

MATERIAL SAFETY DATA SHEET  
COPPER ALUMINIUM OXIDE

1. PRODUCT IDENTIFICATION

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PRODUCTNAME:	COPPER ALUMINIUM OXIDE
CHEMICALNATURE:	METAL OXIDE
FORMULA:	CuAlO <sub>2</sub>

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2. PHYSICAL AND CHEMICAL CHARACTERISTICS

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BOILING POINT 760mmHg:	N/D
MELTINGPOINT:	N/D
SPECIFICGRAVITY:	N/D
MOLECULARWEIGHT:	N/D
VAPORDENSITY:	N/A
VAPOR PRESSURE(mmHg):	N/A
% VOLATILES:	N/A
SOLUBILITY INH <sub>2</sub> O:	INSOLUBLE
APPEARANCE:	Bluish Grey
ODOR:	ODORLESS

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3. HAZARD IDENTIFICATION

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HAZARD DESCRIPTION:	N/A
HMIS RATINGS (SCALE 0-4):	
HEALTH:	1
FLAMMABILITY:	0
REACTIVITY	0

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4. FIRE FIGHTING MEASURES

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FLASHPOINT:	N/A
AUTOIGNITIONTEMPERATURE:	N/A
FLAMMABLELIMITS:	
UPPER:	N/A
LOWER:	N/A
SUITABLE EXTINGUISHING AGENTS:	PRODUCT IS NOT FLAMMABLE. USE FIRE FIGHTING MEASURES THAT SUIT THE SURROUNDING FIRE.
PROTECTIVEEQUIPMENT:	WEAR SELF-CONTAINED RESPIRATOR. WEAR FULLY PROTECTIVE IMPERVIOUS SUIT.

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5. STABILITY

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THERMAL DECOMPOSITION CONDITIONS TOBEAVOIDED:	DECOMPOSITION WILL NOT OCCUR IF USED AND STORED ACCORDING TO SPECIFICATIONS.
MATERIALS TOBEAVOIDED:	NO INFORMATION KNOWN
DANGEROUSREACTIONS:	NO
DANGEROUS PRODUCTSOFT DECOMPOSITION:	METAL OXIDE FUME.

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## 6. HEALTH HAZARD INFORMATION

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ACUTE TOXICITY:	
PRIMARY IRRITANT EFFECT:	
ON THE SKIN:	MAY NOT CAUSE IRRITATION
ON THE EYE:	MAY CAUSE IRRITATION
SENSITIZATION:	NO SENSITIZING EFFECTS KNOWN.
SUBACUTE TO CHRONIC TOXICITY:	COPPER COMPOUNDS MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT. THEY MAY CAUSE METAL FUME FEVER, HEMOLYSIS OF THE RED BLOOD CELLS AND INJURY TO THE LIVER, LUNGS, KIDNEYS AND PANCREAS. INGESTION MAY ALSO CAUSE VOMITING, GASTRIC PAIN, DIZZINESS, ANEMIA, CRAMPS, CONVULSIONS, SHOCK, COMA AND DEATH. COPPER SOLUTIONS MAY CAUSE SENSITIZATION REACTIONS.
SUBACUTE TO CHRONIC TOXICITY:	ALUMINIUM MAY BE IMPLICATED IN ALZHEIMERS DISEASE.
ADDITIONAL TOXICOLOGICAL INFORMATION:	TO THE BEST OF OUR KNOWLEDGE THE ACUTE AND CHRONIC TOXICITY OF THIS SUBSTANCE IS NOT FULLY KNOWN. NO CLASSIFICATION DATA ON CARCINOGENIC PROPERTIES OF THIS MATERIAL IS AVAILABLE FROM THE EPA, IARC, NTP, OSHA OR ACGIH.

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## 7. EMERGENCY AND FIRST AID PROCEDURES:

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INHALATION:	REMOVE TO FRESH AIR, KEEP WARM AND QUIET, GIVE OXYGEN IF BREATHING IS DIFFICULT AND SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.
SKIN:	REMOVE ANY CONTAMINATED CLOTHING, BRUSH MATERIAL OFF SKIN, FLUSH WITH RUNNING WATER, WASH CAREFULLY WITH SOAP AND WATER. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.
EYES:	FLUSH EYES WITH LUKEWARM WATER, LIFTING UPPER AND LOWER EYELIDS, FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST

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## 8. HANDLING AND STORAGE

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HANDLING:	KEEP CONTAINER TIGHTLY SEALED, STORE IN COOL, AND DRY PLACE IN TIGHTLY CLOSED CONTAINERS. NO SPECIAL PRECAUTIONS ARE NECESSARY IF USED CORRECTLY.
INFORMATION ABOUT PROTECTION AGAINST EXPLOSIONS AND FIRES: STORAGE:	THE PRODUCT IS NOT FLAMMABLE. KEEP CONTAINER TIGHTLY SEALED. STORE IN COOL, DRY CONDITIONS IN WELL SEALED CONTAINERS.

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## 9. SPILL OR LEAK PROCEDURES

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:	WEAR APPROPRIATE RESPIRATORY AND PROTECTIVE EQUIPMENT. ISOLATE SPILL AREA AND PROVIDE VENTILATION.
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RESPIRATORY PROTECTION  
VENTILATION:

LOCAL EXHAUST VENTILATION MAY BE  
NECESSARY TO CONTROL ANY AIR CONTAMINANTS DURING THE  
USE OF THIS PRODUCT. GOOD GENERAL VENTILATION  
IS RECOMMENDED.  
RUBBER GLOVES

PROTECTIVE GLOVES:  
EYE PROTECTION:

SAFETY GLASSES.

OTHER PROTECTIVE CLOTHING  
OR EQUIPMENT:  
WASTE DISPOSAL METHOD:

APRON  
IN ACCORDANCE WITH LOCAL,  
STATE AND FEDERAL REGULATIONS.

**PROCESS:**  
**AREA:**  
**USERS:**  
**GUIDE:**  
**COGUIDE:**

**Pulsed Layer Deposition**  
**Room 1.2**  
**Cijy Mathai**  
**Professor S. Duttagupta**  
**Professor R.PINTO, Professor. Neumann Spallart**