

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL @LBD 3000  
MSDS ID: S-001507

Revised Date: 01-17-2005

### **01. GENERAL INFORMATION**

Cray Valley USA, LLC  
Oaklands Corporate Center  
468 Thomas Jones Way  
Exton, Pennsylvania 19341

Emergency phone number:  
800/424-9300 (CHEMTREC)

Product information:  
610/363-4100

#### GENERIC NAME

Polybutadiene with terminal isocyanate groups

#### DOT PROPER SHIPPING NAME

Toxic, liquids, organic, n.o.s.  
(Contains Toluene Diisocyanate)

#### UN/NA NUMBER

UN 2810

#### DOT HAZARD CLASS

6.1

#### PACKING GROUP

II

### **02. SUMMARY OF HAZARDS**

#### WARNING

PHYSICAL HAZARDS: Reacts with water--may result in CO2 build up and an exothermic reaction

ACUTE HEALTH EFFECTS:  
(SHORT-TERM) Suspect severe eye irritation hazard  
Suspect skin irritation hazard  
Suspect respiratory tract irritation hazard  
May cause skin sensitization  
May be toxic by inhalation/may cause respiratory sensitization  
Not expected to be a skin absorption hazard  
Not expected to be toxic by ingestion/may cause gastric irritation

CHRONIC HEALTH EFFECTS:  
(LONG-TERM) No data are available for this product as a whole. See Supplement section of MSDS for information on one of product's components.

### **03. COMPONENTS**

COMPONENT NAME	CAS NUMBER	% COMPOSITION (BY WT.)
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Toluene diisocyanate (TDI)		
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polybutadiene prepolymer	Not assigned	GT 98
Toluene diisocyanate (TDI) mixed isomers** (2,4'- and 2,6'-isomers)	26471-62-5	LT 2

\*\*Subject to SARA 313 requirements. See Section 13 of MSDS for details.

### **04. PHYSICAL AND CHEMICAL DATA**

BOILING POINT	pH
N/DA	N/DA
FREEZING POINT	DRY POINT
N/DA	N/DA
SPECIFIC GRAVITY (H2O=1 at 39.2F) AP 0.93 at 25C/77F	VOLATILE CHARACTERISTICS
VISCOSITY UNITS, TEMP. (Brookfield)	Negligible
N/DA	SOLUBILITY IN WATER
VAPOR PRESSURE	Insoluble
N/DA	STABILITY
VAPOR SP GR (AIR=1 at 60 - 90F)	Stable
N/DA	HAZARDOUS POLYMERIZATION
	May occur upon contact with water and other contaminants

#### APPEARANCE AND ODOR

Gold or colorless liquid with aromatic odor

#### CONDITIONS AND MATERIALS TO AVOID

Elevated temperatures, excessive heat, open flames;  
Avoid long exposures at temperatures >190F;  
Prevent contact with moisture and with substances containing OH and NH<sub>2</sub> groups, acids, bases, magnesium, aluminum and its alloys, metal salts--halides of tin, iron, aluminum and zinc, oxidizing agents

#### HAZARDOUS DECOMPOSITION PRODUCTS

Acrid smoke-fumes/carbon monoxide/carbon dioxide/nitrogen oxides and perhaps other toxic vapors may be released during a fire involving this product. Small amounts of butadiene and TDI may also be released.

### **05. OCCUPATIONAL EXPOSURE LIMITS**

SUBSTANCE	SOURCE	TYPE	VALUE
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A PEL or TLV has not been established for this product

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Toluene-2,4'- diisocyanate	OSHA ACGIH*	PEL-Ceiling Limit TLV-TWA TLV-STEL	0.02 ppm 0.005 ppm 0.02 ppm
Toluene-2,6'- diisocyanate	ACGIH*	TLV-TWA TLV-STEL	0.005 ppm 0.02 ppm

\*The ACGIH SEN (sensitizer) notation is also listed for both TDI isomers.

### **06. FIRE AND EXPLOSION**

FLASH POINT: METHOD (COC)                      AUTOIGNITION TEMP.: METHOD  
AP 233C/451F                                      N/DA

FLAMMABLE LIMITS (% VOLUME IN AIR)  
LOWER: N/DA      UPPER: N/DA

#### FIRE AND EXPLOSION HAZARDS

This product will tend to polymerize thermally at temperatures above 204C/400F. Once initiated, the reaction generates sufficient heat to continue spontaneously. Heat from fire can generate flammable vapors. When mixed with air and exposed to an ignition source, vapors can burn. Such fires are very smoky. Closed drums can also rupture in a fire causing flame to spread, increasing risk of burns. Personal contact with hot liquid after a fire can cause severe burns due to high temperatures.

Polymerization/exothermic reaction can also occur upon contact with water and other contaminants. The reaction of water and hot diisocyanate can be very violent--may rupture closed containers.

#### EXTINGUISHING MEDIA

Dry chemical  
CO2  
Foam  
Water spray for cooling containers

Note: Water contamination may cause CO2 build up within closed containers--containers may rupture due to increased pressure.

#### SPECIAL FIREFIGHTING PROCEDURES

Do not enter fire area without proper protection. See Section 5 - decomposition products possible. Fight fire from safe distance/protected location. Though not normally combustible, material

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will eventually burn if exposed to fire/fire may build enough pressure to rupture closed containers, spreading contents, which are harmful if inhaled, swallowed or splashed in the eyes or on the skin. See Section 8 for personal protection recommended. Notify authorities if liquid enters sewer/public waters.

### **07. HEALTH HAZARDS**

#### ROUTES OF EXPOSURE

##### INHALATION

No significant signs or symptoms indicative of any adverse health hazard are expected to occur at standard conditions due to the low volatility of this material. However, aerosols, or vapors which may be generated at elevated processing temperatures, may cause respiratory tract irritation. Symptoms of irritation may include coughing, mucous production and shortness of breath.

May cause respiratory sensitization.

Exposure may produce cough, mucous, shortness of breath, chest tightness or other symptoms indicative of an allergic/sensitization reaction.

Repeated exposures may cause permanent lung injury/damage.

##### EYE CONTACT -- PRIMARY ROUTE

Although no appropriate human or animal health effects data are known to exist, this material is expected to cause severe eye irritation. Symptoms may include severe pain or burning sensation, redness, swelling, tearing and blurred vision.

##### SKIN ABSORPTION

Although no appropriate human or animal health effects data are known to exist, this material is not expected to be a health hazard by skin absorption.

##### SKIN IRRITATION -- PRIMARY ROUTE

Although no appropriate human or animal health effects data are known to exist, this material is expected to be a skin irritant.

Symptoms may include localized redness or rash, blistering and swelling of the affected area.

Although no appropriate human or animal health effects data is known to exist, this material may cause an allergic skin reaction (sensitization) in susceptible individuals upon repeated exposure.

##### INGESTION

Although no appropriate human or animal health effects data are known to exist, this material is not expected to be toxic by ingestion but it may cause irritation/corrosion of the gastrointestinal (GI) tract.

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### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

This material or its emissions may induce an allergic or sensitization reaction and thereby aggravate systemic disease.

This material or its emissions may aggravate pulmonary/bronchial disease and/or cause breathing difficulty.

## **08. PROTECTIVE EQUIPMENT / CONTROL MEASURES**

### RESPIRATORY PROTECTION

If exposure can even approach the PEL/TLV, use only NIOSH/MSHA approved supplied air respirator operated in a positive pressure mode as specified in the NIOSH/OSHA 1981 occupational health guidelines for chemical hazards.

### EYE PROTECTION

Eye protection, including both chemical splash goggles and face shield, must be worn when possibility exists for eye contact due to spraying liquid or airborne particles. Contact lenses must not be worn.

### SKIN PROTECTION

When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn. This equipment must be cleaned thoroughly after each use.

Use nitrile or butyl rubber gloves/skin protection.

### ENGINEERING CONTROLS

Local exhaust ventilation may be required to meet exposure standard(s) in addition to general room ventilation.

### OTHER HYGIENIC PRACTICES

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

### OTHER WORK PRACTICES

Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse. Shower after work using plenty of soap and water.

## **09. EMERGENCY AND FIRST AID**

### INHALATION

If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

### EYE CONTACT

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In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention.

### SKIN CONTACT

Immediately remove contaminated clothing. Wash skin thoroughly with mild soap/water. Flush w/lukewarm water for 15 minutes. If sticky, a waterless cleaner may be used. Seek medical attention if ill effect or irritation develops.

### INGESTION

If swallowed, give lukewarm water (pint) if victim completely conscious/ alert. Do not induce vomiting/risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.

### EMERGENCY MEDICAL TREATMENT PROCEDURES

Treat symptomatically.

## **10. SPILL AND DISPOSAL**

### PRECAUTIONS IF MATERIAL IS SPILLED OR RELEASED

Trained personnel should wear personal protective equipment including eye, skin and respiratory protection (supplied air respirator or self-contained breathing apparatus). Evacuate/limit access to spill area. Prevent flow to sewers/public waters. Impound/recover large land spill; soak up small spill with absorbent material. Shovel absorbed material into open containers and move to well ventilated area. Material can then be neutralized by applying decontamination solution (mixture of 80% water and 20% non-ionic surfactant Tergitol TMN-10 OR 90% water, 3-8% concentrated ammonia and 2% detergent). Add 10 parts decontamination solution for every one part of TDI. Allow to stand uncovered for 48 hours to let CO2 escape. Also apply decontamination solution to spill area, letting stand for at least 15 minutes.

### WASTE DISPOSAL METHODS

When discarded in its purchased form, this product is not a RCRA hazardous waste. However, it is the responsibility of the generator to determine at the time of disposal whether the product meets the criteria of a hazardous waste. Comply with all applicable federal, state and local regulations. Waste disposal options include landfilling solids at permitted sites. Use registered transporters.

Burn concentrated waste in properly designed combustion systems compatible with highly viscous liquids. Avoid flameouts and assure that emissions comply with all applicable standards. Wastewater containing floating polybutadiene resins must not be fed to any biomass unless floating resin is first removed. Assure that any effluent from biotreatment complies with all applicable regulations.

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### **11. ADDITIONAL PRECAUTIONS**

#### HANDLING AND STORAGE PROCEDURES

Keep containers tightly closed when not in use. Store indoors in a cool, dry, well ventilated area. Prevent moisture contact and contamination with incompatible materials (see Section 4 of MSDS). If necessary, blanket with dry inert gas to prevent contamination by atmospheric moisture. Keep away from heat, sparks and open flame. Protect from freezing. If frozen, thaw (without overheating) and mix before reuse. Recommended storage temperature between 10C/50F-30C/86F. Avoid prolonged storage temperatures above 35C/95F. Product's shelf life is one year from date of receipt.

If heating is necessary due to product freezing or to facilitate material flow during use, use care to avoid localized overheating, possible degradation and container overpressure may occur. Do NOT use electric band heater to heat product--hot spots may be created and autopolymerization may occur. Avoid spillage of product to prevent highly viscous material from sticking to and contaminating clothes or shoes.

#### DECONTAMINATION PROCEDURES

Follow standard plant procedures or supervisor's instructions for decontamination operations.

### **12. LABEL INFORMATION**

#### USE STATEMENT

FOR INDUSTRIAL USE ONLY

#### SIGNAL WORD

WARNING

#### PHYSICAL HAZARDS

WATER-REACTIVE/MAY RESULT IN CO2 BUILD UP AND AN EXOTHERMIC REACTION

#### HEALTH HAZARDS

MAY CAUSE ALLERGIC RESPIRATORY REACTION/LUNG INJURY

MAY CAUSE ALLERGIC SKIN REACTION

MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION

SUSPECT CANCER HAZARD--CONTAINS TOLUENE DIISOCYANATE WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA

#### PRECAUTIONARY MEASURES

PREVENT MOISTURE CONTACT.

PREVENT CONTAMINATION WITH FOREIGN MATERIALS.

AVOID EXCESSIVE HEAT/HIGH TEMPERATURES.

DO NOT BREATHE VAPORS/MISTS.

AVOID CONTACT WITH EYES, SKIN, AND CLOTHING.

DO NOT TASTE OR SWALLOW.

USE ONLY WITH ADEQUATE VENTILATION/PERSONAL PROTECTION.

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KEEP CONTAINER CLOSED WHEN NOT IN USE.  
WASH THOROUGHLY AFTER HANDLING.  
BEFORE USING PRODUCT, READ MATERIAL SAFETY DATA SHEET.

### **13. SUPPLEMENT**

NPCA - HMIS RATING

Health	3*
Flammability	1
Reactivity	1
Personal protection	See Section 8 of MSDS

#### SUBACUTE, SUBCHRONIC AND CHRONIC HEALTH EFFECTS INFORMATION

There are no chronic health effects data for this product as a whole. However, this product contains Toluene diisocyanate (TDI) mixed isomers, which has caused respiratory sensitization and possibly permanent lung damage in some individuals. In subacute, subchronic and chronic studies with animals, TDI caused inflammatory disorders, such as rhinitis, bronchitis, tracheobronchitis and pneumonitis, of the respiratory tract/system upon repeated inhalation exposures. Bronchopneumonia also occurred. In the subacute studies pulmonary fibrosis and severe lung damage occurred. In the chronic studies, a proliferation of fibrous tissue in the bronchioles was noted. Overexposure to isocyanates in general has been reported to cause decreased lung function in certain individuals.

TDI was positive and negative in a variety of mutagenicity tests. TDI did not cause teratogenic effects (birth defects) in animals at concentrations below 0.5 ppm (via inhalation) in a developmental toxicity study. In this study, the No Observed Effect Level (NOEL) for teratogenicity was 0.5 ppm; the NOEL for fetotoxicity was 0.1 ppm and for maternal effects, the NOEL was 0.1 ppm. TDI was also evaluated for reproductive toxicity in a two-generation reproduction study using rats (inhalation exposure). The NOEL was 0.3 ppm for reproductive effects and 0.1 ppm for pup effects.

TDI is considered an IARC (International Agency for Research on Cancer) Group 2B agent, which means it is possibly carcinogenic to humans. TDI is an NTP (National Toxicology Program) Group 2 agent, which means it is reasonable anticipated to be a carcinogen. A TDI manufacture reports that tumors were seen in animals in carcinogenicity studies when the

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animals were dosed via gavage but were not seen when animals were dosed via the inhalation route.

### REGULATORY INFORMATION

#### TSCA STATUS:

TSCA status: All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

#### CALIFORNIA PROPOSITION 65:

California Proposition 65 Information: This product contains, or may contain, trace quantities of a substance(s) known to the state of California to cause cancer and/or reproductive toxicity.

Toluene diisocyanate  
1,3-Butadiene

#### SARA 313 Information:

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372:

Toluene Diisocyanate (mixed isomers)  
CASRN 26471-62-5  
Maximum 2% by weight

#### INTERNATIONAL STATUS

Australia (AICS):	not included on inventory
Canada (DSL):	not included on inventory
China (CECS):	not included on inventory
Europe (EINECS):	polymer
Japan (ENCS):	not included on inventory
Korea (ECL):	not included on inventory
Philippines (PICCS):	not included on inventory

\*Note - qualifiers and codes used in this MSDS

EQ = Equal; AP = Approximately; LT = Less Than; GT = Greater Than;  
TR = Trace; UK = Unknown; N/AP = Not Applicable; N/P = No Applicable  
Information Found; N/DA = No Data Available

## 14. DISCLAIMERS

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Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself. The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable. This MSDS has been prepared in accordance with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).