

Doosan Corporation

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Material Safty Data Sheet (MSDS)

Product Name	DS-7408
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Doosan Corporation Electro-Materials

Revision Date : MSDS

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Revision No : Product Name : DS-7408

Product Name : DS-7408

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : DS-7408
OTHER/GENERIC NAMES : Glass cloth based Epoxy Laminate
PRODUCTS USE : Military : None ANSI : FR-4
(Industrial Thermosetting Laminate for printed circuitry)
MANUFACTURER : Doosan corporation Electro-Materials
661 Yongkang-Ri, Jeungpyeong-Eup, Jeungpyeon-Kun,
Chungcheongbuk-Do, South-Korea

FOR MORE INFORMATION CALL :
(Monday-Friday, 8:30am-6:00pm)

IN CASE OF EMERGENCY CALL :
(24 Hours/Day, 7days/Week)

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS #	WEIGHT %
Glass Fibers	(65997-17-3)	40-70
Copper Foil	(7440-50-8)	8-28
Non-Hazardouse Cured Resin	(Proprietary)	15-25

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.

■ Information for environmental hazardous sustance

	Sustance Name	Used content
Heavy Metals	Cadimium and its compounds	0 %
	Lead and its compounds (mixtures)	0 %
	Mercury and its compounds	0 %
	6+ Chromium compounds	0 %
Chlorinated Organic Compounds	Polychlorinated biphenyls (PCBs)	0 %
	PCN	0 %
	Chlorinated Paraffin (CP)	0 %
	Mirex(Perchlordecone)	0 %
	Others Chlorine compounds	0 %
Brominated Organic Compounds	Polybrominated biphenyls (PBBs)	0 %
	Polybrominated diphenyl ethers (PBDEs)	0 %
	TBBP-A-BIS	0 %
	FR-720	0 %
	Others	Below 8%
	Tributyl compounds & Triphenyl compounds	0 %
	Asbestos	0 %
	Azo compounds *4	0 %
	Formaldehyde	0 %
	Poly vinyl chloride (PVC)	0 %

3. HAZARDS IDENTIFICATION

EMERGENCY OVER VIEW :

A nonflammable, sheet material. Dust, when machined or punched may cause skin or eye

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irritation. Fumes, if decomposed may irritate eyes, nose, and throat.

POTENTIAL HEALTH HAZARDS :

SKIN : Dust may cause moderate skin irritation
EYES : Dust may cause moderate eye irritation. Fumes may irritate eyes
INHALATION : Dust or Fumes may cause irritation of the throat
INGESTION : Not determined
DELAYED EFFECTS : None

Although the information and recommendation in this Material Safety Data Sheet (information) are presented in good faith and believed to be correct as of the data stated above.

Doosan Electro-Materials co., LTD.

make no representation or warranty as to the completeness or accuracy of this information.

This information is supplied with the condition that the person receiving it will make their own determination as to its suitability for their purpose prior to implementation.

For additional information, please contact our Quality Assurance Department

4. FIRST AID MEASURES

SKIN Wash dust off in flowing water or shower. Change contaminated cloth.
EYE Irritate 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)	UWL-0
OSHA FLAMMABILITY CLASS	N/A
EXTINGUISHING MEDIA	Water, CO2 and dry chemical
UNUSUAL FIRE AND EXPLOSION HAZARD :	N/A

SPECIAL FIREFIGHTING PRECAUTION/INSTRUCTIONS :

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

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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. HANDING 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 PROTECTI : Atmospheric levels of Glass Fabric 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>ACGIHTLV</u>	<u>*OSHA PEL</u>	<u>Other Limit</u>
Cured Epoxy resin blend	(Proprietar	5 PPM	5 PPM	N/A
Glass cloth	(65997-17-3	10mg/m3	15mg/m3	N/A
Copper	(7440-50-8)	1mg/m3	1mg/m3	N/A

*OSHA PEL for respirable dust

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

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE : Pale yellow, translucent sheet material

PHYSICAL STATE : Solid

MOLECULAR WEIGHT : N/A

CHEMICAL FORMULA : N/A

ODOR : Very faint epoxy odor

SPECIFIC GRAVITY : (Water=1.0) 1.75+/-0.25

SOLUBILITY IN WATER : (weight %) Negligible in water

pH : N/A

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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 and Epoxy 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 : N/A

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 alternations 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

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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 (lbs)	TPQ (lbs)
N/A	N/A	N/A

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.

Ingredient	CAS. NO.	Comment
Glass Fibers	(65997-17-3)	None
Non-Hazardouse Cured Resin	(Proprietary)	None
Copper Foil	(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 Electro-materials 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

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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.