



MATERIAL SAFETY DATA SHEET

PV ADHESIVE Part A

HMIS	PROTECTIVE CLOTHING	TRANSPORT OF DANGEROUS GOODS								
<table border="1"> <tr><td>1</td><td>HEALTH</td></tr> <tr><td>1</td><td>FLAMMABILITY</td></tr> <tr><td>1</td><td>REACTIVITY</td></tr> <tr><td>B</td><td>PROTECTIVE EQUIPMENT</td></tr> </table>	1	HEALTH	1	FLAMMABILITY	1	REACTIVITY	B	PROTECTIVE EQUIPMENT		NOT REGULATED
1	HEALTH									
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SECTION II. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name:	PV Adhesive Part A
Use:	Photovoltaic adhesive
Manufacturer:	Soprema, Inc. 310 Quadral Drive Wadsworth, Ohio 44281 UNITED STATES
Distributor:	Soprema, Inc. 310 Quadral Drive Wadsworth, Ohio 44281 UNITED STATES
In case of emergency:	SOPREMA (8:00am to 5:00pm - Eastern time): (800) 356-3521 CHEMTREC (USA) (24h.): (800) 424-9300 CANUTEC (Canada): (613) 996-6666 International: (703) 527-3887

EMERGENCY OVERVIEW!!!
MAY CAUSE EYE AND SKIN IRRITATION. PROLONGED OR REPEATED CONTACT WITH SKIN CAN BE HARMFUL.

SECTION II. COMPOSITION AND INFORMATION ON DANGEROUS INGREDIENTS

Component	CAS#	% by weight	TLV	PEL	Primary Hazard
Petroleum asphalt	8052-42-4	20-50	5 mg/m ³ (Note 1)	n/a	n/a
Amine compounds		Up to 3	n/a	n/a	Irritant

¹ applies to fumes from hot asphalt and is not likely to present a hazard when this product is used as directed.

SECTION III. POTENTIAL HEALTH EFFECTS

INHALATION:

At room temperature, exposure to vapors are minimal due to physical properties. Airborne mists of the activated product contain isocyanate which is a respiratory sensitizer.

SKIN CONTACT:

May cause skin irritation. Prolonged or repeated exposure may cause slight irritation.

EYE CONTACT:

May cause eye irritation.

INGESTION:

Single dose oral toxicity is considered low. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury.

SECTION IV. FIRST AID MEASURES

SKIN	Remove heavily contaminated clothing and wash skin thoroughly with soap and water. DO NOT use solvents or thinners to remove materials from skin.
EYES	Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.
INHALATION	Move the person to fresh air if effects occur.
INGESTION	Consult medical personnel before inducing vomiting. If medical advice cannot be obtained take the person and product container to the nearest medical emergency treatment center or hospital.

SECTION V. FIRE-FIGHTING MEASURES

Flash point	> 400 °F (> 204.4 °C)
Autoignition temperature	> 500 °F (> 260 °C)
Extinguishing media	Carbon dioxide, dry chemical, foam, water fog, halon.
Special fire fighting procedures	For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products in Section X. - Stability and Reactivity.

SECTION VII. HANDLING AND STORAGE

STORAGE:

Do not store near flame.

SECTION VIII. EXPOSURE CONTROLS / PERSONAL PROTECTION

SKIN	Skin contact can be minimized by wearing protective clothing and solvent resistant gloves.
RESPIRATORY	Use in well ventilated areas. Wear an OSHA approved type C air supplied respirator when spraying the activated product. Avoid inhalation of activated mixture which contains isocyanates and may result in sensitization and allergic response in some individuals.
EYES	Wear chemical safety goggles.
INGESTION	Avoid airborne mists which can be inhaled or swallowed. Use protective mask, if necessary.

SECTION VI. ACCIDENTAL RELEASE MEASURES

RELEASE OR SPILL:

Eliminate all open flame in vicinity of spill or released vapor. Clean up small spills using appropriate techniques such as absorbent materials or pumping. Where feasible and appropriate remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

SOLUBILITY	Miscible in all proportions with most aromatic, aliphatic or halogenated hydrocarbon solvents; soluble to less than 300 ppm in water.
ODOR	Mild hydrocarbon odor
SPECIFIC GRAVITY	1.0 @ 68 °F (20 °C)
MELTING POINT	n/a
BOILING POINT	> 572 °F (> 300 °C)
VAPOR PRESSURE	n/a
PERCENTAGE VOLATILE (VOLUME)	0%
VAPOR DENSITY (Air=1)	n/a

SECTION X. STABILITY AND REACTIVITY**STABILITY:**

Stable

INCOMPATIBILITY:

May react with strong oxidizing and reducing materials and acids.

HAZARDOUS DECOMPOSITION PRODUCTS:

Incomplete combustion can produce carbon monoxide. Normal combustion forms carbon dioxide, hydrogen chloride and water vapor and may produce oxides of nitrogen. The mixed and cured product will also release hydrogen cyanide.

HAZARDOUS POLYMERIZATION:

Will not occur.

SECTION XI. TOXICOLOGICAL INFORMATION

This product does not contain constituents known to be a carcinogen, mutagen, teratogen or reproductive toxin.

SECTION XII. ECOLOGICAL INFORMATION**Environmental impact:**

This material, if not activated with PV Adhesive Part B may be toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water.

SECTION XIII. DISPOSAL CONSIDERATIONS**Waste disposal:**

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

SECTION XIV. TRANSPORTATION INFORMATION

NOT REGULATED

SECTION XV. REGULATORY INFORMATION

This product does not contain constituents known to be a carcinogen, mutagen, teratogen or reproductive toxin.

SECTION XVI. OTHER INFORMATION

Glossary:

ACGIH: American Conference of Governmental Industrial Hygienists
ANSI: American National Standards Institute
ASTM: American Society for Testing and Materials
CAS: Chemical Abstract Services
CFR: Code of Federal Regulations (United States)
CSA: Canadian Standardisation Association
DOT: Department of Transportation (United States)
DSL: Domestic Substances List (Canada)
EPA: Environmental Protection Agency (United States)
HMIS: Hazardous Material Information System
IARC: International Agency for Research on Cancer
LC50: (Lethal concentration₅₀) Concentration of a substance in air that causes death of 50% mortality of a defined animal population
LD50: (Lethal dose₅₀) Single dose of a substance that, when administered by a defined route in an animal assay, is expected to cause the death of 50% of a defined animal population.
NFPA: National Fire Protection Association (United States)
NIOSH: National Institute for Occupational Safety and Health
NTP: National Toxicology Program
OSHA: Occupational Safety & Health Administration (United States)
PEL: Permissible Exposure Limit
RCRA: Resource Conservation and Recovery Act (United States)
RTECS: Registry of Toxic Effects of Chemical Substances
TDG: Transportation of Dangerous Goods
TLV: Threshold Limit Value
TWA: Time-weighted average
TSCA: Toxic Substances Control Act (United States)
WHMIS: Workplace Hazardous Materials Information System (Canada)

Reference:

Supplier MSDS

This MSDS has been prepared by: SOPREMA, INC.
For information: 800-543-3085

The Material Safety Data Sheets of SOPREMA are available on Internet at the following site: [HTTP://WWW.SOPREMA.US](http://WWW.SOPREMA.US)

Justification of the update:

New MSDS.

This MSDS contains all the information required by ANSI Z-400.1-1998 standard (United States), by regulation 29 CFR Part 1910.1200 of the Hazard Communication Standard of OSHA, and is in accordance with standard DORS/88-66 OF WHMIS Canada.

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier or any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



MATERIAL SAFETY DATA SHEET

PV ADHESIVE Part B

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Distributor:	Soprema, Inc. 310 Quadral Drive Wadsworth, Ohio 44281 UNITED STATES
In case of emergency:	SOPREMA (8:00am to 5:00pm - Eastern time): (800) 356-3521 CHEMTREC (USA) (24h.): (800) 424-9300 CANUTEC (Canada): (613) 996-6666 International: (703) 527-3887

EMERGENCY OVERVIEW!!!

SPRAY OR HEATED MATERIAL IS HARMFUL IF INHALED. RESPIRATORY SENSITIZER. TOXIC FUMES RELEASED DURING FIRES. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTIONS. MAY CAUSE EYE AND SKIN IRRITATION.

SECTION II. COMPOSITION AND INFORMATION ON DANGEROUS INGREDIENTS

Component	CAS#	% Range	TLV	PEL	Primary Hazard
Polymethylene polyphenyl isocyanate	9016-87-9	100	n/a	n/a	n/a
Diphenylmethane-4, 4' - diisocyanate (MDI)	101-68-8		0.005 ppm	0.02 ppm	Sensitizer

SECTION III. POTENTIAL HEALTH EFFECTS**INHALATION:**

Vapors and aerosols can irritate eyes, nose and respiratory passages. Severe overexposure may lead to pulmonary edema. MDI can induce respiratory sensitization with asthma-like symptoms include chronic cough, tightness of chest with difficulty in breathing. Symptoms may be immediate or delayed several hours after exposure. Chronic overexposures may result in permanent decreases in lung function.

SKIN CONTACT:

Prolonged or repeated exposure may cause slight skin irritation or allergic skin and respiratory reactions. LD50 (rabbit)>2 g/kg

EYE CONTACT:

May cause moderate eye irritation. May cause slight transient corneal injury.

INGESTION:

Single dose toxicity is extremely low and not likely to cause injury. LD50 (rats)>10 g/kg.

SECTION IV. FIRST AID MEASURES

SKIN	Wash thoroughly with soap and water.
EYES	Flush eyes immediately with fresh water for at least 15 minutes continuously while holding the eyelids open. If irritation persists, see a doctor.
INHALATION	Move the person to fresh air and apply oxygen if breathing is difficult. If breathing has stopped, apply artificial respiration. Call a physician or transport to a medical facility. Note to physician: No specific antidote. Respiratory symptoms may be delayed including pulmonary edema. May cause respiratory sensitization.
INGESTION	No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

SECTION V. FIRE-FIGHTING MEASURES

Flash point	> 400 °F (> 204.4 °C)
Autoignition temperature	> 1100 °F (> 600 °C)
Extinguishing media	Carbon dioxide, dry chemical, foam. Water should be used in very large quantities.
Special fire fighting procedures	Use self contained breathing apparatus with full face piece and protective clothing to protect against nitrogen oxide fumes and isocyanate vapors. Evacuate down-wind personnel. Contain run-off.
Fire and explosion hazard	Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture them.

SECTION VII. HANDLING AND STORAGE**STORAGE:**

Store indoors at 70° - 95°F in original, unopened containers. Protect from contamination with moisture.

SECTION VIII. EXPOSURE CONTROLS / PERSONAL PROTECTION

SKIN	Skin contact may be minimized by wearing protective clothing and impervious gloves. Launder clothes before re-use.
RESPIRATORY	Use in well ventilated areas only. Wear an OSHA approved type C air supplied respirator if ventilation is inadequate to keep vapors and mist below the TLV.
EYES	Wear chemical safety goggles. If a respirator is required, use full face mask to protect eyes from vapor or mist.
INGESTION	Avoid airborne mists which can be inhaled or swallowed. Use protective mask if necessary. Provide general ventilation or exhaust to control airborne levels below exposure guidelines.

SECTION VI. ACCIDENTAL RELEASE MEASURES

RELEASE OR SPILL:

For major spills, avoid contact. Barricade area. Call CHEMTREC at (800) 424-9300. For minor spills, wear skin, eye, and respiratory protection during cleanup. Absorb spilled liquid with sawdust or other absorbent and shovel into open top containers. DO NOT SEAL. Remove containers to well ventilated outside area and neutralize using dilute household ammonia or sodium carbonate solution. Let stand for 48 hours, allowing carbon dioxide to evolve, leaving insoluble and non-hazardous polyurea. Decontaminate spill areas using dilute household ammonia and detergent. Allow cleaning solution to contact spill area for at least 10 minutes. Empty containers can be neutralized by adding a small amount of water and allowing to stand for 48 hours. The liquid or solid residuals of the above cleanup procedure are non hazardous in accordance with RCRA, 40CFR261 and may be disposed of in accordance with local regulations.

SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

SOLUBILITY	Miscible in all proportions with many hydrocarbon solvents; reacts with water.
APPEARANCE & ODOR	Brown liquid, musty odor
SPECIFIC GRAVITY	1.24 @ 68 °F (20 °C)
BOILING POINT	> 597 °F (decomposes)
VAPOR PRESSURE	< 1x10 ⁻⁵ mm Hg @ 77°F (25°C)
PERCENTAGE VOLATILE (VOLUME)	n/a
VAPOR DENSITY (Air=1)	Approx. 8.5

SECTION XI. TOXICOLOGICAL INFORMATION

PV Adhesive Part B is an isocyanate intended for use with PV Adhesive Part A. Consult the MSDS for PV Adhesive Part A. Avoid inhalation of the activated PV Adhesive mixture which contains isocyanate and may result in sensitization and allergic response in some individuals.

Because of the low vapor pressure of this product, ventilation is usually sufficient to keep vapors below the TLV for isocyanates at ambient temperatures. If the material is heated or sprayed, airborne concentrations of vapor and mist may be excessive and use of an approved MSHA/NIOSH positive pressure supplied air respirator is strongly advised.

Over exposure to PV Adhesive Part B may cause an allergic respiratory sensitization. Sensitized individuals should not be further exposed to this product. Individuals with existing respiratory disease such as chronic bronchitis or emphysema or asthma should not be exposed to isocyanate vapors.

MUTAGENICITY: Mutagenicity data on MDI are inconclusive. MDI was weakly positive in some cases in vitro (test tube) studies; other in vitro studies were negative. A mutagenicity study in animals was negative. For the minor component (s) triethyl phosphate: in vitro mutagenicity studies were negative in some cases and positive in other cases. Animal mutagenicity studies were negative in some cases and positive in other cases.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols. **CANCER INFORMATION:** Lung tumors have been observed in laboratory animals exposed to aerosol droplets of MDI/polymeric MDI (6 mg/m³) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI. **TERATOLOGY (BIRTH DEFECTS):**

In laboratory animals, MDI/polymeric MDI did not produce birth defects; other fetal effects occurred only at high doses which were toxic to the mother.

SECTION X. STABILITY AND REACTIVITY

STABILITY:

Stable when properly stored.

INCOMPATIBILITY:

May react with strong oxidizing materials. Avoid contamination with water, acid or strongly alkaline materials, alcohols, metals, soaps and detergents.

HAZARDOUS DECOMPOSITION PRODUCTS:

Incomplete combustion can produce isocyanate vapors and mist, and carbon monoxide. Normal combustion may produce oxides of nitrogen.

HAZARDOUS POLYMERIZATION:

May occur with strong bases or at temperatures over 320°F (160°C). Temperatures over 99°C (120°F) accelerate the reaction with water.

SECTION XII. ECOLOGICAL INFORMATION

Environmental impact:

Based on information for MDI and polymeric MDI, material is practically non-toxic to aquatic organisms on an acute basis (LC50 greater than 100 mg/L in most sensitive species). Material reacts with water, forming insoluble polyurea which is stable.

SECTION XIII. DISPOSAL CONSIDERATIONS

Empty containers can be neutralized by adding a small amount of water and allowing to stand for 48 hours. The liquid or solid residuals of the above cleanup procedure are non hazardous in accordance with RCRA, 40CFR261 and may be disposed of in accordance with local regulations.

SECTION XIV. TRANSPORTATION INFORMATION

NOT REGULATED

SECTION XV. REGULATORY INFORMATION

Regulatory Status: MDI is subject to the reporting requirement of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (40CFR372). Spills having the potential to affect people offsite must be reported to the appropriate federal, state and local authorities.

SARA 313: Subject to reporting requirements

CERCLA: RQ - 5000 lbs.

SARA 311 & 312: MDI is an immediate health hazard, a delayed health hazard, and a reactive hazard.

TSCA: All ingredients are on the TSCA inventory or are not required to be listed.

WHMIS: D2A respiratory tract sensitizer; D2B eye or skin irritant; D2B skin sensitizer

CPR: MDI CAS #000101-68-8 63-76%

SECTION XVI. OTHER INFORMATION

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ANSI: American National Standards Institute

ASTM: American Society for Testing and Materials

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CFR: Code of Federal Regulations (United States)

CSA: Canadian Standardisation Association

DOT: Department of Transportation (United States)

DSL: Domestic Substances List (Canada)

EPA: Environmental Protection Agency (United States)

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LC50: (Lethal concentration₅₀) Concentration of a substance in air that causes dead of 50% mortality of a defined animal population

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NFPA: National Fire Protection Association (United States)

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PEL: Permissible Exposure Limit

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TDG: Transportation of Dangerous Goods

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