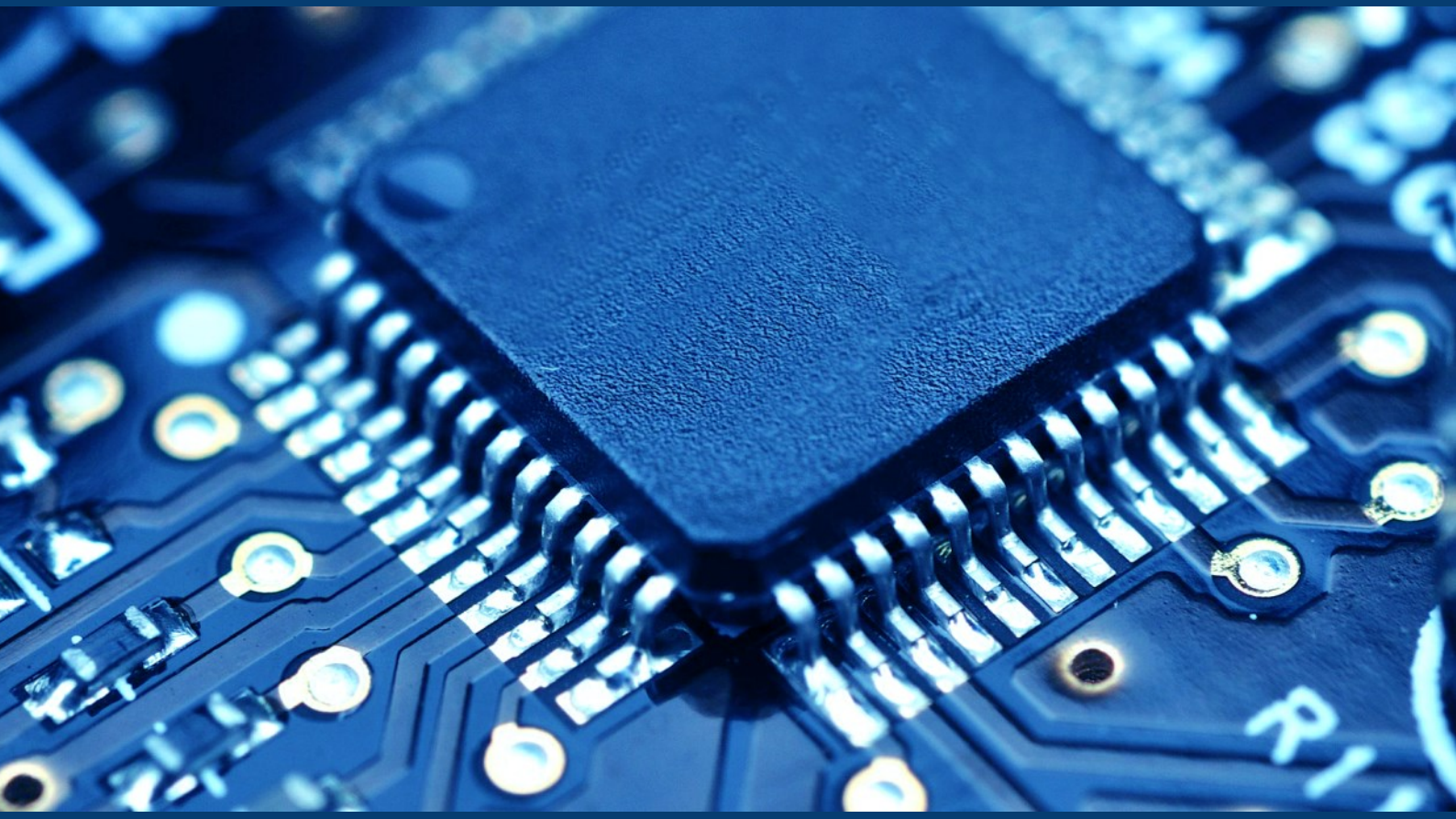
DP 5505IC solder paste

PRODUCT MANUAL



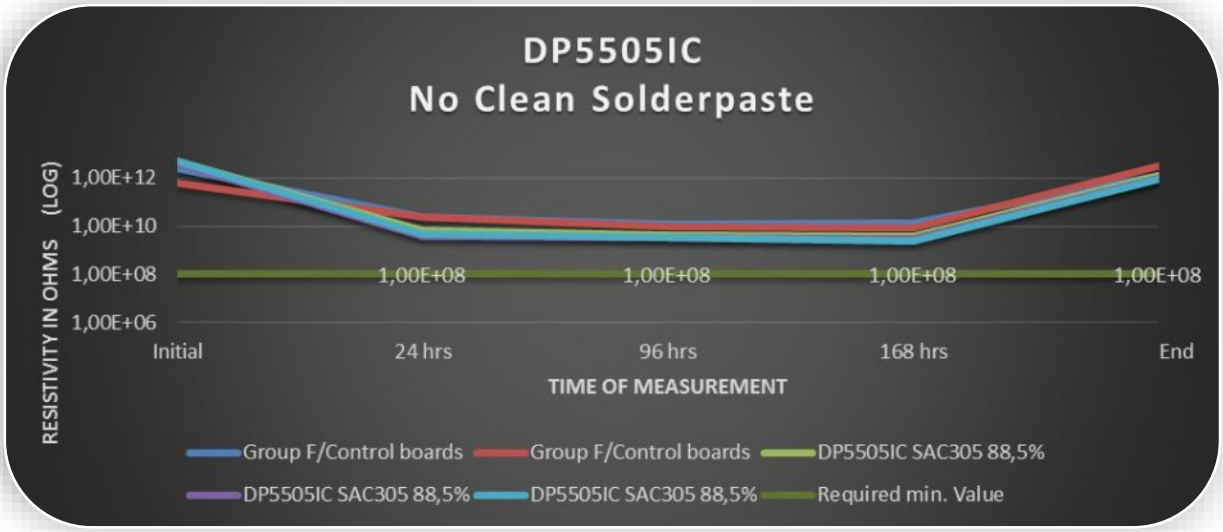
INTERFLUX® ELECTRONICS

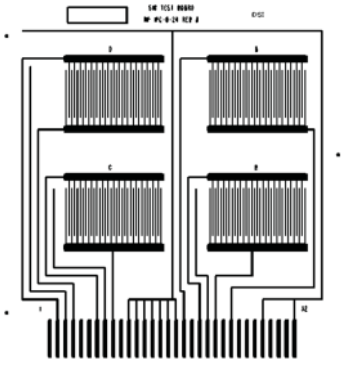
1. Key properties overview

- No-clean solder paste
- RO L0 to IPC-JSTD-004A
- Absolutely halogen free formulation
- High humidity resistance
- High stability
- Low voiding chemistry
- Anti Head in pillow defect
- Long profile capability
- Suitable for vapour phase soldering
- Good cosmetics, minimal clear residue

2. Chemical properties

- Reliability Data | **S**urface **I**nsulation **R**esistance





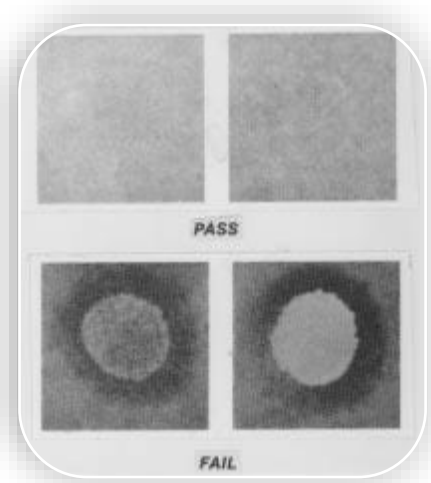
Interflux® DP5505IC **passes**
S.I.R. test to IPC J-STD-005 method TM-650 2.6.3.3B

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	IPC J-STD-005 TM-650 2.6.3.3B
temperature:	85°C
humidity:	85% RH
time:	168 hours
test result:	PASS

2. Chemical properties

- Halides| Silver Chromate method



Silver Chromate test requirements

DP 5505IC **passes**
IPC-TM-650 2.3.33D

- Halides| Spot test

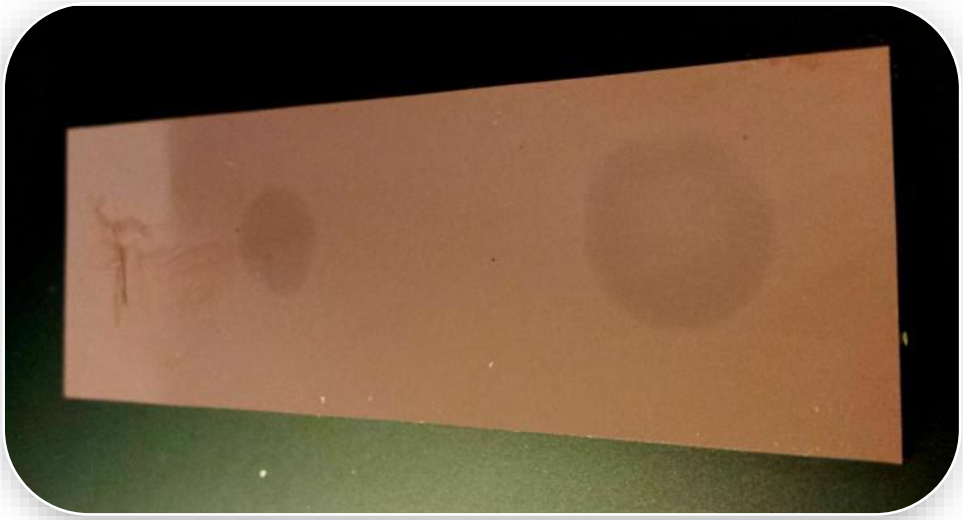
DP 5505IC **passes** Spot test IPC-TM-650, Method 2.3.35.1

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	TM-650 2.3.33D
test method:	TM-650 2.3.35.1
test result:	PASS
test result:	PASS

2. Chemical properties

- Copper mirror



DP 5505IC **passes** IPC-TM-650 2.3.32D copper mirror test

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	IPC-J-STD-004 TM-650 2.3.32D
test result:	PASS

2. Chemical properties

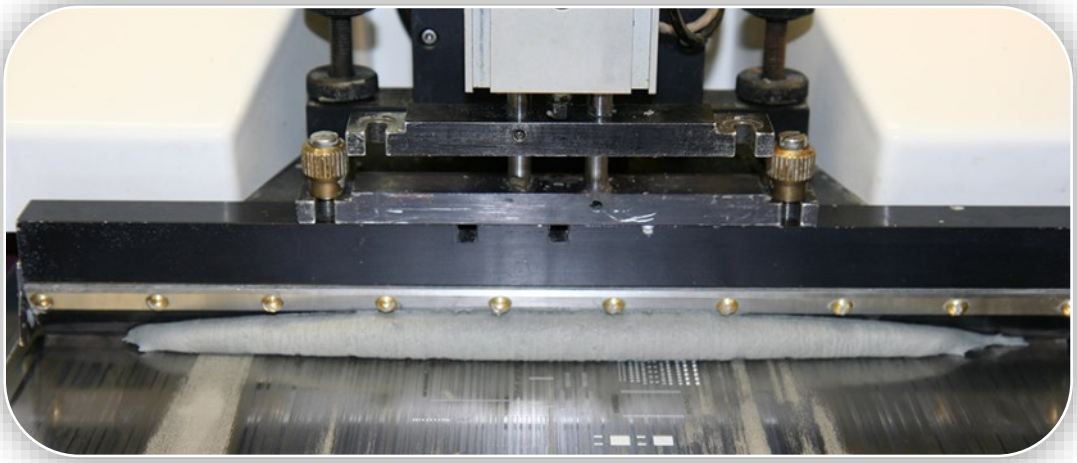
- Viscosity

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	IPC-J-STD-004 TM-650 2.4.34
measurement:	750 000 — 1 000 000 cPs @20°C

3. Printing properties | Rolling of the paste

- Rolling of the paste



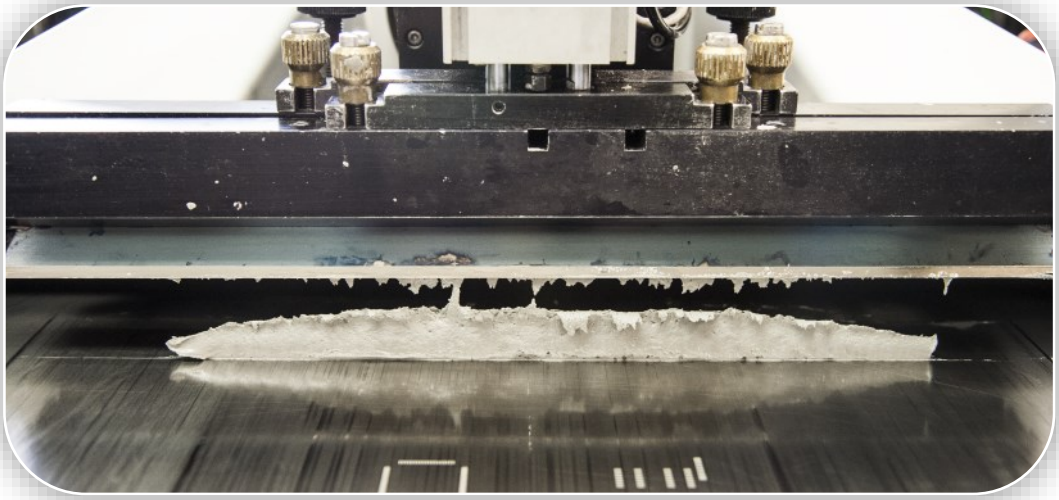
Smooth rolling of the solder paste

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150 µm laser cut 10% red.
print speed:	70 mm/sec
temperature:	22°C
humidity:	52% RH
test result:	PASS

3. Printing properties | Squeegee drop-off

- Squeegee drop-off



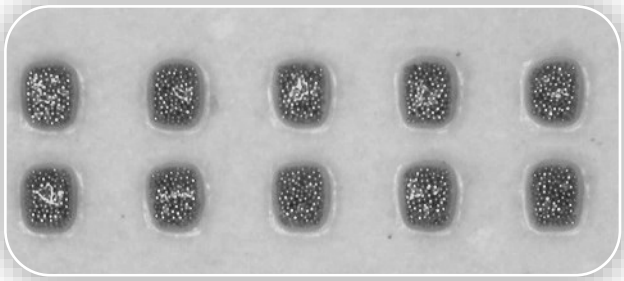
Clear drop-off of the solder paste

Parameters

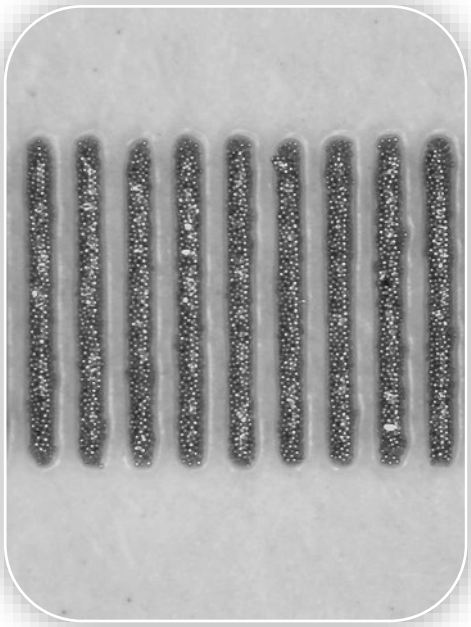
solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150 µm laser cut 10% red.
print speed:	70 mm/sec
temperature:	22°C
humidity:	50% RH
test result:	PASS

3. Printing properties | Aperture size and pitch

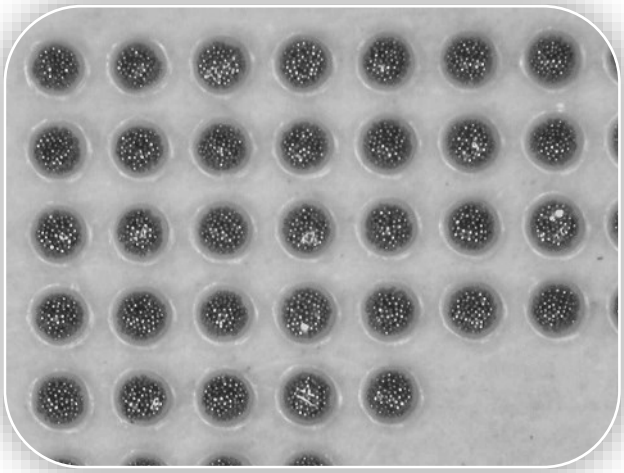
- Aperture size and pitch type 3 powder size (25 –45 µm)



0201 apertures 0,35 x 0,4mm



0,3mm pitch apertures 0,140mm wide



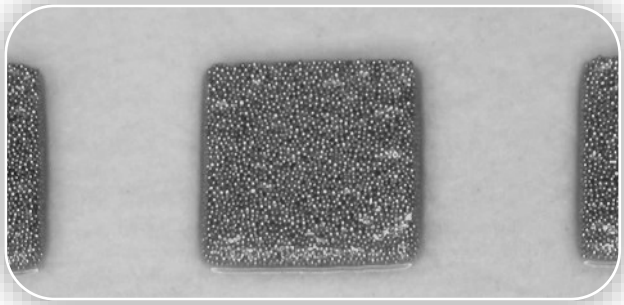
PS-vfBGA 305 apertures 0,275mm diameter

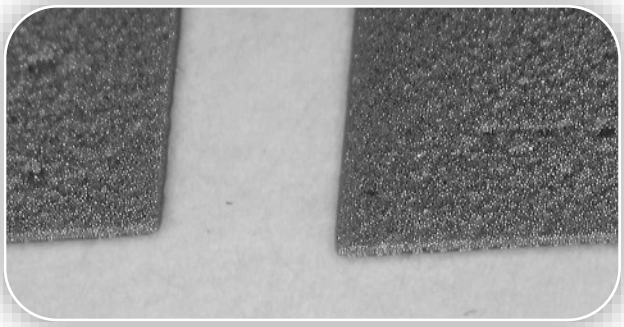
Parameters

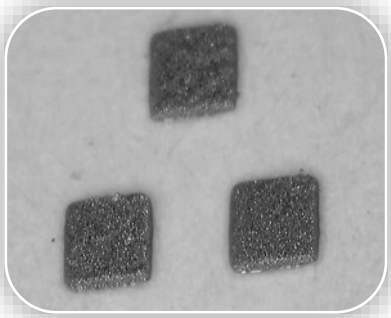
solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	120µm thickness laser cut
aperture:	µBGA 0,5mm pitch
temperature:	22°C
humidity:	48% RH
test result:	PASS

3. Printing properties | Deposit shape

- Deposit shape







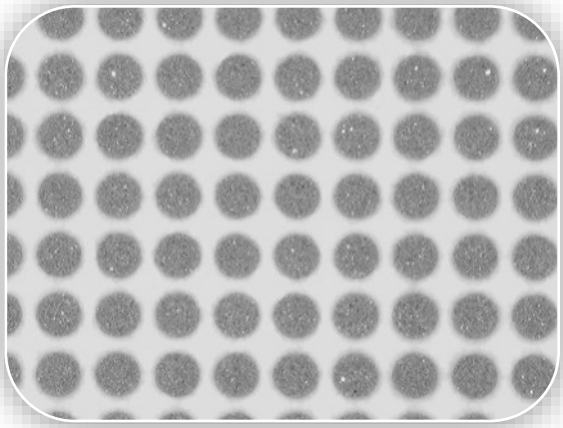
Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150µm thickness laser cut
temperature:	22°C
humidity:	51% RH
test result:	PASS

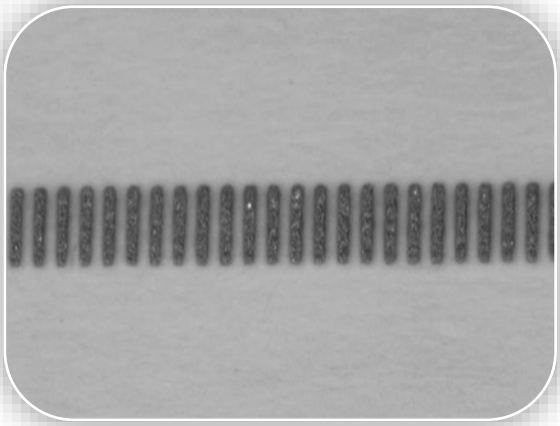
3. Printing properties | Stencil life

- Stencil life

  8 hours on stencil



250 µ BGA shape



0,3 mm Fine pitch spacing

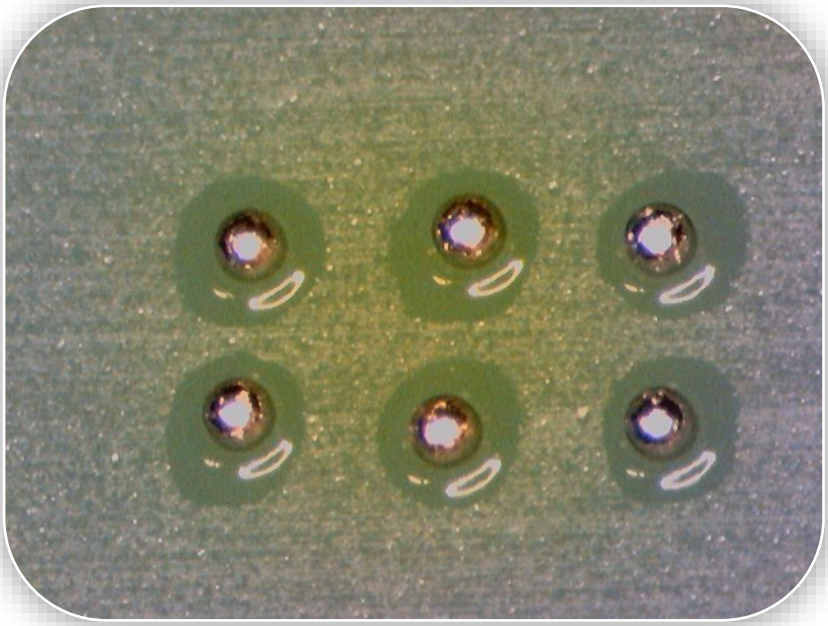
Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150µm thickness laser cut
print speed:	70 mm/sec
temperature:	22°C
humidity:	56% RH
test result:	PASS

3. Printing properties | Open jar time

- Open jar time

  Opened and used jar, 3 weeks at room temperature



No satellite solder balls

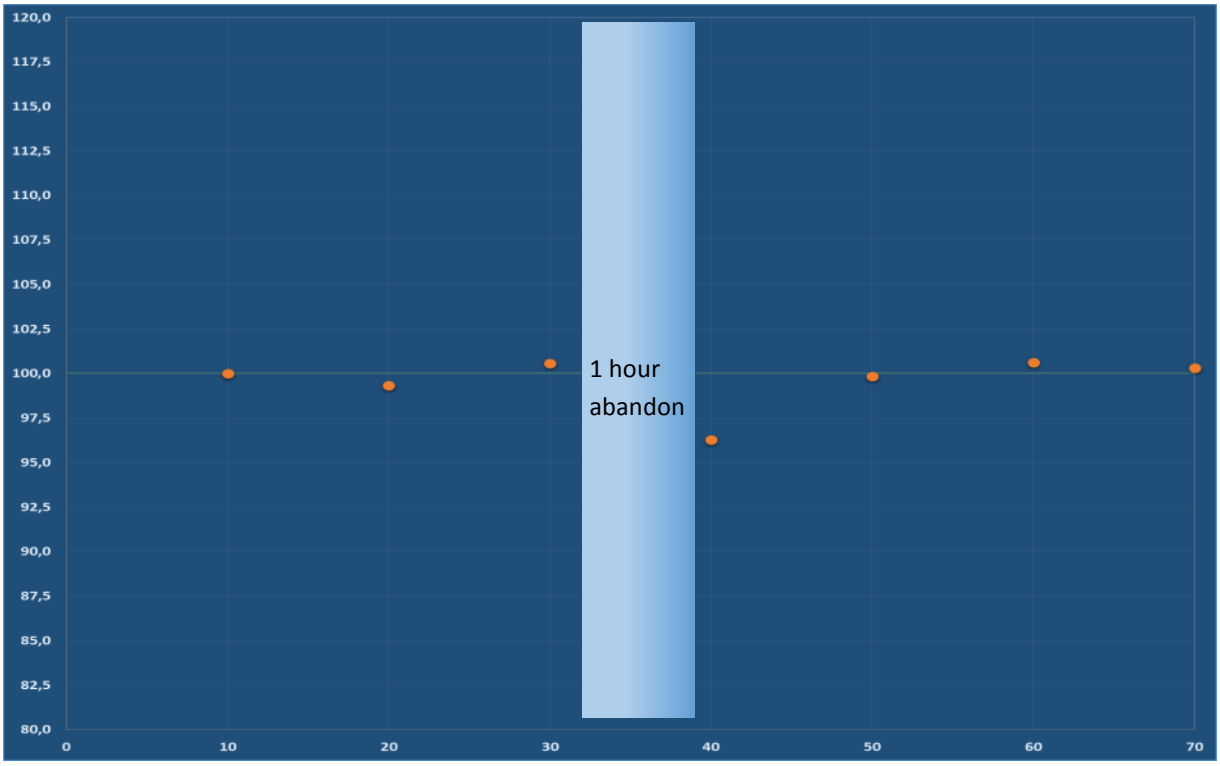
Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150µm thickness laser cut
print speed:	70 mm/sec
reflow profile:	Pb-free linear ramp-up
temperature:	22°C
humidity:	56% RH
test result:	PASS

3. Printing properties | Ultra fine pitch

- Ultra fine pitch capability

  Abandon time 1 hour—no stencil cleaning



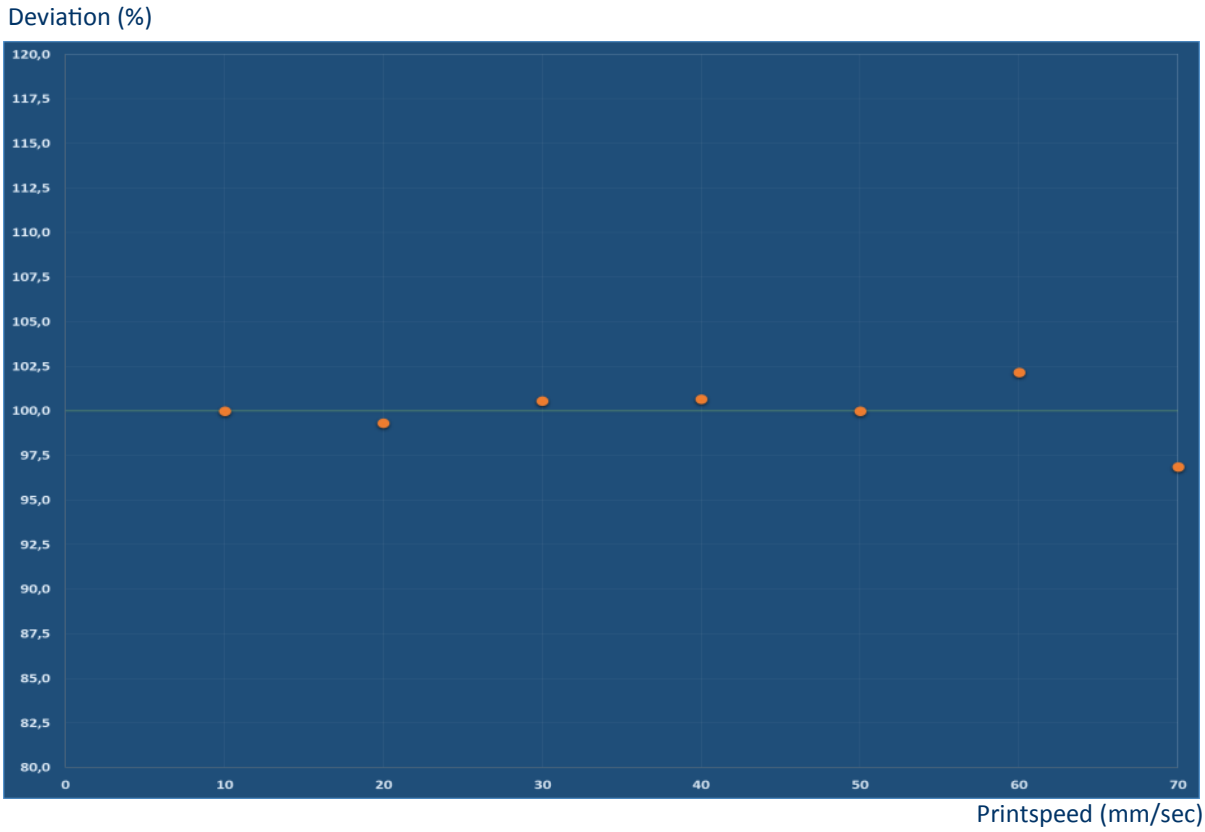
< 3,75% mass deviation

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150µm thickness laser cut
print speed:	50 mm/sec
temperature:	18,5°C
humidity:	52% RH
test result:	PASS

3. Printing properties| Print speed range

- Printing speeds



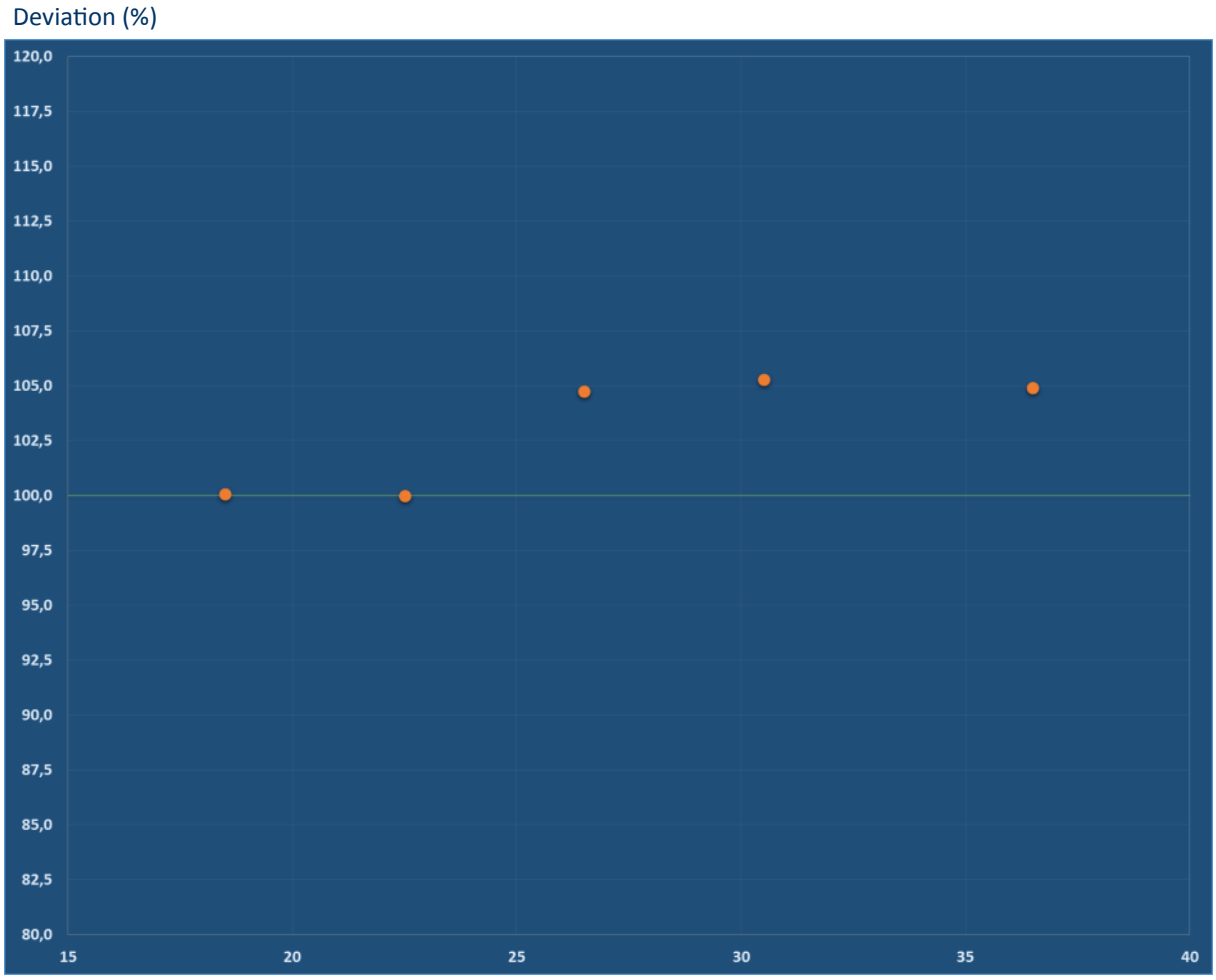
Printing speed

10 mm/sec:	≤ 1,06% mass deviation
20 mm/sec:	≤ 1,28% mass deviation
30 mm/sec:	≤ 1,54% mass deviation
40 mm/sec:	≤ 2,26% mass deviation
50 mm/sec:	≤ 1,83% mass deviation
60 mm/sec:	≤ 2,88% mass deviation
70 mm/sec:	≤ 3,57% mass deviation

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150µm thickness laser cut
print speed:	variable
temperature:	24,5°C
humidity:	55% RH
test result:	PASS

3. Printing properties | Print temperature range



Printing temperature

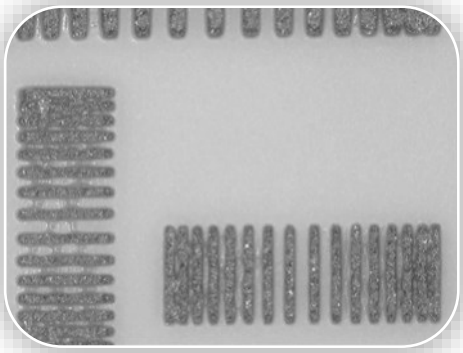
18,5 °C: ≤ 1,00% mass deviation
22,5 °C: ≤ 1,22% mass deviation
26,5 °C: ≤ 4,75% mass deviation
30,5 °C: ≤ 5,27% mass deviation
36,5 °C: ≤ 4,91% mass deviation

Parameters

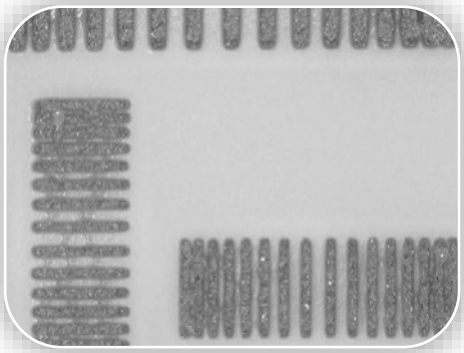
solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
stencil:	150µm thickness laser cut
print speed:	70 mm/sec
temperature:	variable
humidity:	56% RH
test result:	PASS

3. Printing properties

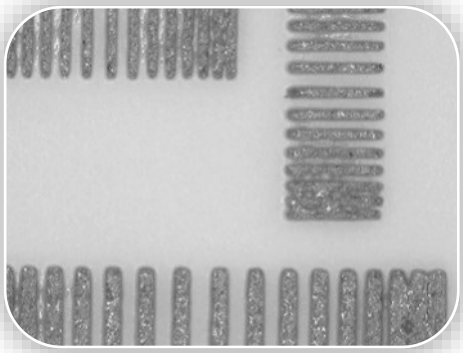
- Slump



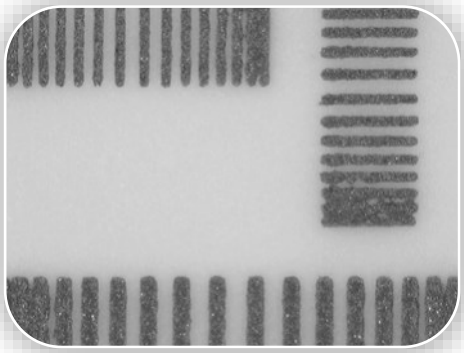
pre cold slump



post cold slump



pre hot slump



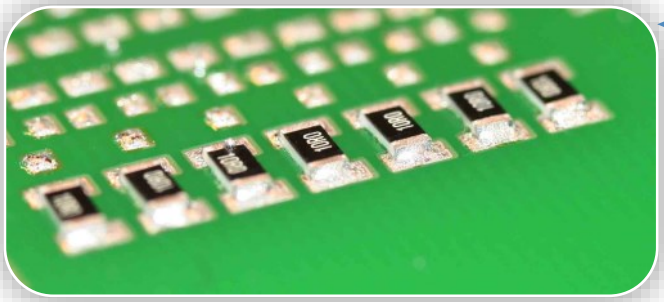
post hot slump

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	IPC-J-STD-005 TM-650 2.4.35
temperature:	22°C or 150°C
humidity:	50% RH
test result:	PASS

4. Mounting properties

- High humidity resistance



DP 5505IC shows excellent resistance to exposure to high humidity environments

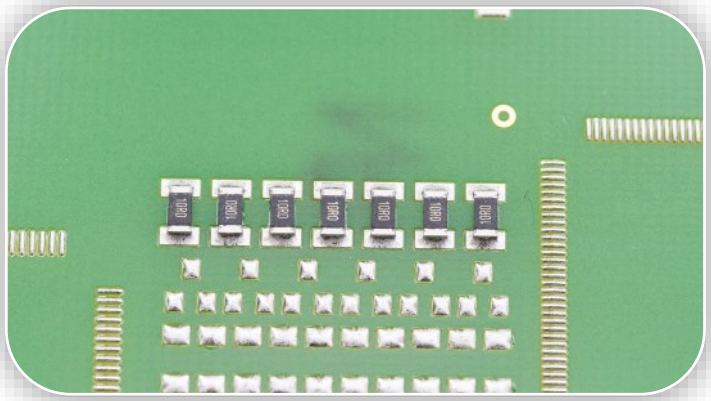
A conventional solder paste suffering from high humidity showing displacement of components and solder

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	4 hours high humidity test
temperature:	26°C
humidity:	94% RH
reflow profile:	Pb-free linear ramp-up
test result:	PASS

4. Mounting properties

- Low humidity resistance



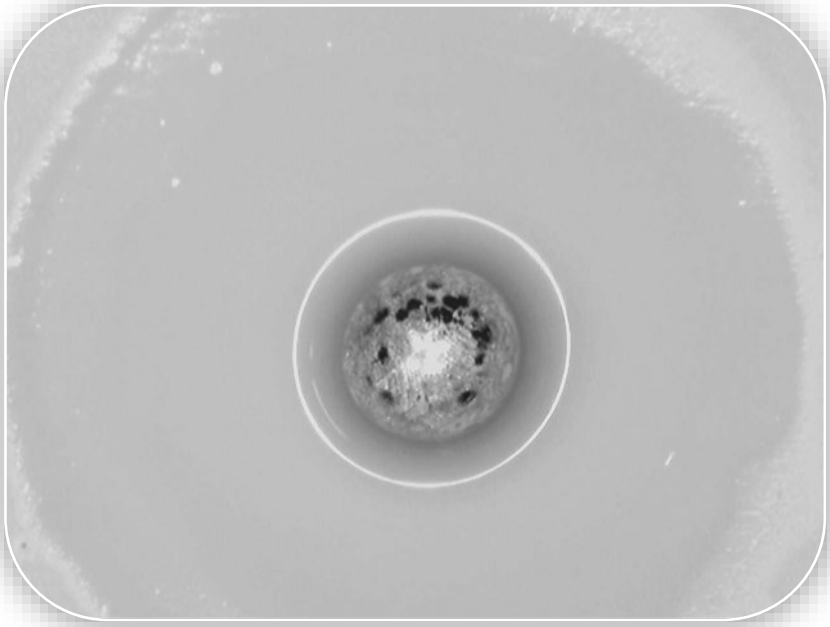
DP 5505IC shows high resistance to exposure to low humidity environments

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	4 hours low humidity test
temperature:	26°C
humidity:	26% RH
reflow profile:	Pb-free linear ramp-up
test result:	PASS

4. Mounting properties

- Solder balling

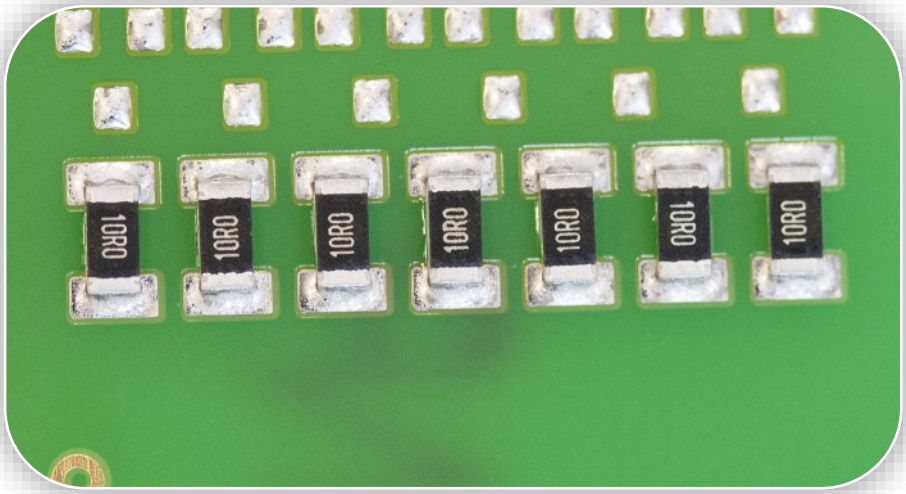


Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
test method:	IPC-J-STD-005 TM-650 2.4.34
temperature:	22°C
humidity:	53% RH
stencil:	200 µm laser cut stainless steel
test result:	PASS (preferred)

4. Mounting properties

- Solder beading



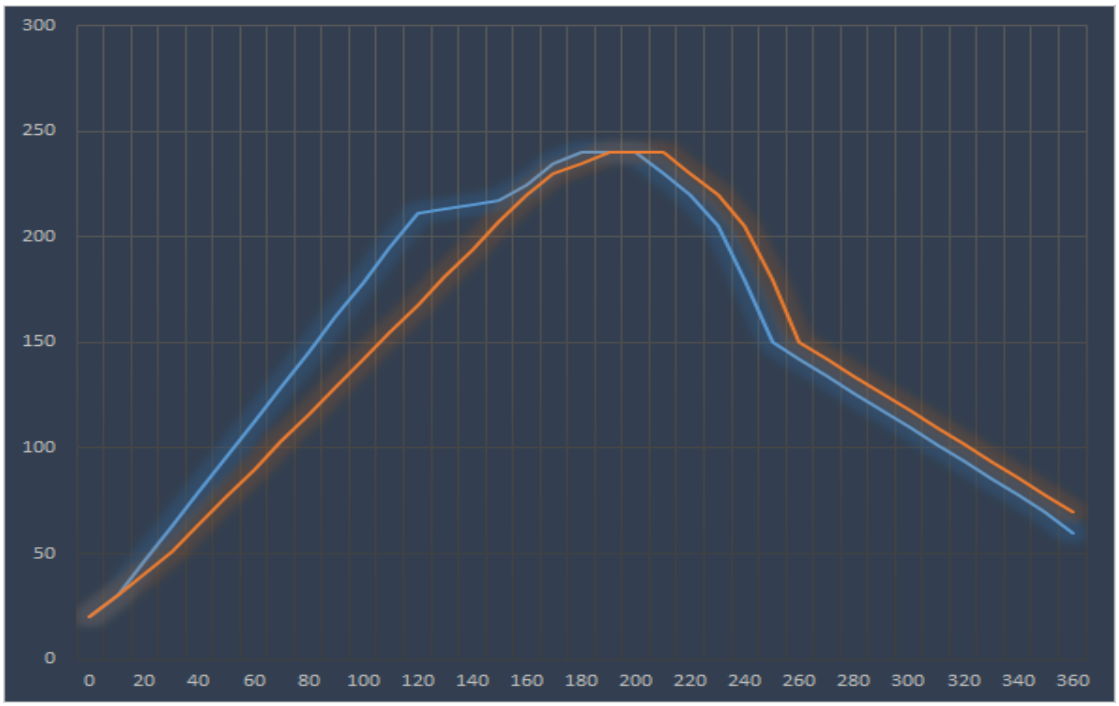
Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
print speed:	70 mm/sec
temperature:	22°C
humidity:	53% RH
stencil:	150 µm laser cut stainless steel
reflow profile:	Pb-free linear ramp-up
test result:	PASS

5. Reflow properties

- Reflow profiles

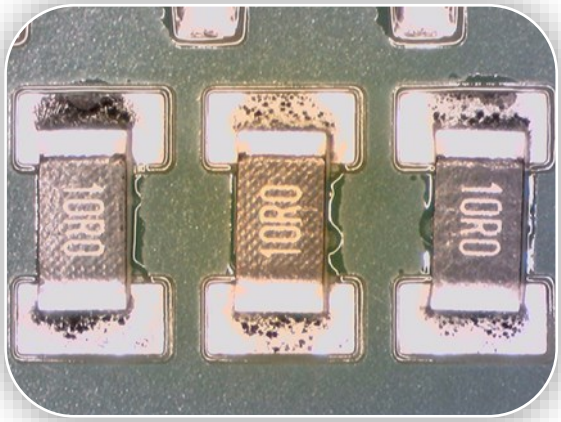
recommended profiles



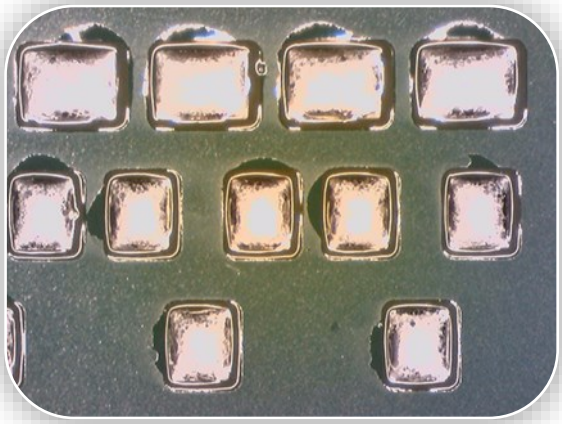
blue line = anti voiding soak profile, Orange line = linear ramp-up profile

5. Reflow properties

- Vapour phase soldering cosmetics



DP 5505IC shows low residue levels when soldered in a vapour phase process.

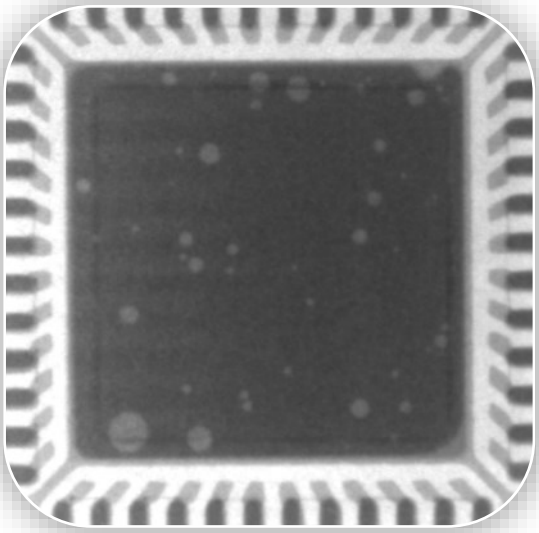


Parameters

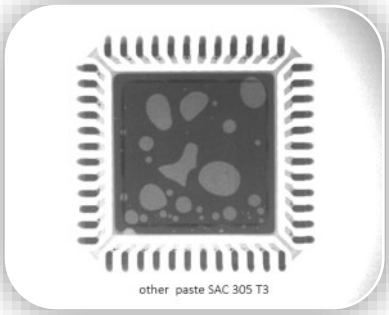
solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
board:	Interflux® NiAu testboard
stencil:	150 µm laser cut stainless steel
liquid/ temp.:	Galden LS230 / 230 °C
test result:	PASS

6. Post reflow properties

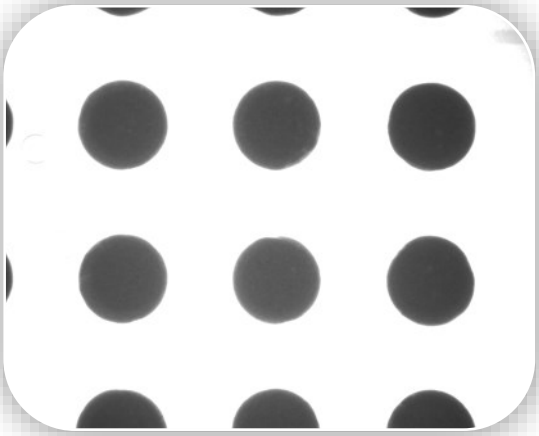
- Voiding QFN's + BGA's



Possible voiding results with DP 5505IC



Other paste SAC 305 T3

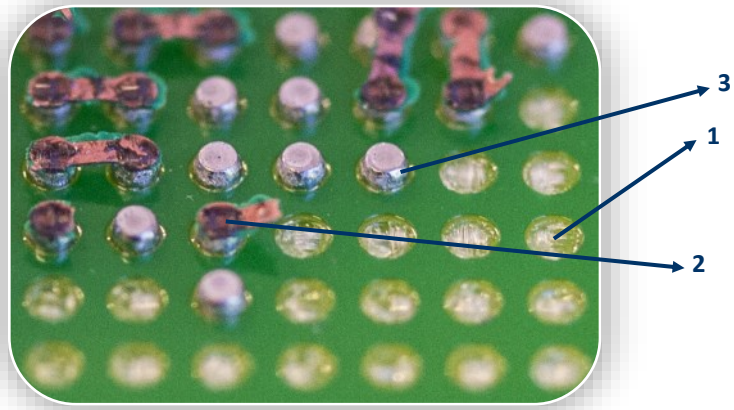


Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
board:	Interflux® NiAu testboard
stencil:	150 µm laser cut stainless steel
reflow profile:	Pb-free soak
test result:	PASS

6. Post reflow properties

- Head in pillow defect
  BGA's



Prying of BGA Package reveals different interconnection fracture lines.
1. PCB pad and PCB base material fracture
2. Component pad and component mould fracture
3. Component pad and component ball fracture

Head-in-Pillow defect is observed when solder ball on component and solder paste on PCB pad do not interconnect after reflow.

On 1000+ interconnections DP 5505IC showed:

Fracture type	share of fractures
1	78 %
2	3,5 %
3	18,5 %
Head-in-Pillow defect	**0**

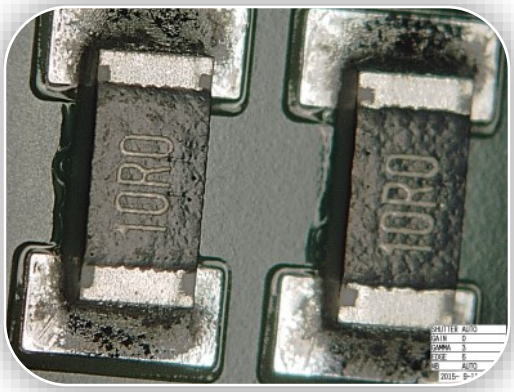
Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
board:	Interflux® NiAu testboard
stencil:	150 µm laser cut stainless steel
reflow profile:	Pb-free soak3
test result:	PASS

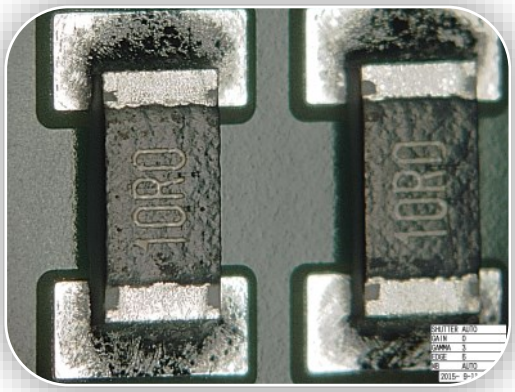
7. Cosmetic properties

- Residue cosmetics

Cleaning results



Before



After cleaning with A4241

Before

After cleaning with A4703

DP 5505IC leaves minimal clear residue with excellent cosmetic properties. DP 5505IC has no-clean chemistry but can be cleaned easily with a wide variety of cleaning agents.

A4241 and A4703 are aqueous cleaning chemistries from Kyzen Corp.

Parameters

solder paste:	DP 5505IC SAC 305 - T3 - 88,5%
board:	Interflux® NiAu testboard
stencil:	150 µm laser cut stainless steel
reflow profile:	Pb-free soak3
test result:	PASS

HEADQUARTERS

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Skandinavia AB www.interflux.com/se

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