



# Bayer

## MATERIAL SAFETY DATA SHEET

BAYER CHEMICALS CORPORATION  
 PRODUCT SAFETY & REGULATORY AFFAIRS  
 100 Bayer Road  
 Pittsburgh, PA 15205-9741

### TRANSPORTATION EMERGENCY

CALL CHEMTREC: 800-424-9300  
 INTERNATIONAL: 703-527-3887

### NON-TRANSPORTATION

BAYER EMERGENCY PHONE...: (412) 923-1800  
 BAYER INFORMATION PHONE.: (800) 662-2927

### 1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME.....: Bonding Agent 2001  
 PRODUCT CODE.....: L206  
 CHEMICAL FAMILY.....: Aromatic Polyisocyanate  
 CHEMICAL NAME.....: Toluene Diisocyanate Homopolymer  
 PRODUCT USE.....: Adhesive Applications - Bonding of PVC/Plastics to Steel

Sold as Hugger Catalyst by PolyOne Corp  
 MC90000026WE

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
--------------------------------	-----------------	-------------------

#### \*\*\*\*\* HAZARDOUS INGREDIENTS \*\*\*\*\*

Dibutyl Phthalate (DBP)			
84-74-2	OSHA : 5.00 mg/m3 TWA		60 - 80 %
	ACGIH: 5.00 mg/m3 TWA		
Toluene Diisocyanate Homopolymer			
9017-01-0	OSHA : Not Established		20 - 40 %
	ACGIH: Not Established		
Toluene Diisocyanate (TDI)			
26471-62-5	OSHA : .005 ppm TWA		< 0.2 %
	.02 ppm STEL		
	ACGIH: .005 ppm TWA		
	.02 ppm STEL		

#### \*\*\*\*\* OTHER INGREDIENTS \*\*\*\*\*

Product Code: L206  
 Approval date: 04/25/2000

MSDS Page 1  
 Continued on next page

2. COMPOSITION/INFORMATION ON INGREDIENTS (Continued)

INGREDIENT NAME	/CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
The following potentially hazardous constituent(s) are contained at levels below OSHA disclosure requirements and are provided for informational purposes only.			
Aromatic sulfonate		OSHA : Not Established	< 0.3 %
		ACGIH: Not Established	

3. HAZARDS IDENTIFICATION:

\*\*\*\*\*  
 \* EMERGENCY OVERVIEW \*  
 \*  
 \* WARNING! Color: Colorless to Yellow; Form: Liquid; Odor: \*  
 \* Weak Aromatic; May cause eye, skin, and respiratory tract \*  
 \* irritation; May cause allergic respiratory reaction; \*  
 \* Inhalation may cause nausea or dizziness; May cause allergic \*  
 \* skin reaction; May cause nervous system damage; May cause \*  
 \* brain damage; May cause cancer based on animal data; Closed \*  
 \* container may explode under extreme heat or when \*  
 \* contaminated with water; Toxic gases/fumes are given off \*  
 \* during burning or thermal decomposition and may cause \*  
 \* allergic skin and respiratory reaction. \*  
 \*\*\*\*\*

POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY.....: Skin Contact; Eye Contact; Inhalation

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE INHALATION.....: TDI vapors or mist at concentrations above the TLV 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 TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. DBP vapors are irritating to the eyes, nose, throat and respiratory tract (mucous membranes). Inhalation may produce symptoms of coughing and choking sensation. Other possible symptoms of overexposure include headache, nausea, narcosis, fatigue and loss of appetite. Deliberately breathing concentrated solvent vapor can result in permanent brain and nervous system damage or death.

CHRONIC INHALATION.....: As a result of previous repeated overexposures or a single large dose, certain individuals may develop isocyanate

## 3. HAZARDS IDENTIFICATION (Continued)

-----  
sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanates at levels well below the TLV. 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. 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 isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent. Chronic exposure to organic solvents has been associated with various neurotoxic effects including permanent brain and nervous system damage. Symptoms include loss of memory, loss of intellectual ability and loss of coordination. Workers in an artificial leather industry who were exposed to DBP (among other phthalate compounds) displayed signs of polyneuritis with symptoms of pain, numbness and muscle spasms.

ACUTE SKIN CONTACT.....: Isocyanates react with skin protein and moisture and can cause irritation with symptoms of reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove. Repeated or prolonged skin contact with DBP can result in dry, defatted and cracked skin causing increased susceptibility to infection. In addition, irritation (i.e. redness, swelling) which may develop into dermatitis (inflammation) may occur from skin contact.

CHRONIC SKIN CONTACT.....: Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and, in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor. Chronic exposure to the solvent may cause effects similar to those identified under chronic inhalation effects.

ACUTE EYE CONTACT.....: Liquid, aerosols or vapors are severely irritating and can cause pain, tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible.

CHRONIC EYE CONTACT.....: Prolonged vapor contact may cause conjunctivitis.

ACUTE INGESTION.....: Ingestion may result in irritation in the mouth, stomach tissue and digestive tract. Symptoms may include sore throat, abdominal pain, nausea, vomiting and diarrhea. Vomiting may cause aspiration resulting in chemical pneumonitis. A worker who accidentally ingested 140 mg/kg DBP developed symptoms of nausea, vomiting, and dizziness followed by headache, pain and irritation in the eyes and light sensitivity.

CHRONIC INGESTION.....: Based on animal tests, prolonged ingestion of DBP may cause reproductive effects such as testicular atrophy and loss of testicular zinc.

## CARCINOGENICITY

NTP.....: 2,4-Toluene Diisocyanate (TDI): Classified as an NTP Anticipated Human Carcinogen - "Substances or groups of substances,

Product Code: L206

Approval date: 04/25/2000

MSDS Page 3  
Continued on next page

### 3. HAZARDS IDENTIFICATION (Continued)

and medical treatments which may reasonably be anticipated to be carcinogens."

IARC.....: 2,4-Toluene Diisocyanate (TDI): Classified as IARC Possible Human Carcinogen (Group 2B) - "The chemical or group of chemicals is possibly carcinogenic for humans."

OSHA.....: Not regulated

OTHER.....: No carcinogenic activity was observed in lifetime inhalation studies in rats and mice (International Isocyanate Institute).

#### MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperreactivity), skin allergies, eczema.

EXPOSURE LIMITS.....: Not established for this product as a whole, refer to Section 2 for exposure limits of hazardous constituents.

### 4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: Flush with clean, lukewarm water (low pressure) for at least 15 minutes holding eyelids open. Obtain medical attention. Refer individual to an ophthalmologist for immediate follow-up.

FIRST AID FOR SKIN.....: Remove contaminated clothing immediately. Wash affected areas thoroughly with soap or tincture of green soap and water for at least 15 minutes. Wash contaminated clothing thoroughly before reuse. For severe exposures, get under safety shower after removing clothing, get medical attention, and consult physician. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

FIRST AID FOR INHALATION: Move to an area free from risk of further exposure. 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. Consult physician.

FIRST AID FOR INGESTION.: DO NOT INDUCE VOMITING. Give a glass of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Consult physician.

NOTE TO PHYSICIAN.....: Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. Skin: TDI is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound. Respiratory: TDI is a known pulmonary sensitizer. Treatment is essentially symptomatic.

Product Code: L206

Approval date: 04/25/2000

MSDS Page 4

Continued on next page

-----  
5. FIRE FIGHTING MEASURES:  
-----

FLASH POINT.....: 356 F (180 C); DIN 51758

FLAMMABLE LIMITS:

UPPER EXPLOSIVE LIMIT (UEL) (%): 2.5 Dibutyl Phthalate

LOWER EXPLOSIVE LIMIT (LEL) (%): 0.5 at 255 C Dibutyl Phthalate

EXTINGUISHING MEDIA.....: Dry Chemical; Carbon Dioxide; Foam; Water

SPECIAL FIRE FIGHTING PROCEDURES: Full emergency equipment with self-contained breathing apparatus and full protective clothing (such as rubber gloves, boots, bands around legs, arms and waist) should be worn by firefighters. No skin surface should be exposed. During a fire, TDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.

UNUSUAL FIRE / EXPLOSION HAZARDS: Closed container may explode when exposed to extreme heat or burst when contaminated with water (CO2 evolved).

-----  
6. ACCIDENTAL RELEASE MEASURES:  
-----

SPILL OR LEAK PROCEDURES.....: Evacuate non-essential personnel. Remove all sources of ignition. Ventilate the area. Equip clean-up crew with appropriate protective equipment (i.e., clothing, respiratory, etc. See Employee Protection Recommendations). Dike or impound spilled material and control further spillage if feasible. Notify appropriate authorities if necessary. Cover spill with sawdust, vermiculite, Fuller's earth or other absorbent material; pour liquid decontaminant over spillage and allow to react at least 10 min., collect material in open containers and add further amounts of decontamination solution. Remove containers to safe place. Cover loosely. Wash down area with liquid decontaminant and flush spill area with water. Decontamination solutions: Ammonium hydroxide (0-10%), detergent (2-5%) and balance water; or solution of Union Carbide's Tergitol TMN-10 (20%) and water (80%).

-----  
7. HANDLING AND STORAGE:  
-----

STORAGE TEMPERATURE (MIN/MAX): 32 F (0 C)/122 F (50 C)

SHELF LIFE.....: One year

SPECIAL SENSITIVITY.....: If container is exposed to heat it can be pressurized and possibly rupture. The isocyanates react slowly with water to form polyureas and liberate CO2 gas. This gas can cause sealed containers to expand and possibly rupture.

Product Code: L206  
Approval date: 04/25/2000

MSDS Page 5  
Continued on next page

## 7. HANDLING AND STORAGE (Continued)

HANDLING/STORAGE PRECAUTIONS: Keep away from heat, sparks or open flame. Ground container during storage and transfer operations. Store in tightly closed containers to prevent moisture contamination. Ideal storage temperature is 50-81 F (10-27 C). Avoid temperatures below 23 F (-5 C). Do not reseal if contamination is suspected. Prevent all contact. Do not breathe the vapors. Warning properties of isocyanates (irritation of the eyes, nose and throat or odor) are not adequate to prevent chronic 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. Exposure to vapors of heated TDI can be extremely dangerous. Employee education and training in safe handling of this product are required under the OSHA Hazard Communication Standard.

## 8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS.....: Liquid chemical goggles or full-face shield. Contact lenses should not be worn.

SKIN PROTECTION REQUIREMENTS.....: Chemical resistant gloves (butyl rubber, nitrile rubber). Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area covered by the cream to a minimum.

VENTILATION/RESPIRATORY REQUIREMENT: Exhaust ventilation sufficient to keep the airborne concentrations of the solvents and TDI below their respective TLVs must be utilized. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. In addition, a respirator that is recommended or approved for use in isocyanate containing environments (air purifying or fresh air supplied) may be necessary. Consider type of application and environmental concentrations. Observe OSHA regulations for respirator use (29 CFR 1910.134). In spray applications, when the airborne isocyanate monomer concentrations are known to be below 0.05 ppm and if the polyisocyanate (polymeric, oligomer) concentrations are known to be below 10 mg/m<sup>3</sup>, a properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate containing spray paint environments, will provide sufficient protection. The use of a positive pressure supplied air respirator is mandatory when: airborne isocyanate concentrations are not known, either of the above guidelines are exceeded, or if spraying is performed in a confined space or area with limited ventilation. It is possible to be exposed to airborne solvent or isocyanate vapors even during non-spray operations such as mixing, and brush or roller application, depending on the conditions of application. For example, heating of material or application to a hot substrate may increase emissions from the coating. Therefore, when airborne concentrations during such non-spray operations exceed the TLV of 0.005 ppm for isocyanate monomer, but are below 0.05 ppm, at least an air purifying (organic vapor) respirator is required. If airborne concentrations are unknown or exceed 0.05 ppm; or if operations are performed in a confined

Product Code: L206  
Approval date: 04/25/2000

MSDS Page 6  
Continued on next page

## 9. PERSONAL PROTECTION (Continued)

space, a supplied air respirator must be worn. In addition, solvent concentrations should be considered when determining the selection and use of a respirator. Refer to Patty's Industrial Hygiene and Toxicology, Volume 1 (3rd edition) Chapter 17 and Volume III (1st edition) Chapter 3, for guidance concerning appropriate air sampling strategy to determine airborne concentrations.

MONITORING.....: TDI, polyisocyanate and solvent exposure levels must be monitored by accepted monitoring techniques to ensure that the TLVs are not exceeded. (Contact Bayer Corporation for guidance). See Volume 1 (Chapter 17) and Volume 3 (Chapter 3) in Patty's Industrial Hygiene and Toxicology for sampling strategy.

MEDICAL SURVEILLANCE.....: Medical supervision of all employees who handle or come in contact with TDI is recommended. This should include preemployment and periodic medical examinations with respiratory function tests (FEV<sub>1</sub>, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with TDI. Once a person is diagnosed as being sensitized to TDI, no further exposure can be permitted.

ADDITIONAL PROTECTIVE MEASURES.....: Safety showers and eyewash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

## 9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM.....: Liquid  
COLOR.....: Colorless to Yellow  
ODOR.....: Weak Aromatic  
pH.....: Not Established  
BOILING POINT.....: Approx. 384 F (195 C) at 1013 mbar  
MELTING/FREEZING POINT.....: 5 F (-15 C)  
VISCOSITY.....: Approx. 10000 mPa.s at 73 F (23 C)  
SOLUBILITY IN WATER.....: Insoluble as resin, reacts with water to liberate CO<sub>2</sub> gas; DBP-0.5%  
SPECIFIC GRAVITY.....: 1.14 at 68 F (20 C); DIN 51757  
BULK DENSITY.....: 9.4 lbs/gal  
% VOLATILE BY VOLUME.....: Not Applicable  
VAPOR PRESSURE.....: Less than 0.001 mbar at 77 F (25 C)

## 10. STABILITY AND REACTIVITY:

STABILITY.....: This is a stable material.  
HAZARDOUS POLYMERIZATION...: May occur; high heat or contact with moisture or other materials which react with isocyanates may cause polymerization.  
INCOMPATIBILITIES.....: Avoid contact with water, alcohols, amines, strong

Product Code: L206  
Approval date: 04/25/2000

MSDS Page 7  
Continued on next page

## 10. STABILITY AND REACTIVITY (Continued)

-----  
bases, metal compounds or surface active materials. Reacts with water to form heat, CO<sub>2</sub> and insoluble ureas.  
INSTABILITY CONDITIONS.....: High temperatures and moisture.  
DECOMPOSITION PRODUCTS.....: By high heat and fire: Carbon dioxide (CO<sub>2</sub>), Carbon monoxide (CO), oxides of nitrogen, Hydrogen cyanide, TDI vapors, others undetermined.  
-----

11. TOXICOLOGICAL INFORMATION:  
-----

## TOXICITY DATA FOR: Bonding Agent 2001

## ACUTE TOXICITY

ORAL LD50.....: Greater than 10,000 mg/kg (rat). 1  
EYE EFFECTS.....: Moderately irritating to rabbit eyes. 1  
SKIN EFFECTS.....: Slightly irritating to rabbit skin. 1

1 Tests conducted at the Institute for Toxicology, Bayer AG

## TOXICITY DATA FOR: Dibutyl Phthalate (DBP)

## ACUTE TOXICITY

ORAL LD50.....: 8 gm/kg (rat). 2,3  
INHALATION LC50.....: 25 gm/m<sup>3</sup>/2 hours exposure (rat). 2,3  
OTHER TOXICITY DATA...: Reproductive and teratogenic effects were observed when DBP was given orally or by intraperitoneal injection into pregnant rats and mice. 3

2 Occupational Health Services (OHS) Material Safety Data Sheet  
3 Registry of Toxic Effects of Chemical Substances (RTECS)

## TOXICITY DATA FOR: Toluene Diisocyanate (TDI)

## ACUTE TOXICITY

ORAL LD50.....: Range of 4130-6170 (Rats and Mice)  
DERMAL LD50.....: Greater than 10,000 mg/kg (Rabbits)  
INHALATION LC50.....: Range of 16-50 ppm (Rat), 10 ppm (Mouse), 11 ppm (Rabbit), 13 ppm (Guinea Pig).  
EYE EFFECTS.....: Severe eye irritant capable of inducing corneal opacity.

SKIN EFFECTS.....: Moderate skin irritant. Primary dermal irritation score; 4.12/8.0 (Draize). However, repeated or prolonged contact may culminate in severe skin irritation and/or corrosion.

SENSITIZATION.....: Skin sensitizer in guinea pigs. One study using guinea pigs reported that repeated skin contact with TDI caused respiratory sensitization. Although poorly defined in experimental animal models, TDI is known to be a pulmonary sensitizer in humans. In addition, there is some evidence that cross-sensitization between different types of diisocyanates may occur.

CHRONIC TOXICITY.....: Sub-chronic and chronic animal studies show that the primary effects of inhaling vapors and/or aerosols of TDI are restricted to the pulmonary systems. Emphysema, pulmonary edema, pneumonitis and rhinitis

Product Code: L206  
Approval date: 04/25/2000

MSDS Page 8  
Continued on next page

## 11. TOXICOLOGICAL INFORMATION (Continued)

are common pathologic effects. Extended exposures to as low as 0.1 ppm TDI have induced pulmonary inflammation.

CARCINOGENICITY.....: The NTP conducted carcinogenesis studies of a commercial grade TDI using rats and mice in which the test material was diluted in corn oil and administered by gavage. The investigators concluded that TDI was carcinogenic in male and female rats (fibrosarcomas, pancreatic adenomas, neoplastic liver nodules and mammary gland fibrosarcomas) and female mice (hemangiosarcomas and hepatocellular adenomas). However, chronic inhalation studies in which rats and mice were exposed to 0.05 and 0.15 ppm TDI (10-30 times recommended TLV, 8-hr level) induced no treatment-related tumorigenic effects. In these studies, both exposure levels produced extensive irritation to the nasal passages and upper respiratory system of the test animals indicating that suitable effective exposures were administered.

MUTAGENICITY.....: TDI is positive in the AMES assay with activation. However, mammalian cell transformation assays using human lung cells and Syrian hamster kidney cells were negative, as were micronucleus tests using rats and mice.

DEVELOPMENTAL TOXICITY: Rats were exposed to an 80:20 mixture of 2,4- and 2,6-Toluene Diisocyanate vapor at analytical concentrations of 0.021, 0.12 and 0.48 ppm. Minimal fetotoxicity was observed at a maternally toxic concentration of 0.48 ppm. The NOEL for maternal and developmental toxicity was 0.12 ppm. No embryotoxicity or teratogenicity was observed.

## 12. ECOLOGICAL INFORMATION:

ECOLOGY DATA FOR: Dibutyl Phthalate (DBP)

FISH TOXICITY.....: LC50 = 1.6 mg/L (96 h, *Salmo gairdneri*).

INVERTEBRATE TOXICITY.....: EC50 = 3.4 mg/L (48 h, *Daphnia magna*).

PLANT TOXICITY.....: EC50 = 0.75 mg/L (96 h, *Selenastrum capricornutum*).

ECOLOGY DATA FOR: Toluene Diisocyanate (TDI)

AQUATIC TOXICITY.....: LC50 -96 hr (static): 165 mg/liter (Fathead minnow) LC50 - 96 hr (static): Greater than 508 mg/liter (Grass shrimp) LC50 - 24 hr (static): Greater than 500 mg/liter (*Daphnia magna*)

## 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD.....: Follow all federal, state or local regulations. TDI must be disposed of in a permitted incinerator or landfill.

Incineration is the preferred method for liquids. Solids are usually incinerated or landfilled.

EMPTY CONTAINER PRECAUTIONS.: Empty containers must be handled with care due to product residue. Decontaminate containers prior to disposal. Empty decontaminated containers should be crushed to prevent reuse. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH. (See Fire and

## 13. DISPOSAL CONSIDERATIONS (Continued)

-----  
 Reactivity Sections). Vapors and gases may be highly toxic.  
 -----

## 14. TRANSPORTATION INFORMATION:

-----  
 TECHNICAL SHIPPING NAME.....: Polyisocyanate in Dibutyl Phthalate contains  
 Toluene Diisocyanate  
 FREIGHT CLASS BULK.....: Isocyanate  
 FREIGHT CLASS PACKAGE.....: Chemicals NOI (Isocyanate) (NMFC 60000)  
 PRODUCT LABEL.....: Bonding Agent 2001  
 -----

## DOT (DOMESTIC SURFACE)

-----  
 PROPER SHIPPING NAME.....: Environmentally Hazardous Substance, Liquid,  
 N.O.S.  
 HAZARD CLASS OR DIVISION.....: 9  
 UN/NA NUMBER.....: UN3082  
 PACKING GROUP.....: III  
 DOT PRODUCT RQ lbs (kgs).....: 14 lbs (6.4 kgs)  
 HAZARD LABEL(s).....: Class 9  
 HAZARD PLACARD(s).....: Class 9  
 -----

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

## IMO / IMDG CODE (OCEAN)

-----  
 PROPER SHIPPING NAME.....: Environmentally Hazardous Substance, Liquid,  
 N.O.S.  
 HAZARD CLASS DIVISION NUMBER.....: 9  
 UN NUMBER.....: UN3082  
 PACKAGING GROUP.....: III  
 HAZARD LABEL(s).....: Marine Pollutant (Mark)  
 HAZARD PLACARD(s).....: Marine Pollutant  
 -----

## ICAO / IATA (AIR)

-----  
 PROPER SHIPPING NAME.....: Environmentally Hazardous Substance, Liquid,  
 N.O.S.  
 HAZARD CLASS DIVISION NUMBER.....: 9  
 UN NUMBER.....: UN3082  
 SUBSIDIARY RISK.....: None  
 PACKING GROUP.....: III  
 HAZARD LABEL(s).....: Miscellaneous  
 RADIOACTIVE?.....: Non-Radioactive  
 PASSENGER AIR - MAX. QTY. ....: No Limit  
 PASSENGER PACKING INSTRUCTION...: 914  
 CARGO AIR - MAX. QTY. ....: No Limit  
 CARGO AIR PACKING INSTRUCTION...: 914  
 -----

Product Code: L206  
 Approval date: 04/25/2000

MSDS Page 10  
 Continued on next page

-----  
 15. REGULATORY INFORMATION:  
 -----

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS.....: On TSCA Inventory

CERCLA REPORTABLE QUANTITY...: Toluene Diisocyanate (TDI) - 100 lbs; Dibutyl Phthalate (DBP) - 10 lbs

SARA TITLE III:  
 SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES...: 2,4-Toluene Diisocyanate (TDI), (CAS # 584-84-9), Less than 0.10%;  
 2,6-Toluene Diisocyanate (TDI), (CAS # 91-08-7), Less than 0.10%

SECTION 311/312 HAZARD CATEGORIES.....: Immediate Health Hazard; Delayed Health Hazard; Reactive Hazard

SECTION 313 TOXIC CHEMICALS.....: 2,4-Toluene Diisocyanate (TDI), (CAS # 584-84-9), Less than 0.10%;  
 2,6-Toluene Diisocyanate (TDI), (CAS # 91-08-7), Less than 0.10%;  
 Dibutyl Phthalate (DBP) (CAS# 84-74-2) - 70%

RCRA STATUS.....: Dibutyl Phthalate (DBP) and Toluene Diisocyanate (TDI) are listed as RCRA hazardous wastes and should be managed as hazardous wastes (EPA Hazardous Waste Numbers U069 and U223 respectively). (40 CFR 261.20-24)

FOREIGN CHEMICAL INVENTORY LIST(S)

EUROPE EINECS.....: Listed  
 CANADA DSL.....: Listed

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

COMPONENT NAME /CAS NUMBER	CONCENTRATION	STATE CODE
Dibutyl Phthalate (DBP) 84-74-2	60 - 80 %	PA1, PA4, MA, NJ1, NJ2, CN1
Toluene Diisocyanate Homopolymer 9017-01-0	20 - 40 %	PA3, NJ4
Toluene Diisocyanate (TDI) 26471-62-5	< 0.2 %	CA1, MA

Product Code: L206  
 Approval date: 04/25/2000

MSDS Page 11  
 Continued on next page

## 15. REGULATORY INFORMATION (Continued)

COMPONENT NAME /CAS NUMBER	CONCENTRATION	STATE CODE
Aromatic sulfonate	< 0.3 %	MA

CA1 = Warning! This chemical is known to the State of California to cause cancer.

MA = Massachusetts Hazardous Substance List

NJ1 = New Jersey Hazardous Substance List

NJ2 = New Jersey Environmental Hazardous Substance List

NJ4 = New Jersey Other - included in 5 predominant ingredients > 1%

PA1 = Pennsylvania Hazardous Substance List

PA3 = Pennsylvania Non-hazardous present at 3% or greater.

PA4 = Pennsylvania Environmental Hazardous Substance List.

CN1 = Canada WHMIS Ingredient Disclosure List over 1%.

## 16. OTHER INFORMATION:

HMIS RATINGS:

Health	Flammability	Reactivity
3	1	2
0=Minimal	1=Slight	2=Moderate
		3=Serious
		4=Severe

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS ratings are provided by Bayer as a customer service.

REASON FOR ISSUE.....: Revise shelf life and Section 12  
 PREPARED BY.....: W. W. Henderson, Ph.D.  
 APPROVED BY.....: J. H. Chapman  
 APPROVAL DATE.....: 04/25/2000  
 SUPERSEDES DATE.....: 08/14/1998  
 MSDS NUMBER.....: 02041

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Bayer Corporation. The data on this sheet relates only to the specific material designated herein. Bayer Corporation assumes no legal responsibility for use or reliance upon these data.

Product Code: L206  
 Approval date: 04/25/2000

MSDS Page 12  
 Last page