

# MATERIAL SAFETY DATA SHEET

## Section 1. Product and Company Information

**MANUFACTURER:** Freecom, Inc.  
P.O. Box 2119  
Big Spring, Texas 79721-2119

**TELEPHONE:** For information purposes 8:00 a.m. to 5:00 p.m. CDT  
(432) 263-8497 (800) 346-4299

**EMERGENCY:** (432) 263-8497 (800) 346-4299

**DATE OF PREPARATION:** July 7, 2003

**SUPERSEDES MSDS DATED:** June 4, 2001

**PRODUCT NAME:** CeRam-Thane 200



## Section 2. Composition and Ingredient Information

Common Name	CAS Number	Weight %
<b>PART-A CeRam-Thane 200 Base</b>		
*Aromatic Hydrocarbon	1330-20-7	35%
*Ethyl Acetate	141-78-6	2%
*n-Butyl Acetate	123-86-4	3%
*Toluene	108-88-3	5%
<b>PART -B CeRam-Thane 200 (Curing Agent)</b>		
Homopolymer of HDI	28182-81-2	75%
Hexamethylene Diisocyanate (HDI)	822-06-0	##
Xylene	1330-20-7	9.5 - 12.25%
n-Butyl Acetate	123-86-4	12.5%
Ethyl Benzene (Solvent Impurity)	100-41-4	0.25 to 3%

\*Indicates toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372. Hazard information is provided in this MSDS for this ingredient..

@@ behind the TVL and PEL values indicate special health and fire hazard notations to be found in the body of the MSDS. Read all sections carefully and check for notation.

## Residual monomer content is less than 0.5%, based on resin solids, at the time of manufacture. After 3-6 months storage, however, the free monomer content may rise to a maximum of 1.6%

## Section 3. Physical Data

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Specific Gravity (kg/l)</b>	1.1	1.06 @68°F (20°C)
<b>Boiling Range</b>	167 to 279°F	Xylene = 280-291°F (138-144°C) Butyl Acetate = 257-261°F (125-127°C)
<b>Vapor Density (Air = 1)</b>	Heavier than air	> Air
<b>Solubility in Water</b>	Insoluble	Resin is insoluble. It reacts slowly with water to liberate CO <sub>2</sub> gas.
<b>Viscosity (centapoise)</b>	3,000 cP	3,000 cP
<b>Appearance and odor</b>	Green viscous liquid with aromatic/ester solvent odor	Clear / pale yellow liquid with solvent / fruity odor
<b>Density – packaged (on average)</b>	8.40 lbs/gal	1.76 lbs/gal
<b>Total Volatiles</b>	45%	25%
<b>Non-Volatiles</b>	55%	75%
<b>VOC content</b>	3.88 lbs/gal (466 G/L)	approx 27% (calculated data)

## Section 4. Fire Fighting Measures

Description	PART A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Flashpoint</b>	58°F	91.0°F (32.7°C)
<b>Flammable Limits</b>	LFL: 1.0%UFL: 10.7%	LEL: 1.0% XyleneLEL: 1.38% n-Butyl AcetateLEL: 0.8% Ethyl BenzeneUEL: 7.0% XyleneUEL: 7.60 n-Butyl AcetateUEL: 6.7% Ethyl Benzene
<b>Extinguishing Media</b>	Foam, CO <sub>2</sub> , Dry Chemical	Dry Chemical, CO <sub>2</sub> , Foam, water spray
<b>Unusual Fire and Explosion Hazards</b>	Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling port.	The organic solvents used in this product are considered severe fire hazards. Vapor/air mixtures are explosive above the flashpoint.
<b>Special Fire Fighting Procedures</b>	Wear self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure mode when fighting fires.	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, highly toxic gases may be generated by thermal decomposition or combustion. Isolate from heat, electrical equipment, sparks and open flame. Closed container may explode when exposed to extreme heat or burst when contaminated with water (CO <sub>2</sub> evolved). Solvent vapors may be heavier than air. Stagnant air may cause vapors to accumulate and travel along the ground to an ignition source which may result in a flashback to the source of the vapors.

## Section 5. Reactivity Data

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Stability</b>	Stable	Stable under normal conditions.
<b>Incompatibility</b>	Avoid contact with strong oxidizing agents.	Water, amines, strong bases, acids, combustible material, alcohols, metal compounds and surface active materials.
<b>Hazardous Decomposition Products</b>	May form toxic materials: carbon dioxide and carbon monoxide, various hydrocarbons, etc.	By high heat and fire: carbon dioxide, carbon monoxide, oxides of nitrogen, HCN, HDI and other undetermined aliphatic fragment.
<b>Hazardous Polymerization</b>	Will not occur.	May occur; Contact with moisture or other materials which react with isocyanates or temperatures over 400°F (204°C) may cause polymerization.
<b>Conditions to Avoid</b>	Never use welding or cutting torch on or near drums (even empty) because product (even just residue) can ignite explosively.	High heat.

## Section 6. Health and Safety

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Primary Routes of Exposure</b>	Inhalation, skin, eye, ingestion	Inhalation, skin contact, skin absorption, eye contact, ingestion
<b>Potential Health Effects</b>	Inhalation: Excessive inhalation of vapors can cause nasal and respiratory irritation, dizziness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation.	Acute Inhalation: HDI vapors or mist at concentrations above the applicable exposure limits can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits with similar symptoms as well as an asthma attack. Exposure well above the exposure limits may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills) has also been reported. Solvent vapors may be irritating to the eyes, nose and throat. Symptoms of irritation may include redness, burning, and itching of the eyes, dryness of the throat and tightness of the chest. Other possible symptoms of overexposure include headache, nausea, narcosis, fatigue and loss of appetite. A concentration of 200 ppm BA can cause eye, nose and throat irritation. At 300 ppm these effects can become severe. Persons exposed to 200 ppm of xylene experienced eye, nose and throat irritation. Concentrations of 10,000 ppm of xylene can be immediately

		dangerous to life and health.
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**Section 6. Health and Safety - continued**

<b>Description</b>	<b>PART-A: CeRam-Thane 200 (Base)</b>	<b>PART-B: CeRam-Thane 200 (Curing Agent)</b>
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<p><b>Potential Health Effects</b></p>	<p>Skin: Prolonged or repeated contact with product can cause moderate skin irritation, defatting, dermatitis.</p>	<p><b>Chronic Inhalation:</b> 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 to isocyanates at levels well below applicable exposure limits. 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 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. 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. Chronic exposure to organic solvents has been associated with various neurotoxic effects including permanent brain and nervous system damage. Symptoms include loss of memory, loss of intellectual ability and loss of coordination.</p> <p><b>Acute Skin Contact:</b> 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. Repeated or prolonged skin contact with solvents can result in dry, defatted and cracked skin causing increased susceptibility to infection. In addition, skin irritation (i.e., redness, swelling), which may develop into dermatitis, may occur from skin contact. Solvents can penetrate the skin and may cause systemic effects similar to those identified under acute inhalation symptoms.</p> <p><b>Chronic Skin Contact:</b> Prolonged contact 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 even as a result of vapor-only exposure. Chronic skin exposure to solvents may cause effects similar to those identified under chronic inhalation effects.</p> <p><b>Acute Eye Contact:</b> Liquid, aerosols and vapors of this product (isocyanate and solvents) are irritating and can cause tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes.</p> <p><b>Chronic Eye Contact:</b> May result in corneal opacity (clouding of the eye surface). Prolonged vapor contact may cause conjunctivitis.</p>
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## Section 6. Health and Safety - continued

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Potential Health Effects</b>	<p>Eye: Can cause severe irritation, redness, tearing, blurred vision.</p> <p>Ingestion: Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal.</p> <p><b>Acute:</b> Irritation of skin, eyes, mucous membranes. Drying, defatting of skin. Avoid ingestion and breathing of vapors.</p> <p><b>Chronic:</b> Eye, liver, kidney, and central nervous system damage may occur.</p>	<p><b>Acute Ingestion:</b> If ingested this product will cause gastrointestinal distress. Ingestion can result in irritation and possible corrosive action in the mouth, stomach tissue and digestive tract. Vomiting may cause aspiration of the solvent resulting in chemical pneumonitis.</p> <p><b>Chronic Ingestion:</b> None reported. Expected to be similar to effects listed for acute ingestion.</p> <p><b>Other Effects of Exposure:</b> If animal studies chronic inhalation of ethyl benzene has caused changes in the liver and kidneys including toxic hepatitis, and changes in blood cholinesterase activity. In animal studies it has been reported that ethyl benzene may cross the placenta. If animal studies aspiration of ethyl benzene caused immediate death by cardiac arrest and respiratory paralysis.</p>
<b>Medical Conditions Aggravated by Exposure</b>	N/A	Asthma and other respiratory disorders (bronchitis, emphysema, hyperreactivity), skin allergies, eczema
<b>Carcenogenicity</b>	no	The components of this product are not listed by NTP, IARC or regulated as a carcinogen by OSHA.

## Section 7. First Aid Measures

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Skin</b>	Thoroughly wash exposed area with soap and water. Remove contaminated clothing. Launder clothing before reuse.	Remove contaminated clothing and shoes immediately. Wash affected areas thoroughly with soap and water. Wash contaminated clothing and clean shoes thoroughly before reuse. For severe exposure, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists.
<b>Eyes</b>	Flush with large amounts of water, lifting upper and lower lids occasionally. Get medical attention.	Flush with clean, lukewarm water (low pressure) for at least 15 minutes, while lifting eyelids to ensure that chemical is being flushed from the eyes. Refer individual to physician or ophthalmologist for immediate followup.
<b>Ingestion</b>	DO NOT INDUCE VOMITING. Keep person warm, quiet and get medical attention. Aspiration of material into lungs due to vomiting can cause chemical pneumonitis, which can be fatal.	DO NOT INDUCE VOMITING. Give one to two cups of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON. Consult physician.
<b>Inhalation</b>	Remove person to fresh air. Give oxygen if breathing difficult; give artificial respiration if breathing stops. Keep person warm and get medical attention.	If breathing is difficult immediately move to an area free from risk of further exposure. Administer oxygen or artificial respiration if needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours.

		Treatment is essentially symptomatic.
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## Section 8. Exposure Controls and Personal Protection

### Exposure controls

INGREDIENT	OSHA PEL (8-HR TWA)	ACGIH TLV (8-HR TWA)
*Aromatic Hydrocarbon	110 ppm	100 ppm
*Ethyl Acetate 99%	400 ppm	400 ppm
*n-Butyl Acetate	150 ppm	150 ppm
N-Butyl Acetate U.G.	150.00 PPM	150.00 PPM
*Toluene	200 ppm @@	100 ppm @@
Homopolymer of HDI	N/E	N/E
Hexamethylene Diisocyanate (HDI)	N/E	0.005 ppm 0.034 mg/m <sup>3</sup>
Xylene	100.00 ppm 435.00 mg/m <sup>3</sup>	100.00 ppm 434.00 mg/m <sup>3</sup> 150.00 STEL 651.00 STEL
n-Butyl Acetate	150 ppm 710 mg/m <sup>3</sup>	150.00 ppm 713 mg/m <sup>3</sup> 200.00 ppm STEL 950.00 mg/m <sup>3</sup> STEL
Ethyl Benzene (Solvent Impurity)	100.00 ppm 435.00 mg/m <sup>3</sup>	100.00 ppm 434.00 mg/m <sup>3</sup> 125.00 ppm STEL 543.00 mg/m <sup>3</sup> STEL

### Personal Protection

Description	PART-A: CeRam-Kote Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Ventilation</b>	Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLVs.	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.
<b>Respiratory Protection</b>	If TLV of the product or any component is exceeded, a NIOSH/MSHA jointly approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators under specified conditions (see safety equipment supplier). Engineering or administrative controls should be implemented to reduce exposure.	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)



## Section 8. Exposure Controls and Personal Protection - continued

### Personal Protection - continued

Description	PART-A: CeRam-Kote Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Protective Gloves</b>	Wear resistant gloves such as nitrile rubber	Permeation resistant gloves (butyl rubber, nitrile rubber). Based on laboratory assessment tests, it is recommended that latex gloves not be worn when working with isocyanates. Cover as much of the exposed skin area as possible with appropriate clothing (long sleeve shirts, etc.) If skin creams are used, keep the area protected only by the cream to a minimum.
<b>Eye Protection</b>	Chemical splash goggles in compliance with OSHA regulations are advised. Check to see if others are permitted.	Safety glasses, splash goggles or faceshield.
<b>Other Protective Clothing or Equipment</b>	To prevent repeated or prolonged skin contact, wear impervious clothing and boots.	To prevent repeated or prolonged skin contact, wear impervious clothing and boots. Safety showers and eyewash stations should be available.
<b>Work/Hygienic Practices</b>	Wash hands before eating, smoking or using washroom. Smoke in smoking permitted areas only.	Precautions must be taken so persons handling this product do not allow contact with the eyes or skin. In spray operations, protection must be afforded against exposure to both vapor and spray mist.

## Section 9. Spills, Leaks, and Disposals

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Steps to be Taken in Case Material is Released or Spilled</b>	<p><b>Small:</b> Absorb, preferably with floor absorbent. Transfer to hood.</p> <p><b>Large:</b> Eliminate all ignition sources. Wear protective clothing. Stop spill, dike area, pump to salvage tank. Prevent run-off to sewers, streams. Notify authorities.</p>	<p>Evacuate nonessential personnel. Remove all sources of ignition. Ventilate the area. Notify appropriate authorities if necessary. Cleanup personnel should wear appropriate personal protective equipment. Dike or impound spilled material and control further spillage if feasible. Do not allow material to leak into surface water supplies, sewers or ground water. 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%)</p>

## Section 9. Spills, Leaks, and Disposals - continued

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>Waste Disposal Method</b>	<p><b>Small spill:</b> Allow volatile portion to evaporate in hood. Allow sufficient time for vapors to completely clear hood duct work. Dispose of remaining material in accordance with applicable regulations.</p> <p><b>Large spill:</b> Destroy by liquid incineration. Contaminated absorbent may be deposited in a landfill in accordance with local, state and federal regulations.</p>	Waste must be disposed of in accordance with federal, state and local environmental control regulations. Incineration is the preferred method. Empty containers retain product residue (liquid and/or vapor) and can be dangerous. Do not pressurize, cut 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.
<b>Precautions to be Taken in Handling and Storage</b>	Do not store or use in high temperature areas or near heat, sparks or open flame. Keep closure tight and container upright to prevent leakage. Store only in well ventilated areas. Avoid contact with breathing vapors released during curing process.	Keep away from heat sparks, and open flames. Ground containers during storage and transfer operations. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Store in a cool, dry area. At maximum storage temperatures noted, material may slowly polymerize without hazard. Ideal storage temperature range for ease of handling is 50-81°F (10-27°C). Avoid contact with skin and eyes. Do not breathe vapors if generated. Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard.
Other Precautions	Do not take internally. Avoid contact with skin and eyes. Avoid breathing of vapors or spray mist. All hazard precautions in the data sheet must be observed.	

## Section 10. Transport Information

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>DOT/IATA/IMDG Shipping Names</b>	Resin Solution	Resin Solution
<b>Hazard Class or Division</b>	3	3
<b>Secondary</b>		
<b>UN Identification Number</b>	UN 1866	UN 1866
<b>Packing Group</b>	III	III
<b>Label(s) required</b>	Flammable Liquid	Flammable Liquid
<b>Quantity Limitations (Air only)</b>		
<b>Passenger Aircraft</b>	60 L	60 L
<b>Cargo Aircraft</b>	220 L	220 L
<b>Packing Instructions</b>		
<b>Passenger Aircraft</b>	309	309
<b>Cargo Aircraft</b>	310	310

## Section 11. Regulatory Information

Description	PART-A: CeRam-Thane 200 (Base)	PART-B: CeRam-Thane 200 (Curing Agent)
<b>OSHA Status</b>	This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.	This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
<b>TSCA Status</b>	On TSCA Inventory	On TSCA Inventory
<b>SARA Title III</b>	Section 302 Extremely Hazardous Substances: None Section 311-312 Hazard Categories: Immediate Health Hazard; Delayed Health Hazard; Flammability Hazard	Section 302 Extremely Hazardous Substances: None  Section 311-312 Hazard Categories: Immediate Health Hazard; Delayed Health Hazard; Fire Hazard; Reactive Hazard  Section 313 Toxic Chemicals: Xylene (CAS# 1330-20-7), 9.50-12.25%; Ethyl Benzene (Solvent Residual), (CAS* 100-41-1), 0.25-3.00%; Hexamethylene 1,6-Diisocyanate, CAS# 822-06-0; DeMinimus is 1.0%. Monomer content at the time of manufacture is 0.7%. The free monomer content may rise to a max. of 1.6% after 3-6 months storage.