CORBOND® III Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Product Name: RUBINATE® 1107 **MSDS # 24847**
Product Use: Component of a polyurethane
Manufacturer: Corbond Corporation, 32404 East Frontage Road, Bozeman, Montana 59715

Section 2 – Composition / Information on Ingredients

HAZARDOUS INGREDIENTS	%	ACGIH TLV	CAS NO.
Polymeric Diphenylmethane Diisocyanate	100		9016-87-9

*Occupational Exposure Limits, if available, are listed in Section 8

Section 3 – Hazards Identification

This material is classified as hazardous under OSHA Hazard Communication Standard (29CFR 1910.1200)
Physical State and Appearance: Liquid
Color: Reddish-Brown
Emergency Overview: Reacts slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures. Inhalation at level above the occupational exposure limit could cause respiratory sensitization and risk of serious damage to respiratory system. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyperactive response to even minimal concentrations of diisocyanates may develop in sensitized persons.
Potential Acute Health Effects:

Eyes: Hazardous in case of eye contact (irritant).
Skin: Hazardous in case of skin contact (irritant, sensitizer). Skin inflammation is characterized by itching, scaling or reddening.
Inhalation: Hazardous in case of inhalation (lung irritant, lung sensitizer).
Ingestion: Slightly hazardous in case of ingestion.
Medical Conditions Aggravated by Overexposure: May cause or aggravate dermatitis and asthma

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

Inhalation at levels above the occupational exposure limit could cause respiratory sensitization and risk of serious damage to respiratory system. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitized persons.

Potential Acute Health Effects

Eyes Hazardous in case of eye contact (irritant).

Skin Hazardous in case of skin contact (irritant,sensitizer). Skin inflammation is characterized by itching, scaling or reddening.

Inhalation Hazardous in case of inhalation (lung irritant,lung sensitizer).

Ingestion Slightly hazardous in case of ingestion.

Medical Conditions Aggravated by Overexposure: May cause or aggravate dermititis and asthma.

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

Section 4. First Aid Measures

Eye Contact Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.

Skin Contact Remove contaminated clothing. After contact with skin, wash immediately with plenty of warm soapy water. If symptoms develop, obtain medical attention. Contaminated clothing should be thoroughly cleaned. An MDI study has demonstrated that a polyglycol-based skin cleanser or corn oil may be more effective than soap and water.

Inhalation Remove patient from exposure, keep warm and at rest. Obtain immediate medical attention. Treatment is symptomatic for primary irritation or bronchospasm. If breathing is labored, oxygen should be given by administered by qualified personnel. Apply artificial respiration if breathing has ceased or shows signs of failing.

Ingestion Do not induce vomiting. Provided the patient is conscious, wash out mouth with water. Obtain immediate medical attention.

Notes to Physician Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

Section 5. Fire Fighting Measures

Auto-ignition Temperature	>600 °C
Flash Points	Closed cup: 218.33°C (425°F).
Flammable Limits	Not available.
Products of Combustion	Carbon Monoxide, Carbon Dioxide,Nitrous Oxide and HCN.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Protective Clothing (Fire)	Splash goggles. Full suit. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product.
Special Remarks on Fire Hazards	Reacts slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

Section 6. Accidental Release Measures

For major spills call Chemtrec (800-424-9300).
See Safety Data Sheet section 8 Personal protective equipment

Small Spill and Leak	Clean-up should only be performed by trained personnel. People dealing with major spillages should wear full protective clothing including appropriate respiratory protection. Evacuate the area. Prevent further leakage, spillage or entry into drains.
Large Spill and Leak	Contain and absorb large spillages onto an inert, non-flammable adsorbent carrier (such as earth or sand). Shovel into open-top drums or plastic bags for further decontamination, if necessary. Wash the spillage area clean with liquid decontaminant. Test atmosphere for MDI. Neutralize small spillages with decontaminant. Remove and properly dispose of residues. (See Section 13 for disposal considerations.) Notify applicable government authorities if release is reportable. The CERCLA RQ for 4,4-MDI is 5,000 lbs (see CERCLA in Section 15).

Decontaminant

Preparation of Decontamination Solution: Prepare a decontamination solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safety data sheets when preparing and using solution. Use of Decontamination Solution: Allow deactivated material to stand for at least 30 minutes before shoveling into drums. Do not tighten the bungs. Mixing with wet earth is also effective, but slower.

Section 7. Handling and Storage

Handling

Avoid personal contact with the product or reaction mixture. Use only with adequate ventilation to ensure that the occupational exposure limit is not exceeded. The efficiency of the ventilation system must be monitored regularly because of the possibility of blockage. Avoid breathing aerosols, mists and vapors. (See Section 8--Exposure Control for details.)

Storage

Keep containers properly sealed and when stored indoors, in a well ventilated area. Keep contents away from moisture. Due to reaction with water, producing CO2-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Do not reseal contaminated containers. Uncontaminated containers, free of moisture, may be resealed only after placing under a nitrogen blanket. Do not store in containers made of copper, copper alloys or galvanized surfaces.

Ideal storage temperature is 16-38°C (60-100°F).

Keep stocks of decontaminant (See Section 6) readily available.

Section 8. Exposure Controls, Personal Protection

Preventive Measures

Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls

Use local exhaust ventilation to maintain airborne concentrations below the TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. For guidance on engineering control measures refer to publications such as the ACGIH current edition of 'Industrial Ventilation, a manual of Recommended Practice.'

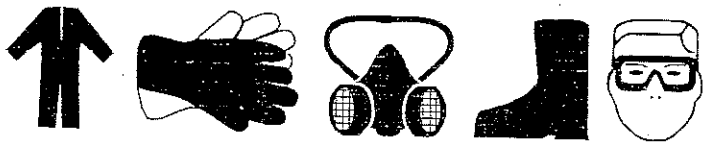
Personal Protection

Eyes Chemical safety goggles. If there is a potential for splashing, use a full face shield.

Body and Hands The following protective materials are recommended: Gloves - neoprene, nitrile rubber, butyl rubber. Thin latex disposable gloves should be avoided for repeated or long term use. Protective clothing should be selected and used in accordance with 'Guidelines for the Selection of Chemical Protective Clothing' published by ACGIH.

Respiratory When the product is sprayed or heated without adequate ventilation, an approved MSHA/NIOSH positive-pressure, supplied-air respirator may be required. Air purifying respirators equipped with organic vapor cartridges and a HEPA (P100) particulate filter may be used under certain conditions when a cartridge change-out schedule has been developed in accordance with the OSHA respiratory protection standard (29 C.F.R. 1910.134).

Protective Clothing (Pictograms)



Consult your supervisor or S.O.P. for special handling directions

Personal Protection in Case of a Large Spill Splash goggles. Full suit. Vapor respirator or a self-contained breathing apparatus. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product Name

4,4-Diphenylmethane Diisocyanate

Exposure Limits

ACGIH TLV	0.05 mg/m3 (8-hour,40 hours/week)
OSHA PEL Ceiling Limit	0.20 mg/m3
NIOSH REL/TWA	0.05 mg/m3 (10-hour,40 hours/week)
NIOSH REL/CEILING	0.20 mg/m3 (10-minute)

Exposure controls/personal protection Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Persons with respiratory problems including asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or skin allergies should be evaluated for their suitability of working with this product. Once a person is diagnosed as sensitized, no further exposure to the material that caused the sensitization should be permitted.The Occupational Exposure limits do not apply to previously sensitised individuals.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Liquid.
Odor	slightly musty
Color	Reddish-brown
pH	Not applicable.
Boiling/Condensation Point	>300 °C decomposes
Melting/Freezing Point	Not available.
Specific Gravity	1.23 (Water = 1)

Vapor Pressure	0.000004 mmHg
Vapor Density	8.5
Evaporation Rate	Not available.
Viscosity	Dynamic: 200 cP
Flash Points	Closed cup: 218.33°C (425°F).

Section 10. Stability and Reactivity

Stability and Reactivity	Stable at room temperature.
Conditions of Instability	Avoid high temperatures. Avoid freezing.
Incompatibility with Various Substances	Not available.
Hazardous Decomposition Products	Carbon Monoxide, Carbon Dioxide,Nitrous Oxide and HCN.
Hazardous Polymerization	Polymerization may occur at elevated temperatures in the presence of alkalies, tertiary amines and metal compounds.

Section 11. Toxicological Information

Toxicity to Animals	LD50 Rat Oral: > 5000 mg/kg LD50 Rabbit Dermal: > 5000 mg/kg LC50 Rat Respirable aerosol: 2240 mg/m^3 1 hours LC50 Rat Respirable aerosol: 0.49 mg/m^3 4 hours
Inhalation	This product is a respiratory irritant and potential respiratory sensitizer. Repeated inhalation of vapor or aerosol at levels above the occupational exposure limit could cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat, and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.
Skin Contact	Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization. There is limited evidence from animal studies that skin contact may play a role in respiratory sensitization. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

Eye Contact	The vapor, aerosol, and liquid are irritant.
Ingestion	Ingestion may cause irritation of the gastrointestinal tract. Based on the acute oral LD50 this product is considered practically non-toxic by ingestion.
Carcinogenic Effects	The ingredients of this product are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.
Mutagenic Effects	There is no substantial evidence of mutagenic potential.
Reproductive Effects	No adverse reproductive effects are anticipated.
Teratogenic effects	No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal respirable concentrations well in excess of the defined occupational limits.
Remark	A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol at concentrations of 0, 0.2, 1 or 6 mg/m3. No adverse effects were observed at 0.2 mg/m3. At the 1 mg/m3 concentration, minimal nasal and lung irritant effects were seen. Only at the top concentration (6.0 mg/m3) was there an increased incidence of a benign tumor of the lung (adenoma). One malignant pulmonary tumor (adenocarcinoma) was seen in the 6.0 mg/m3 group. MDI administration to rats in this study did not change the distribution and incidence of tumors from those seen in control animals. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur. (MDI) There are reports that chronic exposure to diisocyanates by inhalation may result in permanent decreases in lung function.

Section 12. Ecological Information

Ecotoxicity	Polymeric MDI. LC50 (Zebra Fish) > 1000 mg/l . EC50 (Daphnia magna) (24 hour) > 1000 mg/l EC50 (E. Coli) > 100 mg/l
Environmental Fate and Distribution	It is unlikely that significant environmental exposure in the air or water will arise based on consideration of the production and use of the substance.
Persistence and Degradation	Immiscible with water, but will react with water to produce inert and non-biodegradable solids.

Section 13. Disposal Considerations

Waste Information

The generation of waste should be avoided or minimized wherever possible.

Disposal should be in accordance with local, state, provincial or national regulations. This material is not a hazardous waste under RCRA 40 CFR 261. Small quantities should be treated with a decontaminant solution (See Section 6). The treated waste is not a hazardous material under RCRA 40 CFR 261. Chemical waste, even small quantities, should never be poured down drains, sewers or waterways.

Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

Section 14. Transport Information

Transportation Emergency Number 1-800-424-9300 (CHEMTREC).

DOT Classification Single containers less than 5,000 lbs. are not regulated. Single containers with 5,000 lbs. or more of 4,4'-Methylene Diphenyl Diisocyanate are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, PGIII, RQ.

TDG Classification Not regulated.

IMO/IMDG Classification Not regulated.

ICAO/IATA Classification Not regulated.

Section 15. Regulatory Information

U.S. Federal Regulations

This material is classified as hazardous under OSHA Hazard Communication Standard (29 CFR 1910.1200).

HCS Classification Toxic
Irritating material
Sensitizing material

TSCA 8(b) inventory:All Ingredients Listed.

SARA Title III Section 313 (40 CFR Part 372): EPCRA Section 313 (40 CFR 372)
Diisocyanate Compounds (Category Code N120) 96%

EPCRA Section 313 (40 CFR 372) CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): 4,4-Methylene diphenyl diisocyanate (CAS 101-68-8) has a 5,000 lb. RQ (reportable quantity). Any spill or release above the RQ must be reported to the National Response Center (800-424-8802).

This product does not contain nor is it manufactured with ozone depleting substances.

State Regulations

California prop. 65: No ingredients listed.

Canadian Regulations

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all the information required by the CPR.

WEMIS (Canada) Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
Class D-2A: Material causing other toxic effects (VERY TOXIC).
Class D-2B: Material causing other toxic effects (TOXIC).

CEPA DSL/NDSL:All Ingredients Listed.

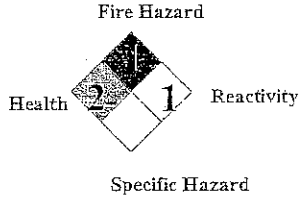
Section 16. Other Information

CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, RESPIRATORY TRACT, SKIN, EYES. MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION.

Hazardous Material Information System (U.S.A.)

Health	2
Fire Hazard	1
Reactivity	1

National Fire Protection Association (U.S.A.)



Trademarks: RUBINATE® is a registered trademark of Huntsman LLC or an affiliate thereof in one or more countries, but not all countries.

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 behavior of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behavior should be determined by the user and made known to handlers, processors and end users.

Verified by nichocj.
Printed 2/24/2005.