DuPont 5062D and 5063D

GOLD BRAZING LOW TEMPERATURE BRAZE SYSTEM

Technical Data Sheet

Product Description

DuPont 5062D and DuPont 5063D constitute a two component all thick film paste system designed to facilitate the use of high temperature solders and low temperature braze alloys on:

- Low temperature cofire ceramic (DuPont™ Green Tape™ low temperature co-firec ceramic system).
- Alumina
- Multilayer hybrid circuits

Product Benefits

- High strength, high reliability attachment mechanism
- Hermetic packaging
- Compatibility with thick film resistors, as well as all conventional IC and lid attach processes

Processing

5062D

Printing

Print 5062D onto fired substrate using a 325-mesh, 13 µm emulsion screen

Drying

Dry in air at 150ºC for 15 minutes

Firing

Fire using standard 850ºC, 30 minutes profile (see figure 1). Total fired thickness should be 12-15 µm.

5063D

Printing

Print 5063D directly on top of the fired 5062D print using a 325-mesh, 13 µm emulsion screen.

Table 1
Typical Physical Properties

Test	Properties	
	5062D	5063D
Thickness (µm) Fired	12 - 15	≥ 30 (≥ 42 total)
Resistivity (mΩ/sq) [@10µm]	< 5	-
PGA Reliability [1]		
Thermal Cycle [2] (N)	>65	-
Thermal Aging [3] (N)	>65	-
Seal Ring Reliability [4] (Atm cm^3/s)	$<10^{-8}$	-

[1] Average tensile pull strength of a pin a standard pin grind array (PGA) brazed to 951 Green Tape™ , PGA consists of 1.8 mm diameter pad of 5062D/5063D, and a 400 µm diameter Kovar pin with a 800 µm diameter nail head.
[2] 200 cycles, -50ºC to 150ºC, rapid transfer
[3] 1000 hours in air at 150ºC
[4] Helium leak test of Kovar seal ring on 951 Green Tape™ 100 Thermal cycles, -25ºC to +85ºC

Table 1 shows anticipated typical physical properties for DuPont 5062D & 5063D based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

Table 2
Composition Properties

Test	Properties	
	5062D	5063D
Viscosity (Pa.S) (Brookfiel HBT, 10 rpm UC&SP#14 spindle, 25ºC	260-360	225-325
Coverage [5], (cm2/g)	70	90
Thinner	8672	9180

[5] At 25 µm print thickness

Drying
Dry in air at 150ºC for 15 minutes

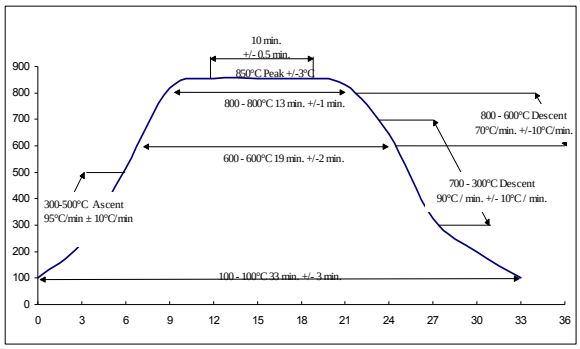
Repeat previous print and dry step. Ensure that 5063D completely covers the 5062D print.

Firing
Fire using standard 850ºC 30 minute profile (see figure 1). Total 5063D fired thickness should be ≥ 30 µm.

Attachment
Once the substrate has been prepared with 5062D and 5063D, pins window frames, or heat sinks may be attached with braze alloy (such as Au/In, Au/Ge, Au/Sn, etc.), performs, or pastes. Brazing is performed in a nitrogen or nitrogen/ hydrogen atmosphere using fixtures which position the attachment and braze alloy directly on top of the 5062D/5063D metallization.

Figure 1

Typical 30 minute Furnace Profile



Furnace Control Points

30 MINUTE

C0NTROL POINT	NOMINAL	TOLERANCE	RANGE
100C - 100C	33 Min	+/- 3 Min	30 - 33 Min
600C - 600C	19 Min	+/- 1 Min	18 - 20 Min
800C - 800C	14 Min	+/- 1 Min	13 - 15 Min
850C DWELL (Time)	10 Min	+/- 0.5Min	9.5 - 10.5 Min
850C DWELL (Temp)	850C	+/- 3C	847C - 853C
300C - 500C ASCENT	95C/MIN	+/- 10C/Min	85C - 105C/Min
800C - 600C DESCENT	70C/Min	+/- 10C/Min	60 - 80C/Min
700C - 300C DESCENT	95C/Min	+/- 10C/Min	85C - 105C/Min
BURNOUT REMOVAL	500C*	+/- 50C	450C - 550C

*Note: Avoid removing burnout gasses above 500C on high thru-put furnaces

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Storage and Shelf Life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Safety and Handling

For Safety and Handling information pertaining to this product, read the Material Safety Data Sheet (MSDS).

Caution: Do not use in medical applications involving implantation in the human body or contact with internal body fluids or tissue unless the product is provided by DuPont under a formal written contract consistent with the DuPont Policy Regarding Medical Applications of DuPont Materials H-50103-2 ("Medical Applications Policy") and which expressly acknowledges the contemplated use. For additional information, please request a copy of DuPont Medical Caution Statement H-50102-2 and the DuPont Medical Applications Policy.

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For more information on DuPont 5062D & 5063D or other DuPont Microcircuit Materials products, please contact your local representative:

Americas

DuPont Microcircuit Materials
14 T.W. Alexander Drive
Research Triangle Park, NC 27709
Tel.: 800-284-3382

Europe

Du Pont (U.K.) Limited
Coldharbour Lane
Bristol BS16 1QD
U.K.
Tel.: 44-117-931-3191

Asia

DuPont Kabushiki Kaisha
Sanno Park Tower, 11-1
Nagata-cho 2-chome
Chiyoda-ku, Tokyo 100-611
Japan
Tel.: 81-3-5521-8650

DuPont Taiwan Ltd
45, Hsing-Pont Road,
Taoyuan, Taiwan 330
Tel.: 886-3-377-3616

DuPont China Holding Co. Ltd
Bldg 11, 399 Keyuan Rd., Zhangji Hi-Tech Park,
Pudong New District, Shanghai 201203, China
Tel.: 86-21-6386-6366 ext.2202

DuPont Korea Inc.
3~5th Floor, Asia tower #726,
Yeoksam-dong, Gangnam-gu
Seoul 135-719, Korea
Tel.: 82-10-6385-5399

E. I. DuPont India Private Limited
7th Floor, Tower C, DLF Cyber Greens,
Sector-25A, DLF City, Phase-III,
Gurgaon 122 002 Haryana, India
Tel.: 91-124-4091818

Du Pont Company (Singapore) Pte Ltd
1 HarbourFront Place, #11-01
HarbourFrong Tower One,
Singapore 098633
Tel.: 65-6586-3022

http://mcm.dupont.com