

Adhesives and Chemicals, Inc.

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MATERIAL SAFETY DATA SHEET

Manufacturer's Name: Adhesives and Chemicals, Inc.
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Telephone numbers: 570-654-6735
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Emergency Number: (Chemtrec) 800-424-9300

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SECTION 1. PRODUCT IDENTITY

Product Name: **8306B**

Chemical family: Isocyanate

Chemical Name: Tris (4-Isocyanatophenyl)Thiophosphate in solvents

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Warning! Flammable. Toxic gases/fumes may be given off during burning or thermal decomposition. Closed container may forcible rupture under extreme heat or when contents have been contaminated with water. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Vapors or mist may be a fire and explosion hazard when exposed to high temperature or ignition. Vapors may travel to areas away from work site before igniting/flashing back to vapor source. Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling solvents may be harmful or fatal. Causes respiratory tract irritation. May cause allergic respiratory reaction. Harmful if inhaled. Respiratory sensitizer. Lung damage and respiratory sensitization may be permanent. Causes skin irritation. May cause allergic skin reaction. Skin sensitizer. Causes eye irritation. May cause lung damage.

Potential Health Effects

Primary Routes of Entry: Inhalation, Skin Contact, Eye contact

Medical Conditions Aggravated by Exposure: Asthma, respiratory disorders, skin allergies, eczema

Health Effects and Symptoms of Overexposure

Inhalation

Acute

Inhalation of solvents may cause central nervous system depression with symptoms of nausea, lightheadedness, drowsiness, dizziness and loss of co-ordination. Isocyanate vapors or mist at concentrations above the exposure standards or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure standards or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure standards or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible. May cause nervous system effects which can include symptoms of dizziness, incoordination, headache, numbness, and/or confusion.

Chronic

As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanate (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the exposure standards or guide lines. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many nonspecific 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. Sensitization can be permanent. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may permanent. Chronic exposure to organic solvents has been associated with various neurotoxic effects including permanent brain and nervous system damage.

Skin

Acute

Causes irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

Chronic

Prolonged contact can cause reddening , swelling, rash, and in some cases, skin sensitization.

Eye

Acute

Causes irritation with symptoms of reddeing, tear, stinging, and swelling. May cause temporary corneal injury. Vapor may cause irritation with symptoms of burning and tearing.

Chronic

Prolonged vapor contact may cause conjunctivitis.

Ingestion

Acute

May cause irritation; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Chronic

Chronic exposure to organic solvents has been associated with various neurotoxic effects including permanent brain and nervous system damage.

Carcinogenicity

No carcinogenic substance as defined IARC, NTP and/or OSHA

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

Weight %	Components	CAS No.
60-100 %	Ethyl acetate	141-78-6
20-30 %	Tris(4-Isocyanatophenyl) thiophosphate	4151-51-3
1-5 %	Monochlorobenzene	108-90-7

SECTION 4: FIRST AID MEASURES

Eye Contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops and persists.

Skin Contact

Immediately remove contaminated clothing and shoes. Wash off with soap and water. Use lukewarm water if possible. Wash contaminated clothing before reuse. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops and persists.

Inhalation

Move to an area free from further exposure. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening.

Ingestion

Do not induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

Notes to Physician

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision.

Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn.

Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound.

Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

SECTION 5: FIRE-FIGHTING MEASURES

Suitable extinguishing media: dry chemical, carbon dioxide (CO₂), foam, water spray for large fires.

Special fire fighting procedures

Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.

Unusual fire/explosion hazards

Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO₂ formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous. Flammable liquid: vapors may spread long distances and ignite. Vapors or mist may be a fire and explosion hazard when exposed to high temperature or ignition.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill and Leak Procedures

Evacuate non-emergency personnel. Isolate the area and prevent access. Remove ignition sources. Notify management. Put on protective equipment. Control source of leak. Ventilate. Contain the spill to prevent spread into drains, sewers, water supplies, or soil. For major spills minimize vapor by covering spillage with fire fighting foam (AFFF). Released material may be pumped into closed, but not sealed, metal container for disposal. Process can generate heat. Minor spills may be covered with suitable absorbent material (clay). Saturate absorbent material with neutralization solution and mix. Wait 15 minutes. Collect material in open-head metal containers. Repeat applications of decontamination solution, with scrubbing followed by absorbent until the surface is decontaminated. Check for residual surface contamination. Swipe® test kits have been used for this purpose. Apply

lid loosely and allow containers to vent for 72 hours to let carbon dioxide escape. Neutralization solution may be made from 90% water, 3-8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.

SECTION 7: HANDLING AND STORAGE

Maximum storage temperature: 50°C (122°F)

Storage period: 6 months

Handling and storage precautions

Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep air borne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Ground and bond containers and equipment before transferring to avoid static sparks.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ethyl acetate (141-78-6)

US ACGIH threshold limit values

Time weighted average (TWA): 400 ppm

US OSHA table Z-1 limits for air contaminants (29 CFR 1910.1000)

PEL: 400 ppm, 1400 mg/m³

Monochlorobenzene (108-90-7)

US ACGIH threshold limit values

Time weighted average (TWA): 10 ppm

US OSHA table Z-1 limits for air contaminants (29 CFR 1910.1000)

PEL: 75 ppm, 350 mg/m³

US ACGIH threshold limit values

Hazard designation: Group A3 confirmed animal carcinogen with unknown relevance to humans.

Ventilation and respiratory protection

Local exhaust should be used to maintain levels below the exposure standards or guidelines. Airborne concentrations greater than the exposure standards or guidelines can occur in inadequately ventilated environments. In such cases respirator protection must be worn. The type of respiratory

protection selected must comply with the requirements set forth in OSHA's Respiratory Protection Standard (29 CFR 1910.134).

Hand protection

Gloves should be worn (butyl rubber, nitrile rubber, or neoprene).

Eye protection

Chemical goggle should be worn or a full face shield if splash hazard exists.

Skin and body protection

Cover as much of the exposed skin area as possible with appropriated clothing (gloves, long sleeved shirts and pants).

Medical surveillance

All workers who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for a medical exclusion from isocyanate areas. Workers with a history of adult asthma should be restricted from work with isocyanates. Workers with a history of prior isocyanate sensitization should be excluded from further work with isocyanates.

Additional Protective measures

Emergency showers and eye wash stations should be available. Educate and train all workers in the safe use and handling of this product.

SECTION 10: PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Color	Yellow to brown
Odor	Ether-like
Freezing point	Not established
Boiling point	77°C (171°F) @ 760 mmHg
Flash point	-4°C (25°F)
Lower explosion limit	1.3% for the solvent
Upper explosion limit	11.5 % for the solvent
Vapor pressure	Approx. 97 hPa @ 20°C (68°F)
Specific gravity	1.0 @ 20° C
Solubility in water	Insoluble – reacts slowly with water to liberate CO ₂ gas
Autoignition temperature	460°C (860°F)
Decomposition temperature	No decomposition up to boiling point
Dynamic viscosity	Approx. 3 mPa.s @ 20°C
Bulk density	8.345 lb/gal @20°C

SECTION 11: STABILITY AND REACTIVITY

Stability

Stable under normal conditions of use and storage

Material to avoid

Water, amines, stron bases, alcohols, copper alloys, aluminum

Conditions to avoid

Heat, flames, sparks

Hazardous decomposition products

By fire and high heat: carbon dioxide, carbon monoxide, oxides of nitrogen, dense black smoke, hydrogen cyanide, isocyanate, isocyanic acid, other undetermined compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity data for DesmoduR RF-E

Acute oral toxicity	LD50: >2000 mg/kg (rat)
Skin irritation	Rabbit, no skin irritation
Eye irritation	Rabit, slightly irritating

Toxicity data for ethyl acetate

Acute oral toxicity	LD50: 5260 mg/kg (rat)
Acute inhalation toxicity	LC50: 200 mg/l, 1 hrs. (rat) LC0: 29.3 mg/l, 4 hrs. (rat)
Acute dermal toxicity	LD50: >18,000 mg/kg (rabbit)
Skin irritation	Rabbit, exposure time 24 hrs: non-irritating
Eye irritation	Rabbit, draize, non-irritating
Sensitization	Dermal non-sensitizer (guinea pig, maximization test GPMT)
Repeated dose toxicity	90 days, inhalation: NOAEL: 0.002 mg/l (rat) 11 weeks, inhalation: NOAEL: 2000 ppm (guinea pig)
Mutagenicity	Genetic toxicity in vitro: Ames: negative (salmonella typhimurium, metabolic activation: with/without) Positive and negative results were seen in various in vitro studies Genetic toxicity in vivo: Micronucleus assay: negative (mouse)
Carcinogenicity	Did not show carcinogenic effects in animal experiments. (Male and female mouse, intraperitoneal, 8 weeks)

Toxicity data for monochlorobenzene

Acute oral toxicity	LD50: approx. 1427 mg/kg (male rat) LD50: approx. 2455 mg/kg (female rat)
Acute inhalation toxicity	LC50: 13.87 mg/l, 6 hrs. (rat) RD50: 1054 mg/l, 5 min. (mouse)
Acute dermal toxicity	LD50: >7940 mg/kg (rabbit)
Skin irritation	Rabbit, exposure time 4 hrs: moderately irritating
Eye irritation	Rabbit, non-irritating
Sensitization	Dermal non-sensitizer (guinea pig, Magnusson/Kligmann maximization test)
Repeated dose toxicity	24 weeks, inhalation: NOAEL: <75 ppm (rat) 168 days, inhalation: NOAEL: <75 ppm (rabbit)
Mutagenicity	Genetic toxicity in vitro: Ames: negative Genetic toxicity in vivo: Positive and negative results were seen in various studies
Carcinogenicity	Rat, oral, 2 years, ambiguous Mouse, oral, 2 years, negative
Toxicity to reproduction/fertility	Two generation study, inhalation, 6 hrs/day, 7 days/week, male and female rat, NOAEL (F1): >450 ppm NOAEL (F2): 50ppm No effects on reproductive parameters observed at doses tested.
Developmental toxicity/teratogenicity	Rat, inhalation, 6 hrs/day, 7 days/week, NOAEL (teratogenicity): 590 PPM, No teratogenic effects observed at doses tested.

SECTION 12: TRANSPORTATION INFORMATION

Proper shipping name	Flammable liquids, n.o.s. (contains monochlorobenzene, ethyl acetate)
Hazard class or division	3
UN/NA number	UN1993
Packaging group	II
Hazard label	Flammable liquid
RSPA/DOT regulated components	Ethyl acetate, monochlorobenzene
Reportable quantity	6666 lbs.

SECTION 13: REGULATORY INFORMATION

OSHA Hazcom standard rating: hazardous

US Toxic substances control act: Listed on the tsca inventory.

US EPA CERCLA hazardous substances (40CFR 302):

Components	Reportable quantity
Ethyl acetate	5000 lbs
Monochlorobenzene	100 lbs

SARA Section 311/312 hazard categories:

Acute health hazard, chronic health hazard, reactivity hazard

US EPA Emergency planning and community right-to-know act (EPCRA) SARA title III section 313 toxic chemicals (40 CFR 372.65) – supplier notification required:

Components: Monochlorobenzene

US EPA resource conservation and recovery act (RCRA) composite list of hazardous wastes and appendix VIII hazardous constituents(40 CFR 261):

When discarded in its purchased form this product meets the criteria of ignitability, and should be managed as a hazardous waste (EPA hazardous waste number D001). (40 CFR 261.20-24)

Massachusetts, New Jersey or Pennsylvania right-to-know substance lists:

Weight %	Components	CAS no.
60-100%	Ethyl acetate	141-78-6
20-30%	Tris(4-Isocyanatophenyl)thiophosphate	4151-51-3
1-5%	Monochlorobenzene	108-90-7

New Jersey environmental hazardous substances list and/or New Jersey RTK special hazardous substances list:

Weight %	Components	CAS no.
60-100%	Ethyl acetate	141-78-6
1-5%	Monochlorobenzene	108-90-7

California Prop. 65

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

NFPA 704M rating

Health	2
Flammability	3
Reactivity	1
Other	

HMIS rating

Health	2
Flammability	3
Reactivity	1
Other	

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