MATERIAL SAFETY DATA SHEET

Section 1. Product and Company Information

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PRODUCT NAME: CeRam-Kote 60

Section 2. Composition and Ingredient Information

Common Name	Chemical Name	CAS Number	Weight %
PART-A CeRam-Kote 60 (Base)			
Ceramic Filler	Ceramic Filler	67762-90-7 1344-28-1 14807-96-6	43 to 78
*Proprietary #1	Epoxy Resin	041638-13-5	2 to 6
*Proprietary #2	Epoxy Resin	28064-14-4	1 to 8
*Proprietary #3	Epoxy Resin	25068-38-6	6 to 20
Methyl Ethyl Ketone	2-Butanone	78-93-3	4 to 7
Methyl Isobutyl Ketone	4-Methyl-2-Pentanone	108-10-1	2 to 5
PART-B CeRam-Kote 60 (Curing Agent)			
Trimethylhexamethylenediamine	trimethyl-1,6-Hexanediamine	25620-58-0	2 to 3
p-tert Butyl Phenol (PTBP)	Phenol, 4-(1,1-dimethylethyl)-	98-54-4	2 to 3
m-Xylylenediamine	1,3- Benzenedimethaneamine	1477-55-0	2 to 3

*The specific chemical identity of this ingredient is declared proprietary information under 29 CFR 1910.1200, section (i) Trade Secret. Hazard Information is provided in this MSDS for this ingredient.

Section 3. Physical Data

Description	CeRam-Kote 60 (Catalyzed)	PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Specific Gravity (kg/l)	1.80	1.8612	1.04
Boiling Point	no data	241°F (116°C)	>392°F (>200°C)
Vapor Density (Air = 1)	> Air	3.2	No Data
Solubility in Water	Insoluble	Insoluble	Slight (0.1 - 1%)
Viscosity (centapoise)	1000 cP to 1500 cP	1200 to 2000 cP	500 cP
pH	Slightly alkaline	Slightly acidic	Alkaline
Density – packaged (on average)	14.8 (6.7)	13.5 lbs/gal (6.1 kg.)	1.34 lbs/gal (0.61 kg)
Total Volatiles	14-16%	10 to 12%	56%
Non-Volatiles	84-86%	88 to 90%	44%
VOC content	2.0 lbs/gal (240 g/l)less water	2.0 lbs/gal (240 g/l) less water	0.0

Section 4. Fire Fighting Measures

Description	CeRam-Kote 60 (catalyzed) and/or PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Flashpoint	64°F (17.8°C) when catalyzed	230°F (110°C)
Flammable Limits	LFL: 1.2 - MIBK UFL: 8.0 - MIBK	LEL: No DataUEL: No Data
Auto Ignition Temperature	750°F (399°C) - IPA	No Data
Extinguishing Media	Foam, CO_2, or dry chemical	Ignition will give rise to a Class B fire. In case of large fire use: water spray, alcohol foam. In case of small fire use: CO_2, dry chemical, dry sand or limestone
Unusual Fire and Explosion Hazards	Product is a NFPA Class 1B flammable liquid. Prevent smoking, open flame, static and other electrical sparking. Excessive heat may cause lids of containers to pop open from excessive vapor pressure.	May generate toxic or irritating combustion products. Contact of liquid with skin must be prevented. Sudden reaction and fire may result if product is mixed with an oxidizing agent. May generate carbon monoxide gas. May generate toxic nitrogen oxide gases. May generate ammonia gas. Personnel in vicinity and downwind should be evacuated.
Fire Fighting Instructions	Treat as a flammable liquid type fire. In a sustained fire wear self-contained breathing apparatus and full protective bunker turnout gear	A face shield should be worn. Firefighters should wear butyl rubber boots, and body suit and a self-contained breathing apparatus. Retain expended liquids from fire fighting for later disposal

Section 5. Reactivity Data

Description	CeRam-Kote 60 (catalyzed) and/or PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Stability	Avoid High Heat	Stable
Incompatibility	Avoid organic peroxides and oxidizers	Mineral acids (i.e., sulfuric, phosphoric, etc.). Organic acids (i.e., acetic acid, citric acid, etc.). Oxidizing agents (i.e., perchorates, nitrates, etc.). Reactive metals (i.e., sodium, calcium, zinc, etc.). Sodium or Calcium Hypochlorite. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Materials reactive with hydroxyl compounds. A reaction accompanied by large heat release occurs when the product is mixed with acids. Heat generated may be sufficient to cause vigorous boiling creating a hazard due to splashing or splattering of hot material.
Hazardous Decomposition Products	Various hydrocarbon fragments. See section 4 of MSDS for combustion products statement.	Nitrogen oxide can react with water vapors to form corrosive nitric acid (TVL=2 ppm). Carbon Monoxide in a fire. Carbon Dioxide in a fire. Ammonia when heated. Nitrogen Oxides in a fire. Irritating and toxic fumes at elevated temperatures. Nitric acid in a fire. Aldehydes. The oxides of nitrogen gases (except nitrous oxide) emitted on decomposition are highly toxic.
Hazardous Polymerization	May occur. Avoid excessive heat, contamination and prolonged storage above 70°F	Will not occur.

Section 6. Health and Safety

	CeRam-Kote 60 (catalyzed) and/or PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Primary Routes of Exposure	Inhalation, skin, eye	Eye, skin, Ingestion, Skin absorption
Potential Health Effects	**Acute (short term):** This product if inhaled may cause nose, throat, and mucous membrane irritation and possible central nervous system effects including headaches, nausea, vomiting, dizziness, drowsiness, loss of coordination, impaired judgment, and general weakness. It may cause moderate irritation to the skin with dryness, cracking, and possible dermatitis with prolonged or repeated contact. Direct eye contact with this product may cause immediate irritation to the eyes with redness, burning, tearing and blurred vision. It may cause mouth, throat and gastrointestinal irritation, nausea, vomiting, and diarrhea if ingested. Aspiration of material into the lungs can cause chemical pneumonitis which can be fatal.	Harmful if swallowed. Corrosive to eyes. Corrosive to skin. Severe eye irritant. **Acute (short term):** Product vapor in low concentrations can cause lacrimation, conjunctivitis and corneal edema when absorbed into the tissue of the eye from the atmosphere. Coreneal edema may give rise to a perception of “blue haze” or “fog” around lights. The effect is transient and has no known residual effect. Burns of the eye may cause blindness. Contact with the skin may cause dryness (defatting), itching and/or rash. Contact of undiluted product with the eyes or skin quickly causes severe irritation and pain and may cause burns, necrosis and permanent injury. Inhalation of aerosols and mists may severely damage contacted tissue and produce scarring. Product is absorbed through the skin and may cause nausea, headache and general discomfort.

Section 6. Health and Safety (continued)

	CeRam-Kote 60 (catalyzed) and/or PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Potential Health Effects (continued)	**Chronic (long term):** Prolonged or repeated skin contact may result in irritation, dermatitis marked by rough, dry cracking skin. Contact with the epoxy resin may cause sensitization. In lab animals, overexposure by inhalation to MIBK has been reported to cause liver and kidney abnormalities, and lung and brain damage. Kidney disorders have been reported from human ingestion of Isopropanol.	**Chronic (long term):** Repeated and/or prolonged exposure may result in: adverse eye effects (such as conjunctivitis or corneal damage), adverse skin effects (such as defatting, rash, or irritation), adverse skin effects (such as rash, irritation or corrosion). Dryness of nasal passages may be experienced when material is inhaled over a long period of time.
Medical Conditions Aggravated by Exposure	Persons with a history of chronic respiratory disease, skin disease, or central nervous system disorders may be at increase risk for worsening their conditions from exposure to this product.	Eye disease; skin disorders and allergies.

Section 7. First Aid Measures

Description	CeRam-Kote 60 (catalyzed) and/or PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Inhalation	Remove individual to fresh air. If breathing is difficult, administer oxygen and obtain medical aid.	Move patient to fresh air. If breathing has stopped or is labored give assisted respiration (e.g., mouth-to-mouth). Supplemental oxygen may be indicated. Prevent aspiration of vomit. Turn victim's head to the side. Seek medical advice.
Eyes	Flush with running water for at least 15 minutes. Seek medical attention	Hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes. Seek medical advice.
Skin	Wash with flowing water. Remove contaminated clothing and launder before re-wearing. If irritation persists, seek medical attention	Remove product and immediately flush affected area with water for at least 15 minutes. Remove contaminated clothing and shoes. Destroy contaminated leather apparel. Cover the affected area with a sterile dressing or clean sheeting and transport for medical care. Do not apply greases or ointments. Control shock, if present. Launder contaminated clothing prior to use.
Ingestion	DO NOT induce vomiting. Seek medical attention.	In the event of ingestion, administer 3-4 glasses of milk or water. DO NOT INDUCE VOMITING. Seek medical advice.

Section 8. Exposure Controls and Personal Protection

Exposure controls

INGREDIENT	OSHA PEL (8-HR TWA)	ACGIH TLV (8-HR TWA)
***Proprietary #1, #2, #3**	5 mg/m³ (respirable fraction) 15 mg/m³ (total fraction)	10 mg/m³
Methyl Ethyl Ketone	200 PPM, STEL 300 PPM	200 PPM, STEL 300 PPM
Methyl Isobutyl Ketone	100 PPM	50 PPM, STEL 75 PPM
Ceramic Filler	2 mg/m³	2 mg/m³
Part B	None established	None established

Personal Protection

Description	CeRam-Kote 60 (catalyzed) and/or PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Engineering controls	General dilution ventilation and/or exhaust ventilation should be provided as necessary to maintain exposures below regulatory limits.	Maintain air concentrations in work spaces in accord with standards outlined in Sections 2 and 6.
Respiratory Protection	If irritation occurs, or if the TLV or PEL is exceeded, use a NIOSH/MSHA approved air purifying respirator with organic vapor cartridges or canisters, or supplied air respirators. Use respiratory protection in accordance with your company's respiratory program, local regulations or OSHA regulations under 29 CFR 1910.134.	Not required under normal conditions in a well-ventilated workplace. Under the following conditions a respirator may be required: when product vapor concentration exceeds the limits listed in Section 2, during repair and cleaning of equipment, during transfer or discharge of the product, sampling, spray applications. Types of respirators that may be used include the following: Chemical Cartridge Respirator with face piece to protect against the organic vapor, Supplied air respirator with full face piece, Self-contained breathing apparatus in pressure demand mode. In emergency conditions, use a self-contained breathing apparatus in pressure demand mode.
Dermal Protection	Loose fitting long sleeved shirt, long pants and chemical resistant gloves such as neoprene or natural rubber gloves.	Impervious clothing. Slicker suit. Rubber boots. Full rubber suit (rain gear). Butyl or latex protective clothing. Neoprene rubber gloves. Impermeable gloves. Cuffed butyl rubber gloves. Nitrile rubber gloves. Polyvinyl chloride gloves.
Eye Protection	Chemical protective goggles.	Full face shield with goggles underneath.

Section 9. Spills, Leaks, and Disposal

Description	CeRam-Kote 60 (catalyzed) and/or PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
Land Spill	Prevent material from entering sewers or waterways. Remove all sources of ignition (flames, hot surfaces, and electrical static or frictional sparks). Ventilate area. Absorb with inert materials (vermiculite or sand) and place in a closed container for disposal as solid waste. Wash area well with trisodium phosphate and water.	Stop the leak, if possible. Reduce vapor spreading with a water spray. Shut off or remove all ignition sources. Construct a dike to prevent spreading (includes molten liquids until they freeze). If recovery is not feasible, admix with dry soil, sand or non-reactive absorbent an place in an appropriate chemical waste container. Transfer to containers by suction, preparatory for later disposal. Flush area with water spray. Clean-up personnel must be equipped with self-contained breathing apparatus and butyl rubber protective clothing. For large spills, recover spilled material with a vacuum truck.
Disposal Considerations	Characteristic hazardous waste (D001) due to ignitability	Comply with all Federal, State and Local Regulations.

Section 10. Transport Information

Description	PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
DOT/IATA/IMDG Shipping Names	Resin Solution	Amines, Liquid, Corrosive, N.O.S., trimethyl-1,6-Hexanediamine
Hazard Class or Division	3	8
Secondary	None	None
UN Identification Number	UN 1866	UN 2735
Packing Group	III	III
Label(s) required	Flammable (3)	Corrosive (8)
Quantity Limitations(Air only)		
Passenger Aircraft	60 liters (15 gallons)	1 liters (1 quarts)
Cargo Aircraft	220 liters (58 gallons)	30 liters (7.5 gallons)
Packing Instructions		
Passenger Aircraft	309	818
Cargo Aircraft	310	820

Section 11. Regulatory Information

Description	PART-A: CeRam-Kote 60 (Base)	PART-B: CeRam-Kote 60 (Curing Agent)
TSCA Status	Each ingredient is on the inventory	All components are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory
SARA Title III	Sec 304: MIBK Sec 313: MIBK	Sec 312: (40CFR370) hazard class Immediate Health Hazard. Delayed Health Hazard. Sec 313: (40CRF372) toxic chemicals above “de minimis” level are: None