



SAFETY DATA SHEET
U.S. Department of Labor
Occupational Safety & Health Administration

Andek 950

SECTION 1 - IDENTIFICATION

MANUFACTURER: Andek Corporation
ADDRESS: 850 Glen Avenue, Moorestown, NJ 08057
TELEPHONE: 1-856-786-6900
In an emergency, contact CHEMTREC 1-800- 424-9300;
Outside the United States call +1-703-527-3887
PRODUCT IDENTIFIER: Andek 950
RECOMMENDED USE: Adhesive and Sealant

SECTION 2 – HAZARD IDENTIFICATION

HAZARD CLASSIFICATION:

Skin

Acute Skin - 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. Contact with MDI can cause discoloration.

Chronic Skin - Prolonged contact can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Eye

Acute Eye - Causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

Chronic Eye - Prolonged vapor contact may cause conjunctivitis.

Inhalation

Acute Inhalation - Di-isocyanate vapors or mist at concentrations above the TLV or PEL 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 hyper reactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL 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.

Chronic Inhalation - As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to di-isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to di-isocyanates at levels well below the TLV or PEL. 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 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. Sensitization can be permanent. Chronic overexposure to di-isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

Ingestion

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

Carcinogenicity:

No Carcinogenic substances as defined by IARC, NTP and/or OSHA

SIGNAL WORD: Warning

HAZARD STATEMENTS:

Toxic gases/fumes may be given off during burning or thermal decomposition. Closed container may forcibly 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. 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. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. Causes eye irritation. May cause lung damage.

PICTOGRAMS:



PRECAUTIONARY STATEMENTS:

Prevention:

- **Do Not** handle until all safety precautions have been read and understood.
- **Do Not** allow contact with water.
- Protect from moisture. If moisture enters container, pressure can build up which can cause a sealed container to pressurize and burst.
- Keep container tightly closed.
- Keep only in original container.
- Avoid breathing mist or spray.
- **Do Not** get in eyes, on skin, or on clothing.
- Wash thoroughly after handling.
- **Do Not** eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves/protective clothing/eye protection/face protection .

Response:

- **Skin:** Remove contaminated clothing. Wash affected areas thoroughly with soap and water.
- **Eyes:** Flush with clean lukewarm water (low pressure) for at least 15 minutes and obtain medical attention immediately.
- **Inhalation:** Remove victim to fresh air. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic.
- **Ingestion:** **Do Not** induce vomiting. Give 250 ml of milk or water to drink and get immediate medical attention.

Storage:

- Store in tightly closed containers
- Protect from moisture and foreign materials.
- Ideal storage temperature range is 50-81°F.

Disposal:

- **Waste Disposal Method:**
Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.
- **Empty Container Precautions:**
Empty containers retain product residue
Observe all precautions for product.
Do Not heat or cut empty container with electric or gas torch
Do Not reuse without thorough commercial cleaning and reconditioning.
If container is to be disposed, ensure all product residues are removed prior to disposal.

SECTION 3 – COMPOSITION

<u>CHEMICAL NAME</u>	<u>CAS #</u>	<u>APPROX %</u>
Polyisocyanate Prepolymer based on MDI	CAS# is a trade secret	60%
4,4'-Diphenylmethane Di-isocyanate (MDI)	101-68-8	20%
Polymeric Diphenylmethane Di-isocyanate (pMDI)	9016-87-9	10%
Diphenylmethane Di-isocyanate (MDI) Mixed Isomers	26447-40-5	5%

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. Get medical attention.

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.

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 di-isocyanate.

SECTION 5 – FIRE-FIGHTING MEASURES

Flash Point (Method Used): 460°F Pensky-Martens Closed Cup (ASTM D-93)

Flammable limits: Not Established

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.

Exposure to heated di-isocyanate can be extremely dangerous.

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 di-isocyanate can be vigorous.

Decomposition Products: May be toxic and irritating

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 the leak. Ventilate. Contain the spill to prevent spread into drains, sewers, water supplies, or soil. Call ChemTrec at 800-424-9300 or 703-527-3887 for assistance and advice. Major Spill or Leak (Standing liquid): Released material may be pumped into closed, but not sealed, metal container for disposal. Process can generate heat. Minor Spill or Leak (Wet surface): Cover spill area with suitable absorbent material (Kitty Litter, Oil-Dri®, etc). 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. Swype® test kits have been used for this purpose. Apply lid loosely and allow containers to vent for 72 hours to let carbon dioxide (CO²) escape.

Additional Spill Procedures/Neutralization

Neutralization solutions:

- (1) Colorimetric Laboratories Inc. (CLI) decontamination solution.
- (2) A mixture of 75% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10) and 5% n-propanol.
- (3) A mixture of 80% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10).
- (4) A mixture of 90% water, 3-8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.

Andek requires that CHEMTREC be immediately notified (800-424-9300) when this product is unintentionally released from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having knowledge of the release.

SECTION 7 – HANDLING & STORAGE

Storage temperature:

minimum:	18 °C (64.4 °F)
maximum:	40 °C (104 °F)

Storage period

6 Months @ 25 °C (77 °F): after receipt of material by customer

Handling/Storage Precautions

Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne 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 resealed if contamination is suspected.

Further Info on Storage Conditions

Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard 29 CFR 1910.1200.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION:

4,4'-Diphenylmethane Di-isocyanate (MDI) (101-68-8)

US. ACGIH Threshold Limit Values

Time Weighted Average (TWA): 0.005 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Ceiling Limit Value: 0.02 ppm, 0.2 mg/m³

Industrial Hygiene/Ventilation Measures

Local exhaust should be used to maintain levels below the TLV whenever MDI is heated, sprayed, or aerosolized. Standard reference sources regarding industrial ventilation (e.g., ACGIH Industrial Ventilation Manual) should be consulted for guidance about adequate ventilation. To ensure that published exposure limits have not been exceeded, monitoring for airborne di-isocyanate should become part of the overall employee exposure characterization program. NIOSH, OSHA, and others have developed sampling and analytical methods.

Respiratory protection

Airborne MDI concentrations greater than the ACGIH TLV-TWA (TLV) or OSHA PEL-C (PEL) can occur in inadequately ventilated environments when MDI is sprayed, aerosolized, or heated. In such cases, respiratory 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). The type of respiratory protection available includes (1) an atmosphere-supplying respirator such as a self-contained breathing apparatus (SCBA) or a supplied air respirator (SAR) in the positive pressure or continuous flow mode, or (2) an air-purifying respirator (APR). If an APR is selected then (a) the cartridge must be equipped with an end-of-service life indicator (ESLI) certified by NIOSH, or (b) a change out schedule, based on objective information or data that will ensure that the cartridges are changed out before the end of their service life, must be developed and implemented. The basis for the change out schedule must be described in the written respirator program. Further, if an APR is selected, the

airborne di-isocyanate concentration must be no greater than 10 times the TLV or PEL. The recommended APR cartridge is an organic vapor/particulate filter combination cartridge (OV/P100).

Hand protection

Gloves should be worn., Nitrile rubber showed excellent resistance., Butyl rubber, neoprene and PVC are also effective.

Eye protection

When directly handling liquid product, eye protection is required. Examples of eye protection include a chemical safety goggle, or chemical safety goggle in combination with a full face shield when there is a greater risk of splash.

Skin and body protection

Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact., Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction., This data reinforces the need to prevent direct skin contact with isocyanates.

Medical Surveillance

All applicants 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 medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to di-isocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

Additional Protective Measures

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

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES:

Appearance: Viscous liquid

Physical state: Liquid

Color: Dark brown

Odor: Mild

Odor Threshold: None Established

pH: None Established

Melting Point/freezing point: None Established

Initial boiling point/ boiling range: 694°F

Flash point: 460°F

Evaporation rate: None Established

Flammability (solid, gas): None Established

Upper/lower flammability or explosive limits: None Established

Vapor pressure: <0.0001 mmHg @25°C (77°F)

Vapor density: None Established

Relative density: 1.14kg/Lt

Solubility : Insoluble (reacts with water to evolve CO² gas

Partition coefficient: N-Octanol/wter: N/A

Auto-ignition temperature: None Established

Decomposition temperature: Polymerises @ 200°C

Vicosity: 5,000 to 6,000 centipoise @ 25°C

SECTION 10 – STABILITY AND REACTIVITY

Hazardous Reactions

Contact with moisture, other materials that react with isocyanates, or temperatures above 350° F (177° C), may cause polymerization

Materials to avoid

Water, Amines, Strong bases, Alcohols, Copper alloys

Hazardous decomposition products

By Fire and High Heat: Carbon dioxide (CO²), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke., Isocyanate, Isocyanic Acid, Other undetermined compounds

SECTION 11 – TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE:

Skin Contact, Inhalation, Eye Contact

EFFECTS FROM SHORT AND LONG TERM EXPOSURE:

Repeated dose toxicity for Polymeric MDI

90 Days, inhalation: NOAEL: 1 mg/m³, (rat, Male/Female, 6 hrs/day 5 days/week) Irritation to lungs and nasal cavity.
2 years, inhalation: NOAEL: 0.2, (rat, Male/Female, 6 hrs/day 5 days/week) Irritation to lungs and nasal cavity.

Repeated dose toxicity for 4,4'-Diphenylmethane Diisocyanate (MDI)

90 Days, inhalation: NOAEL: 0.3 mg/m³, (rat, Male/Female, 18 hrs/day, 5 days/week) Irritation to lungs and nasal cavity.

NUMERICAL MEASURES OF TOXICITY:

CHEMICAL NAME	Oral	Dermal	Inhalation	Eye Irritation
Polymeric MDI	Acute - LD50: > 2,000 mg/kg (rat, Male/Female)	rabbit, Slightly irritating	Acute - LC50: 490 mg/m ³ , 4 h (rat)	
4,4'-Diphenylmethane Di-isocyanate (MDI)		Acute - LD50: > 10,000 mg/kg (rabbit)	Acute - LC50: 369 mg/m ³ , 4 h (rat, Male/Female) LC50: > 2240 mg/m ³ , 1 h (rat) (OECD Test Guideline 403)	Rabbit - Slightly irritating

SYMPTOMS ASSOCIATED WITH EXPOSURE:

Polymeric MDI - Dermal sensitization according to Buehler (epicutaneous test): negative (guinea pig, OECD Test Guideline 406)
Toxicological studies at the product

4,4'-Diphenylmethane Di-isocyanate (MDI) -

Dermal: sensitizer (guinea pig, Maximization Test)
Inhalation: sensitizer (Guinea pig)

CHEMICAL LISTED IN NTP OR IARC?

Polymeric MDI:

Carcinogenicity

rat, Male/Female, inhalation, 2 Years, 6 hrs/day 5 days/week,

Exposure to a level of 6 mg/m³ polymeric MDI was related to the occurrence of lung tumors. This level is significantly over the TLV for MDI.

Mutagenicity

rat, female, inhalation, gestation days 6-15, 6 hrs/day, NOAEL (teratogenicity): 12 mg/m³, NOAEL (maternal): 4 mg/m³
No Teratogenic effects observed at doses tested., Fetotoxicity seen only with maternal toxicity.

4,4'-Diphenylmethane Di-isocyanate (MDI):

Carcinogenicity

rat, Female, inhalation, 2 Years, 17 hrs/day, 5 days/week, negative

Mutagenicity

Genetic Toxicity in Vitro:

Ames: (Salmonella typhimurium, Metabolic Activation: with/without)

Positive and negative results were reported. The use of certain solvents which rapidly hydrolyze di-isocyanates is suspected of producing the positive mutagenicity results.

Genetic Toxicity in Vivo: Micronucleus Assay: (mouse), negative

SECTION 12 – ECOLOGICAL INFORMATION**DATA FROM TOXICITY TEST (AQUATIC AND/OR TERRESTRIAL ORGANISM WHERE AVAILABLE):**

CHEMICAL NAME	Algae/Aquatic Plants	Fish	Toxicity to Microorganism	Crustacea (Aquatic Invertebrates)
Polymeric MDI	NOEC: 1,640 mg/l, End Point: growth (Green algae (<i>Scenedesmus subspicatus</i>), 72 h)	LC0: > 1,000 mg/l (Danio rerio (zebra fish), 96 h) LC0: > 3,000 mg/l (<i>Oryzias latipes</i> (Orange-red killifish), 96 h)	EC50: > 100 mg/l, (activated sludge, 3 h)	EC50: > 1,000 mg/l (Water flea (<i>Daphnia magna</i>), 24 h)
4,4'-Diphenylmethane Di-isocyanate (MDI)		LC50: > 500 mg/l (Zebra fish (<i>Brachydanio rerio</i>), 24 h)		EC50: > 500 mg/l (Water flea (<i>Daphnia magna</i>), 24 h)

BIODEGRADATION:

Polymeric MDI: 0 %, Exposure time: 28 d, i.e. not readily degradable

BIOACCUMULATION POTENTIAL:

Polymeric MDI: *Oncorhynchus mykiss* (rainbow trout), Exposure time: 112 d, < 1 BCF Does not bioaccumulate.

MOBILITY IN SOIL: Not Determined

SECTION 13 – DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

Empty Container Precautions

Empty containers retain product residue; observe all precautions for product. **Do Not** heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. **Do Not** reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are removed prior to disposal.

SECTION 14 – TRANSPORT INFORMATION

UN #	NA3082
UN PROPER SHIPPING NAME:	Other regulated substances, liquid, n.o.s. (contains 4,4'- Diphenylmethane Di-isocyanate (MDI))
HAZARD CLASS:	9
PACKING GROUP:	III
ENVIRONMENTAL HAZARDS:	N/A
GUIDANCE ON TRANSPORT IN BULK:	N/A
TRANSPORT LABELS REQUIRED:	Class 3

Additional Transportation Information:

When in individual containers of less than the Product RQ, this material ships as non-regulated.

SECTION 15 – REGULATORY INFORMATION**US Federal Regulation:****SARA 311/312 Hazard Categories**

CHEMICAL NAME	CWA reportable quantities	CWA Toxic Pollutants	CWA Priority Pollutants	CWA Hazardous Substances	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity RQ
4,4'-Diphenylmethane Di-isocyanate (MDI)	5000 lbs	Listed	N/A	Hazardous	Acute	Required	5000 lbs.

US State Right to Know Regulations: New Jersey, Massachusetts, Rhode Island or Pennsylvania substance lists

CHEMICAL NAME	CAS #
Polyisocyanate Prepolymer based on MDI	CAS# is a trade secret
4,4'-Diphenylmethane Di-isocyanate (MDI)	101-68-8

Polymeric Diphenylmethane Di-isocyanate (pMDI)	9016-87-9
Diphenylmethane Di-isocyanate (MDI) Mixed Isomers	26447-40-5

California Prop. 65:

Warning: This product contains chemical(s) known to the State of California to be Carcinogenic.

CHEMICAL NAME	CAS #
Acetaldehyde	75-07-0
Furan	110-00-9
Cobalt and cobalt compounds	7440-48-4
Propylene Oxide	75-56-9

Massachusetts: Extraordinary Hazardous Substance List

CHEMICAL NAME	CAS #
Furan	110-00-9
Propylene Oxide	75-56-9

SECTION 16 – OTHER INFORMATION (HMIS RATING)

Health	2*
Flammability	1
Physical Hazard	1
Personal Protection	H

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

* = Chronic Health Hazard

Disclaimer: Andek Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the issue date of this Safety Data Sheet (SDS). However, because the conditions of handling, use, and storage of these materials are beyond Andek Corporation's control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials and make no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations contained in the SDS are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and data and to comply with all applicable international, federal, state and local laws and regulations.
