

# LFS-UFP-T4

**No Clean Solder Paste  
SAC 305 (Sn96.5/Ag3.0/Cu0.5) Lead Free**

## DESCRIPTION

*LFS-UFP-T4* has been formulated to give manufacturers a wide process window with excellent printing and wetting properties.

*LFS-UFP-T4* gives bright, smooth and shiny void free solder joints with low, clear, post process residues that make for reliable pin probe testing.

*LFS-UFP-T4* is particularly suitable for fine pitch printing due to reduced particle size.

## BENEFITS

- Decreased "head in pillow problem"
- Constant viscosity during continuous printing and storage
- Superior wetting and spreading characteristics
- Reduces or eliminates voiding, particularly under BGA's
- High resistance to slumping
- High humidity resistance
- High Resistance to solder balling
- Extended stencil life
- 72 hour tack time
- 1 year refrigerated shelf life

## Typical specification and test results

	Specification
Alloy	96.5Sn, 3.0Ag, 0.5Cu
Flux type and content	12.0% RMA
Particle size	Type 4 20-38 Micron
Alloy melting temp	216-221°C
Viscosity	180 pass
Tensile Strength	37mpa
Elongation	33%
Wetting time	1.58 sec
Silver Chromate Test	No discolouration
Insulation resistance	Pass
Electromigration	Pass
J-STD-004	ROLO

## APPLICATION

Allow the solder paste to warm up to room temperature (at least 8 hours) before using for the first time. Stir with a spatula for at least 30 seconds to ensure homogenisation of paste. Apply sufficient paste to stencil to allow a smooth even roll. A bead diameter of 1/2 to 5/8 inch is normally sufficient. Squeegees should be set at 60° for highest print definition. Pressure should be around about 0.28-0.33Kg/sq cm, print speed 20-150mm/sec with 0.0mm snap-off distance (on contact).

Do not store new and used paste in the same container. Once a pot of paste has been opened, replace the internal plug, re-seal and store in a cool place out of direct sunlight. Do not return to fridge. Paste that has not been opened may be kept in the fridge (4°C) for up to 12 months.

Paste can be stored up to 60 days at room temp (25°C).

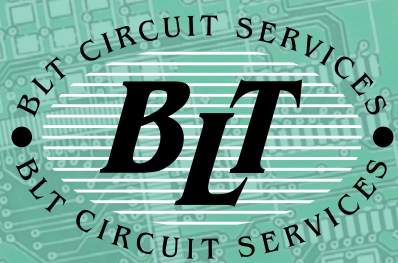
## REFLOW

The *LFS-UFP-T4* paste can be reflowed using any of the three most commonly used profile types i.e (Ramp-Soak-Spike), RTS (Ramp-To-Spike) and LSP (Low-Long-Spike). Please refer to the Reflow Profile Supplement.

## EQUIPMENT AND CIRCUIT CLEANING

BLT manufactures a range of aqueous and solvent cleaning equipment for stencils and misprinted boards. SCS/1 and SCS/2 are particularly recommended for use with LFS series solder pastes.

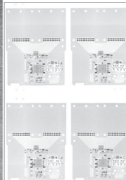
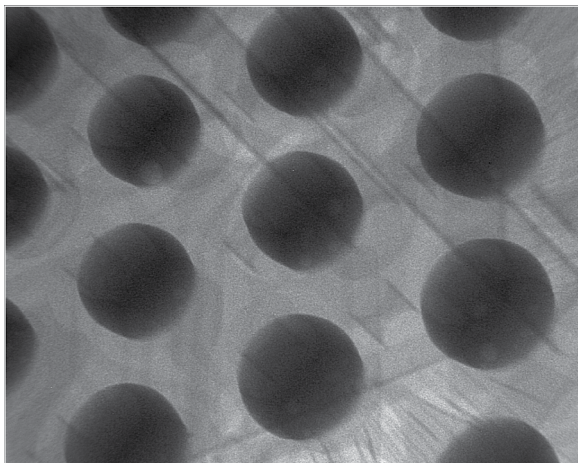
Post cleaning is not necessary for *LFS-UFP-T4*, but should absolute cleanliness be required, then Vigon N640 or Vigon US is recommended.



# LFS-UFP-T4

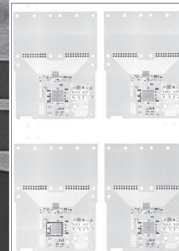
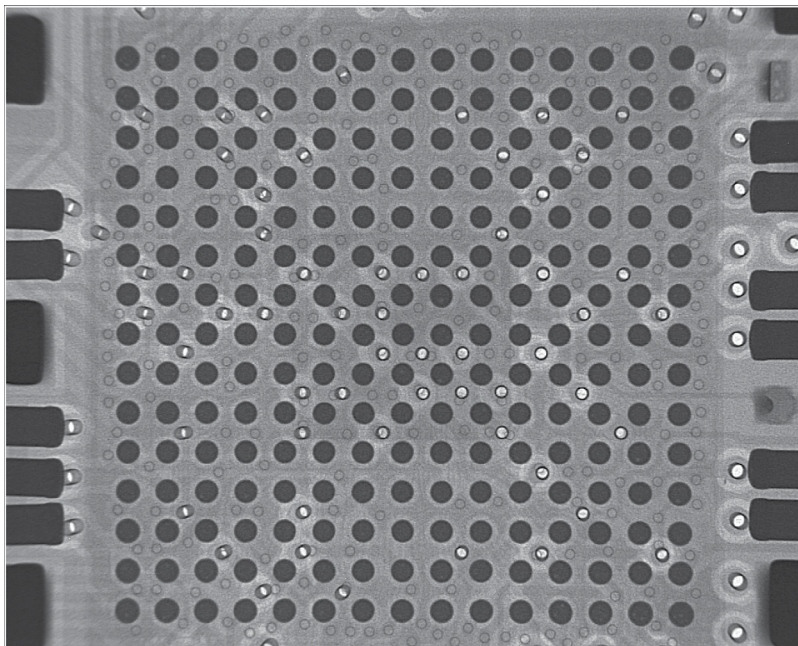
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## TYPICAL X-RAY EXAMPLES



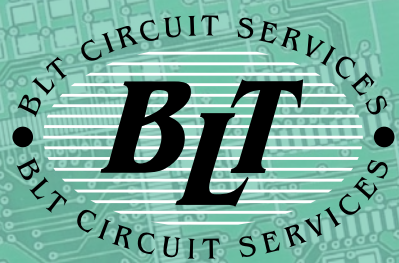
— 0.25mm —  
Tube voltage: 109 kV  
Tube power: 1.59 W  
Filter used: Edge medium 3  
Filter strength: 100  
Averaging: 32 frames

## BGA Zoom



— 2.5mm —  
Tube voltage: 109 kV  
Tube power: 1.59 W  
Filter used: Edge medium 3  
Filter strength: 100  
Averaging: 32 frames

## Full BGA

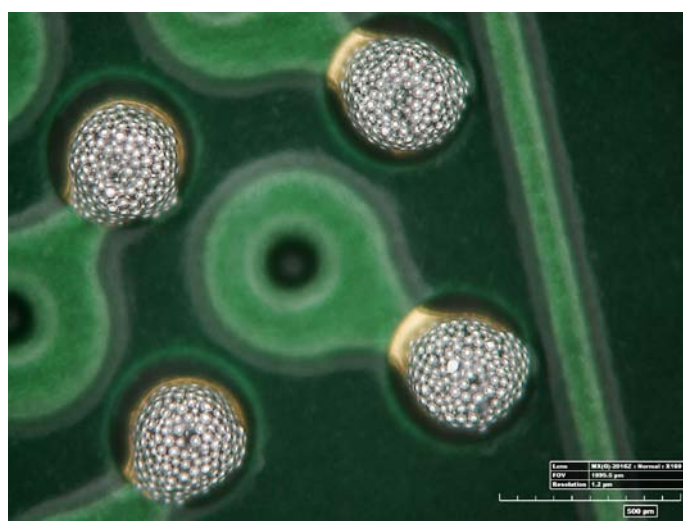
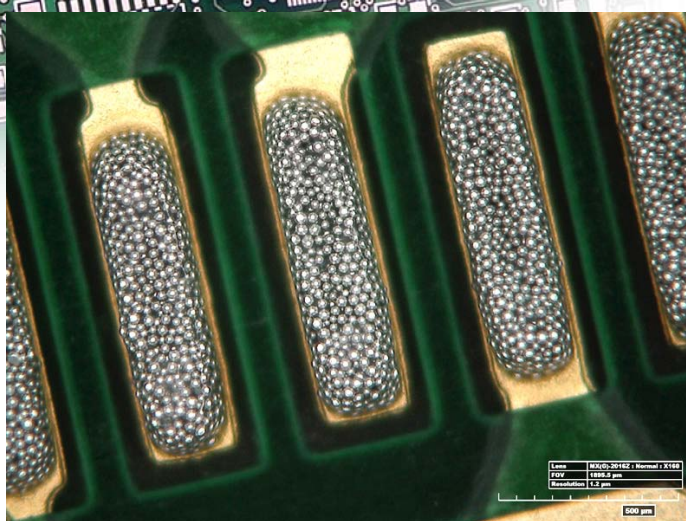


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## SUPPORT DATA & TEST RESULTS

### Printability



Type 4 Solder Spheres 20-38 microns giving excellent printing definition.

### Recommended Reflow Profile

Typical Profile length 3-4.5 minutes

Initial heating rate 1-4°C

Soak time from 150-180°C 60-90 secs or 60-120 seconds if using a faster initial heating rate to 170°C Ramp

From 180°C to peak 2-3°C per second

Time above 220° C 45-75 seconds

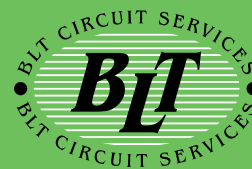
Peak temp 240-260°C\* \*To accommodate some LED component profiles

Cool down 2-5°C per second

Please find two examples of a typical RSS and RTS with the LFS-UFP-T4 paste on the following 2 pages.

### Warranty

All reasonable endeavours have been made to ensure that the information contained in this data sheet is accurate, but it is submitted on the express condition that BLT Circuit Services Ltd. shall be under no liability whatsoever in respect thereof or for any loss, injury, damage or liability of whatsoever nature arising, suffered or incurred as a consequence of its use.



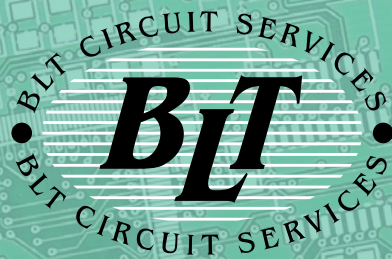
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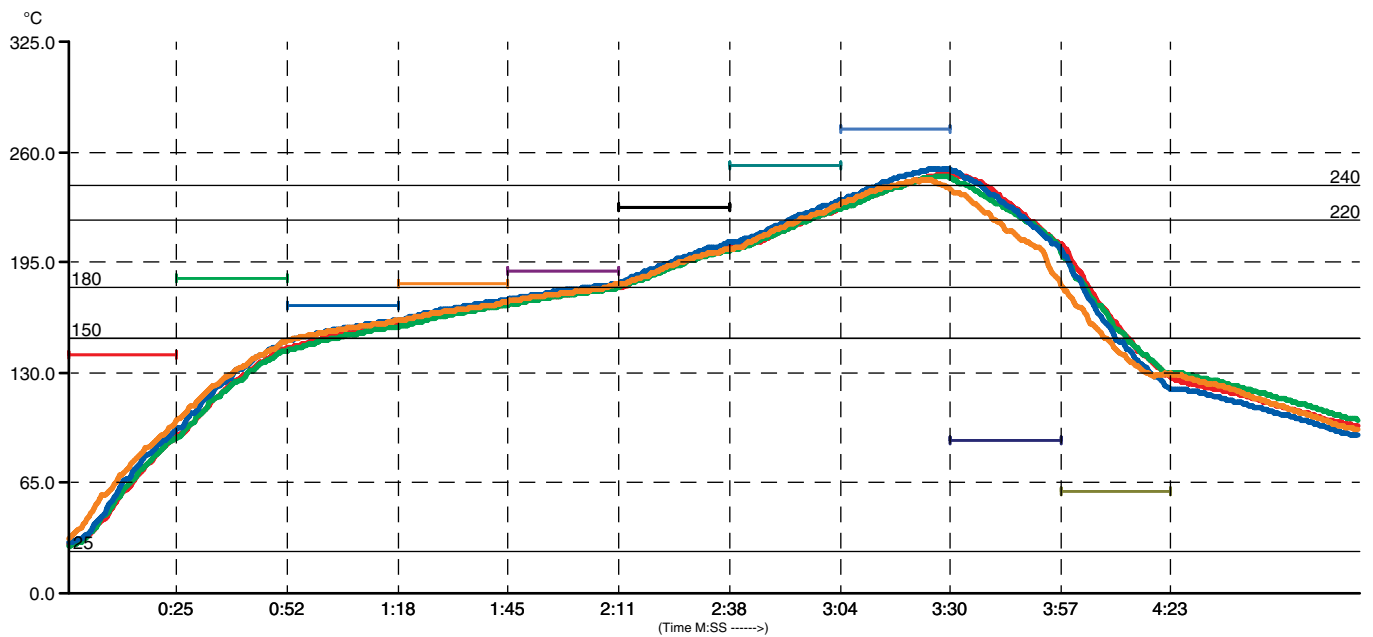
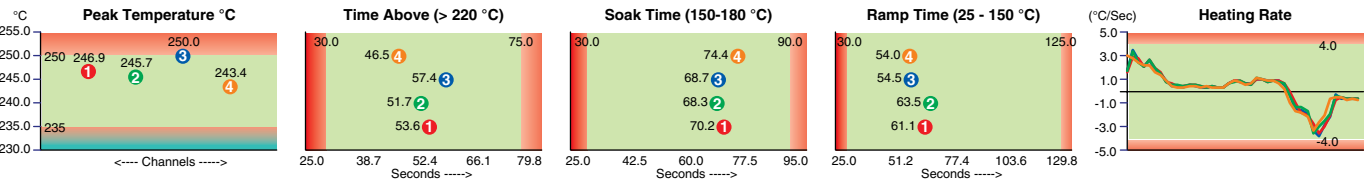
Web www.bltcircuitservices.co.uk



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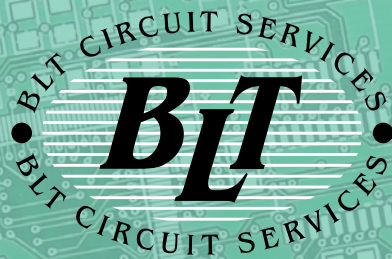
## RAMP SOAK SPIKE DATA



Process Parameters		
Solder Type: BLT LFS-UFP-T4 Solderpaste		
	Min	Max
Soak Time (150-180°C)	30 seconds	90 seconds
Time Above (t>220°C)	30 seconds	75 seconds
Peak Temperature	235°C	260°C

Zone Setpoints (Machine: : Soltec quantis) Recipe: Ramp Soak Spike										
95.00 cm/min (N2)	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	10
Top Heater (°C)	140	186	170	182	190	227	252	273	90	60
Bottom Heater (°C)	140	186	170	182	190	227	252	273	90	60

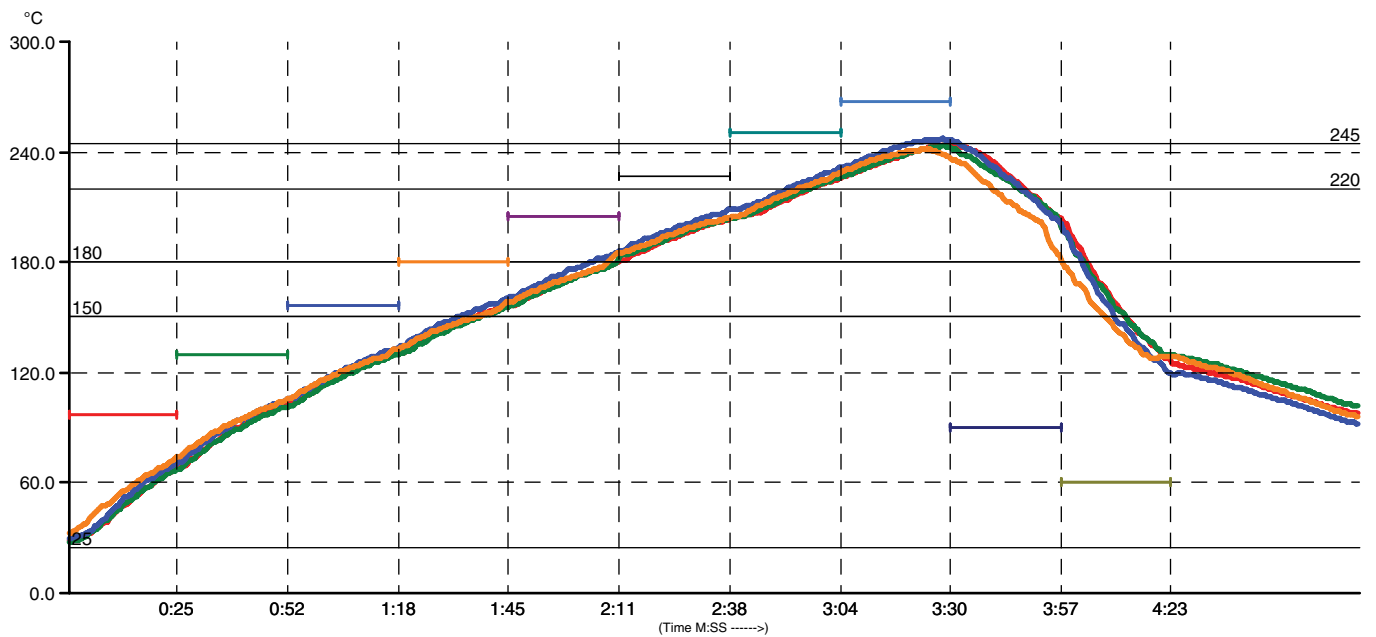
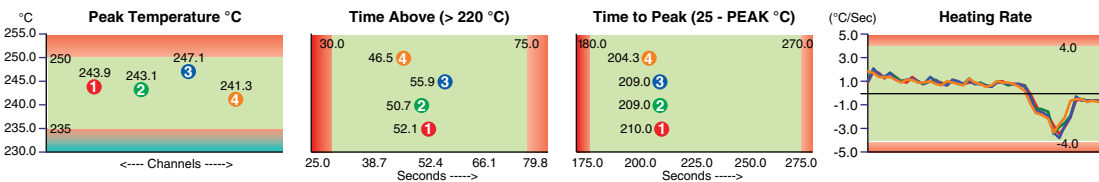
Channel	Process Data									Zone Slopes (°C/Sec)											
	Peak	25-150	t=150	t=180	150-180	t=220	t>220	t>240	t=Peak	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	Max+	Max-
1	246.9	61.1	61.1	131.3	70.2	176.8	53.6	20.0	3:29.0	2.9	2.2	0.5	0.5	0.3	1.0	1.0	0.9	-2.1	-3.7	2.9	-3.7
2	245.7	63.5	63.5	131.8	68.3	177.8	51.7	15.0	3:29.0	3.3	2.4	0.6	0.5	0.5	0.9	1.0	0.9	-2.7	-3.7	3.3	-3.7
3	250.0	54.5	54.5	123.2	68.7	172.1	57.4	25.0	3:29.0	3.5	2.5	0.5	0.5	0.5	1.0	1.1	0.9	-2.5	-4.2	3.5	-4.2
4	243.4	54.0	54.0	128.5	74.4	175.4	46.5	11.0	3:24.6	3.0	2.2	0.5	0.4	0.6	0.9	1.0	-1.0	-3.8	-3.1	3.0	-3.8
Delta	6.6	9.5	9.5	8.6	6.1	5.7	10.9	14.0	14.0	0.6	0.3	0.1	0.1	0.3	0.1	0.1	1.9	1.7	1.1	0.6	0.5
Mean	246.50	58.27	58.27	128.70	70.40	175.53	52.30	17.75	17.75	3.17	2.33	0.53	0.47	0.47	0.95	1.02	0.43	-2.78	-3.68	3.17	-3.85



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## RAMP TO SPIKE DATA



Process Parameters		
Solder Type: BLT LFS-UFP-T4 Solderpaste		
	Min	Max
Soak Time (150-180°C)	40 seconds	90 seconds
Time Above (t>220°C)	30 seconds	75 seconds
Peak Temperature	235°C	260°C

Zone Setpoints (Machine: : Soltec quantis) Recipe: Ramp To Spike										
95.00 cm/min (N2)	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	10
Top Heater (°C)	97	130	156	180	205	227	250	267	90	60
Bottom Heater (°C)	97	130	156	180	205	227	250	267	90	60

Channel	Process Data									Zone Slopes (°C/Sec)											
	Peak	25-150	t=150	t=180	150-180	t=220	t>220	t>245	t=Peak	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	Max+	Max-
1	243.9	210.0	97.2	131.3	34.1	177.3	52.1	0.0	3:29.0	1.8	1.5	1.1	1.0	0.9	1.0	0.8	-2.1	-3.6	1.8	-3.6	
2	243.1	209.0	98.6	131.3	32.7	177.3	50.7	0.0	3:29.0	2.0	1.6	1.2	1.2	1.2	1.0	0.9	0.8	-2.7	-3.6	2.0	-3.6
3	247.1	209.0	92.9	125.1	2.2	172.1	55.9	10.0	3:29.0	2.1	1.7	1.2	1.2	1.0	1.0	1.0	0.8	-2.4	-4.1	2.1	-4.1
4	241.3	204.3	97.2	129.4	32.2	174.9	46.5	0.0	3:24.6	1.8	1.5	1.2	1.0	1.3	0.8	0.9	-0.9	-3.8	-3.1	1.8	-3.8
Delta	5.8	5.7	5.7	6.2	1.9	5.2	9.4	10.0	0.0	0.3	0.2	0.1	0.2	0.4	0.2	0.1	1.7	1.7	1.0	0.3	0.5
Mean	243.85	208.07	96.48	129.28	32.80	175.40	51.30	2.50	0.00	1.93	1.58	1.18	1.10	1.10	0.95	0.95	0.38	-2.75	-3.60	1.93	-3.78