ESK

ceradyne, inc.

Material Safety Data Sheet

Material: 08128044

EKamold® EP Aerosol

Version: 1.1 (US) Date of print: July 12, 2006 Date of last Issuing: March 17, 2006

1 Product and company identification

1.1 Identification of the substance or preparation:

Commercial product name: EKamold® EP Aerosol

Use of substance / preparation: Industrial. release agent

1.2 Company/undertaking identification:

Manufacturer/distributor:
ESK Ceramics GmbH & Co. KG
Max-Schaidhauf-Str. 25
87437 Kempten/Allgäu
Germany

Customer information:
Ceradyne, Inc.
ESK Ceramics
1201 North Industrial Drive
Saline, MI 48176
Customer Care Center:
Tel 734-944-8232, Fax 734-9441375
Hours of operation:
Monday - Friday, 8 am to 5 pm (eastern standard time)
Corporate website: www.ceradyne.com

Emergency telephone no. (24h): **714 / 715-0293 cell** and +49 / (0) 8677 / 83-2222

Transportation emergency: **714 / 715-0293 cell** and +49 / (0) 621 / 60-43333

This MSDS was issued by: Fernando G Hernandez, Ceradyne, Inc

2 Composition/information on ingredients

2.1 Chemical characterization (preparation):

Chemical characteristics Aerosol - Mixture of boron nitride powder, ethanol and power gas

2.2 Information on ingredients:

Type	CAS No.	Substance	Content [wt. %]		Notes
			Lower	Upper	
INHA	64-17-5	Ethanol	30.0	60.0	
INHA	106-97-8	Butane	30.0	60.0	
INHA	74-98-6	Propane	5.0	10.0	
INHA	13530-50-2	Aluminum tris (dihydrogen phosphate	1.0	5.0	

Type: HYD - by-product upon hydrolysis, INHA - ingredient, NEBE - by-product, MONO - residual monomer, VERU - impurity, VUL - by-product upon vulcanization. ***

Note: C1 - IARC carcinogen, C2 - NTP carcinogen, C3 - OSHA carcinogen, NH - non-hazardous, R - reproductive toxin.

Substances listed in the Subsections "HAPS" and "California Proposition 65 Carcinogens / Reproductive Toxins" that are not listed in Section 2 are only present at quantities below 0.1% for California Proposition 65 listed toxins or below 1% for non-carcinogenic HAPS or they are inextricably bound in the product.

3 Hazards identification

3.1 Hazards classifications

HMIS® rating (product as packaged):

Health: 2 Fire: 4 Reactivity: 0 PPE: G

Note: Respiratory protection is only recommended in the event that ventilation or engineering controls are unable to maintain exposures below recommended levels; or in the event of a spill or other emergency response situation. Hazardous Materials Identification System and HMIS are

registered trademarks of the National Paint and Coatings Association. (HMIS codes are based on contact with the product as packaged and any hydrolysis by-products, if present.)

Canadian WHMIS Classification: B5, D2B

3.2 Emergency overview and potential hazards

Signal Word: DANGER

Physical Hazards: Liquefied Gas. Extremely flammable liquid and vapor. Vapor may cause flash fire.

Acute health effects

Route of entry or possible contact: eyes, skin, and inhalation

Eye contact: May cause eye irritation.

Skin contact: May cause skin irritation. Causes defatting of the skin.

Inhalation: May cause mucous membrane irritation. At higher aerosol/vapor concentrations: Inhalation causes central nervous system effects.

Ingestion: Not expected in industrial use.

Additional information on acute health effects:
Ethanol (CAS-No. 64-17-5) is an irritant to the eyes and mucous membranes. Overexposure has been shown to cause central nervous system depression. Direct contact with the eyes will cause burning and stinging.

3.3 Further information:

Chronic health effects: none known. See Sect. 3.2 "Additional information on acute health effects".

Medical conditions which may be aggravated by exposure:
Alcoholic beverage can enhance the toxic effects. Persons with impaired liver function may be more susceptible to the effects of ethanol.

Carcinogens/Reproductive toxins: There are no carcinogenic ingredients present at or over 0.1% in this material. This material does not contain any reproductive toxins at or above OSHA or WHMIS reportable levels. See Section 11 for Toxicological Information, if any.

4 First-aid measures

4.1 General information: Get medical attention if irritation or other symptoms occur. Before seeking medical attention remove contaminated clothing and shoes. Take a copy of the Safety Data Sheet when going for medical treatment.

4.2 After inhalation: If inhaled remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult give oxygen.

4.3 After contact with the skin: If contact with skin, immediately flush skin with plenty of water for at least 15 min.

4.4 After contact with the eyes: If contact with eyes, immediately hold eyelids apart and flush with plenty of water for at least 15 min.

4.5 After swallowing: For ingestion, if conscious, give several glasses of water but do not induce vomiting. If vomiting does occur, give additional fluids.

5 Fire-fighting measures

5.1 Flammable properties: Method

Flash point.....: -97 °C (-142 °F)
Boiling point / boiling range.....: -44 °C (-47 °F) at 1013 hPa
Lower explosion limit (LEL).....: approx. 1.5 %(V)
Upper explosion limit (UEL).....: approx. 15.0 %(V)
Ignition temperature .....: 365 °C (689 °F)
NFPA Hazard Class (comb./flam. liquid): .....IA

5.2 Fire and explosion hazards: Danger! Flammable gases. Extremely flammable liquid and vapor. Vapor may cause flash fire. Never use welding or cutting torch on or near any container of this material, even if empty, because an explosion could occur. Product may form flammable/explosive vapor-air mixture during use. Container may burst upon heating.

5.3 Recommended extinguishing media: carbon dioxide, halones, water-mist or alcohol-resistant foam. Use extinguishing measures appropriate to the source of fire.

5.4 Unsuitable extinguishing media: dry chemical.

5.5 Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:

5.6 Fire fighting procedures: Cool endangered containers with water. Fire fighters should wear full protective clothing including a self-contained breathing apparatus.

6 Accidental release measures

6.1 Precautions: Keep unprotected persons away. Wear personal protection equipment (see section 8). Do not inhale gases/vapors/aerosols. Avoid contact with eyes and skin. Ensure adequate ventilation. Observe wind direction.

HAZWOPER PPE Level: D

6.2 Containment: Prevent material from entering sewers or surface waters. Condense gasses/vapors/mists using a directed spray of water. Spills of material which could reach surface waters must be reported to the United States Coast Guard National Response Center's toll free phone number (800) 424-8802.

6.3 Methods for cleaning up: Exhaust vapors. Use absorbent materials to pick up residual liquids. Take up mechanically and dispose of according to local/state/federal regulations.

6.4 Further information: Eliminate all sources of ignition. Consider explosion protection. Observe notes under section 7.

7 Handling and storage

7.1 Handling

Precautions for safe handling: Ensure adequate ventilation. Keep away from incompatible substances in accordance with section 10.2.

Precautions against fire and explosion: Do not open sprays violently and do not keep above 50 °C (122 °F) (TRG 300 pos. 6.6.1, par. 1- German regulations for dangerous goods). Vapors may form in closed rooms with air mixtures, leading to explosion in the presence of sources of ignition, even in empty, unclean vessels.
Keep away from sources of ignition and do not smoke. Vapors heavier than air, therefore inflammable gas mixture may form mainly near floor. Do not use on oxygen instruments. In case of fire remove container out of endangered area. Cool endangered containers with water.

7.2 Storage

Conditions for storage rooms and vessels: Store in a cool place.

Advice for storage of incompatible materials: Do not store with: strong oxidizing agents, peroxides, and Fire-promoting materials.

Further information for storage: Keep in the original container in a cool well-ventilated place. Protect against sun. Do not expose the product to thermal radiation.

8 Exposure controls and personal protection

8.1 Engineering controls

Ventilation: General ventilation sufficient to provide 1 CFM per square foot of floor area or 6 room air exchanges per hour is recommended.

Local exhaust: To control flammable/combustible vapors: Local exhaust ventilation which meets the requirements of ANSI Z9.2 is recommended to control airborne contaminants at the point of use.

8.2 Associate substances with specific control parameters such as limit values
Maximum airborne concentrations at the workplace

CAS No.	Material	Type	mg/m3	ppm	Dust fract.
64-17-5	Ethanol	OSHA PEL	1,900.0	1,000.0	
74-98-6	Propane	OSHA PEL	1,800.0	1,000.0	
	Particulates not otherwise classified	OSHA PEL	15.0		Inhalable dust
	Particulates not otherwise classified	OSHA PEL	5.0		Respirable dust
106-97-8	n-Butane	ACGIH TWA		800.0	
64-17-5	Ethanol	ACGIH TWA		1,000.0	
74-98-6	Propane	ACGIH TWA		2,500.0	
	Particulates not otherwise classified	ACGIH TWA	10.0		Inhalable dust
	Particulates not otherwise classified	ACGIH TWA	3.0		Respirable dust

Re; Particulates not otherwise classified: The value is for particulate matter containing no asbestos and ,1% crystalline silica (ACGIH).

8.3 Personal protection equipment (PPE)

Respiratory protection: Recommendation in case of long or strong exposure: A NIOSH approved air purifying respirator equipped with universal multi-contaminant multi-gas/vapor cartridges is recommended if overexposure to chemical vapors could occur.

Hand protection: Any liquid-tight rubber or vinyl gloves.

Eye protection: Safety glasses with side shields or chemical safety goggles.

Other protective clothing or equipment: Additional protective clothing or equipment is not normally required. Provide eye bath and safety shower.

9 Physical and chemical properties

9.1 Appearance

Physical state / form.....: liquefied gas
Color.....: white
Odor.....: slight

9.2 Safety parameters Method

Melting point / melting range.....: not determined
Boiling point / boiling range.....: -44 °C (-47 °F) at 1013 hPa
Flash point.....: -97 °C (-142 °F)
Ignition temperature .....: 365 °C (689 °F)
Lower explosion limit (LEL).....: approx. 1.5 %(V)
Upper explosion limit (UEL).....: approx. 15.0 %(V)
Density.....: not applicable
Water solubility / miscibility.....: completely miscible
pH-Value.....: approx. 7 at 20 °C (68 °F)
Viscosity (dynamic).....: not applicable

10 Stability and reactivity

10.0 General information: Stable under normal conditions of use.

10.1 Conditions to avoid: Heat, open flames, and other sources of ignition.

10.2 Materials to avoid: Reacts with: aluminum/aluminum chloride and alkali/alkaline earth metals. Reacts violently with: oxygen, oxidizing agents. Reaction causes the formation of: heat to the point of explosion.

10.3 Hazardous decomposition products:
If stored and handled in accordance with standard industrial practices and local regulations where applicable: none known.

1 0.4 Further information: Hazardous polymerization cannot occur.

11 Toxicological information

11.1 General information: Toxicological testing has not been conducted with this material.

11.2 Toxicological Data:
Experience with man: NA

12 Ecological information

12.1 Information on elimination (persistence and degradability)

Biodegradation / further information: Organic solvent: Readily biologically degradable.
Further information:

12.2 Behavior in environmental compartments>
Mobility
Further information:

12.3 Ecotoxicological effects: No expected damaging effects to water organisms.
Effects in sewage treatment plants (bacteria toxicity: respiration-/reproduction inhibition):
Do not introduce large amounts into purification plants.

12.4 Additional information
Other harmful effects
General information: Product not investigated. Prevent material from introduction into surface water and into soil.
No environmental problems expected if handled and treated in accordance with standard industrial practices and local regulations where applicable.

13 Disposal considerations

13.0 RCRA Waste Classification: D001 (Ignitable)
This classification applies only to the material as it was originally produced.

13.1 Product disposal
Recommendation: Fully empty can. Observe local/state/federal regulations.

13.2 Packaging disposal
Recommendation: Pressure gas pack under pressure, must not be forced open or heated above 50 °C (122 °F).
Dispose of only completely emptied pressure gas pack. Do not incinerate empty pressure gas packs. Do not pierce, cut or sold unclean containers. Containers may be recycled or re-used.
Observe local/state/federal regulations.

14 Transport information

14.1 US DOT & CANADA TDG SURFACE
Valuation. Hazardous product

Proper Shipping Name	Aerosols, flammable
Class	2.1
UN no.	1950
Label	Flammable gas/2
NAERG Page	126

14.2 Transport by sea IMDG-Code

Valuation	Hazardous product
Class	2.1
UN no.	1950
Proper Shipping Name	Aerosols
Marine Pollutant	no

14.3 Air transport ICAO-TI/IATA-DGR

Valuation	Hazardous product
Class	2.1
UN no.	1950
Proper Shipping Name	Aerosols, flammable

15 Regulatory information

15.1 U.S. Federal regulations

TSCA inventory status and TSCA information:
This material or its components are listed on or are in compliance with the requirements of the TSCA Chemical Substance Inventory.

TSCA 12(b) Export Notification: This material does not contain any TSCA 12(b) regulated chemicals.

CERCLA Regulated Chemicals: This material does not contain any CERCLA regulated chemicals.

SARA 302 EHS Chemicals: This material does not contain any SARA extremely hazardous substances.

SARA 311/312 Hazard Class: Fire hazard. Immediate (acute) health hazard. Sudden release of pressure hazard.

SARA 313 Chemicals: This material does not contain any SARA 313 chemicals above de minimum levels.

HAPS: This material does not contain any hazardous air pollutants.

15.2 U.S. State regulations

California Proposition 65 Carcinogens:
This material does not contain any chemicals known to the state of California to cause cancer.

California Proposition 65 Reproductive Toxins:
This material does not contain any chemicals known to the state of California to cause reproductive effects.

Massachusetts Substance List:
64-17-5 Ethanol
106-97-8 Butane
74-98-6 Propane

New Jersey Right-to-Know Hazardous Substance List:
64-17-5 Ethanol
106-97-8 Butane
74-98-6 Propane

Pennsylvania Right-to-Know Hazardous Substance List:
64-17-5 Ethanol
106-97-8 Butane
74-98-6 Propane

15.3 Canadian regulations This product has been classified in accordance with the Hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Hazard Classes: B5, D2B
DSL Status: This material or its components are listed on the Canadian Domestic Substances List.
Non-DSL Chemicals: This material does not contain any non-DSL chemicals.
Canadian Ingredient Disclosure List:
64-17-5 Ethanol
106-97-8 Butane

15.4 Other international regulations
EU Hazard Symbols:

	F+	Extremely Flammable

EU Risk Phrases:

R12	Extremely flammable
S2	Keep out of reach of children.
S16	Keep away from sources of ignition - No smoking
S23	Do not breathe spray.
S51	Use only in well ventilated areas.
S33	Take precautionary measures against static discharges.

Details of international registration status
Listed on the following inventories:
TSCA - USA
PICCS - Philippines
ENCS - Japan
IECSC - China
EINECS - Europe
ECL – Korea
DSL - Canada
AICS - Australia

16 Other information

16.1 Additional information:
This Material Safety Data Sheet (MSDS) meets the requirements of the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200). This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the date compiled. However, no representation, warranty or guarantee expressed or implied, is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information. Nothing herein shall be construed as a recommendation for uses, which infringe valid patents, or as extending a license under valid patents. This MSDS provides selected regulatory information on this product, including its components. This is not intended to include all regulations. It is the responsibility of the user to know and comply with all applicable rules, regulations and laws relating to the product being used.

16.2 Glossary of Terms:

ACGIH -	American Conference of Governmental Industrial Hygienists
DOT -	Department of Transportation
hPa -	Hectopascals
mPa*s -	Milli Pascal-Seconds
OSHA -	Occupational Safety and Health Administration

PEL -	Permissible Exposure Limit
ppm -	Parts per Million
SARA -	Superfund Amendments and Reauthorization Act
STEL -	Short Term Exposure Limit
TSCA -	Toxic Substances Control Act
TWA -	Time Weighted Average
WHMIS -	Canadian Workplace Hazardous Materials Identification System

Flash point determination methods Common name

ASTM D56	Tagliabue (Tag) closed cup
ASTM D92, DIN 51376, ISO 2592	Cleveland open cup
ASTM D93, DIN 51758, ISO 2719	Pensky-Martens closed cup
ASTM D3278, DIN 55680, ISO 3679	Setaflash or Rapid closed cup
DIN 51755	Abel-Pensky closed cup

16.3 Conversion table:

Pressure:	1 hPa * 0.75 = 1 mm Hg = 1 Torr; 1 bar = 1000 hPa
Viscosity:	1 mPa*s = 1 Centipoise (Cp)