

# Material Safety Data Sheet

## 1. Chemical product and enterprise logo

**A. Name of Product** DS-9530

**B. Recommended use of the product and the limitation on use**

Recommended use : Material for Printed Circuit Boards

Limitation on use : No data available

**C. Producer and supplier:**

**Name of producing company:** Doosan Corporation Electro-Materials BG

Address: 83-16, Gongdan 1-gil, Gimcheon-si, Gyeongsangbuk-do, Korea

For More Information Call : (Monday-Friday, 8:30am~6:00pm) 82-31-260-6325

In Case Of Emergency Call : (24 Hours/Day, 7Days/Week) 82-31-260-6325

## 2. Hazard overview


**A. Classification of harmfulness. Danger**

Physical danger : Not Applicable

Health harmfulness : Target organ whole body toxicity - 1 time exposure, classification 3 - stimulation of respiratory organ

Environmental harmfulness: Acute aquatic toxicity, classification 1

**B. Warning sign items including preventive measure phrases**

Pictorial symbol: 

Signal language: Warning

Harmfulness.Danger Phrases: Harmful if swallowed

May cause respiratory irritation

Very toxic to aquatic organisms

Preventive measure phrases

Prevention : Keep away from heat.spark.flame.high temperature - No smoking

Earth, join container and accommodating facilities.

Use explosion-preventive electricity.ventilation.illumination equipment

Put on protective gloves. protective clothes.protective glasses. protective face mask

Avoid inhaling dust.fume.mist.vapor.spray

Treat only outdoors or in the place ventilation is good

Response : If you inhaled move to the place with fresh air and rest yourself with a posture you can easily breath

If you feel discomfort see your doctor (go to the hospital).

Store : Preserve the container tightly sealed in the place with good ventilation.

Preserve tightly sealed.

Disposal : Dispose the contents. Container following the details clarified in the related laws.

**C. Other harmfulness.danger not included in the criteria of classification of harmfulness.danger**

Cas number	Health	Fire	Response
<input type="radio"/> 7440-50-8	2	No Data	0
<input type="radio"/> 9002-84-0	1	1	0
<input type="radio"/> 7631-86-9	No Data	No Data	No Data

## 3. Ingredient/composition information

Name of chemical	Usual name and other names	CAS Number / Identification number	Content(%)
<input type="radio"/> Copper foil	-	7440-50-8	10~90
<input type="radio"/> Polytetrafluoroethylene	PTFE	9002-84-0	5~90
<input type="radio"/> Fused silica	-	7631-86-9	5~60

#### 4. First-aid measures

##### A. Eye exposure

Call a doctor and get medical advice/attention  
Irrigate with flowing water for 20 minutes. If irritation persists, consult a physician.

##### B. Skin exposure

Call a doctor and get medical advice/attention  
Wash dust off in flowing water or shower. Change contaminated cloth.

##### C. Inhalation

Call a doctor and get medical advice/attention  
If overcome by dust or smoke, remove to fresh air.  
If not breathing, breathing, give mouth-to-mouth resuscitation.

##### D. Ingestion

If Large amounts are ingested, consult physician.

##### E. The most major symptom/influence of acute and chronic illness

No data available

##### F. First aid and the matters that require attention of doctors

Let the medical staffs know of the contaminated situations so that they too could take appropriate protective measures.

#### 5. Fire safety measures

##### A. Appropriate (inappropriate) fire extinguisher

- Appropriate fire extinguisher : Powder fire extinguishing chemicals. Carbon dioxide. Water spray. General foam  
 Inappropriate fire extinguisher : No data available

##### B. Particular harmfulness generated from chemicals

- Risk of fire and explosion : No data available

##### C. Protective equipment to put on when extinguishing fire and preventive measures

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

#### 6. Leak Emergency Treatment

##### A. Measures and protective equipments necessary to protect human body

Take measures of isolation of exposed area and control the access of people except for the concerned persons.  
For future disposal collect and dispose leaked materials to appropriate container.  
Move it to the place of good ventilation.  
Follow the OSHA respiration protective equipment regulation (29 CFR 1910.134) or European Standard EN 149.  
Keep distance of more than 25 ~ 50m from the leaking point and control the entry of people except for the concerned persons.  
Put on Self-Contained Breathing Apparatus (SCBA Apparatus)

##### B. Measures necessary to protect environment

- Atmosphere : No data available  
 Earth : No data available  
 Under water : No data available

##### C. Method of purification or removal

- in case of leaking a little amount No data available  
 in case of leaking large amount : Escape at least 50m opposite to the direction of 1st wind.

#### 7. Operation, Disposal and Storage

##### A. Safe treatment method :

Treat only in the place with good ventilation  
Minimize the generation and accumulation of dust.  
Avoid inhaling of dust and direct skin contact.

##### B. Method of safe storage :

Preserve it in a tightly sealed container  
Avoid contact with mixture-prohibited material  
Store in cool and dry place.  
Store in a place of good ventilation

## 8. Exposure Control and Individual Protection

### A. Standard of exposure of chemicals and biological standard of exposure etc.

Regulation

Ingredient Name		CAS. NO,	Domestic regulation	ACGIHTLV
Copper Foil	TWA	7440-50-8	1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
	STEL	7440-50-8	2 mg/m <sup>3</sup>	No data available
PTFE	TWA	9002-84-0	No data available	No data available
	STEL	9002-84-0	No data available	No data available
Fused silica	TWA	7631-86-9	0.1 mg/m <sup>3</sup>	No data available
	STEL	7631-86-9	No data available	No data available

Biological exposure standard

: No data available

### B. Appropriate engineering management

Install local ventilation apparatus and manage to maintain suitable controlled wind speed.

Confirm whether the work process is appropriate for allowed standard and exposure standard of the Ministry of Employment and Labor.

Install sealed facilities or local ventilation apparatus.

### C. Personal Protective Apparatus

Protection of respiratory organ : Put on respiratory protective apparatus certified by Korea Occupational Safety and Health Agency

Eye protection : Install emergency washing facilities (shower-type) and eyes washing facilities so that the workers can easily use.  
Put on goggles for chemicals described in eyes, face protection regulation (29 CFR 1910.133 ) of OSHA or EN166.  
Put on protective goggle to protect the eyes from scattering materials.

Hands protection : Put on protected gloves.

Body protection : Put on protective garment which can prevent skin exposure.

## 9. Physical and Chemical Properties

Classification	7440-50-8	9002-84-0	7631-86-9
A. Appearance	Brown thin sheet material	Solid	Solid
B. Physical State	Solid	White	White
C. Smell Value	No Smell	No Smell	No Smell
D. PH	No data available	No data available	No data available
E. Melting point/Freezing point	1083 ℃	327 ℃	1610 ℃
F. Boiling point/boiling point extent	2595 ℃	> 400 ℃	2230 ℃
G. Flashing point	No data available	No data available	No data available
H. Evaporating rate	No data available	No data available	No data available
I. Flammability (solid, gas)	No data available	No data available	No data available
J. Ignition highest/lowest value	-/-	60/11 %	-/-
K. Steam pressure	No data available	0.06 mmHg (at 360℃)	10 mmHg (at 1732℃)
L. Solubility	No data available	No data available	Soluble at HF
M. Vapor density	No data available	No data available	No data available
N. Specific gravity	8.78	2.25	0.47
Q. n-octanol/water distribution coefficient	-0.57	No data available	No data available
P. Spontaneous ignition temperature	No data available	No data available	No data available
Q. Decomposition temperature	No data available	( >399℃ )	No data available
R. Viscosity	No data available	No data available	No data available
S. Molecular weight	63.546	No data available	60.084

## 10. Stability and Reactivity

<b>A. Chemical stability :</b>	Not reactive and stable under recommended storage conditions.
<b>B. Possibility of harmful response :</b>	Hazardous polymerization does not occur under recommended storage conditions.
<b>C. Condition to avoid :</b>	Do not overheat. High temperatures can produce irritating or toxic fumes. Refer to the "Guide to the Safe Handling of Fluoropolymer Resins", published by the Society of the Plastics Industry.
<b>D. Material to avoid :</b>	Acetylene, acids, finely divided aluminum, powdered metals, and very strong oxidizers, such as fluorine.
<b>E. Harmful material generated when decomposing :</b>	Fluorinated hydrocarbons, carbonyl fluoride, hydrogen fluoride.

## 11. Toxicological Information

### A. Information on highly possible exposure route

- Inhaling through respiratory organ  
No known significant effects.
- Taking through the mouth  
No known significant effects.
- Skin contact  
No known significant effects.
- Eyes contact  
No known significant effects.

### B. Delayed, acute and chronic influence by short-term and long-term exposure

Classification	7440-50-8	9002-84-0	7631-86-9
<input type="radio"/> Acute toxicity			
-Through the mouth	LD50 481 mg/kg Rat (OECD TG 401, GLP)	No data available	No data available
-Through the skin	LD50 > 2000 mg/kg Rat (OECD TG 402, GLP)	No data available	No data available
- Inhaling	LC50> 5.11 mg/ℓ 4 hr Rat (OECD TG 436, GLP)	No data available	No data available
<input type="radio"/> Skin corrosiveness/ stimulation	Skin corrosion / irritation test results for rabbits, non-irritating (OECD TG 404, GLP)	No data available	No data available
<input type="radio"/> Severe eyes damage/Stimulation	Eye irritation / eye irritation test in rabbits, but with minor irritation, not classified (OECD TG 405, GLP)	No data available	No data available
<input type="radio"/> Respiratory organ hypersensitiver	No data available	No data available	No data available
<input type="radio"/> Skin hypersensitiveness	Skin sensitization test for guinea pigs showed no sensitization (OECD TG 406, GLP)	No data available	No data available
<input type="radio"/> Carcinogenic	No data available	3	3
<input type="radio"/> Reproductive cell mutagenicity	Mutagenicity test using in vitro microorganism showed negative (OECD TG 471, GLP)  Irregular DNA synthesis studies using hepatocytes from male rats in vivo showed no toxic activity (OECD TG 486, GLP)	No data available	No data available
<input type="radio"/> Reproductive toxicity	A reduction in the weight of spleen at 1500ppm in rats (OECD TG 416, GLP)  Developmental toxicity test using rabbit resulted in death at 30 mg Cu / kg bw / day	No data available	No data available
<input type="radio"/> Target organ whole body toxicity (1 time exposure)	Stimulates upper respiratory tract	No data available	No data available
<input type="radio"/> Target organ whole body toxicity (repeated exposure)	Liver and kidney damage and lesion at the end of esophagus in rats	No data available	No data available
<input type="radio"/> Inhale harmfulness	No data available	No data available	No data available

## 12. Ecological Information

Classification	7440-50-8	9002-84-0	7631-86-9
<b>A. Aquatic and land animal ecological toxicity</b>			
<input type="radio"/> Fishes	LC50 0.286 mg/ℓ 96 hr Oncorhynchus mykiss (LC50 = 0.28640% sewage treatment plant effluent, 0.164river water mg/L 96hr)	No data available	No data available
<input type="radio"/> Crustacean	LC50 0.0338 ~ 0.792 mg/ℓ 48 hr Daphnia magna (OECD TG 202)	No data available	No data available
<input type="radio"/> Algal	NOEC 0.0376 ~ 0.708 mg/ℓ 72 hr (Phaeodactylum tricornutum: NOEC = 0.0376 - 0.708 mg/L 72hr, OECD TG 201)  Phaeodactylum tricornutum: NOEC = 5.7 µg/L, IOS 10253, GLP)	No data available	No data available
<b>B. Residual and resolvability</b>			
<input type="radio"/> Residual	log Kow -0.57 (estimated value)	No data available	No data available
<input type="radio"/> Resolvability	No data available	No data available	No data available
<b>C. Living organism condensability</b>			
<input type="radio"/> Biodegradability	BCF 5830	No data available	No data available
<input type="radio"/> Condensability	No data available	No data available	No data available
<b>D. Soil movability</b>	No data available	No data available	No data available
<b>E. Other harmful influence</b>	No data available	No data available	No data available

## 13. Waste Disposal

### A. Method of disposal

Dispose the content container following the regulation in case indicated in the waste management law.(Not Biodegradable)

### B. Matters that require attention when disposing(including the method of disposing contaminated container and packing)

Please consider the matters that require attention in case indicated in the waste management law.

#### 14. Transport Information

A. UN number: 3089  
 B. UN optimal shipping name: METAL POWDER, FLAMMABLE, N.O.S.  
 C. Degree of danger in transportation: 4.1  
 D. Container grade: 2  
 E. Marine pollution material: No data available  
 F. Special safety measures necessary, or necessary for user to know about the transportation or means of transportation :  
 Kinds of emergency measures in case of fire: F-G  
 Kinds of emergency measures in case of leaking: S-G

#### 15. Information on Laws and Regulations

# Copper

A. Regulation by Industry Safety and Health Law : Exposure standard setting material  
 B. Regulation by Harmful Chemical Material Management Law : No data available  
 C. Regulation by Dangerous Material Safety Management Law : No data available  
 D. Regulation by Waste Management Law : No data available  
 E. Other regulation by domestic and foreign laws :  
 Residual organic pollution material management law: Not applicable  
 EU Classification Information  
   - Determined classification result: Not applicable  
   - Danger phrase : Not applicable  
   - Prevention measure phrase: Not applicable  
 US management information  
   '- OSHA 규정 Regulation Not applicable  
   '- CERCLA 103 Regulation (40CFR302.4) : 2267.995 kg 5000 lb  
   '- EPCRA 302 Regulation (40CFR355.30) : Not applicable  
   '- EPCRA 304 Regulation (40CFR355.40) : Not applicable  
   '- EPCRA 313 Regulation (40CFR372.65) : Not applicable  
 Rotterdam Agreement Material : Not applicable  
 Stockholm Agreement material : Not applicable  
 Montreal Protocol material : Not applicable

#### 16. Other information

A. Source of the material : Korea Occupational Safety & Health Agency (<http://msds.kosha.or.kr>)  
 OECD Screening Information Data Set(<http://webnet.oecd.org/hpv/UI/Search.aspx>)  
 European chemical Substances Information System(ECB-ESIS)(<http://ecb.jrc.it/esis>)  
 International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)  
 National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)  
 National Library of Medicine/Hazardous Substances Data Bank(NLM/HSDB)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>)  
 International Chemical Safety Cards (ICSC)(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>)  
 National Emergency Management Agency(<http://www.nema.kr/hazmat/main/main.jsp>)  
 Chemical Substances Hazard Assessment Report/Initial Risk Assessment Report([http://www.safe.nite.go.jp/english/sougou/view/TotalSrchnInput\\_en.faces](http://www.safe.nite.go.jp/english/sougou/view/TotalSrchnInput_en.faces))  
 NITE([http://www.safe.nite.go.jp/ghs/h18\\_list.html](http://www.safe.nite.go.jp/ghs/h18_list.html))  
 The ECOTOxicology database (ECOTOX)([http://cfpub.epa.gov/ecotox/quick\\_query.htm](http://cfpub.epa.gov/ecotox/quick_query.htm))  
 Akron University(<http://ull.chemistry.uakron.edu/erd/>)  
 Emergency Response Guidebook(2008)  
 International Agency for Research on cancer(IARC)(<http://monographs.iarc.fr/ENG/Classification/index.php>)

B. The first date of makig : 2017-08-03  
 C. Number of Amendment and the last date of amendment : 0, 2017-08-0.  
 D. Others  
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