DSMT Product Introduction

DAESUNG METAL

R&D Center

2021 Ver.03

1. Company History

1980
Founded Daesung Metal

1990
Factory 1 (Incheon)

1990
Silver business
Metal recycling manufacture

2003
Sputtering target manufacture

2009
Factory 2 (Incheon)

Precious metal material manufacture

2010~2012
Accessories business

Non-ferrous metal Sputtering target manufacture

2014
Komsco Enrollment

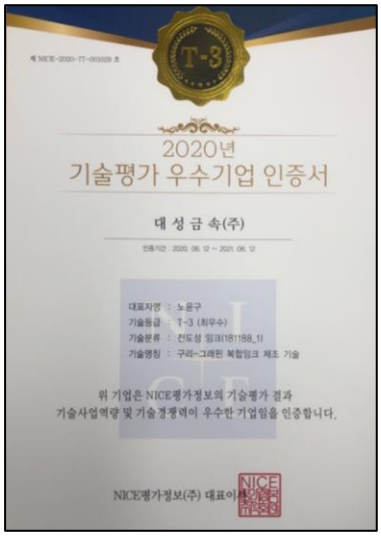
KRX GOLD manufacture

2016
New headquarter (Incheon)

R&D Center (Incheon)

Electronic material development

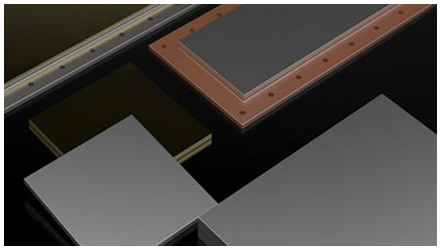
- **-. Cu-Graphene Powder & Paste/Ink**
- **-. Ag-Cu-Gr Paste (Low sintering)**
- **-. Ag Paste (Low Resistance)**
- **-. Solder Paste & Flux (T7~T10)**
- **-. Epoxy Solder Paste**
- **-. Water Soluble Flux & Paste**
- **-. Ball Flux & Micro Ball Flux**
- **-. Epoxy Adhesive**



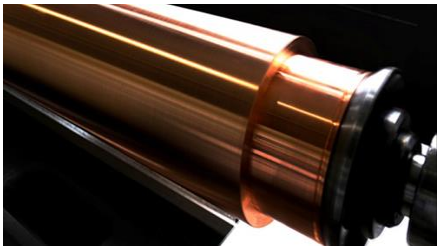
2. Product line-up

※ Sputtering Target

Material	Purity	G/S	Material	Purity	G/S	Material	Purity	G/S
Ag	4N5	<50㎛	Ni-Cr (80:20wt%)	3N5	<30㎛	Cu	4N8	<100㎛
Au	4N	<80㎛				Al	5N/4N	
Pd	3N5	<50㎛	Ni-V (93:7wt%)	3N5	<30㎛	Ni	4N	
						Ti	4N5	
			Ni-Cu (Monel)	4N		Al-1%Si	5N	<100㎛
						Al-0.8%Si	5N	<100㎛

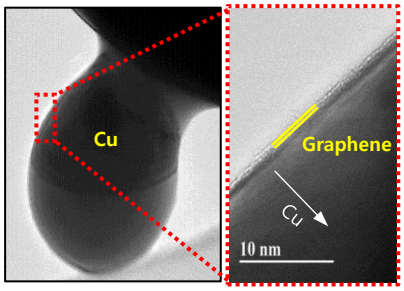


Cu Cylinder target

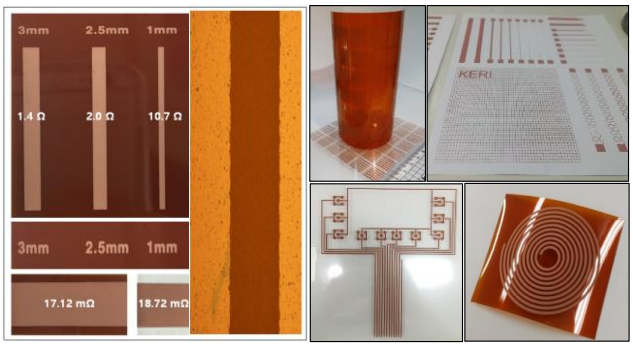


※ Silver / Gold Bar, Coin

3. Cu-Graphene Paste



Specific resistance



Cu-Graphene Paste

-. Particle Size

ITEM	Size	
	1.5㎛	400㎚
Printable Thickness	10~100㎛	10㎛ ↓
Vacumm N2 Oven	200℃ 1hr	200℃ 1hr
N2 Reflow	180℃ 5min 250℃ 20min	180℃ 5min 230℃ 20min

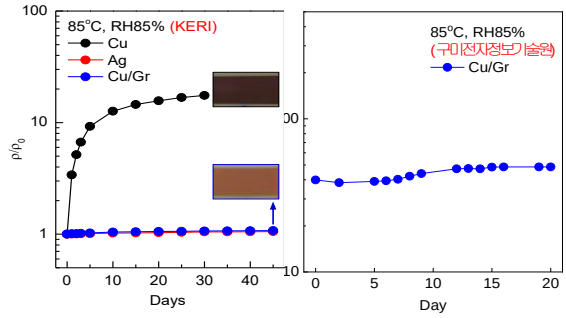
-. Printing Type

1. Screen Printing
2. PAD Printing
3. Etc. (Customizing)

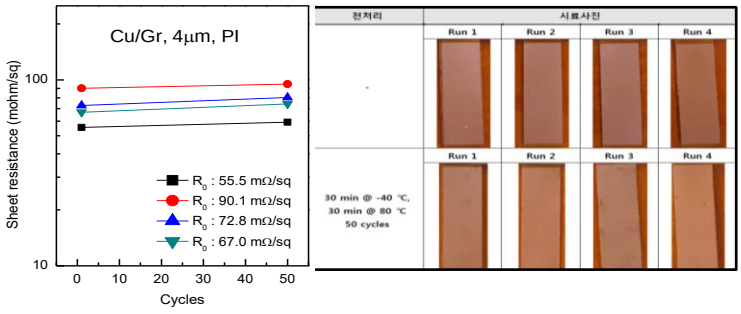
-. Sintering Type : Heating, Light sintering

-. Temperature/Humidity test : OK

Temperature/Humidity test (85°C, 85%)



Thermal shock test (-40oC/30min~+80oC/30min,50 cycle)



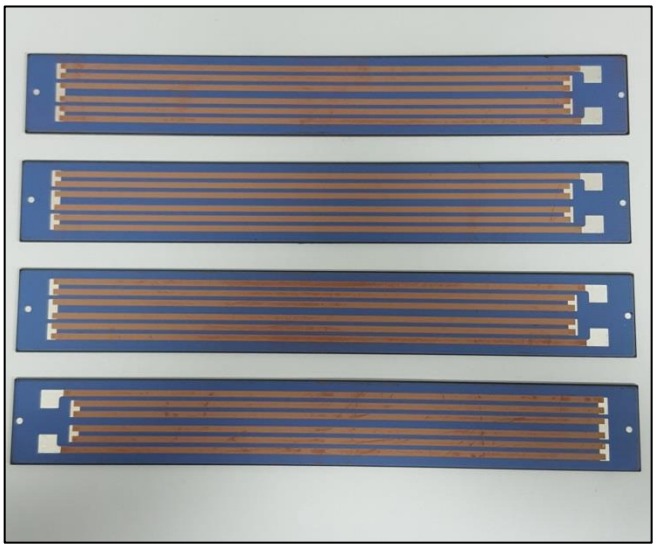
Product name	Particle Size	Specific resistance	Viscosity (cps)
DSMT-CG1500	1.5㎛	3 mΩ.cm ↓	10,000~100,000
DSMT-CG400	400㎚	3 mΩ.cm ↓	10,000~100,000
DSMT-CG1000	1.5㎛,400㎚ Hybrid	3 mΩ.cm ↓	10,000~100,000

Application

Field	Purpose	Substrate	Advantage
Display Electrode	Ag → Cu-Graphene	Glass / Film	Low Cost
Touch panel	Ag → Cu-Graphene	PET / CPI / PI Film	Low Cost / High Flexible
Via Filling	Cu → Cu-Graphene	PCB / FPCB	Anti oxidation
Thick film heater	Ag, Pd → Cu-Graphene	SUS	Anti oxidation / High Fever

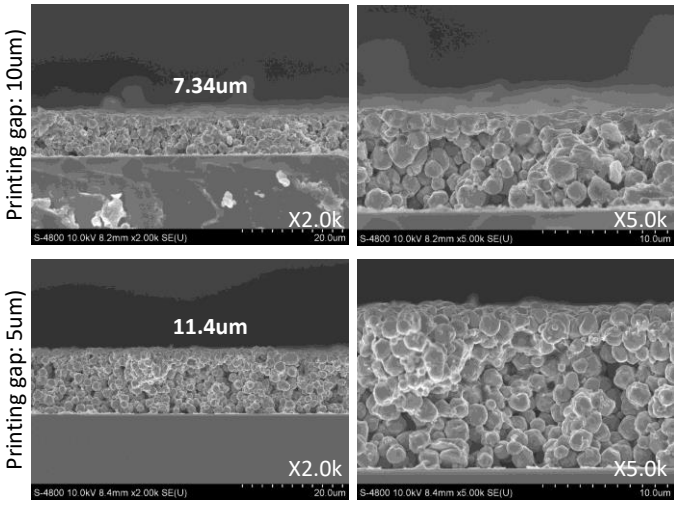
3. Cu-Graphene Paste

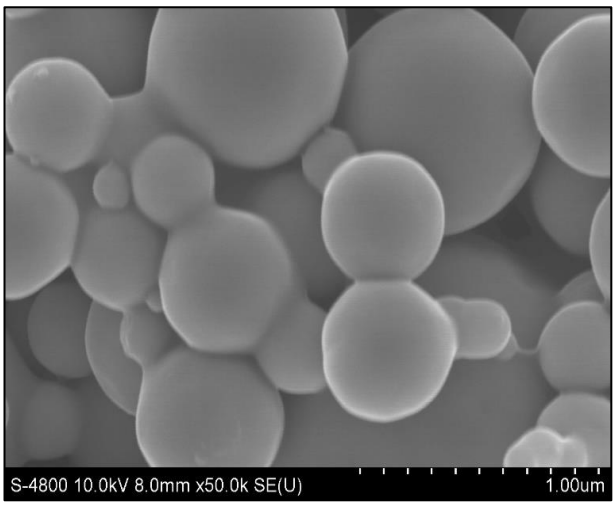
Application field



1. PTC heater (EV)
2. Pattern printing
3. Solar electrode circuit
4. Heat dissipation material
5. Via filling

SEM Image

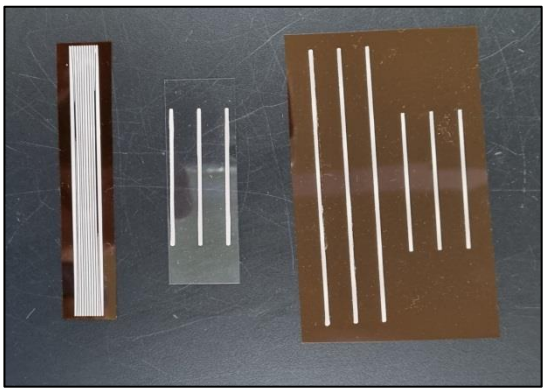




-. Binder Type

1. Epoxy : Via filling / Heat dissipation material
2. Polyester : Flexible Film
3. Acryl : Pattern printing / Pattern printing Etc.

4. Ag Paste & ACH(Ag-Cu-Gr) Paste

Ag Paste & Ag-Cu-Graphene Paste

-. Particle Size

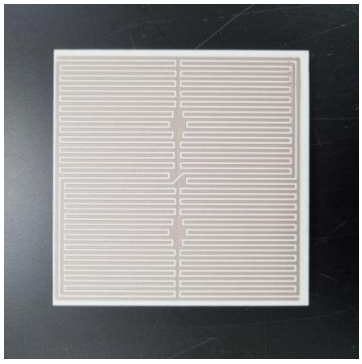
ITEM	Size	
	1~10 um	200 ㎚↑
Printable Thickness	5~50㎛	5㎛↓
Heating Oven	130~300℃ 30~90min	
Air Condition	Air	Air

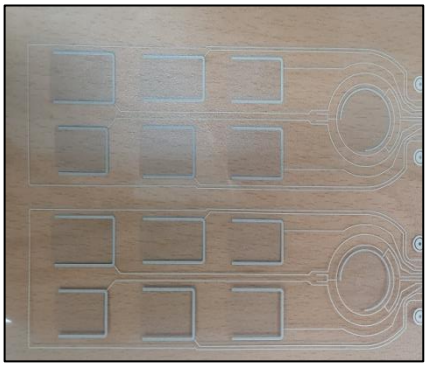
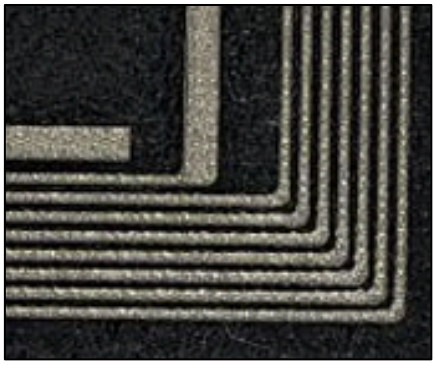
-. Printing Type

1. Screen Printing
2. PAD Printing
3. Etc. (Customizing)

-. Sintering Type : Heating, Light sintering

-. Low Temp. Sintering : 130~300℃



Product name	Particle Size	Specific resistance (200℃)	Viscosity (cps)
DSMT-AG001A	Ag Micro+Nano	1 mΩ.cm ↓	20,000~50,000
DSMT-AG001B	Ag Micro	1 mΩ.cm ↓	20,000~50,000
DSMT-ACH001	1.5~7㎛ Hybrid / Ag 30%	10 mΩ.cm ↓	20,000~50,000
DSMT-ACH002	1.5~7㎛ Hybrid / Ag 50%	5 mΩ.cm ↓	20,000~50,000

Application

Field	Purpose	Substrate	Advantage
Display Electrode	Ag → Ag Nano	Glass / Film	Low Resistance
Touch panel	Ag → Ag-Cu-Graphene	PET / CPI / PI Film	Low Cost / High Flexible
LED Bonding	Ag → Ag-Cu-Graphene	PCB / FPCB	Low Cost / High Adhesiveness
Thick film heater	Ag, Pd → Ag-Cu-Graphene	SUS	Low Cost / High Fever

5. Plugging Paste

Plugging Paste

-. Particle Size

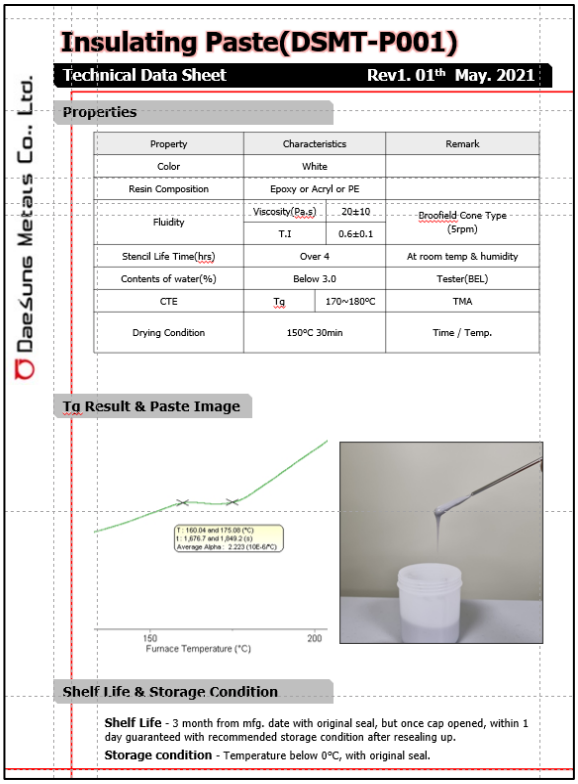
ITEM	Size
	100nm~5um
Filler Content	50~60%
Heating Oven	150℃ 30min
Air Condition	Air

-. Printing Type

1. Screen Printing

-. Sintering Type : Heating

-. High Tg : 170~180℃



Insulating Paste(DSMT-P001)

Technical Data Sheet Rev1. 01th May. 2021

Daesung Metals Co., Ltd.

Properties

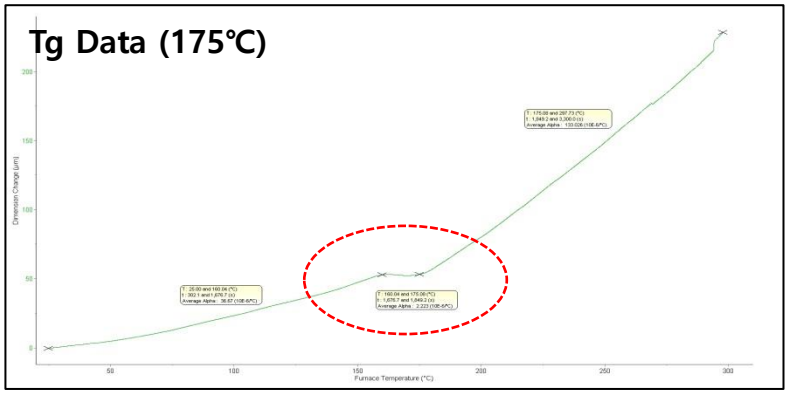
Property	Characteristics		Remark
Color	White		
Resin Composition	Epoxy or Acryl or PE		
Fluidity	Viscosity(Pa.s)	20±10	Broofield Cone Type (5rpm)
	T.I	0.6±0.1	
Stencil Life Time(hrs)	Over 4		At room temp & humidity
Contents of water(%)	Below 3.0		Tester(BEL)
CTE	Tg	170~180℃	TMA
Drying Condition	150℃ 30min		Time / Temp.

Tg Result & Paste Image

Shelf Life & Storage Condition

Shelf Life - 3 month from mfg. date with original seal, but once cap opened, within 1 day guaranteed with recommended storage condition after resealing up.

Storage condition - Temperature below 0℃, with original seal.

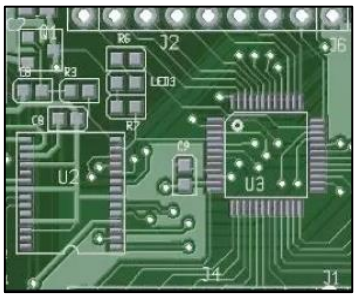


Product name	Particle Size	Specific resistance (150℃)	Viscosity (cps)
DSMT-P001	Micro + Nano	Insulation	20,000~50,000

Application

Field	Purpose	Substrate	Advantage
Via Filling	-	PCB/FPCB Via Hole	High Tg / Low Cost

6. Solder Paste & Flux

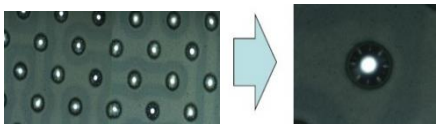


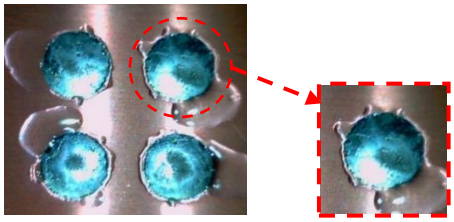
Solder Paste

-. Particle Size

Grade	Size
Type7	D50 6~7㎛
Type8	D50 5㎛
Type9	D50 2~3㎛
Type10	D50 1㎛

Solder Ball & Wetting Test





-. Printing Type

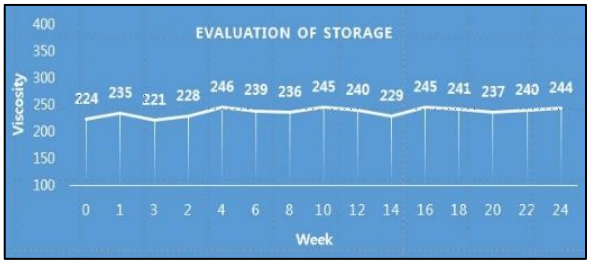
1. Screen Printing
2. Dotting Printing
3. Etc. (Customizing)

-. Sintering Type : Heating (Reflow Oven)

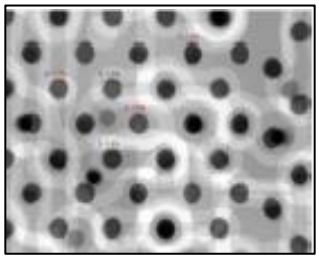
-. Viscosity change : 6 month / Rate of change 15% ↓

-. Void : Max 7% ↓

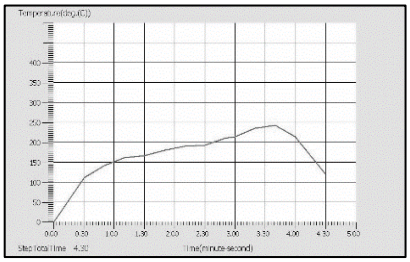
Viscosity Evaluation Result



Void Test (Max. 3%↓)



Reflow Profile



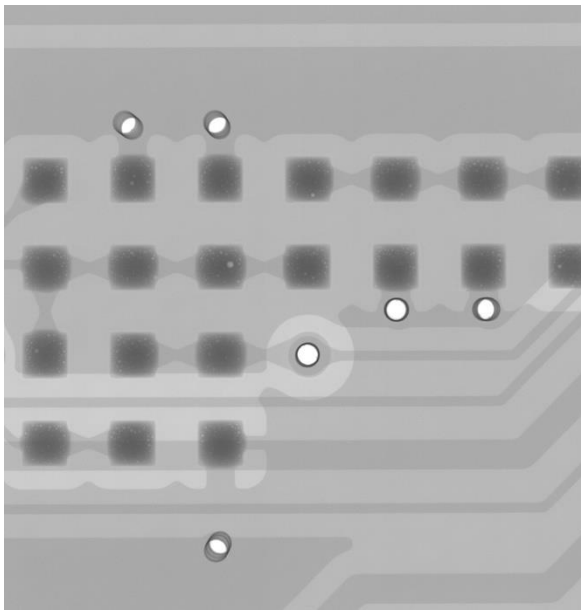
Product name	Viscosity (Pa.s)	Alloy	Printing Guarantee Time	Other
DSMT-U7S / U7W	250±100	SnAg3.0Cu0.5/SnCu0.7/Etc.	12h	Solvent Soluble : S Water Soluble : W
DSMT-U8S / U8W	250±100	SnAg3.0Cu0.5, Etc.	12h	
DSMT-U9S / U9W	250±100	SnAg3.0Cu0.5, Etc.	12h	
DSMT-U10S / U10W	250±100	SnAg3.0Cu0.5, Etc.	12h	

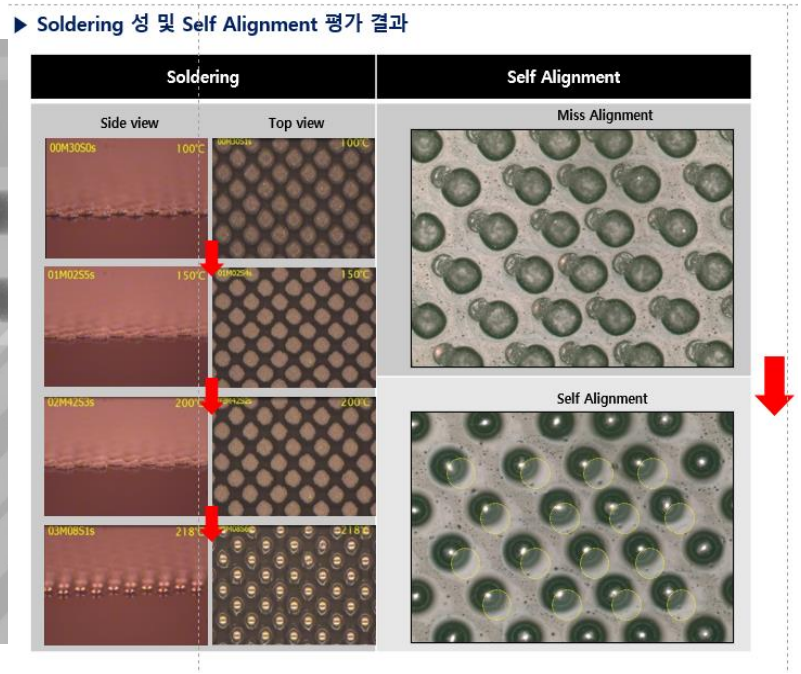
Application

Field	Purpose	Substrate	Advantage
PCB Bumping	High Printability	PCB / FPCB	Low Viscosity Change Low Void Low Cost Fast delivery
SMT (MLCC)	High Printability	PCB / FPCB	
Chip Bonding	High Tackiness	PCB / FPCB	

6. Solder Paste & Flux

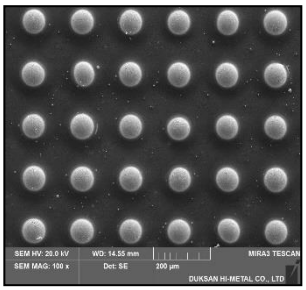
Void / Soldering

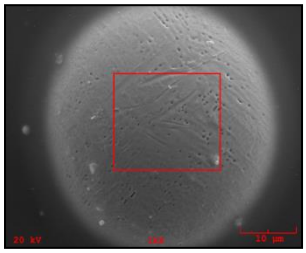


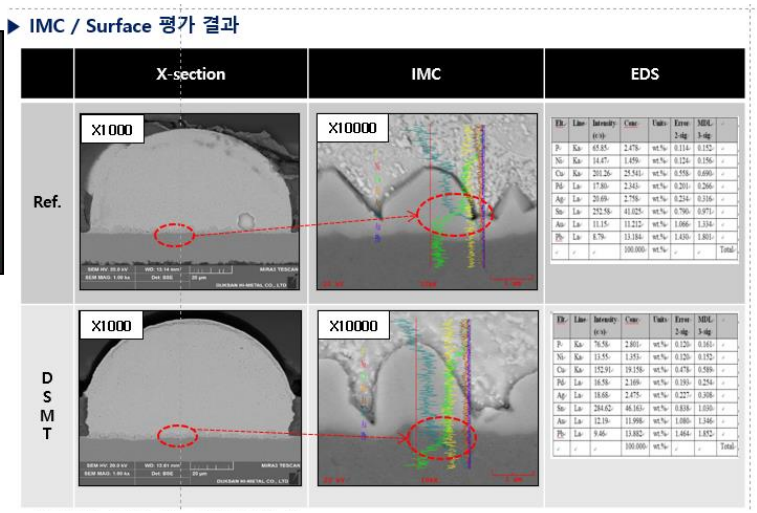


1. Low Void (Max. 7% ↓)
2. Self alignment Test PASS

IMC Data (SEM)



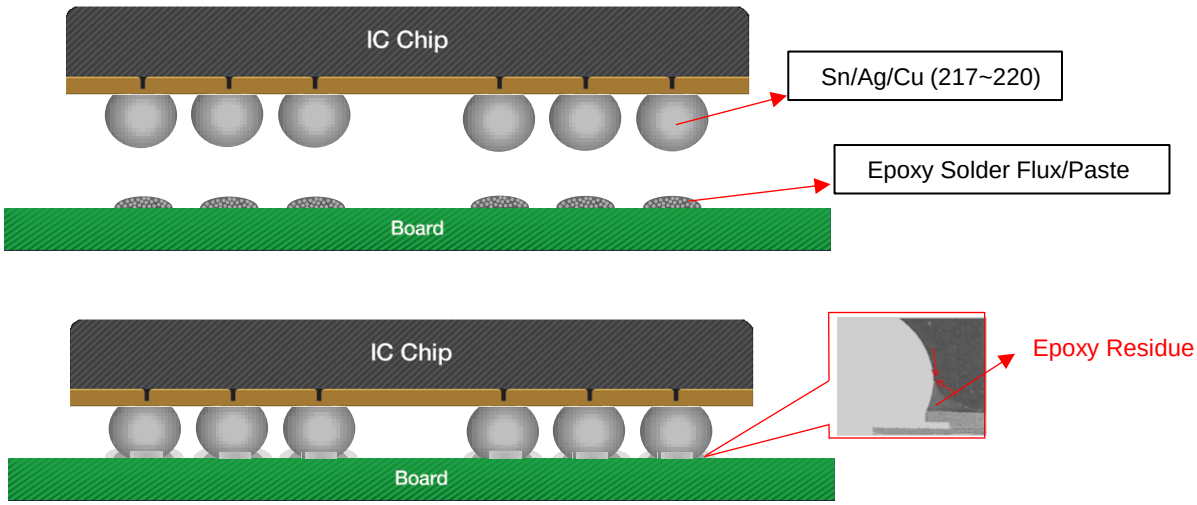




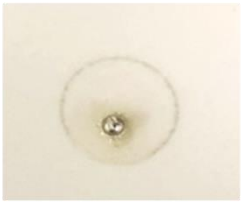
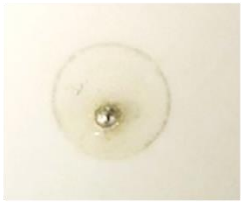
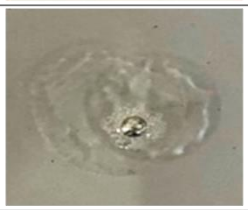
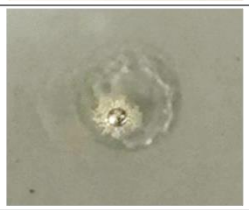
-. IMC Data

1. Alloy IMC formation PASS
2. Reliability Test PASS

7. Epoxy Solder Paste



※ Dry Test (150℃ 24hr)

	Before	After
Alumina		
Glass		

-. Epoxy Solder Paste
1. Screen Printing
2. Dotting Printing
3. Etc. (Customizing)

-. Stencil life : 6h ↑

-. DST : SAC305 ↑

-. Void : Max 7% ↓

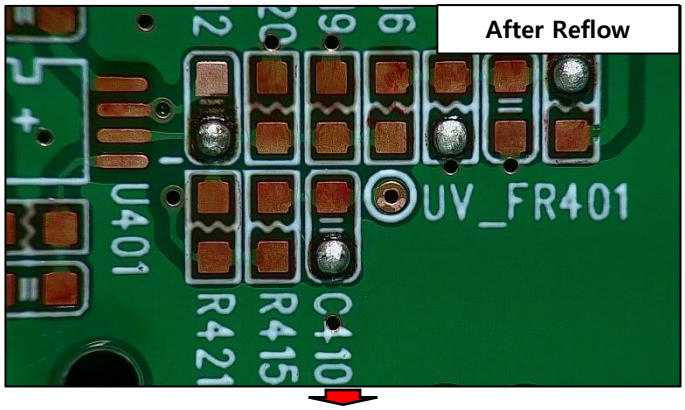
-. Low yellow Index

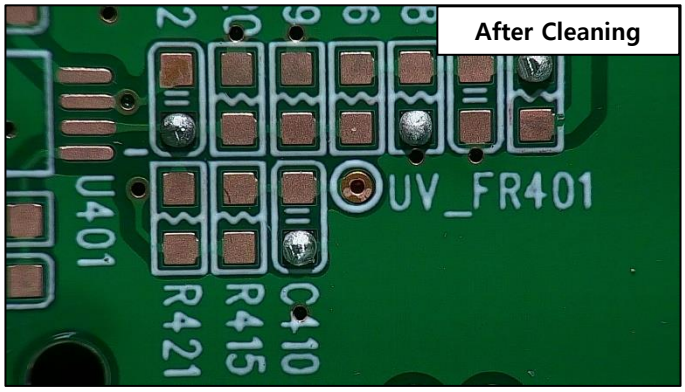
Product name	Viscosity (Pa.s)	Alloy	Printing Guarantee Time	Other
DSMT-E601S/P	20~200	SnAg3.0Cu0.5,	12h	Screen : S Pin Dotting : P
DSMT-E701S/P	20~200	SnAg3.0Cu0.5,	12h	
DSMT-E801S/P	20~200	SnAg3.0Cu0.5,	12h	
DSMT-E901S/P	20~200	SnAg3.0Cu0.5,	12h	

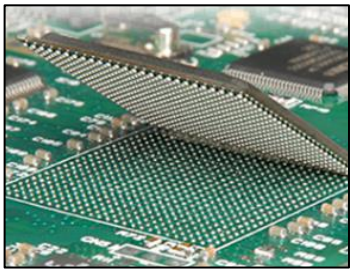
Application

Field	Purpose	Substrate	Advantage
PCB Bumping	High Strength	PCB / FPCB	Low Viscosity Change Low Void Low Cost Fast delivery
LED Bonding	High Transparency	Lead frame	

8. Micro Solder Ball Flux (MBT001 / MBT002)







-. Micro Solder Ball Flux

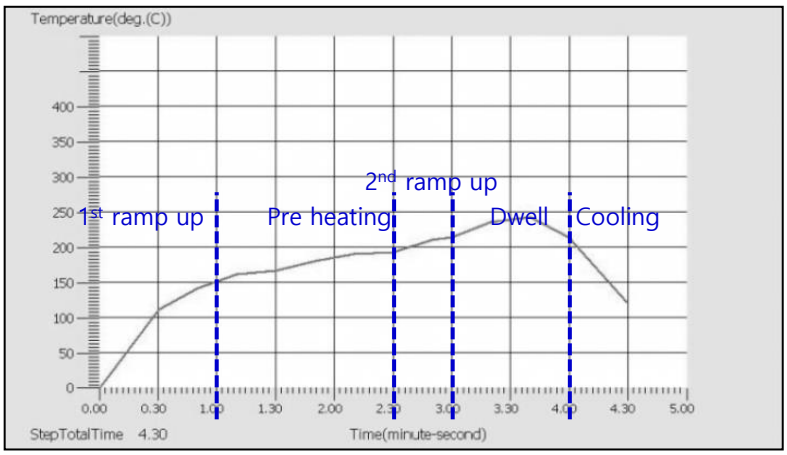
1. Screen Printing
2. Water Soluble or Solvent Soluble
3. Stencil life : 12h ↑

Product name	Viscosity (Pa.s)	Cleaning Type	Printing Guarantee Time	Other
DSMT-MBT001	40~100	Solvent Soluble	12h	Screen Type or Pin Dotting Type
DSMT-MBT002	40~100	Water Soluble	12h	
DSMT-WF001	20~40	Water Soluble	12h	

Application

Field	Purpose	Substrate	Advantage
PCB Bumping	High Activation / Adhesiveness	PCB / FPCB	Low Viscosity Change Low Cost High Quality Fast delivery
LED Bonding	High Cleanability	Lead frame	

9. Reflow Profile (SAC305 Solder Paste)



Pre heating			Dwell			Cooling	
Time	Peak(℃)	Max(℃)	Time	℃	Max(℃)	℃/sec	℃
144sec	150 ~ 190	200	72sec	215℃ 이상	235 ~ 250	108sec	215~120

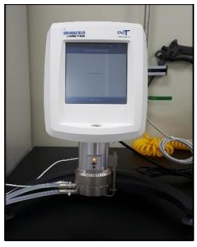
10. Manufacturing line & Equipment

-. Clean Room (10,000 Class ↓)

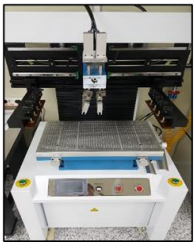
-. Dispersion equipment

-. Analysis equipment

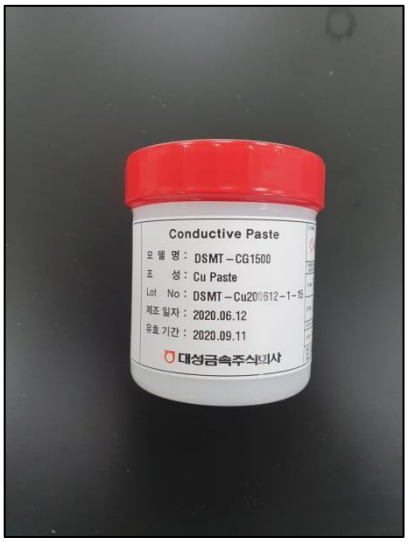
-. Reliability equipment

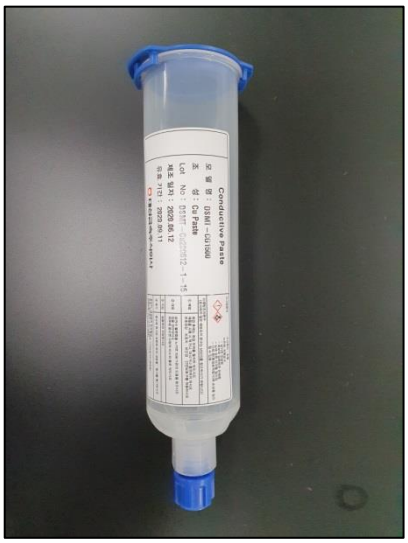





11. Packaging





- 6oz / 10cc / 30cc Syringe
- 500g Jar
- 150㎖ Jar (Ball Flux)
- 1kg Jar
- 2kg Jar

12. Storage

-. Storage Standard : 150mL jar packing & refrigerator storage

-. Storage Place

1. Solder Paste/Flux : Refrigerator (Below 10℃)
2. Cu-Gr Paste : Refrigerator (Below 0℃)
3. Ag/ACH Paste : : Refrigerator (Below 0℃)

-. Solder Paste : 3 months from date of manufacture
(when cold storage at below 10℃)

-. Cu-Gr Paste : 1 months from date of manufacture
(when cold storage at below 0℃)

13. Manufacture Company

- Company Name : DAESUNG METAL
- Address : 89, Bukhang-ro 120 beon-gil, Seo-gu, Incheon, Republic of Korea
- T +82 32)575-8547 / M +82 10-6625-8013 (Manager : LEE SANG MIN)

Infinite passion n innovation!