MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

TRADE NAME: ProCoat Clear Topcoat (Part A)

Aliphatic Polyisocyanate
Polymeric Hexamethylene Diisocyanate

Transportation (800) 424-9300 Chemtrec
Emergency call: (703) 527-3887 International

Manufactured By:
Genesis Coatings
2780 La Mirada Dr, #B
Vista, CA 92081
(800) 533-4273

Date Prepared or Revised: 10-14-02

II. HAZARDOUS INGREDIENTS

	CHEMICAL NAME	CAS #	WGT % = TO
1	Homopolymer of Hexamethylene Diisocyanate (HDI)	28182-81-2	Essentially 100%
2	Hexamethylene Diisocyanate (HDI)	822-06-0	

OCCUPATIONAL EXPOSURE LIMITS

	OSHAL PEL	ACGIH TLV	OTHER
1	N/E	N/E	
2	N/E	.005 PPM TWA	.034 mg/m3 TWA

** Monomer content is less than 0/2% based on resin solids at the time of manufacturer. This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.

III. PHYSICAL PROPERTIES

FREEZING POINT: -11.2°F (-24°C)
BULK DENSITY: 9.68 LBS./GALLON
SPECIFIC GRAVITY: 1.16 g/cm3@68°F
SOLUBILITY IN H_2O: *resin is insoluble
*Reacts slowly with water to liberate c02 gas.
VOC BY WEIGHT: approx. 0.2% (calculated data)
VAPOR PRESSURE: 5.2x10-9 mmHg @ 68°F
VAPOR DENSITY: N/E
APPEARANCE: slight yellow
PHYSICAL FORM: liquid
ODOR: slight-nearly odorless

IV. FIRE AND EXPLOSION

FLASH POINT: 460°f (237.7°c)
METHOD USED: SETAFLASH (ASTM D-3243, D-3278, D-3828)
FLAMMABILITY EXPLOSIVE LIMITS: Upper-N/E Lower-N/E
AUTOIGNITION TEMPERATURE: 860°f (460°c) DIN 71794
EXTINGUISHING MEDIA: Dry chemical; carbon dioxide; foam; water spray for large fires.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None reported.
SPECIAL FIRE FIGHTING PROCEDURES: Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, HDI vapors and other irritating, thermal decomposition or combustion may generate highly toxic gases. Closed container may explode with exposed to extreme heat or may burst when contaminated with water (CO_2 evolved).

V. REACTIVITY DATA

STABILITY: Stable under normal conditions. **HAZARDOUS POLYMERIZATION**: May occur. Contact with moisture or other materials that react with isocyanates or temperatures over 400°F (204°C) may cause polymerization. **INCOMPATIBILITY**: Water, amines, strong bases, alcohols, metal compounds, and surface-active materials. **INSTABILITY CONDITIONS**: None known. **DECOMPOSITION PRODUCTS**: By high heat and fire: carbon dioxide, carbon monoxide, oxides or nitrogen, HCN, HDI, and other unknown aliphatic fragments.

VI. HEALTH HAZARD / FIRST AID

ROUTES OF ENTRY: inhalation, skin contact, eye contact **HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE**: Acute Inhalation: HDI vapors and/or polyisocyanate aerosols at concentrations above TLV or MGL respectively can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing running nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function (breathing obstruction). Persons with preexisting, nonspecific bronchial hyperactivity can respond to concentrations below TLV or MGL with similar symptoms as an asthma attack. Exposure well above TLV or MGL may lead to bronchitis, bronchial spasm, and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills) has also been reported. **CHRONIC INHALATION**: As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure of isocyanate at levels well below the TLV or MGL. These symptoms, which include: chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitization an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanates has also been reported to cause lung damage, including decrease in lung function, which may be permanent. Sensitization may be either temporary or permanent. **ACUTE SKIN CONTACT**: Isocyanates react with skin protein and moisture and can cause irritation. Symptoms of skin irritation may be reddening, swelling, rash, scaling, or blistering. Some persons may develop skin sensitization from skin contact. Cured material is difficult to remove. **CHRONIC SKIN CONTACT**: Prolonged contact with skin with the isocyanate can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material or aerosols. **ACUTE EYE CONTACT**: Liquid and aerosols of this product are irritating and can cause pain, tearing, reddening, and swelling accompanied by a stinging sensation and or a feeling of fine dust in the eyes. **CHRONIC EYE CONTACT**: May result in corneal opacity (clouding of the eye surface). **ACUTE INGESTION**: Can result in irritation and possible corrosive action in the mouth, stomach tissue, and digestive tract. **CHRONIC INGESTION**: None found. **CARCINOGENICITY**: This product is not listed by NTP, IARC, or regulated as a carcinogen by OSHA. **MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**: Asthma and other respiratory disorders (bronchitis, emphysema, and hyperactivity) skin allergies, and eczema.

FIRST AID

FOR EYES: Flush with clean, lukewarm water (low pressure) for at least 15 minutes, while lifting eyelids. Refer individual to physician or ophthalmologist for immediate follow-up. **FOR SKIN**: Remove contaminated clothing immediately. Wash affected areas thoroughly with soap and water. Wash contaminated clothing thoroughly before reuse. For severe exposure, get under safety shower after removing clothing, then get medical attention. Seek medical attention if irritation develops of persists. **FOR INHALATION**: Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic. Consult physician. **FOR INGESTION**: **DO NOT INDUCE VOMITING!** Give 1 to 2 cups of milk or water to drink. **DO NOT GIVE ANYTHING BY MOUTH TO UNCONSCIOUS OR CONVULSING PERSON**. Contact a physician immediately.

NOTE TO PHYSICIAN: EYES**: Stain for evidence of corneal injury. If the cornea is burned, instill antibiotic/steroid preparation frequently. Workplace vapors could produce reversible corneal epithelial edema impairing vision.** SKIN**: This product is a known 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 product.** INHALATION**: This is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having dermal or pulmonary sensitization reaction to this material must be removed from any further exposure to any isocyanate.**

VII. CONTROL MEASURES

REQUIRED WORK/HYGIENE PROCEDURES: Precautions must be taken so that persons handling this product do not allow contact with eyes or skin. **PRODUCT SHOULD NOT BE SPRAYED – ROLL APPLICATIONS ONLY SHOULD BE USED**. **EYE PROTECTION**: Safety glasses, splash goggles, and/or full faceshield. **SKIN PROTECTION**: Permeation resistant gloves (nitrile rubber, butyl rubber, PVA). Note: Polyvinyl alcohol degrades in water. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area protected only by the cream to a minimum. **VENTILATION**: 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 protection equipment is mandated (See RESPIRATOR REQUIREMENTS below). 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. the are released into the work area), it is possible to be exposed to airborne monomeric HDI.) **RESPIRATOR REQUIREMENTS**: A respirator that is recommended or approved for use in isocyanate-containing environments (air purifying or fresh air-supplied) may be necessary for situations such as high temperature use which may produce inhalation exposures.

A supplied-air respirator (either positive pressure or continuous flow) is recommended.Before an air-purifying respirator can be used, air monitoring must be preformed 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 respirators use (29 CFR 1910.134).

NON-SPRAY APPLICATIONS

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 exist:
   - 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 preformed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146).

B. 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) 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.

MONITORING: Refer to Patty's Industrial Hygiene and Toxicology-Volume 1 (3rd Edition) Chapter 17 and volume III (1st Edition) Chapter 3 – for guidance concerning appropriate air sampling strategy to determine airborne concentrations of isocyanates. **MEDICAL SURVEILLANCE**: Medical supervision of all employees who handle or come in contact with this product is recommended. This should include pre-employment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum). Persons with asthma-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate, no further exposure can be permitted. **ADDITIONAL PROTECTIVE MEASURES**: Safety showers and eyewash stations should be readily available to the work area. Educate and train employees in safe use of product. Follow all label instructions. For additional information, see Bayer's "Health and Safety Information for Hexamethylene Diisocyanate Based Polyisocyanates."

VIII. SPILL, LEAK AND DISPOSAL PROCEDURES

WASTE DISPOSAL METHOD: Waste must be disposed of in accordance with federal, state, and local environmental control regulations. Incineration is the preferred method. If incinerated, toxic and corrosive gases must be properly handled. **EMPTY CONTAINER PRECAUTIONS**: Empty containers retain product residue (liquid and/or vapor) and can be dangerous. Do not pressurize, cute, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. **SPILL OR LEAK PROCEDURES**: Evacuate nonessential personnel. Remove all sources of ignition and ventilate the area. Notify appropriate authorities if necessary. Put on personal protective equipment. Dike or impound spilled material and control further spillage if feasible. Do not allow material to enter ground water supplies or sewer systems. Cover the spill with sawdust, vermiculite, Fuller's earth, or other absorbent material. Pour decontamination solution over spill area and allow to react for at least 10 minutes. Collect material in open containers and add further amounts of decontamination solution. Remove containers to a safe place, cover loosely, and allow to stand for 24 to 48 hours. Wash down spill area with decontamination solutions. Decontamination solutions: nonionic surfactant Union Carbide's Tergitol TMN-10 (20%) and water (80%); concentrated ammonia (3 – 8%), detergent (2%) and water (90 – 95%).

IX. HMIS RATING

0 = Insignificant
1 = Slight
2 = Moderate
3 = High
4 = Extreme
* = Chronic Health Hazard

Fire:	1
Health:	2
Reactivity:	1
Special Hazard:	*

X. USER'S RESPONSIBILITY

The responsibility to provide a safe work place remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

TRADE NAME: **GCR 3 Clear Topcoat**
Part B - Polyol Base

Manufactured By:
Genesis Coatings, Inc
2780 La Mirada Dr, #B
Vista, CA 92081
(800) 533-4273

Date prepared or revised: 10-14-02

II. HAZARDOUS INGREDIENTS

CHEMICAL IDENTITY	OSHA PEL	ACGIH/TLV	CAS #
POLYESTER POLYOLS, PROPRIETARY	N.E.	N.E.	
DIETHANOLAMINE	3 PPM	3PPM	111-42-2
AMMONIUM HYDROXIDE	25PPM	25PPM	1336-21-6

III. PHYSICAL PROPERTIES

SPECIFIC GRAVITY (H2O=1): 1.05 FREEZING POINT OR RANGE: 32°F
SOLUBILITY IN WATER: Dispersible BOILING POINT OR RANGE: >212°F
VAPOR PRESSURE (MMHG): N/A % VOLATILES: 55
VAPOR DENSITY (AIR=1): N/A pH (10% SOLUTION): 8.0 - 9.0
EVAPORATIONRATE (BUTYL ACETATE = 1): N/A
APPEARANCE AND ODOR: Liquid, light yellow with ammonia odor

IV. FIRE AND EXPLOSION

FLASH POINT (ASTM D93): > 212°F
FLASH POINT TEST METHOD: N/A
FLAMMABLE LIMITS: LEL = N.D. UEL = N.D.
EXTINGUISHING MEDIA: Dry Chemicals, Foam, Carbon Dioxide, Water Fog
SPECIAL FIRE FIGHTING PROCEDURES: Remove all Ignition Sources. Wear self-contained breathing apparatus and complete personal protective equipment when entering areas where potential exposure to vapors or products of combustion exists.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None

V. REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY (MATERIALS TO AVOID): Contamination with strong acids and oxidizing agents.
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Carbon Dioxide, Carbon Monoxide from burning and toxic fumes at elevated temperature.
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: Contact with strong acids, alkali and oxidizing agents

VI. HEALTH HAZARD/FIRST AID

ROUTE(S) OF ENTRY: Inhalation, Skin, and Ingestion
HEALTH HAZARDS (ACUTE AND CHRONIC):
EYES: Will cause injury that will persist for several days
SKIN: Prolonged contact will cause irritation
SWALLOWING: Can cause headaches and nausea
INHALATION: Can cause respiratory irritation

CARCINOGENICITY:
NTP: NO / ARC MONOGRAPH: NO / OSHA REGULATED: NO
SIGNS AND SYMPTOM OF EXPOSURE: No specific information available.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY OVER EXPOSURE: Repeated exposure to this product may cause eye and respiratory tract irritation and respiratory sensitization.
EMERGENCY AND FIRST AID PROCEDURES:
EYES: Flush with water for at least 15 minutes. Get medical attention of irritation persists.
SKIN: Wash with soap and water. Remove contaminated clothing and shoes. Wash before reuse.
INHALATION: In case of exposure to high vapor mist, remove person to fresh air. If breathing has stopped, administer artificial respiration and seek medical attention.

VII. PRECAUTIONS FOR SAFE HANDLING

VENTILATION PROTECTION: Use w/adequate ventilation. Local exhaust: recommended
EYE PROTECTION: Splash Proof Eye Goggles
PROTECTIVE GLOVES: Rubber gloves
RESPIRATORY PROTECTION: Product should not be sprayed – roll applications only should be used.
HANDLING AND STORAGE: Store in a cool dry well ventilated area. Protect Container against physical damage. Keep container away from incompatible material (see section V). Keep out of reach of children.
OTHER PROTECTIVE CLOTHING: Eye wash and Safety Shower.
OTHER PRECAUTIONS: Wash thoroughly after handling. Do not wear any contaminated clothing or shoes. Use good personal hygiene practice.

VIII. SPILL, LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL: Dike spill. Absorbed with inert material and collect for disposal. Prevent washing from entering water ways before being neutralized.
WASTE DISPOSAL: Follow all local, state, and federal waste disposal regulations.

IX. HMIS RATING

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4 = Extreme

Fire: 0
Health: 1
Reactivity: 1
Special Hazard: 0

X. USER'S RESPONSIBILITY

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