

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

### **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 prepolymer

DOT PROPER SHIPPING NAME  
N/AP  
DOT HAZARD CLASS  
Not regulated

UN/NA NUMBER  
N/AP

### **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 eye irritation hazard Suspect skin irritation hazard Suspect respiratory tract irritation hazard May cause skin and respiratory sensitization No data on skin absorption found 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.)
Methylene diphenyl diisocyanate (MDI) polybutadiene prepolymer	Not assigned	AP 92-96
Methylene diphenyl diisocyanate (MDI) mixed isomers** (2,4'- and 4,4'-isomers)	26447-40-5	AP 4-8

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
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\*\*Subject to SARA 313 requirements. See Section 13 of MSDS for additional information.

### 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 0.9 at 25C/77F	VOLATILE CHARACTERISTICS Negligible
VISCOSITY UNITS, TEMP. (Brookfield)	SOLUBILITY IN WATER Insoluble
N/DA	STABILITY Stable
VAPOR PRESSURE	HAZARDOUS POLYMERIZATION
N/DA	May occur upon contact with water and other contaminants
VAPOR SP GR (AIR=1 at 60 - 90F)	
N/DA	

#### APPEARANCE AND ODOR

Light grey-brown 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 MDI may also be released.

### 05. OCCUPATIONAL EXPOSURE LIMITS

SUBSTANCE	SOURCE	TYPE	VALUE
A PEL or TLV has not been established for this product			
Methylene bisphenyl isocyanate (4,4'-Methylene diphenyl diisocyanate)	OSHA ACGIH	PEL-Ceiling Limit TLV-TWA	0.02 ppm 0.005 ppm

### 06. FIRE AND EXPLOSION

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

FLASH POINT: METHOD (Estimated)  
GT 93C/200F

AUTOIGNITION TEMP.: METHOD  
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 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

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

---

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 eye irritation.

May cause moderate irritation with symptoms including burning sensation, tearing, redness or swelling.

#### SKIN ABSORPTION

No appropriate human or animal health effects data are known to exist.

#### 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 of the gastrointestinal (GI) tract.

#### 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

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

---

Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses should 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, neoprene 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

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

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

---

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 (sodium carbonate 5-10%, liquid detergent 0.2-2% and water to make 100% OR ammonia 3-8%, liquid detergent 0.2-2% and water to make 100%). Add 10 parts decontamination solution for every one part of isocyanate. 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.

### **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 six months 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,

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

---

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

### 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.

USE ONLY WITH ADEQUATE VENTILATION/PERSONAL PROTECTION.

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	2*
Flammability	1
Reactivity	1
Personal protection	See Section 8 of MSDS

### CHRONIC HEALTH EFFECTS INFORMATION

There are no chronic health effects data for this product as a whole. However, this product contains Methylene diphenyl diisocyanate (MDI) mixed isomers, including 4,4'-Methylene diphenyl diisocyanate, which has caused respiratory sensitization and possibly permanent lung damage in some individuals. This MDI isomer was negative in some mutagenicity tests using standard bacterial cells and was weakly positive in one test

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

using Salmonella in the presence of exogenous metabolic activation. This MDI isomer is considered an IARC (International Agency for Research on Cancer) Group 3 agent, which is unclassifiable as to its carcinogenicity in humans. Overexposure to isocyanates in general has been reported to cause decreased lung function in certain individuals.

### 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.

1,3-Butadiene

#### INTERNATIONAL INVENTORY STATUS

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

#### 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:

This product contains Methylene diphenyl diisocyanate (MDI) mixed isomers (2,4'- and 4,4'-isomers). The 4,4'-MDI isomer is reportable under SARA 313 as indicated below.

Diisocyanates (4,4'-Methylene diphenyl diisocyanate)  
CASRN 101-68-8  
Maximum 8% by weight

\*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

# Cray Valley USA, LLC

## Material Safety Data Sheet

Product: KRASOL® NN-3A  
MSDS ID: S-001497

Revised Date: 12-05-2006

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### **14. DISCLAIMERS**

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).