Data package:
LOCTITE ECCOBOND DAM 7010C
LOCTITE ECCOBOND FIL 7010C

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Henkel

Data package: ECCOBOND DAM 7010C / FILL 7010C

Objective

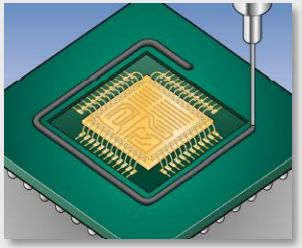
SVHC –free Dam and Fill system

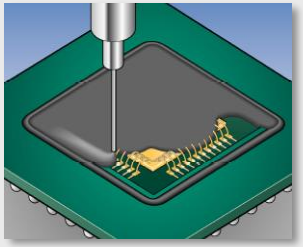
- Development of SVHC-free, REACH and Roh's compliant, one component dam and fill product.

Benefits

- CMR / SVHC –free
- Low CTE
- Hhigh Tg
- Good chemical resistance (ATF)
- Easy processing
- Compliant withASTM E595-15 (NASA outgassing)

Application Examples & Value Enhancement





Data package: ECCOBOND DAM 7010C / FILL 7010C
Product properties - uncured

	Unit	ECCOBOND DAM 7010C	ECCOBOND FIL 7010C
Appearance		1 component, Black	1 component, black
Viscosity (15s-1)	Pa.s	80 - 105	20 - 30
Thixotropic Index		3,3	1,3
Density	g/cc	1,90	1,87
Storage temperature	°C	-40	-40
Shelf life at -40°C	month	6	6
Cure schedule • Temperature • Time	 °C min	 140 120	 140 120

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Product properties - cured

Property	Unit	ECCOBOND DAM 7010C	ECCOBOND FIL 7010C
Hardness	Shore D	90	90
CTE below Tg	ppm/K	14 -18	14 - 18
CTE above Tg	ppm/K	60 - 65	55 - 60
Tg (TMA)	°C	135 - 145	135 - 145
Tg (DMA)	°C	130 - 140	155 - 165
E-modulus at 25°C	GPa	11	11
Thermal conductivity	W/m.K	0,78	0,72

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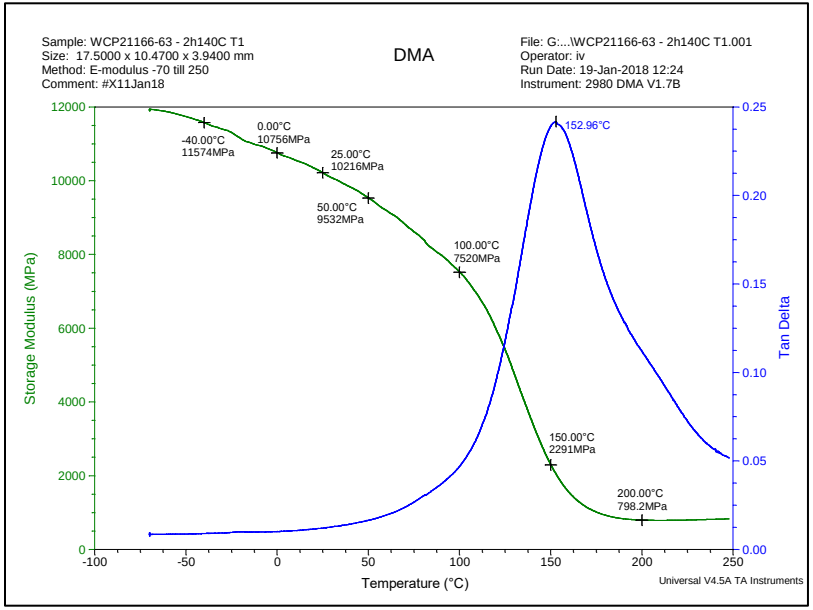
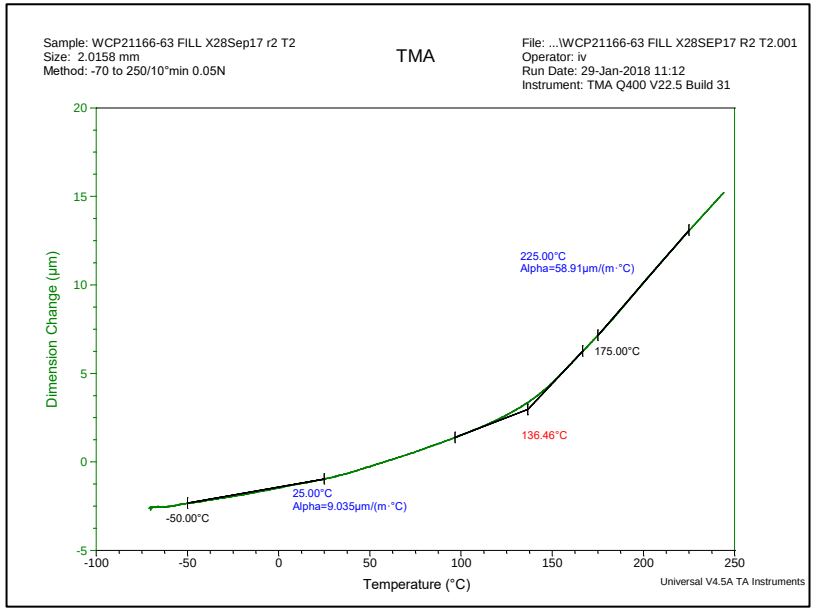
DMA/TMA graph





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ECCOBOND FIL 7010C – cure schedule evaluation

Property	Unit	2hr at 140°C	1hr 140°C + 2hr 160°C
Tg (DMA)	°C	150 - 155	190 - 195
E-modulus			
at -40°C	GPa	11,5	10,5
At 0°C		10,7	9,5
At 25°C		10,0	9,0
At 100°C		7,2	7,4
At 150°c		2,0	6,2
At 200°C		0,8	1,3

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Product properties - cured

Property	Unit	ECCOBOND DAM 7010C	ECCOBOND FIL 7010C
Dielectric constant at 1 MHz		3,6	3,5
Dissipation factor at 1 MHz		0,015	0,016
Volume resistivity	Ohm.cm	8,9E+15	9,6E+15
Surface resistivity	ohm	5,9E+15	3,4E+16
Dielectric strength	kV/mm	22	23

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Additional properties

Property	Unit	ECCOBOND DAM 7010C	ECCOBOND FIL 7010C
ATF resistance (@ 150°C, 1000h) by weight gain (absorption)	%	< 0,05	< 0,05
Water absorption @ RT, 7 d	%	0,10	0,14
Water absorption @ 100°C, 24hr	%	0,45	0,63
Water absorption	%		
@85°C/85%RH, 168hr		0,56	0,41
@85°C/85%RH, 1000hr		1,04	0,81
Ionic content	ppm		
Na^+		9	5
K^+		1	2
NH_4^+		4	2
Cl^-		3	2
F^-		2	4

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Reliability: Thermal shock -40°C / 150°C

- Test set up:
  - Test board: 6-layerd FR-4/Cu board (3,2mm thick)
  - Dam height: 2,8 mm
  - Quantity fill: 50g
- Cure: 1hr 120°C + 1hr 150°C
- Reliability test – Thermal shock
  - -40°C / +150°C, 30min hold

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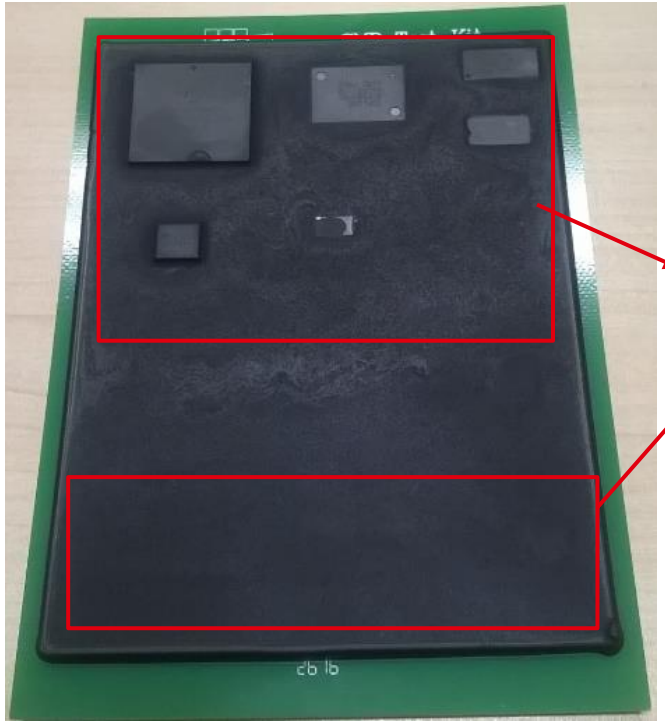

Evaluation of cracks above and around components in the fill material

Data package: ECCOBOND DAM 7010C / FILL 7010C

Reliability: After Cure

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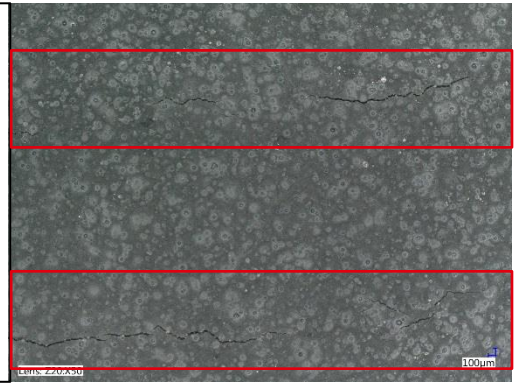
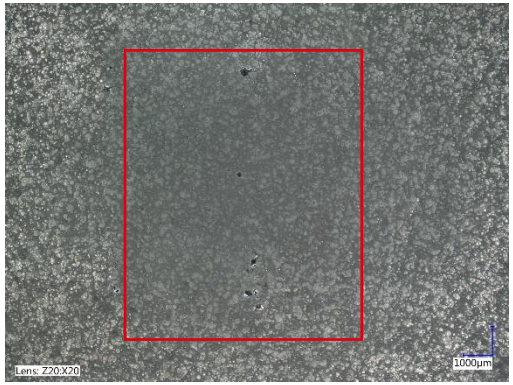
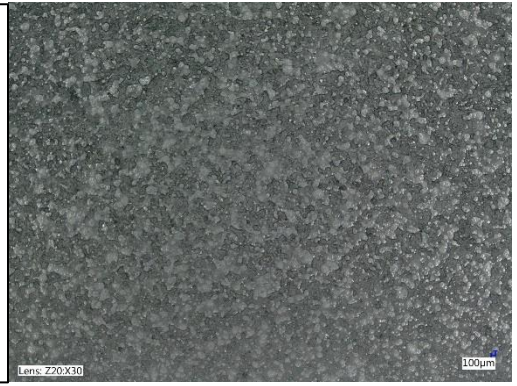
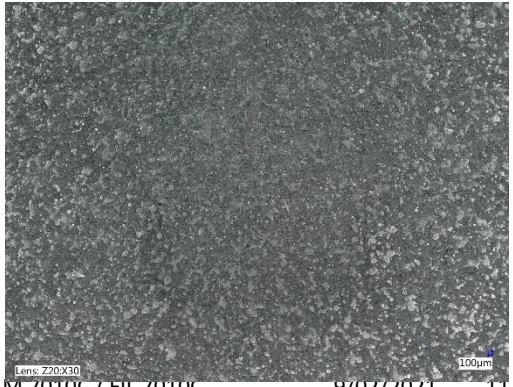




FIL 7010C

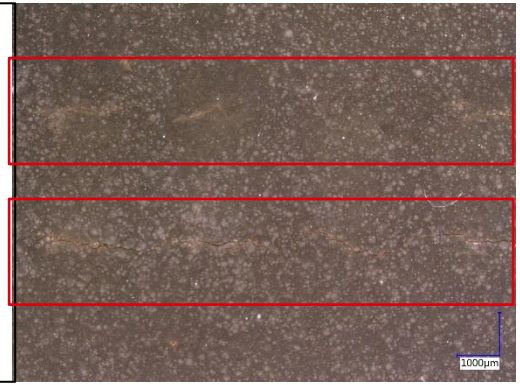


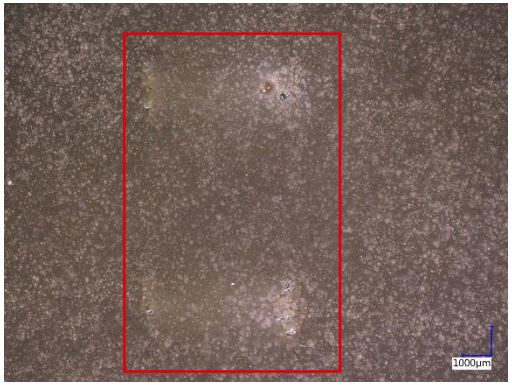


Data package: ECCOBOND DAM 7010C / FILL 7010C

Reliability: After 2000 x TS

Reference





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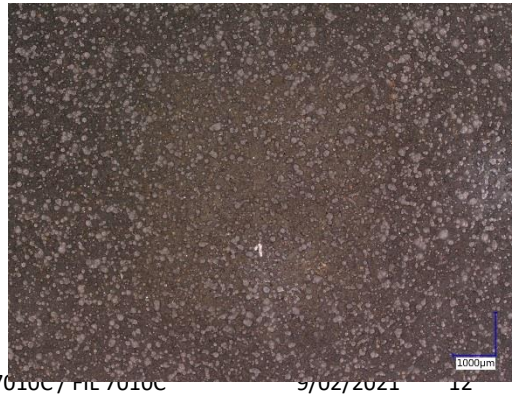

Data package: ECCOBOND DAM 7010C / FILL 7010C
Reliability: After 2000 x TS

Conclusion:

- The reference material already shows cracks after cure. The cracks slightly increase during thermal shock test.

- LOCTITE ECCOBOND FIL 7010C does not show any cracks around the components after cure, as well as after 2000 times thermal shock test (-40°C to 150°C).

Thank you!