name (ICAO)	CORROSIVE LIQUID, N.O.S. (contains Tetrahydrofurfuryl acrylate)
Proper shipping name (DOT)	CORROSIVE LIQUIDS, N.O.S. (contains Tetrahydrofurfuryl acrylate)

Transport hazard class(es)

DOT hazard class	8
DOT hazard label	8
IMDG Class	8
ICAO class/division	8

Transport labels



DOT transport labels



Packing group

IMDG packing group	III
ICAO packing group	III
DOT packing group	III

Environmental hazards

Environmentally Hazardous Substance



15. Regulatory information

US Federal Regulations

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SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities

None above reporting levels

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

None above reporting limits

SARA Extremely Hazardous Substances EPCRA Reportable Quantities

None above reporting limits

SARA 313 Emission Reporting

None above reporting limits

SARA (311/312) Hazard Categories

Acute
Chronic

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm

Inventories

Canada - DSL/NDSL

All the ingredients are listed or exempt.

US - TSCA

All the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification

None above reporting limits

16. Other information

Classification abbreviations and acronyms	Eye Dam. = Serious eye damage Skin Corr. = Skin corrosion Skin Sens. = Skin sensitisation STOT SE = Specific target organ toxicity-single exposure Repr. = Reproductive toxicity
Revision date	5/7/2021
Revision	2
Supersedes date	1/31/2018
Hazard statements in full	H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H319 Causes serious eye irritation. H335 May cause respiratory irritation. H360Df May damage the unborn child. Suspected of damaging fertility. H361f Suspected of damaging fertility.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.