

P.O. Box 4980
The Woodlands, TX 77387-4980

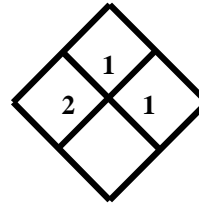
8 am to 5 pm Phone: (800) 257-5547
24-Hour Emergency Phone: (800) 328-8501
International Emergency Phone: (409) 727-0831
Asia Pacific Emergency Phone: (65) 6336-6011

Effective Date: 3/13/09**Material Safety Data Sheet**

MSDS No: 6095

1. PRODUCT IDENTIFICATION**Trade Name:** RenCast 6401-1 US**MSDS Category:** Commercial Product**Made In:** U.S.A.**Chemical Family:** Isocyanate**Synonyms:**

RP 6401-1 Resin

Intended Use or Product Type: Polyurethane resin

NFPA RATING

Health:	2*
Flammability:	1
Reactivity:	1
Personal Protection:	

HMIS RATING

2. COMPOSITION / INFORMATION ON INGREDIENTS

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS				CARCINOGEN STATUS			
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
*	101-68-8	Benzene, 1,1'-Methylenebis[4-Isocyanato-MDI Common Name: Concentration: 60.00 - 100.00 % by wt	0.005 ppm	NE	0.02 ppm	NE	NE	NR	NR	NR
*	26447-40-5	Benzene, 1,1'-Methylenebis[Isocyanato-Diphenylmethane diisocyanate Common Name: Concentration: 1.00 - 5.00 % by wt	NE	NE	NE	NE	NE	NR	NR	NR
*	39310-05-9	Benzene, 1,1'-Methylenebis(Isocyanato-, homopolymer Diphenylmethane diisocyanate homopolymer Common Name: Concentration: 10.00 - 30.00 % by wt	NE	NE	NE	NE	NE	NR	NR	NR
*	61788-32-7	Terphenyl, hydrogenated Common Name: Concentration: 1.00 - 5.00 % by wt	0.5 ppm	NE	0.5 ppm	NE	NE	NR	NR	NR
*	78-40-0	Phosphoric Acid, Triethyl Ester	NE	NE	NE	NE	NE	NR	NR	NR

Effective Date: 3/13/09

Concentration	1.00 - 5.00 % by wt								
---------------	---------------------	--	--	--	--	--	--	--	--

NE = Not Established NR = Not Reviewed * = OSHA Hazardous Ingredient

3. HAZARDS IDENTIFICATION

Emergency Overview: Causes skin, eye, and respiratory irritations. May cause allergic skin and respiratory reactions.

Primary Route(s) of Entry: Dermal; heated product may produce inhalable vapors.

4. FIRST AID MEASURES

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

Skin: Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes. Seek immediate medical attention.

Inhalation: Remove to fresh air. Seek immediate medical attention.

Eyes: Immediately flush eyes with water for at least 15 minutes. Seek immediate medical attention.

Overexposure Effects: Contact with liquid causes eye and skin irritation. If inhaled causes breathlessness, chest discomfort, and reduced pulmonary function. May cause allergic skin and respiratory reactions in some individuals, leading to asthma type spasms of the bronchial tubes and difficulty in breathing.

Medical Conditions Aggravated by Exposure: Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases, eye conditions or recurrent skin eczema or sensitization should be excluded from working with isocyanates.

Additional Information: Referral to a physician is recommended if there is any question about the seriousness of any injury.

5. FIRE FIGHTING MEASURES

Flash Point:	> 230°F (> 110 °C)
Flash Point Method Used:	Estimated
Flammable Limits in Air (Lower - % by volume):	Not established
Flammable Limits in Air (Upper - % by volume):	Not established

Fire Fighting Extinguishing Media: Carbon dioxide, dry chemical, foam, water.

Fire Fighting Equipment: Use self-contained breathing apparatus.

Fire and Explosion Hazards: Decomposition and combustion products may be toxic.

6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Remove spillage by absorbing in absorbent material.

Effective Date: 3/13/09

7. HANDLING AND STORAGE

Signal Word: Warning!

Precautions: Causes irritation if inhaled and can cause skin irritation, eye irritation, allergic respiratory reaction, and allergic skin reaction. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Keep container closed when not in use. Use with adequate ventilation. Wash thoroughly after handling.

Other Handling Information: Nuisance dust may be generated when sanding or sawing cured material.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Skin Protection: Wear impermeable gloves.

Respiratory Protection: If a person is concerned with exposure to isocyanates, an organic respirator can provide protection at less than the TLV. It is not a requirement at an exposure level less than the TLV. For exposures in excess of the TLV, an air supplied respirator would be required. Conditions that may create exposures above the TLV are spray applications, the material being strongly heated in excess of 125F before application, or the use of material in poorly ventilated areas.

Eye Protection: Wear splash-proof chemical goggles.

Engineering Controls: General mechanical and local exhaust in accordance with ACGIH recommendations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Clear Amber
Physical State:	Liquid
Solubility in Water:	Reacts with water
Vapor Pressure:	0.11 mm Hg at 71°C (160 °F)
Specific Gravity:	1.17 - 1.21 (water = 1)
Boiling Point:	Not Determined
Evaporation Rate:	Not Determined
Vapor Density:	> 1 (Air = 1)
VOC:	79.6884 g/L
pH:	Not Determined
Coefficient of water/oil:	Not Determined

10. STABILITY AND REACTIVITY

Conditions to Avoid: Excessive heat for prolonged periods of time.

Stability: Stable.

Incompatibility: Strong oxidizers, acids and bases.

Hazardous Decomposition Products: Combustion may form toxic materials, such as carbon dioxide, carbon monoxide.

Hazardous Polymerization: Will not occur.

Effective Date: 3/13/09

11. TOXICOLOGICAL INFORMATION**Acute Inhalation Exposure Effects:** Respiratory irritant.**Sensitization:** May cause allergic skin reaction and respiratory sensitivity in some people.**Skin Irritation:** Irritant.**Eye Irritation:** Irritant.**12. ECOLOGICAL INFORMATION****13. DISPOSAL CONSIDERATIONS****Waste Disposal Method:** Consult qualified local or corporate personnel for method that will comply with local, state and federal health and environmental regulations.**Additional Information:** Disposal of Cured Product: This product when cured may contain very small quantities of organic mercury compounds. It is the responsibility of the user to determine if the selected disposal method complies with applicable regulations.**14. TRANSPORT INFORMATION****DOT: Non-Bulk****Proper Shipping Name:** Resin compounds, N.O.I.**IATA: Non-Bulk****Proper Shipping Name:** Not Regulated**IMDG: Non-Bulk****Proper Shipping Name:** Not Regulated**TDG: Non-Bulk****Proper Shipping Name:** Not Regulated**15. REGULATORY INFORMATION****US Federal Regulations:****Occupational Safety and Health Act (OSHA):** This Material Safety Data Sheet (MSDS) has been prepared in compliance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is considered to be a hazardous chemical under that standard.**Resource Conservation and Recovery Act (RCRA):** Not specifically listed as hazardous waste under RCRA (40 CFR 261). However, it is strongly recommended that compound be treated as a hazardous waste and disposed of accordingly.**SARA Title III: Section 304 - CERCLA:** This product contains the following chemicals regulated under Section 304 (40 CFR 302) as hazardous substance(s) for emergency release notification ("CERCLA" List):Chemical Name: Benzene, 1,1'-Methylenebis[4-Isocyanato-
Common Name: MDI

Effective Date: 3/13/09

CAS Number: 101-68-8
Percent in Composition: 60 - 100 % by wt
Component RQ: 5000

SARA Title III: Section 313 Toxic Chemical List (TCL): This product contains a toxic chemical(s) for routine annual toxic chemical release reporting under section 313 (40 CFR 372). This information must be included in all MSDS's copied or distributed for this material.

Chemical Name: Benzene, 1,1'-Methylenebis[4-Isocyanato-
Common Name: MDI
Percent in Composition: 60 - 100 % by wt
Comment: DIISOCYANATE COMPOUNDS

TSCA Section 8(b) - Inventory Status: All chemical components of this product are in compliance with TSCA inventory requirements.

TSCA Section 12(b) - Export Notification: This product does not contain any chemical(s) that are subject to a Section 12(b) export notification.

International Regulations:

Australian Inventory Status: This product contains only chemicals which are currently listed on the Australian Inventory of Chemical Substances.

Canadian Inventory Status: This product contains only chemicals that are currently listed on the Canadian Domestic Substance List.

Canadian WHMIS: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations. D2A, D2B

European Inventory Status (EINECS): This product contains only chemicals that are currently listed on the European Inventory of Existing Commercial Chemical Substances (EINECS).

Japanese Inventory Status: This product contains one or more chemicals currently not on the Japanese Ministry of International Trade and Industry List of Existing and New Chemical Substances.

State Regulations:

California Proposition 65: This product does not contain any chemicals currently on the California list of Known Carcinogens and Reproductive Toxins.

Pennsylvania Right-to-Know: The following is required composition information:

Chemical Name: Benzene, 1,1'-Methylenebis[4-Isocyanato-
Common Name: MDI
CAS Number: 101-68-8
Comment: Environmental Hazardous Substance

Chemical Name: Benzene, 1,1'-Methylenebis(Isocyanato-, homopolymer
Common Name: Diphenylmethane diisocyanate homopolymer
CAS Number: 39310-05-9
Comment: Not on Pennsylvania Hazardous Substance List

Effective Date: 3/13/09

Chemical Name: Terphenyl, hydrogenated
Common Name: Plasticizer
CAS Number: 61788-32-7
Comment: Hazardous Substance

Chemical Name: Benzene, 1,1'-Methylenebis[Isocyanato-
Common Name: Diphenylmethane diisocyanate
CAS Number: 26447-40-5
Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: Terphenyl
CAS Number: 26140-60-3
Comment: Special Hazardous Substance

16. OTHER INFORMATION

MSDS No: 6095
Reason Issued: 3/09 update WHMIS & add syn

Disclaimer: The information and recommendations contained herein are based upon tests in controlled laboratory conditions, are believed to be correct, and are provided for the sole purpose of hazard communication as part of Huntsman's product safety program. This product has not been tested for, and therefore is not recommended or suitable for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended or likely, or for uses for which implantation within the human body is intended, and Huntsman assumes no liability for any such uses.

The information and recommendations contained herein are not intended to constitute performance information concerning the product, which is available in separate technical data sheets available from Huntsman upon request. Users are urged, and are urged to urge others who may come in contact with the product, to obtain and consult data sheets prior to purchase, use, transportation or storage of the product.

HUNTSMAN MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE. HUNTSMAN'S LIABILITY IS STRICTLY LIMITED TO REIMBURSEMENT OF BUYER'S PURCHASE PRICE, OR IN HUNTSMAN'S DISCRETION REPLACEMENT, OF THE PRODUCT IN RESPECT OF WHICH SUCH CLAIM IS MADE. HUNTSMAN'S LIABILITY IS STRICTLY LIMITED BY LEGAL NOTICES IN TECHNICAL DATA SHEETS, PRODUCT LITERATURE, AND/OR SALE DOCUMENTS. The foregoing DISCLAIMERS and LIMITATION OF LIABILITY supercede inconsistent or contradictory provisions in Buyer's documents.

USER SHOULD CONSULT A LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENTAL AGENCY TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT. HUNTSMAN DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.



P.O. Box 4980
The Woodlands, TX 77387-4980

8 am to 5 pm Phone: (800) 257-5547
24-Hour Emergency Phone: (800) 328-8501
International Emergency Phone: (409) 727-0831
Asia Pacific Emergency Phone: (65) 6336-6011

Effective Date: 5/5/09

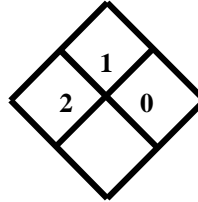
Material Safety Data Sheet

MSDS No: 6096

1. PRODUCT IDENTIFICATION

Trade Name: Ren 6401-1

Chemical Family: Polyol



NFPA RATING

Health:	2
Flammability:	1
Reactivity:	0
Personal Protection:	

HMIS RATING

Synonyms:

RP 6401-1 Hardener
TDT 178-72 Hardener

Intended Use or Product Type: Polyol blend

2. COMPOSITION / INFORMATION ON INGREDIENTS

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS				CARCINOGEN STATUS			
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
*	120-07-0 Common Name: Concentration	Ethanol, 2,2'-(Phenylimino)bis-N,N-Hydroxyethyl aniline 1.00 - 5.00 % by wt	NE	NE	NE	NE	NE	NR	NR	NR

* = OSHA Hazardous Ingredient

3. HAZARDS IDENTIFICATION

Emergency Overview: Causes skin and eye irritation.

Primary Route(s) of Entry: Dermal; heated product may produce inhalable vapors.

4. FIRST AID MEASURES

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

Skin: Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes. Seek immediate medical attention.

Inhalation: Remove to fresh air. Seek immediate medical attention.

Eyes: Immediately flush eyes with water for at least 15 minutes. Seek immediate medical attention.

Overexposure Effects: Causes skin and eye irritation.

Medical Conditions Aggravated by Exposure: Skin and eye conditions.

Additional Information: Referral to a physician is recommended if there is any question about the seriousness of any injury.

5. FIRE FIGHTING MEASURES

Flash Point:	> 200°F (> 93 °C)
Flash Point Method Used:	Estimated
Flammable Limits in Air (Lower - % by volume):	Not established
Flammable Limits in Air (Upper - % by volume):	Not established

Fire Fighting Extinguishing Media: Carbon dioxide, dry chemical, foam, water.

Fire Fighting Equipment: Use self-contained breathing apparatus.

Fire and Explosion Hazards: Decomposition and combustion products may be toxic.

6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Remove spillage by absorbing in absorbent material.

7. HANDLING AND STORAGE

Signal Word: Warning!

Precautions: Can cause skin and eye irritation. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

Other Handling Information: Nuisance dust may be generated when sanding or sawing cured material.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Skin Protection: Wear impermeable gloves.

Respiratory Protection: Use NIOSH approved organic vapor cartridge respirator when vapor/mist exposure is likely.

Eye Protection: Wear splash-proof chemical goggles.

Engineering Controls: General mechanical and local exhaust in accordance with ACGIH recommendations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Effective Date: 5/5/09

Color:	White, Opaque
Odor:	Slight Styrene Like
Physical State:	Liquid
Solubility in Water:	Moderate
Vapor Pressure:	Not Determined
Specific Gravity:	1.03 - 1.05 (water = 1)
Boiling Point:	Not Determined
Melting Point:	Not Determined
Evaporation Rate:	Not Determined
Density:	Not Determined
Vapor Density:	Not Determined
VOC:	0.036 g/L
pH:	Not Determined
Coefficient of water/oil:	Not Determined

Percent Volatile: Not determined.

10. STABILITY AND REACTIVITY

Conditions to Avoid: Excessive heat for prolonged periods of time.

Stability: Stable.

Incompatibility: Strong oxidizers, acids and bases.

Hazardous Decomposition Products: Combustion may form toxic materials, such as carbon dioxide, carbon monoxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Skin Irritation: Irritant.

Eye Irritation: Irritant.

12. ECOLOGICAL INFORMATION

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Consult qualified local or corporate personnel for method that will comply with local, state and federal health and environmental regulations.

Additional Information: Disposal of Cured Product: This product when cured may contain very small quantities of organic mercury compounds. It is the responsibility of the user to determine if the selected disposal method complies with applicable regulations.

14. TRANSPORT INFORMATION

DOT: Non-Bulk

Printed: 7/30/2009

Page 3 of 3

Effective Date: 5/5/09

Proper Shipping Name:	Not Regulated
IATA: Non-Bulk	
Proper Shipping Name:	Not Regulated
IMDG: Non-Bulk	
Proper Shipping Name:	Not Regulated
TDG: Non-Bulk	
Proper Shipping Name:	Not Regulated

Motor Freight Classification Resin compounds, N.O.I.

15. REGULATORY INFORMATION

US Federal Regulations:

Occupational Safety and Health Act (OSHA): This Material Safety Data Sheet (MSDS) has been prepared in compliance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is considered to be a hazardous chemical under that standard.

Resource Conservation and Recovery Act (RCRA): D 009 contains mercury.

SARA Title III: Section 313 Toxic Chemical List (TCL): This product does not contain any chemicals for routine annual toxic chemical release reporting under Section 313 (40 CFR 372).

TSCA Section 8(b) - Inventory Status: All chemical components of this product are in compliance with TSCA inventory requirements.

TSCA Section 12(b) - Export Notification: This product does not contain any chemical(s) that are subject to a Section 12(b) export notification.

International Regulations:

Canadian Inventory Status: This product contains only chemicals that are currently listed on the Canadian Domestic Substance List.

Canadian WHMIS: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations. D2B

State Regulations:

California Proposition 65: The following is required composition information. This product contains the following chemical(s) which are currently listed on the California list of Known Carcinogens and Reproductive Toxins:

Chemical Name: Mercury, (neodecanoato-O)phenyl)-

Common Name: Phenyl mercury neodecanoate

CAS Number: 26545-49-3

Percent in Composition: 0.195 % by wt

Comment: Warning! This chemical is known to the State of California to cause birth defects or other reproductive harm.

Chemical Name: 2- Propenenitrile

Common Name: Acrylonitrile

CAS Number: 107-13-1

Effective Date: 5/5/09

Percent in Composition: 0.0024 % by wt

Comment: Warning! This chemical is known to the State of California to cause cancer.

Pennsylvania Right-to-Know: The following is required composition information:

Chemical Name: Polymer Polyol

CAS Number: Confidential

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: 1,4- Butanediol

Common Name: 1,4-Butanediol

CAS Number: 110-63-4

Comment: Not on Pennsylvania Hazardous Substance List

16. OTHER INFORMATION**MSDS No:**

6096

Approved By:

Dianne Blessing

Title:

Product EHS Specialist

Disclaimer: The information and recommendations contained herein are based upon tests in controlled laboratory conditions, are believed to be correct, and are provided for the sole purpose of hazard communication as part of Huntsman's product safety program. This product has not been tested for, and therefore is not recommended or suitable for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended or likely, or for uses for which implantation within the human body is intended, and Huntsman assumes no liability for any such uses.

The information and recommendations contained herein are not intended to constitute performance information concerning the product, which is available in separate technical data sheets available from Huntsman upon request. Users are urged, and are urged to urge others who may come in contact with the product, to obtain and consult data sheets prior to purchase, use, transportation or storage of the product.

HUNTSMAN MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE. HUNTSMAN'S LIABILITY IS STRICTLY LIMITED TO REIMBURSEMENT OF BUYER'S PURCHASE PRICE, OR IN HUNTSMAN'S DISCRETION REPLACEMENT, OF THE PRODUCT IN RESPECT OF WHICH SUCH CLAIM IS MADE. HUNTSMAN'S LIABILITY IS STRICTLY LIMITED BY LEGAL NOTICES IN TECHNICAL DATA SHEETS, PRODUCT LITERATURE, AND/OR SALE DOCUMENTS. The foregoing DISCLAIMERS and LIMITATION OF LIABILITY supercede inconsistent or contradictory provisions in Buyer's documents.

USER SHOULD CONSULT A LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENTAL AGENCY TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT. HUNTSMAN DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.



Material Safety Data Sheet

REN® 6401-2 US

1. Product and company identification

REN® 6401-2 US
Material uses : Polyurethane Catalyst
MSDS # : 00070591
Validation date : 10/19/2011.
Print date : 10/19/2011.

Supplier/Manufacturer : Huntsman Advanced Materials Americas LLC
P.O. Box 4980
The Woodlands, TX 77387

Non-Emergency phone: (800) 257-5547
E-Mail: MSDS@huntsman.com

In case of emergency : Chemtrec: (800) 424-9300 or (703) 527-3887

2. Hazards identification

Physical state : Liquid.
Color : White.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : CAUTION!
MAY BE HARMFUL IF SWALLOWED. MAY CAUSE EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
Do not ingest. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

See toxicological information (Section 11)

GENERAL INFORMATION : Read the entire MSDS for a more thorough evaluation of the hazards.

3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
1,4-butanediol	110-63-4	3 - 7
ETHANOL, 2,2'-(PHENYLIMINO)BIS-	120-07-0	1 - 3

4. First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

4 . First aid measures

- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Notes to physician** : No specific treatment. Treat symptomatically. Call medical doctor or poison control center immediately if large quantities have been ingested.

5 . Fire-fighting measures

- Flash point** : Closed cup: >93°C (>199.4°F)
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

General information

Appearance

- Physical state** : Liquid.
Color : White.
Odor : Not available.

Important health, safety and environmental information

- pH** : Not available.
Boiling/condensation point : Not available.
Melting/freezing point : Not available.
Flash point : Closed cup: >93°C (>199.4°F)
Flammable limits : Not available.
Auto-ignition temperature : Not available.
Vapor pressure : Not available.
Specific gravity : 1.04
Partition coefficient: n-octanol/water (log Kow) : Not available.
Density : Not available.
Vapor density : Not available.
Evaporation rate (butyl acetate = 1) : Not available.
VOC : Not available.

10 . Stability and reactivity

- Chemical stability** : The product is stable.
Under normal conditions of storage and use, hazardous reactions will not occur.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.
- Conditions to avoid** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : No known significant effects or critical hazards.
Ingestion : Harmful if swallowed.
Skin : Slightly irritating to the skin.
Eyes : Slightly irritating to the eyes.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ETHANOL, 2,2'-(PHENYLIMINO)BIS-1,4-butanediol	LD50 Oral	Rat	980 mg/kg	-
	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat - Male, Female	1500 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	>5.1 mg/L	4 hours

11 . Toxicological information

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
1,4-butanediol	Sub-chronic NOAEL Oral	Rat - Male	225 mg/kg	13 weeks; 5 days per week
	Sub-acute NOEC Inhalation Dusts and mists	Rat - Male	1100 mg/m3	2 weeks; 6 hours per day

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
1,4-butanediol	Eyes - Non-irritant.	Rabbit	-	-	-
	Skin - Non-irritant.	Rabbit	-	-	-

Skin : 1,4-butanediol: Non-irritating to the skin.

Eyes : 1,4-butanediol: Non-irritating to the eyes.

Sensitizer

Product/ingredient name	Route of exposure	Species	Result
1,4-butanediol	skin	Guinea pig	Not sensitizing

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
1,4-butanediol	Negative - Oral - NOAEL	Rat - Female	225 mg/kg	103 weeks; 5 days per week

Mutagenicity

Product/ingredient name	Test	Experiment	Result
1,4-butanediol	OECD 476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: <i>In vitro</i> Subject: Mammalian- Animal Metabolic activation: +/-	Negative
	OECD 473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: <i>In vitro</i> Subject: Mammalian- Animal Metabolic activation: +/-	Negative
	OECD	Experiment: <i>In vitro</i> Subject: bacteria/yeast Metabolic activation: +/-	Negative

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
1,4-butanediol	Negative - Oral	Rat	500 mg/kg NOAEL	10 days; 7 days per week

Potential chronic health effects

- Chronic effects** : Contains material that may cause target organ damage, based on animal data.
- Target organs** : Contains material which may cause damage to the following organs: kidneys, the nervous system, central nervous system (CNS).
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.

11 . Toxicological information

Medical conditions aggravated by over-exposure

Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
1,4-butanediol	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50 813 mg/L Fresh water	Daphnia	48 hours Static
	DIN DIN 38412 part 9	Acute EbC50 (biomass) >500 mg/L Fresh water	Algae	72 hours Static
	OECD 203 Fish, Acute Toxicity Test	Acute LC50 >30000 mg/L Fresh water	Fish	96 hours Static
	DIN DIN 38412 part 9	Chronic EC10 76 mg/L Fresh water	Algae	72 hours Static
	Unknown guidelines	Chronic EgC50 15536.6 to 15786.28 mg/L Fresh water	Bacteria	40 hours
	OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic NOEC >85 mg/L Fresh water	Daphnia	21 days

1,4-butanediol: Not toxic or harmful to aquatic organisms.

Biodegradability

Product/ingredient name	Test	Result	Dose	Inoculum
1,4-butanediol	OECD 301C Ready Biodegradability - Modified MITI Test (I)	93 to 96 % - Readily - 14 days	100 mg/L TOC	Activated sludge

Other ecological information

Biological Oxygen Demand (BOD 5 DAY) : Not Determined

Chemical Oxygen Demand (COD) : Not Determined

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
1,4-butanediol	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
1,4-butanediol	-0.88	-	low

Other adverse effects : No known significant effects or critical hazards.

12 . Ecological information

PBT : Not applicable.

Other information

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14 . Transport information

Proper shipping name

DOT : Not regulated.

TDG : Not regulated.

IMDG : Not regulated.

IATA : Not regulated.

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-		-
TDG Classification	Not regulated.	-	-		-
IMDG Class	Not regulated.	-	-		-
IATA-DGR Class	Not regulated.	-	-		-

PG* : Packing group

15 . Regulatory information

U.S. Federal regulations

HCS Classification : Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.

TSCA 5(a)2 final significant new use rule (SNUR) : None.

TSCA 5(e) substance consent order : None.

TSCA 12(b) one-time export notification: : None.

15 . Regulatory information

TSCA 12(b) annual export notification : None.

SARA 302/304/311/312 extremely hazardous substances : **SARA 302/304/311/312 extremely hazardous substances:** No Ingredient Listed

SARA 311/312 hazard identification : **SARA 311/312 MSDS distribution - chemical inventory - hazard identification:** Immediate (acute) health hazard

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : **Product name** **CAS number** **Concentration**
No Ingredients Listed.

Clean Air Act - Ozone Depleting Substances (ODS) : This product does not contain nor is it manufactured with ozone depleting substances.

SARA 313 : No ingredients listed.

CERCLA: Hazardous substances: No ingredients listed.

STATE REGULATIONS:

PENNSYLVANIA - RTK: None of the components are listed.

California Prop 65 :

WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.

WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
ORGANIC COMPOUNDS OF MERCURY	No.	Yes.	No.	No.
aniline	Yes.	No.	Yes.	No.
acrylonitrile	Yes.	No.	Yes.	No.
acetaldehyde	Yes.	No.	90 µg/day (inhalation)	No.
1,4-dioxane	Yes.	No.	Yes.	No.
Ethylene oxide	Yes.	Yes.	No.	No.

Canada

WHMIS (Canada) : D-2B

CEPA DSL : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

15 . Regulatory information

- International lists** :
- Australia inventory (AICS):** All components are listed or exempted.
 - China inventory (IECSC):** Not determined.
 - Japan inventory:** At least one component is not listed.
 - Korea inventory:** Not determined.
 - New Zealand Inventory of Chemicals (NZIoC):** Not determined.
 - Philippines inventory (PICCS):** Not determined.

16 . Other information

- Label requirements** : MAY BE HARMFUL IF SWALLOWED. MAY CAUSE EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

- Hazardous Material Information System (U.S.A.)** :

Health	1
Flammability	1
Physical hazards	0
Personal protection	

The customer is responsible for determining the PPE code for this material.

- National Fire Protection Association (U.S.A.)** :



- Date of printing** : 10/19/2011.
Date of issue : 10/19/2011.
Date of previous issue : 10/15/2011.
Version : 3

☑ Indicates information that has changed from previously issued version.

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon

16 . Other information

the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.