

DOOSAN MATERIAL SAFETY DATA SHEET

CORPORATION ELECTRO-MATERIALS

661 Young Kang-Ri, Jeung Pyung-Eup, Jeung Pyung-Kun,

Chung Cheong Bug-Do, Korea

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : **DST-5000**

OTHER/GENERIC NAMES : Al based Cu Clad Laminate

PRODUCTS USE : Military : N/A NEMA : N/A
(Al based Cu Clad Laminate)

MANUFACTURER : Doosan Corporation Electro-Materials BG
661 Yong Kang-Ri, Jeung Pyung-Eup
Jeung Pyung-Gun, Chung Cheong Bug-Do
Korea

FOR MORE INFORMATION CALL :

(Monday-Friday, 8:30am-6:00pm)

82-43-820-8200

IN CASE OF EMERGENCY CALL:

(24 Hours/Day, 7days/Week)

82-43-820-8200

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS #	WEIGHT %
Copper	(7440-50-8)	2.4~88
Epoxy Resin	(25085-99-8)	1.45~40
Al	(7429-90-5)	9.65~94.3%

Trace impurities and additional material names not listed above may also appear in the Regulatory Information section(#15) towards the end of the MSDS. these materials may be listed for local "Right to Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVER VIEW :

A nonflammable, copper sheet material. Dust, when machined or punched may cause skin or eye irritation. Fumes, if decomposed may irritate eyes, nose, and throat.

POTENTIAL HEALTH HAZARDS :

SKIN : Copper, Al and dielectric dust may cause moderate skin irritation

EYES : Copper, Al and dielectric dust may cause moderate eye irritation.
Fumes may irritate eyes

INHALATION : Copper, Al and dielectric dust may be released when machined.

INGESTION : Do not allow food, drink or tobacco in an area where it may be contaminated

DELAYED EFFECTS : None

4. FIRST AID MEASURES

SKIN	Wash dust off in flowing water or shower. Change contaminated cloth.
EYE	Irrigate with flowing water for 15 minutes. If irritation persists, consult a physician.
INHALATION	If overcome by dust or smoke, remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. Call physician.
INGESTION	If large amounts are ingested, consult physician.
ADVICE TO PHYSICIAN :	Treat symptomatically

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES	N/A
FLASH POINT	N/A
FLASH POINT METHOD	Not determined
AUTOIGNITION TEMPERATURE	N/A
UPPER FLAME LIMIT(Volume % in air)	N/A
LOWER FLAME LIMIT(Volume % in air)	N/A
FLAME PROPAGATION RATE(Solids)	ULV-0
OSHA FLAMMABILITY CLASS	N/A
EXTINGUISHING MEDIA	Water, CO2 and dry chemical
UNUSUAL FIRE AND EXPLOSION HAZARD :	May give off toxic gases of epoxy when burning or when heated to decomposition

SPECIAL FIREFIGHTING PRECAUTION/INSTRUCTIONS :

Fireman should wear proper protective equipment and positive pressure self-contained breathing apparatus

6. ACCIDENTAL RELEASE MEASURES

INCASE OF SPILL OR OTHER RELEASE :(Always wear recommended personal protection equipment)
Not applicable, material is an article.
Spills and releases may have to be reported to federal and/or local authorities.
See the Regulatory Information section(#15) regarding reporting requirements

7. HANDLING AND STORAGE

NORMAL HANDLING : (Always wear recommended personal protective equipment)
The primary exposure route is inhalation of dust when
machined/punched or from fumes or vapors when heated

STORAGE RECOMMENDATIONS : N/A

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS : Use local exhaust ventilation to control dust.

PERSONAL PROTECTIVE EQUIPMENT :

SKIN PROTECTION : For brief contact to dust, no precautions other than clean
body-covering clothing should be needed. Use gloves and
aprons when prolonged or frequently repeated contact occurs.

EYE PROTECTION : Use appropriate eye protection when machining material

RESPIRATORY PROTECTION : Atmospheric levels of Copper Dust should be maintained
below exposure guidelines. When respiratory protection is
required for certain operations, use a NIOSH-approved dust
respirator.

ADDITIONAL RECOMMENDATIONS : N/A

EXPOSURE GUIDELINES : (Guidelines exist for the following ingredients)

<u>Ingredient Name</u>	<u>CAS. NO.</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>Other Limit</u>
Copper	(7440-50-8)	1mg/m3	1mg/m3	N/A

Other exposure limits for the decomposition products normally associated with product use
are as follows : None

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	:	White Gray
PHYSICAL STATE	:	Solid
MOLECULAR WEIGHT	:	N/A
CHEMICAL FORMULA	:	N/A
ODOR	:	None, unless heated
SPECIFIC GRAVITY	:	(Water=1.0) 2.5 to 3.3
SOLUBILITY IN WATER	:	(weight %) Negligible in water
pH	:	N/A
BOILING POINT	:	N/A
MELTING POINT	:	N/A
VAPOR PRESSURE	:	N/A

VAPOR DENSITY	:	(Air=1.0) N/A	
EVAPORATION RATE	:	N/A	Compared to : N/A
% VOLATILES	:	N/A	
FLASH POINT	:	N/A	

(Flash point method and additional flammability data are found in section 5)

10. STABILITY AND REACTIVITY

NORMALLY STABLE ? (CONDITIONS TO AVOID)

Stable

INCOMPATIBILITIES :

Not determined

HAZARDOUS DECOMPOSITION PRODUCTS :

CO, CO₂, Copper oxides if heated in excess of 300 deg.C

HAZARDOUS POLYMERIZATION ?

None known

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS : Dust may cause moderate eye, skin and throat irritation.

DELAYED(SUBCHRONIC & CHRONIC) EFFECTS : None Known

OTHER DATA : Non determined

12. ECOLOGICAL INFORMATION

Not Biodegradable

13. DISPOSAL CONSIDERATIONS

RCRA :

Is the unused product a RCRA hazardous waste if discarded ?

No

OTHER DISPOSAL CONSIDERATIONS : Disposal must be made in accordance with all applicable

Local, State and Federal regulations. Copper should be recycled.

The information offered here is for the product as shipped. Use and/or alterations the such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT HAZARD CLASS : Not regulated
US DOT ID NUMBER : N/A

For additional information on shipping regulations affecting this material, contact the information number found on the first page.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

TSCA INVENTORY STATUS : The resin system components used to make this material are on the TSCA inventory list.

OTHER TSCA ISSUES : N/A

SARA TITLE III/CERCLA :**RQs & TPQs :**

reportable Quantities "(RQs)" and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

	SARA/CERCLA	SARA EHS
Ingredient	RQ(1bs)	TPQ(1bs)
Copper	5000	None

Spills/releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center (1-800-424-8802) and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS : N/A**SARA 313 TOXIC CHEMICALS :**

The following ingredients are SARA 313 "Toxic Chemicals". CAS#'s and wt.% are found in section #2.

<u>Ingredient</u>	<u>CAS. NO.</u>	<u>Comment</u>
Copper	(7440-50-8)	Recycle

STATE RIGHT TO KNOW :

In addition to the ingredients found in section 2, the following are listed for state right-to-know purposes:

Ingredient	Wt. %	Comment
N/A	N/A	N/A

ADDITIONAL REGULATORY INFORMATION :

Doosan Corporation Electro-materials BG does not use polybromide-biphenyls or polybromide-biphenyloxides as a fire retardant in any our epoxy or phenolic systems.

WHMIS CLASSIFICATION (CANADA) : N/A

FOREIGN INVENTORY STATUS : N/A

16. OTHER INFORMATION

CURRENT ISSUE DATE :

PREVIOUS ISSUE DATE :

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING :

We are using the new A.N.S. I format for material safety data sheets.