SAFETY DATA SHEET

1. Identification

Drew Paints, inc.
PO Box 29139
Portland OR 97296-9139
USA

TRANSPORTATION EMERGENCY

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

NON-TRANSPORTATION

Emergency Phone:	Call Chemtrec
Information Phone:	(503) 227-6497

Product Name:	Polyester Urethane Activator
Material Number:	22ACT1
Chemical Family:	Aliphatic Polyisocyanate in Organic Solvent
Use:	**Raw material for coatings, adhesives, sealants, or elastomers in** industrial applications

2. Hazards Identification

GHS Classification

Flammable liquids:	Category 3
Acute toxicity (Inhalation):	Category 4
Eye irritation:	Category 2A
Skin sensitisation:	Category 1
Carcinogenicity:	Category 2
Specific target organ toxicity - single exposure:	Category 3 (Respiratory system, Central nervous system)
Specific target organ toxicity repeated exposure:	Category 2 (Central nervous system)
Aspiration hazard:	Category 1

GHS Label Elements

Hazard pictograms:

Signal word: Danger

Hazard statements:
Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.

May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.
May cause damage to organs (Central nervous system) through prolonged or repeated exposure.

Precautionary statements:

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, sparks, open flames, and hot surfaces. - No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical, ventilating and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust, mist, gas, vapors or spray.
Wash skin and face thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear permeation resistant protective gloves and clothing. Wear eye and face protection.
Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical attention.
Call a doctor or emergency medical facility (i.e. 911) if you feel unwell.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical attention.
If eye irritation persists: Get medical attention.
Wash contaminated clothing before reuse.
In case of fire: Use dry chemical, carbon dioxide (CO2), foam, or water spray (for large fires) to extinguish.
Storage:
Store in a well-ventilated place. Keep container tightly closed. Keep cool.
Store locked up.
Disposal:
Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. Composition/Informationon Ingredients

Hazardous Components

Residual diisocyanate monomer content:, < 0.50%, During the following six months, especially if stored at temperatures near the top of the recommended storage temperature range, HDI monomer content may rise to a maximum of:, 0.70%

Weight Percent	Components	CAS-No.	Classification
60 - 100%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2	Acute toxicity Category 4 Inhalation. Skin sensitisation Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system.
10 - 30%	n-Butyl Acetate	123-86-4	Flammable liquids Category 3. Specific target organ toxicity - single exposure Category 3 Central nervous system.
7 - 13%	Xylene	1330-20-7	Flammable liquids Category 3. Acute toxicity Category 4 Inhalation. Acute toxicity Category 4 Dermal. Skin irritation Category 2. Eye irritation Category 2A. Specific target organ toxicity - single exposure Category 3 Respiratory system. Central nervous system. Specific target organ toxicity - repeated exposure Category 2 Central nervous system. Aspiration hazard Category 1.
1 - 5%	Ethyl Benzene	100-41-4	Flammable liquids Category 3. Acute toxicity Category 4 Inhalation. Eye irritation Category 2A. Carcinogenicity Category 2. Specific target organ toxicity - single exposure Category 3 Respiratory system. Aspiration hazard Category 1.
<=0.5%	Hexamethylene-1,6-Diisocyanate	822-06-0	Acute toxicity Category 4 Oral. Acute toxicity Category 1 Inhalation. Skin corrosion Category 1. Serious eye damage Category 1. Respiratory sensitisation Category 1. Skin sensitisation Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system.

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

4. First Aid Measures

Most Important Symptom(s)/Effect(s)

Acute: Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

Causes serious eye irritation with symptoms of reddening, tearing, swelling, and burning. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.
,May cause defatting of the skin with symptoms of dryness and cracking.,Inhalation of the solvents may cause central nervous system depression with symptoms of nausea, lightheadedness, drowsiness, dizziness and loss of co-ordination.,Ingestion and/or vomiting may cause aspiration into the lungs resulting in chemical pneumonitis (inflammation of the lungs).
Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Eye Contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops.

Skin Contact

If direct skin contact with isocyanates occurs, immediately remove contaminated clothing and shoes. Wipe off the isocyanate product from the skin using dry towels or other similar absorbent fabric. If readily available, apply a polyglycol-based cleanser (e.g. Colorimetric Laboratories, Inc. (CLI) D-TAM™ Skin Cleanser) or corn oil. Wash with soap and warm water and pat dry. If a polyglycol-based cleanser is not available, wash with soap and warm water for 15 minutes. If available, use a wipe test pad to verify decontamination is complete (e.g. CLI SWYPE™). Get medical attention if irritation develops. Discard or wash contaminated clothing before reuse.

Inhalation

Move to an area free from further exposure. Extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Ingestion

Do NOT induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

Notes to Physician

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision. Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the

irritating nature of the compound. Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

5. Firefighting Measures

Suitable Extinguishing Media: Dry chemical, Carbon dioxide (CO2), Foam, water spray for large fires.

Unsuitable Extinguishing Media: High volume water jet

Fire Fighting Procedure
Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.

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

Unusual Fire/Explosion Hazards
Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO2 formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous. Flammable Liquid. Vapors may spread long distances and ignite. Vapors or mist may be a fire and explosion hazard when exposed to high temperature or ignition. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flashback. Vapors or fumes may form explosive mixture with air.

6. Accidental Release Measures

Spill and Leak Procedures
Implement site emergency response plan. Evacuate non-emergency personnel. The magnitude of the evacuation depends upon the quantity released, site conditions, and the ambient temperature. Isolate the area and prevent access of unauthorized personnel. Notify management. Call CHEMTREC at 1-800-424-9300 for assistance and advice.

Wear necessary personal protective equipment (PPE) as specified in the SDS or the site emergency response plan. Ventilate and remove ignition sources. Control the source of the leak. Contain the released material by damming, diking, retaining, or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc…). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface. For spills involving a solid product, remove mechanically (sweep up, vacuum, shovel etc.) and collect and place into an approved metal container.

Decontaminate the spill surface area using a neutralization solution (see list of solutions on the SDS); scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous

surfaces. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container. Residual surface contamination can be checked using a wipe test pad to verify decontamination is complete (e.g. CLI Surface Swype™). If the wipe test pad demonstrates that isocyanate remains on the surface (red color on pad), repeat applications of neutralization solution, with scrubbing, followed by absorbent until the surface is decontaminated (no color change on wipe pad). Apply lid loosely to metal waste container (do not tighten the lid because carbon dioxide gas and heat can be generated from the neutralization process). With the lid still loosely in place, move the container to an isolated, well-ventilated area to allow release of carbon dioxide. After 72 hours, seal the container, and properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, state and local regulations.

Additional Spill Procedures/Neutralization
Products or product mixtures that have been shown to be effective neutralization solutions for decontaminating surfaces, tools, or equipment that have been in contact with an isocyanate include, but are not limited to:

- Colorimetric Laboratories, Inc. (CLI): 1-847-803-3737
  - o Isocyanate Decontamination Solution
- Spartan Chemical Company: 1-800-537-8990
  - o Spartan® ShineLine Emulsifier Plus (stripping solution)
  - o Spartan® SC-200 Heavy Duty Cleaner
- ZEP Commercial Heavy Duty Floor Stripper
- A mixture of 90% water, 10% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10)
- A mixture of 75% water, 20% non-ionic surfactant, and 5% n-propanol
- A mixture of 80% water, 10% non-ionic surfactant, 5% isopropanol, 5% ammonium hydroxide (household ammonia)

For more information about neutralization solutions, please refer to spill cleanup and neutralization information available on Covestro's Product Safety First website. www.productsafetyfirst.covestro.com
Note: Always wear proper PPE when cleaning up an isocyanate spill or when decontaminating surfaces, tools, or equipment using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Residual surface contamination can be checked using a surface wipe method such as the CLI Swype™ pad.

7. Handling and Storage

Handling/Storage Precautions
Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Ground and bond containers and equipment before transferring to avoid static sparks.

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

Storage Temperature

Minimum:	-34 °C (-29.2 °F)
Maximum:	50 °C (122 °F)

Storage Conditions
Store separate from food products.

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

Substances to Avoid
Water, Amines, Strong bases, Alcohols, Copper alloys

8. Exposure Controls/Personal Protection

The recommendations in this section should not be a substitute for a personal protective equipment (PPE) assessment performed by the employer as required by 29 CFR 1910 Subpart I.

Exposure Limits

n-Butyl Acetate (123-86-4)

US. ACGIH Threshold Limit Values
Time weighted average 50 ppm

US. ACGIH Threshold Limit Values
Short term exposure limit 150 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Permissible exposure limit 150 ppm, 710 mg/m3

Xylene (1330-20-7)

US. ACGIH Threshold Limit Values
Time weighted average 100 ppm

US. ACGIH Threshold Limit Values
Short term exposure limit 150 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Permissible exposure limit 100 ppm, 435 mg/m3

US. ACGIH Threshold Limit Values
Hazard Designation: Group A4 Not classifiable as a human carcinogen.

Ethyl Benzene (100-41-4)

US. ACGIH Threshold Limit Values
Time Weighted Average (TWA): 20 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Permissible exposure limit: 100 ppm, 435 mg/m3

US. ACGIH Threshold Limit Values
Hazard Designation: Group A3 Confirmed animal carcinogen with unknown relevance to humans.

Hexamethylene-1,6-Diisocyanate (822-06-0)
US. ACGIH Threshold Limit Values
Time weighted average 0.005 ppm

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Industrial Hygiene/Ventilation Measures
Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls, such as ventilation, whenever feasible. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent emissions into the workplace. If oven off-gases are not vented properly (i.e. they are released into the work area), it is possible to be exposed to airborne monomeric HDI.

Respiratory Protection
A respirator that is recommended or approved for use in isocyanate-containing environments (air-purifying or fresh air-supplied) may be necessary for spray applications or other situations such as high temperature use which may produce inhalation exposures. A supplied-air respirator (either positive pressure or continuous flow-type) is recommended. Before an air-purifying respirator can be used, air monitoring must be performed to measure airborne concentrations of HDI monomer and HDI polyisocyanate. Specific conditions under which air-purifying respirators can be used are outlined in the following sections. Observe OSHA regulations for respirator use (29 CFR 1910.134). SPRAY APPLICATION: A. Good industrial hygiene practice dictates that when isocyanate-based coatings are spray applied, some form of respiratory protection should be worn. During the spray application of coatings containing this product the use of a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists: -the airborne isocyanate concentrations are not known; or -the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or -the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m3 averaged over 8 hours or 10 mg/m3 averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or -operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing spray paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met: -The airborne isocyanate monomer concentrations are known to be below 0.05 ppm averaged over eight (8) hours (10 times 8 hour TWA exposure limit); and -the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m3 averaged over 8 hours or 10 mg/m3 averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits). In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup. NON-SPRAY OPERATIONS: A. During non-spray operations such as mixing, batch-making, brush or roller application, etc., at elevated temperatures (for example, heating of material or application to a hot substrate), it is possible to be exposed to airborne isocyanate vapors. Therefore, when the coatings system will be applied in a non-spray manner, a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists: - the airborne isocyanate concentrations are not known; or - the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or - the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m3 averaged over 8 hours or 10 mg/m3 averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or - operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met: -the airborne concentrations of the isocyanate monomer are below 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); and - the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m3 averaged over eight (8) hours or 10 mg/m3 averaged over 15 minutes (10

times the 8 hour TWA or the 15 minute STEL exposure limits) and - a NIOSH-certified End of Service Life Indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup.

Hand Protection
Ensure gloves remain in good condition during use and replace if any deterioration is observed.

Gloves should be worn. For protection from isocyanates, nitrile rubber, butyl rubber, or neoprene gloves are recommended. For protection from solvents in this product, nitrile rubber gloves may be appropriate, but a personal protective equipment (PPE) assessment should be performed by the employer.

Eye Protection
When handling liquid product, chemical goggles should be worn., Chemical safety goggles in combination with a full face shield if a splash hazard exists.

Skin Protection
Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact., Gloves, long sleeved shirts and pants.

Medical Surveillance
All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted. Refer to the Covestro pamphlet (Medical Surveillance Program for Isocyanate Workers) for additional guidance.

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

9. Physical and Chemical Properties

State of Matter:	liquid
Color:	Clear, Pale yellow
Odor:	solvent-like, like fruit
Odor Threshold:	No Data Available
pH:	No Data Available
Boiling Point:	125 - 127 °C (257 - 260.6 °F) Estimated based on component(s)
Flash Point:	33 °C (91.4 °F) (Setaflash (ASTM D-3243, D-3278, D-3828))
Evaporation Rate:	No Data Available
Lower Explosion Limit:	0.8 %(V) for the solvent
Upper Explosion Limit:	7.6 %(V) for the solvent
Vapor Pressure:	HDI Polyisocyanate: 9.3 X 10-6 @ 68 F (20 C) mmHg 10 mmHg @ 20 °C (68 °F) For a solvent. 7 - 9 mmHg @ 20 °C (68 °F) For a solvent.
Vapor Density:	No Data Available
Density:	ca. 1.06 g/cm³ @ 20 °C (68 °F)
Relative Vapor Density:	No Data Available
Specific Gravity:	1.06 @ 20 °C (68 °F)

Solubility in Water:	Insoluble - Reacts slowly with water to liberate CO2 gas
Partition Coefficient: n-octanol/water:	No Data Available
Auto-ignition Temperature:	Approximately 400 °C (752 °F)
Decomposition Temperature:	No Data Available
Dynamic Viscosity:	No Data Available
Kinematic Viscosity:	No Data Available
Bulk Density:	1,060.46 kg/m3
Molecular Weight:	500 Approximate Value, For the polyisocyanate
Pour point:	No Data Available
Self Ignition:	not applicable

10. Stability and Reactivity

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

Stability
Stable under normal conditions of use and storage.

Materials to Avoid
Water, Amines, Strong bases, Alcohols, Copper alloys

Conditions to Avoid
Heat, flames and sparks.

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

11. Toxicological Information

Likely Routes of Exposure:
Skin Contact
Inhalation
Eye Contact
Ingestion

Health Effects and Symptoms

Acute: Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

Causes serious eye irritation with symptoms of reddening, tearing, swelling, and burning. May cause

temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.
,May cause defatting of the skin with symptoms of dryness and cracking.,Inhalation of the solvents may cause central nervous system depression with symptoms of nausea, lightheadedness, drowsiness, dizziness and loss of co-ordination.,Ingestion and/or vomiting may cause aspiration into the lungs resulting in chemical pneumonitis (inflammation of the lungs).
Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the exposure limits or guidelines. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent.

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

Prolonged vapor contact with the eyes may cause conjunctivitis.
,Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling solvents may be harmful or fatal.,Suspected of causing cancer.,May cause damage to the nervous system.
Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Toxicity Data for: DESMODUR N 75A BA/X

Data on the product is not available.

Please find the data available for the components.

Acute Oral Toxicity
Acute toxicity estimate: > 5,000 mg/kg (Calculation method)

Acute Inhalation Toxicity
Acute toxicity estimate: 1.93 mg/l, dust/mist (Calculation method)

Acute Dermal Toxicity
Acute toxicity estimate: > 5,000 mg/kg (Calculation method)

Toxicity Data for: Homopolymer of Hexamethylene Diisocyanate

Toxicity Note
Data is based on a similar product, including residual monomer.

Acute Oral Toxicity
LD50: > 5,000 mg/kg (rat, female) (OECD Test Guideline 423)

Acute Inhalation Toxicity
LC50: 0.554 mg/l, 4 h, dust/mist (rat)

The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Acute Dermal Toxicity
LD50: > 2,000 mg/kg (rat, female) (OECD Test Guideline 402)

Skin Irritation
rabbit, slight irritant

Eye Irritation
rabbit, slight irritant

Sensitization
Skin sensitisation according to Magnusson/Kligmann (maximizing test):: positive (Guinea pig, OECD Test Guideline 406)

Repeated Dose Toxicity
Subchronic inhalation toxicity, rat:

Test concentration - 0,4 ; 3,4 and 21,0 mg aerosol/m³exposure time - 13 weeks(6 hours a day, 5 days a week)3,4 mg/m³ was tolerated without damage (NOEL),21,0 mg/m³ caused increase of lung weight.No evidence of histopathological changes in the upper and central respiratory passages.Unspecific changes in the lower respiratory tract; these are attributed to the product's primary irritation potential.Evidence of damage to organs other than the organs of respiration was not found.

Mutagenicity
Genetic Toxicity in Vitro:
Salmonella/microsome test (Ames test): No indication of mutagenic effects.

Genetic Toxicity in Vivo:
Micronucleus test: negative (Mouse)
negative

Toxicity Data for: n-Butyl Acetate

Acute Oral Toxicity
LD50: 12,789 mg/kg (rat, male) (OECD Test Guideline 423)

LD50: 10,760 mg/kg (rat, female) (OECD Test Guideline 423)

Acute Inhalation Toxicity
LC50: > 21 mg/l, 4 h, vapour (rat) (OECD Test Guideline 403)

Acute Dermal Toxicity
LD50: 14,112 mg/kg (rabbit, male/female) (OECD Test Guideline 402)
assuming density = 0.882 g/cm3

Skin Irritation
Human experience, Non-irritating

Eye Irritation
rabbit, OECD Test Guideline 405, slight irritant

Sensitization

dermal: non-sensitizer (Guinea pig, Maximization Test)

dermal: non-sensitizer (Human, Magnusson/Kligmann (Maximization Test))

Repeated Dose Toxicity
13 Weeks, inhalation: NOAEL: 500 ppm, (Rat,)

Chronic exposure damages the brain and the central nervous system.

13 weeks, inhalation (vapour): NOAEL: 500, (rat, male/female, 6 hours a day, 5 days a week)

Mutagenicity
Genetic Toxicity in Vitro:
Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)
Cytogenetic assay: negative (other mammalian cell line, Metabolic Activation: without)
Chromosome aberration test: negative (Chinese hamster lung cells, Metabolic Activation: without)

Genetic Toxicity in Vivo:
In vivo micronucleus test: negative (Mouse, male/female, Oral)
Studies of a comparable product.
negative

Toxicity to Reproduction/Fertility
Two-generation study, Inhalative, daily, (rat, male/female) NOAEL (parental): 750 ppm, NOAEL (F1): 750 ppm, NOAEL (F2): 750 ppm

Developmental Toxicity/Teratogenicity
Rat, Female, inhalation, gestation days 1-16, 7 hrs/day, NOAEL (teratogenicity): 1,500 ppm, No Teratogenic effects observed at doses tested.rabbit, female, inhalation, gestation days 1-19, 7 hrs/day, NOAEL (teratogenicity): 1500 ppm, No Teratogenic effects observed at doses tested.Rat, Female, inhalation, 7 hrs/day, NOAEL (teratogenicity): 1,500 ppm, NOAEL (maternal): 1500 ppm

Other Relevant Toxicity Information
May cause drowsiness or dizziness.

Toxicity Data for: Xylene

Acute Oral Toxicity
LD50: 3,523 mg/kg (rat, male) (Directive 67/548/EEC, Annex V, B.1.)

Acute Inhalation Toxicity
LC50: 6,700 ppm, 4 h, gas (rat, male)

Acute Dermal Toxicity
LD50: 1,700 mg/kg (rabbit)

Skin Irritation
rabbit, Exposure Time: 24 h, irritating

Eye Irritation
rabbit, irritating

Sensitization
Skin sensitization (local lymph node assay (LLNA)):: negative (Mouse, OECD Test Guideline 429)

Repeated Dose Toxicity

Oral: LOAEL: 150 mg/kg, (rat, male/female)

Mutagenicity
Genetic Toxicity in Vitro:
Ames test: negative (Salmonella typhimurium, Metabolic Activation: with/without)
Chromosome aberration test in vitro: negative (Chinese hamster ovary (CHO) cells, Metabolic Activation: with/without)
In vitro mammalian cell gene mutation test: negative (Mouse lymphoma cells, Metabolic Activation: with/without)

Genetic Toxicity in Vivo:
In vivo micronucleus test: negative (Mouse, male, intraperitoneal)
negative

Carcinogenicity
Mouse, male/female, Oral, 103, 5 times/week Animal testing did not show any carcinogenic effects.

Toxicity to Reproduction/Fertility
Two-generation study, Inhalative, (rat, male/female) NOAEL (parental): > 500, NOAEL (F1): > 500, NOAEL (F2): > 500 No toxicity to reproduction

Developmental Toxicity/Teratogenicity
rat, female, Inhalative, 6 hours/day 7 days/week, NOAEL (teratogenicity): > 2000, NOAEL (maternal): 500

Other Relevant Toxicity Information
May cause drowsiness or dizziness if inhaled.

May cause irritation of respiratory tract.

Toxicity Data for: Ethyl Benzene

Acute Oral Toxicity
LD50: 3,500 mg/kg (rat)

Acute Inhalation Toxicity
LC50: 17.2 mg/l, 4 h, vapour (rat)

Acute Dermal Toxicity
LD50: 15,433 mg/kg (rabbit, male)

Skin Irritation
Draize, Mild skin irritation

Eye Irritation
rabbit, slight irritant

Guinea pig, Irritating to eyes.

Sensitization
dermal: non-sensitizer (Human, Patch Test)

Repeated Dose Toxicity
28 Days, inhalation: NOAEL: 3.4 mg/l, (rabbit,)

90 Days, inhalation: NOAEL: 0.47 mg/l, (Rat, Male/Female, daily)

104 weeks, inhalation: NOAEL: 75 ppm, (Mouse,)

Mutagenicity
Genetic Toxicity in Vitro:
Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)
Positive and negative results were seen in various in vitro studies.
Mammalian cell - gene mutation assay: negative (Mouse lymphoma cells (L5178Y/TK), Metabolic Activation: with/without)
Positive and negative results were seen in various in vitro studies.

Genetic Toxicity in Vivo:
Drosophila SLRL test: (Drosophila melanogaster)
negative

Micronucleus Assay: (Mouse, Male/Female, inhalation)
negative

Carcinogenicity
Ethylene benzene was tested by inhalation exposure in mice and rats. In mice, there was an increased incidence of lung adenomas in males and liver adenomas in females. In male rats, there was an increased incidence of renal tubule adenomas and carcinomas.
Two studies of workers potentially exposed to ethylbenzene in a production plant and a styrene polymerization plant showed no excess cancer incidence and no excess cancer mortality during a 15-year follow-up.
Toxicity to Reproduction/Fertility
Other method, inhalation, (Monkey, male) Reproductive effects have been observed in animal studies.One generation study, inhalation, (Rat, female) NOAEL (parental): 1000 ppm, NOAEL (F2): 100 ppm

Developmental Toxicity/Teratogenicity
Rat, female, inhalation, gestation, daily, NOAEL (teratogenicity): 100 ppm, NOAEL (maternal): 100 ppm
Teratogenic effects seen only with maternal toxicity.
Fetotoxicity seen only with maternal toxicity.rabbit, female, inhalation, gestation, daily, NOAEL (teratogenicity): < 1000 mg/m3, NOAEL (maternal): < 1000 mg/m3 Teratogenic effects seen only with maternal toxicity.
Fetotoxicity seen only with maternal toxicity.Rat, inhalation, daily, NOAEL (teratogenicity): 2000, NOAEL (maternal): 500

Other Relevant Toxicity Information
May cause irritation of respiratory tract.

May be fatal if swallowed and enters airways.

Toxicity Data for: Hexamethylene-1,6-Diisocyanate

Acute Oral Toxicity
LD50: 746 mg/kg (rat, male) (OECD Test Guideline 401)

LD50: 959 mg/kg (rat, male) (OECD Test Guideline 401)

Acute Inhalation Toxicity
LC50: 0.124 mg/l, 4 h, vapour (rat, male/female) (OECD Test Guideline 403)

Acute Dermal Toxicity
LD50: > 7,000 mg/kg (rat, male/female) (OECD Test Guideline 402)

Skin Irritation

rabbit, OECD Test Guideline 404, Corrosive

Eye Irritation
rabbit, OECD Test Guideline 405, Corrosive

Sensitization
dermal: sensitizer (Guinea pig, Maximisation Test)

dermal: sensitizer (Human, Case Report)

Respiratory sensitization: sensitizer (Guinea pig)

Repeated Dose Toxicity
2 years, inhalation: NOAEL: 0.005 ppm, (rat, Male/Female, 6 hrs/day 5 days/week)
Irritation to lungs and nasal cavity.

Mutagenicity
Genetic Toxicity in Vitro:
Salmonella/microsome test (Ames test): negative (Salmonella typhimurium, Metabolic Activation: with/without)
Point mutation in mammalian cells (HPRT test): negative (Metabolic Activation: with/without)

Genetic Toxicity in Vivo:
Micronucleus test: negative (Mouse, male/female, Inhalative)
negative

Carcinogenicity
rat, male/female, Inhalative, 2 yrs, 6 hours/day, 5 days/week Did not show carcinogenic effects in animal experiments.

Toxicity to Reproduction/Fertility
Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test, Inhalative, 6 hours/day 7 days/week, (rat, male/female) NOAEL (F2): 0.3 ppm Fertility and developmental toxicity tests did not reveal any effect on reproduction.

Developmental Toxicity/Teratogenicity
rat, female, Inhalative, 6 hours/day (Exposure duration: day 0 - 19 of gestation), NOAEL (teratogenicity): 0.3 ppm, NOAEL (maternal): 0.005 ppm Did not show teratogenic effects in animal experiments.

Neurological Effects
Rats exposed by inhalation, 6 hours/day, for approximately 3 weeks, to concentrations as high as 0.3 ppm showed no neurobehavioral effects or damage to nerve tissues.

Carcinogenicity:

Ethyl Benzene	IARC - Overall evaluation: 2B Possibly carcinogenic to humans.

12. Ecological Information

Ecological Data for: DESMODUR N 75A BA/X

Data on the product is not available.

Please find the data available for the components.

Ecological Data for Homopolymer of Hexamethylene Diisocyanate

Biodegradation
1 %, Exposure time: 28 d, i.e. not readily degradable

Acute and Prolonged Toxicity to Fish
LC50: > 100 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates
EC50: > 100 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants
ErC50: > 100 mg/l, (scenedesmus subspicatus, 72 h)

Toxicity to Microorganisms
EC50: > 100 mg/l, (activated sludge, 3 h)

Additional Ecotoxicological Remarks
Data is based on a similar product, including residual monomer.

Ecological Data for n-Butyl Acetate

Biodegradation
aerobic, 98 %, Exposure time: 28 Days

Biochemical Oxygen Demand (BOD)
1,020 mg/g

Chemical Oxygen Demand (COD)
2,320 mg/g

Theoretical Biological Oxygen Demand (ThBOD)
2,207 mg/g

Bioaccumulation
ca. 4 - 14 BCF

Acute and Prolonged Toxicity to Fish
LC50: 18 mg/l (Fathead minnow (Pimephales promelas), 96 h)

LC50: 185 mg/l (Silverside Minnow (Menidia peninsulae), 96 h)

Acute Toxicity to Aquatic Invertebrates
EC50: 72.8 mg/l (Water flea (Daphnia magna), 48 h)

EC50: 32 mg/l (brine shrimp (Artemia salina), 48 h)

Toxicity to Aquatic Plants
EC50: 670 mg/l, End Point: growth (Crytomonad (Chilomonas paramecium), 48 h)

674.7 mg/l, End Point: growth (Green algae (Scenedesmus subspicatus), 72 h)

Toxicity to Microorganisms
EC50: 959 mg/l, (Pseudomonas putida, 18 h)

Ecological Data for Xylene

Biodegradation
> 60 %, Exposure time: 28 d, i.e. readily biodegradable

Biochemical Oxygen Demand (BOD)
5 Days, 80 %

Chemical Oxygen Demand (COD)
83 mg/g

Acute and Prolonged Toxicity to Fish
LC50: 13.5 - 17.3 mg/l (Rainbow (Donaldson)Trout (Oncorhynchus mykiss), 96 h)

Acute Toxicity to Aquatic Invertebrates
600 ug/L (Gammarus sp., 48 h)

Toxicity to Aquatic Plants
EC50: 10 mg/l, End Point: growth (other: algae, 72 h)

Toxicity to Microorganisms
EC50: 96 mg/l, (Bacteria, 24 h)
Studies of a comparable product.

Ecological Data for Ethyl Benzene
Biodegradation
Aerobic, 50 %, Exposure time: 28 Days

Biochemical Oxygen Demand (BOD)
5 Days, 2.8 %

35 Days, 1,780 mg/g

Theoretical Biological Oxygen Demand (ThBOD)
3.17 mg/g

Bioaccumulation
Cyprinus carpio (Carp), 15 BCF

Acute and Prolonged Toxicity to Fish
LC50: 4.2 mg/l (Rainbow (Donaldson)Trout (Oncorhynchus mykiss), 96 h)

LC50: 12.1 mg/l (Fathead minnow (Pimephales promelas), 96 h)

LC50: 4.3 mg/l (Hybrid striped bass (Morone saxatilis x chrysops), 96 h)

Acute Toxicity to Aquatic Invertebrates
EC50: 1.8 - 2.9 mg/l (Water flea (Daphnia magna), 48 h)

Toxicity to Aquatic Plants
EC50: 4.6 mg/l, (Green algae (Selenastrum capricornutum), 72 h)

Toxicity to Microorganisms
EC50: 130 mg/l, (Activated sludge microorganisms, 48 h)

EC50: 9.68 ppm, (Photobacterium phosphoreum, 30 min)

Ecological Data for Hexamethylene-1,6-Diisocyanate

Biodegradation
aerobic, 42 %, Exposure time: 28 d, i.e. not readily degradable

Bioaccumulation
value calculated, 57.6 BCF
An accumulation in aquatic organisms is not to be expected.

value calculated, 3.2 BCF
An accumulation in aquatic organisms is not to be expected. Studies of hydrolysis products.

Acute and Prolonged Toxicity to Fish
LC0: >= 82.8 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates
EC0: >= 89.1 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants
ErC50: > 77.4 mg/l, (Desmodesmus subspicatus (Green algae), 72 h)

Toxicity to Microorganisms
EC50: 842 mg/l, (activated sludge, 3 h)

13. Disposal Considerations

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

Empty Container Precautions
Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning.

14. Transportation Information

Land transport (DOT)

Proper Shipping Name:	**Paint**
Hazard Class or Division:	3
UN/NA Number:	UN1263
Packaging Group:	III
Hazard Label(s):	FLAMMABLE LIQUID

RSPA/DOT Regulated Components:
n-Butyl Acetate
Xylene
Ethyl Benzene
Hexamethylene-1,6-Diisocyanate

Reportable Quantity: 484 kg (1067 lb)

Sea transport (IMDG)
Proper Shipping Name: **Paint**

Hazard Class or Division:	3
UN number:	UN1263
Packaging Group:	III
Hazard Label(s):	FLAMMABLE LIQUIDS

Air transport (ICAO/IATA)

Proper Shipping Name:	Paint
Hazard Class or Division:	3
UN number:	UN1263
Packaging Group:	III
Hazard Label(s):	FLAMMABLE LIQUIDS

15. Regulatory Information

United States Federal Regulations

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

No substances are subject to TSCA 12(b) export notification requirements.

US. EPA CERCLA Hazardous Substances (40 CFR 302) Components:

n-Butyl Acetate	Reportable quantity: 5000 lbs
Xylene	Reportable quantity: 100 lbs
Ethyl Benzene	Reportable quantity: 1000 lbs

SARA Section 311/312 Hazard Categories:

Refer to hazard classification information in Section 2.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) Components:

None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required Components:

Xylene
Ethyl Benzene

US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste., In its purchased form, this product meets the criteria of ignitability under 40 CFR 261.21(a), and, when discarded in that form, should be managed as a hazardous waste.

State Right-To-Know Information

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

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

Weight percent	Components	CAS-No.
60 - 100%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2
10 - 30%	n-Butyl Acetate	123-86-4
7 - 13%	Xylene	1330-20-7
1 - 5%	Ethyl Benzene	100-41-4

<=0.5%	Hexamethylene-1,6-Diisocyanate	822-06-0

New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:

Weight percent	Components	CAS-No.
10 - 30%	n-Butyl Acetate	123-86-4
7 - 13%	Xylene	1330-20-7
1 - 5%	Ethyl Benzene	100-41-4
<=0.5%	Hexamethylene-1,6-Diisocyanate	822-06-0

California Prop. 65:

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

Weight percent	Components	CAS-No.
1 - 5%	Ethyl Benzene	100-41-4

CFATS (Chemical Facility Anti-Terrorism Standards) Chemicals

To the best of our knowledge, this product does not contain Appendix A Chemicals of Interest (COI), at or above the Screening Threshold Quantity (STQ), as defined by the Department of Homeland Security Chemical Facility Anti-terrorism Standard (CFATS, 6 CFR Part 27.

Based on information provided by our suppliers, this product is considered "DRC Conflict Free" as defined by the SEC Conflict Minerals Final Rule (Release No. 34-67716; File No. S7-40-10; Date: 2012-08-22).

16. Other Information

The method of hazard communication for Drew Paints, Inc. is comprised of product labels and safety data sheets.

The handling of products containing reactive HDI polyisocyanate/prepolymer and/or monomeric HDI requires appropriate protective measures referred to in this SDS. These products are therefore recommended only for use in industrial or trade (commercial) applications. They are not suitable for use in Do-It-Yourself applications.

Information contained in this SDS is believed to be accurate but is furnished without warranty, express or implied, including warranties of merchantability or fitness for a particular purpose. The information relates only to the specific material designated herein. Drew Paints, Inc. assumes no legal responsibility for use of or reliance upon the information in this SDS and such information shall in no case be considered a part of our terms and conditions of sale. The user is responsible for determining whether the Drew Paints, Inc. product is suitable for user's method of use or application. Drew Paints, Inc. is not liable for any failure to observe the precautionary measures described in this SDS or for any misuse of the product.