

Tin Whisker Test Report

Basic Information:	
Package Type	SOT23 6L
Test Condition	Refer JESD201
Cumulative exposure time	1500Cycles and 4000 hrs
Observation:	
Number of sample inspected	66 units (3 units per read point per test type)
Total number of termination inspected	198 leads (3 leads per units)
Type of whisker	Striations
Axial length of longest whisker (maximum)	27.50 um (Within specification)
Substrate:	
Type	Package
Substrate material	Cu
Forming operation	Stamped
Post finish treatment	Anneal @ 150°C, 1 hr
Tin Finish:	
Finish application date	Jan 30' 08
Alloy Type	Tin
Bath type	MSA
Finish Type	Matte
Conclusion:	
The package can pass criteria of class 1, 1A and 2	

Summary Result

Stress Type	Test condition	Precondition	Read Point	Length of whisker (um)
Temperature Cycling	-55 +/-10°C to 85 +/-0 °C	A (No precon)	500 cycles	0.00
			1000 cycles	27.50
			1500 cycles	0.00
		D (Pb free reflow)	500 cycles	0.00
			1000 cycles	19.90
			1500 cycles	0.00
Temperature/ Humidity Storage	30 +/-2 °C and 60 +/-3% RH	A (No precon)	1000 hrs	0.00
			2000 hrs	0.00
			3000 hrs	0.00
			4000 hrs	0.00
		D (Pb free reflow)	1000 hrs	0.00
			2000 hrs	0.00
			3000 hrs	0.00
			4000 hrs	0.00
High Temperature/ Humidity Storage	55 +/-3 °C and 85 +/- 3 %RH	A (No precon)	1000 hrs	0.00
			2000 hrs	0.00
			3000 hrs	0.00
			4000 hrs	0.00
		D (Pb free reflow)	1000 hrs	0.00
			2000 hrs	0.00
			3000 hrs	0.00
			4000 hrs	0.00

Criteria:

Considerations	Stress Type	Maximum Allowable Whisker Length		
		Class 2	Class 1	Class 1A
Components with a minimum lead-to-lead gap > 320 um	Temperature cycling	45 um	50 um	50 um
	Temperature / Humidity Storage	20 um	40 um	75 um
	High Temperature / Humidity Storage	20 um	40 um	75 um

Terms and definitions:

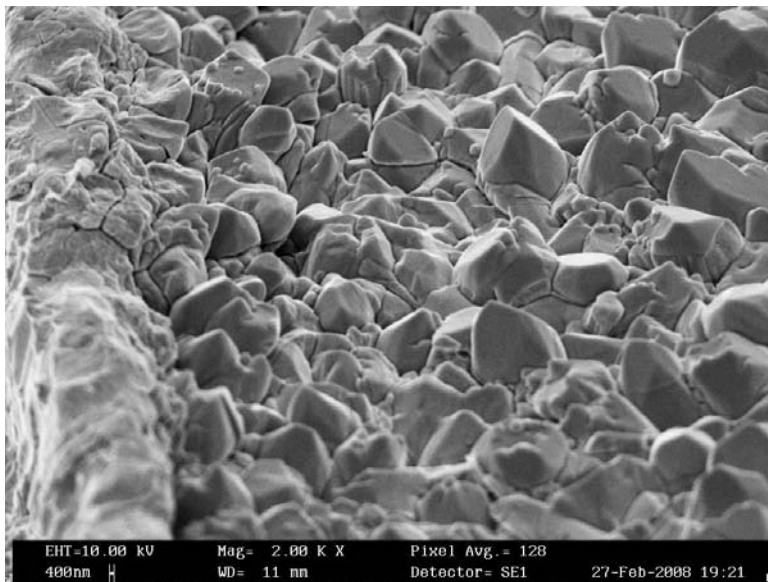
Whiskers should have the following characteristics:

- An aspect ration (length/width) greater than 2
- Length of 10 micron or more

Whisker length:

The straight line distance from the point of emergence of the whisker to the most distant point on the whisker (i.e., the radius of a sphere containing the whisker with its center located at the point of emergence.)

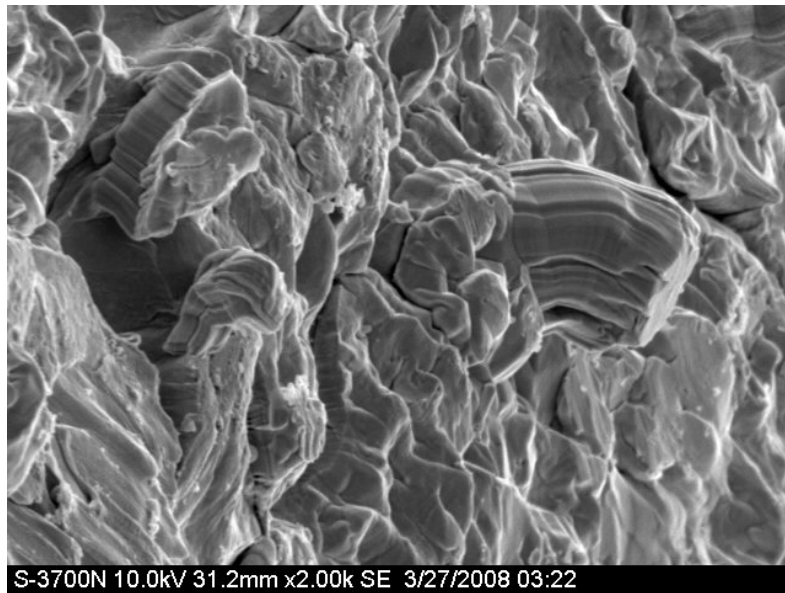
SEM Photo: Precondition A (No precondition) + TCT500



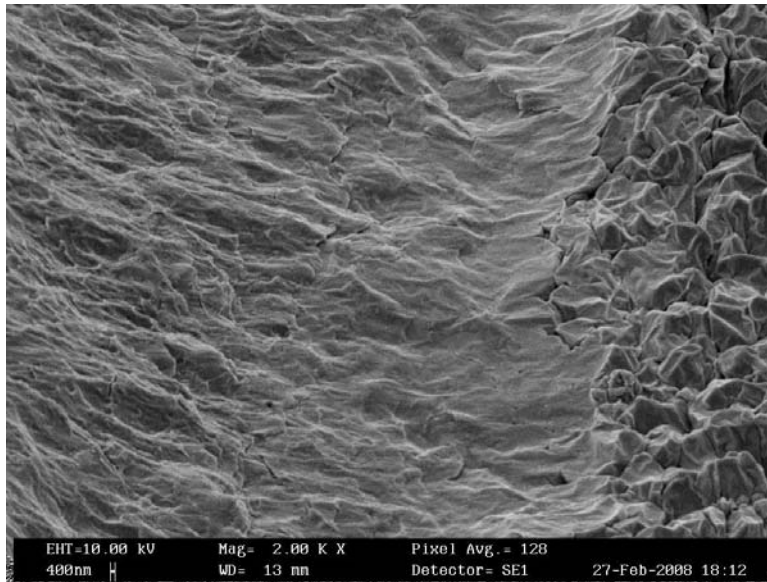
SEM Photo: Precondition A (No precondition) + TCT1000



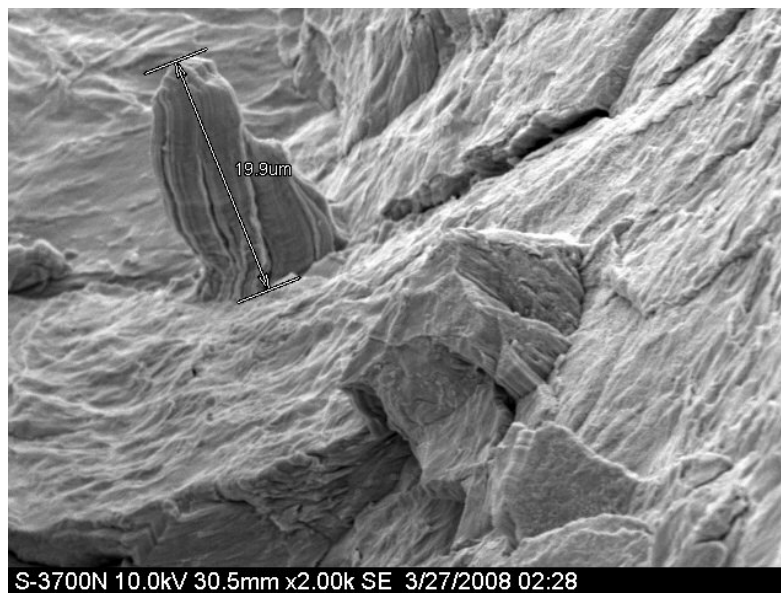
SEM Photo: Precondition A (No precondition) + TCT1500



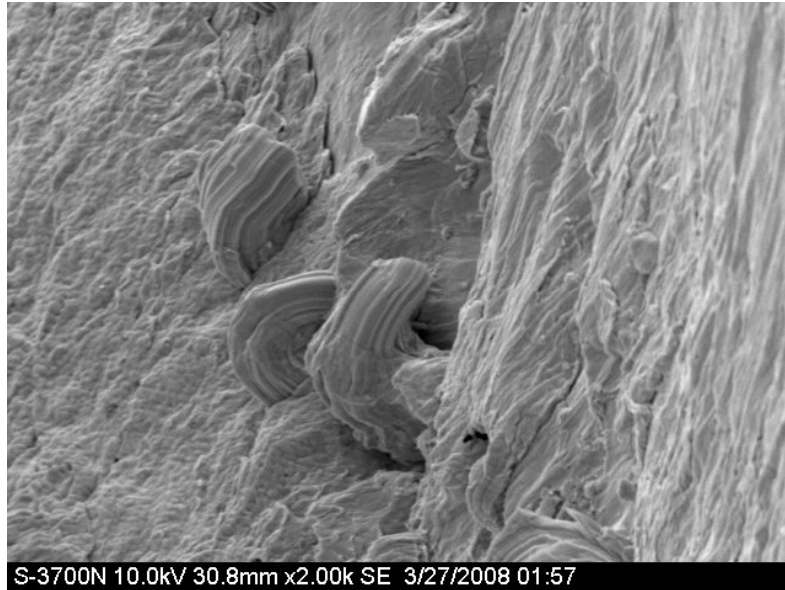
SEM Photo: Precondition D (Pb free reflow) + TCT500



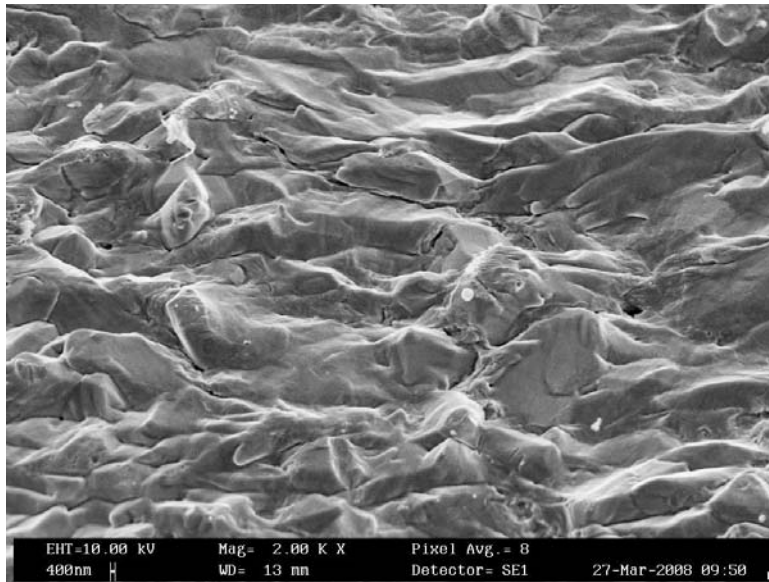
SEM Photo: Precondition D (Pb free reflow) + TC1000



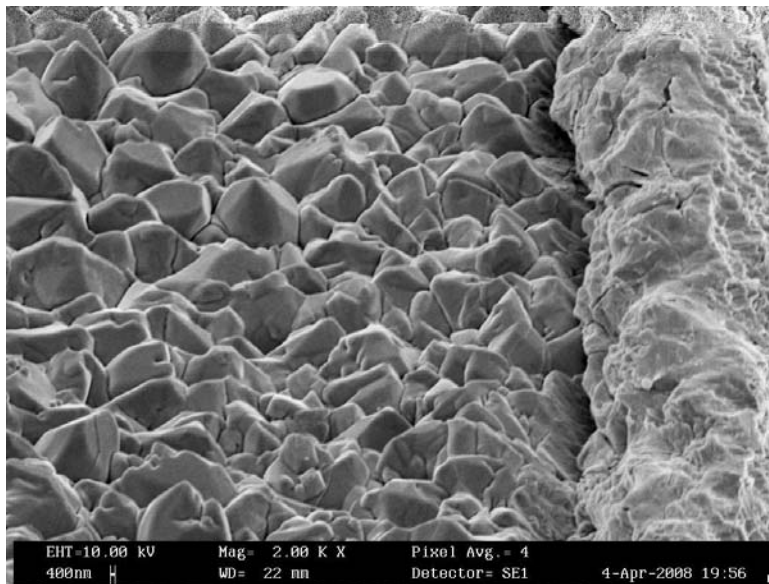
SEM Photo: Precondition D (Pb free reflow) + TCT1500



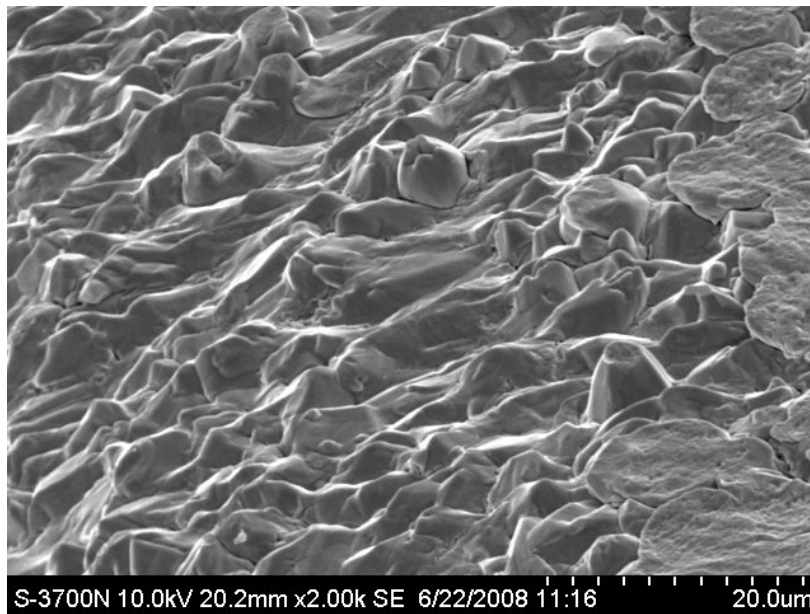
SEM Photo: Precondition A (No precondition) + TH1000



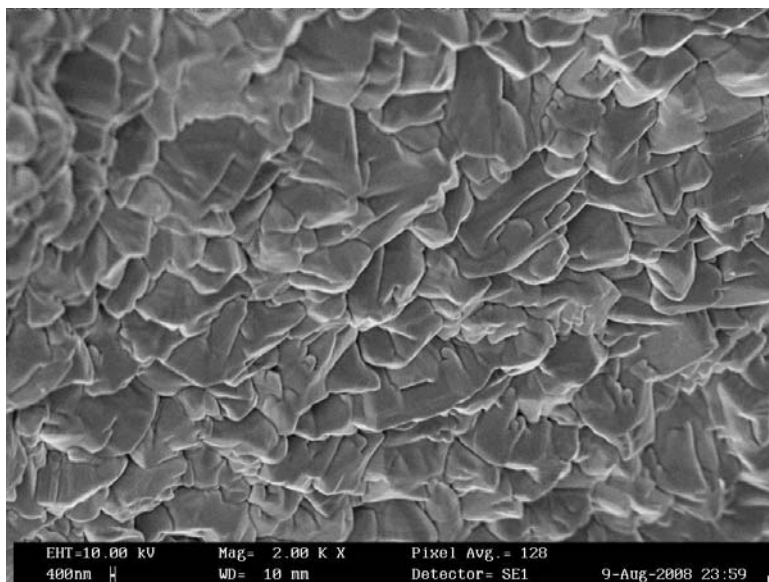
SEM Photo: Precondition A (No precondition) + TH2000



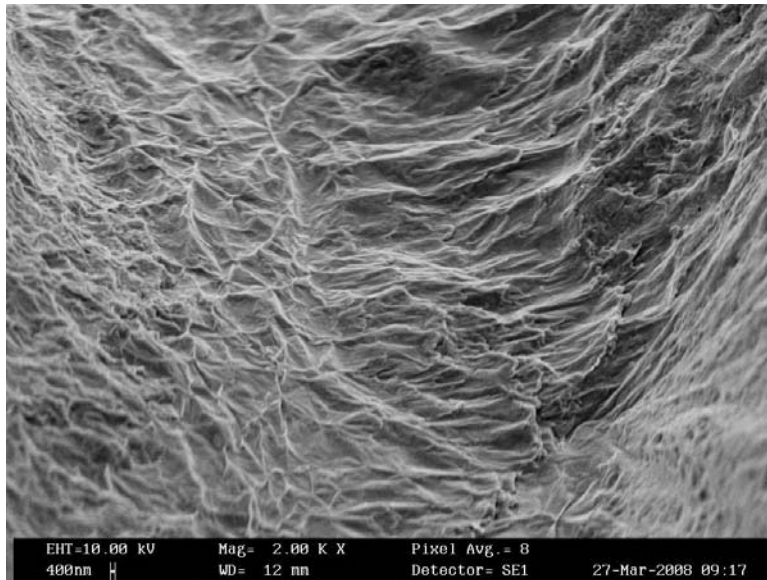
SEM Photo: Precondition A (No precondition) + TH3000



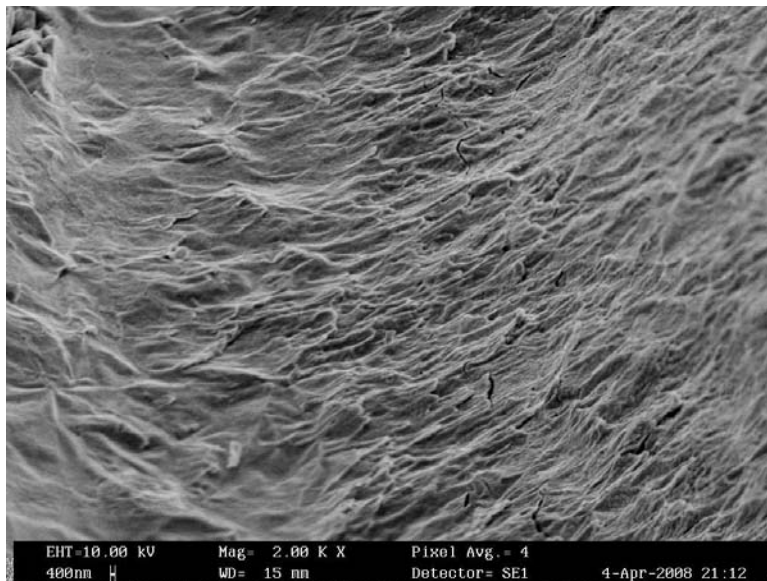
SEM Photo: Precondition A (No precondition) + TH4000



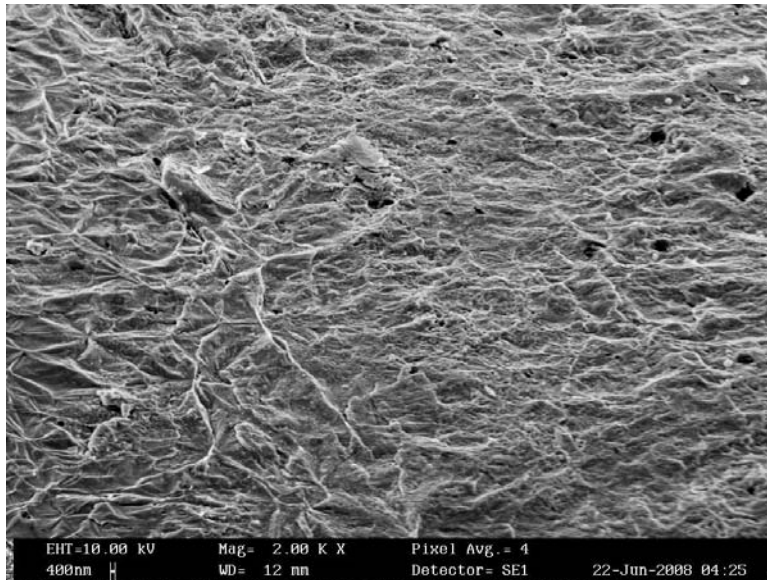
SEM Photo: Precondition D (Pb free reflow) + TH1000



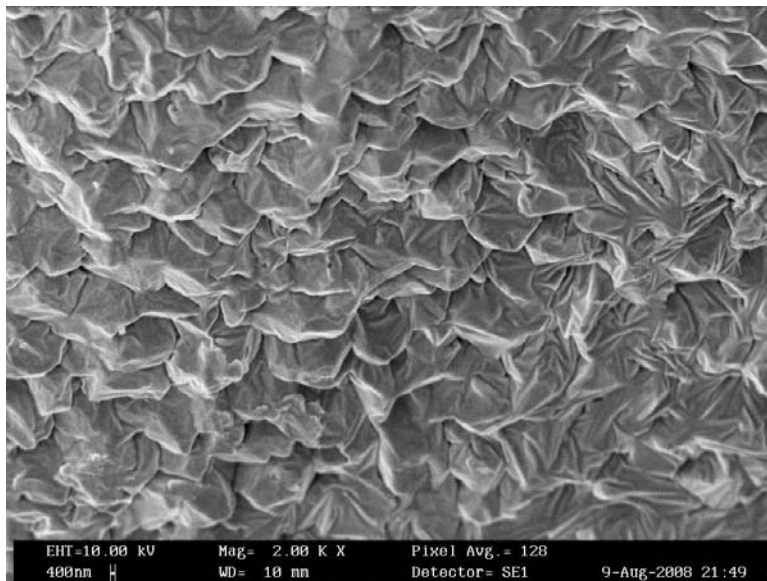
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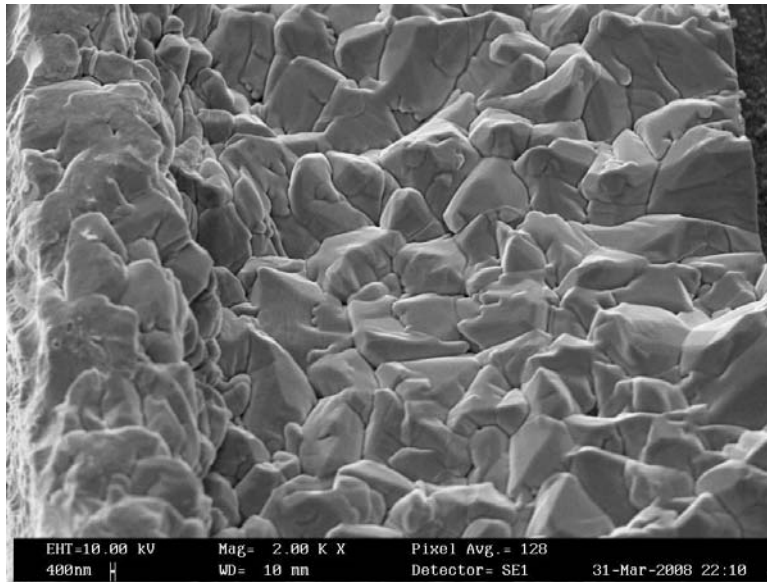
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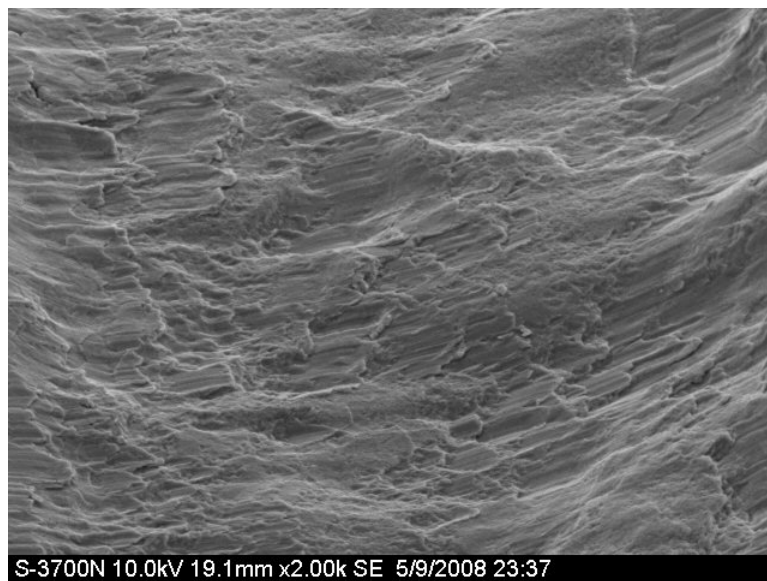
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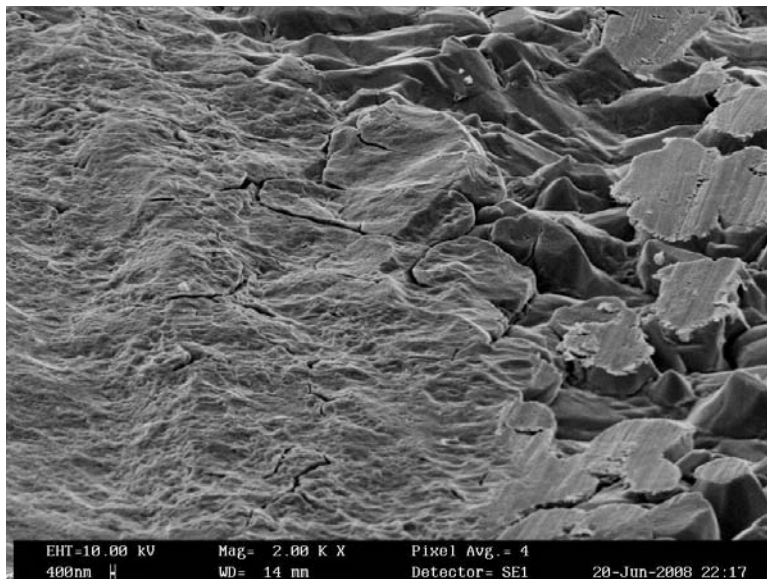
SEM Photo: Precondition A (No precondition) + HTH1000



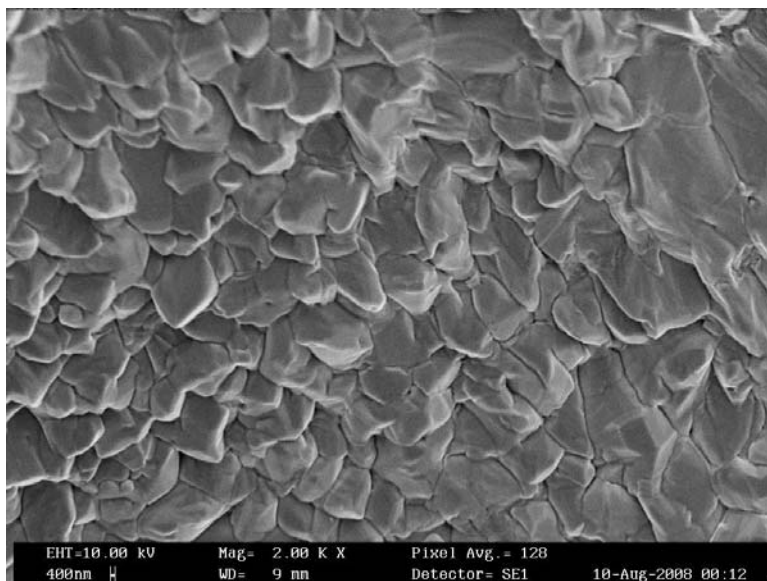
SEM Photo: Precondition A (No precondition) + HTH2000



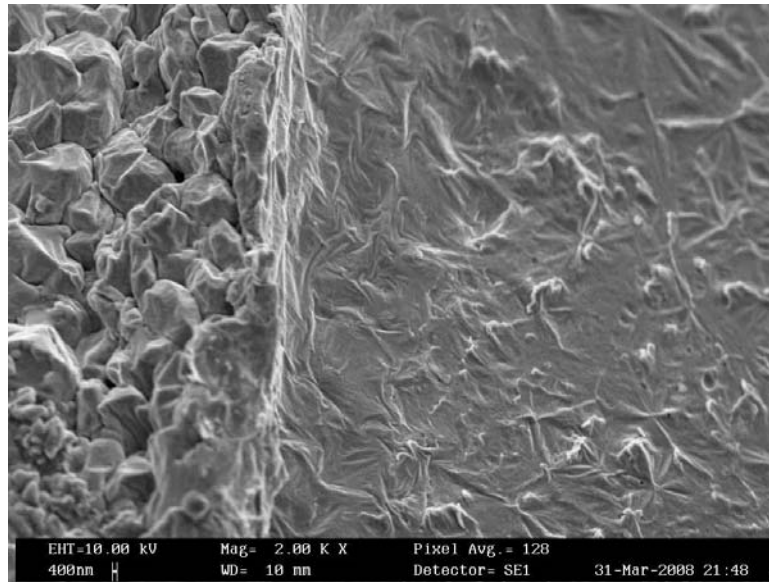
SEM Photo: Precondition A (No precondition) + HTH3000



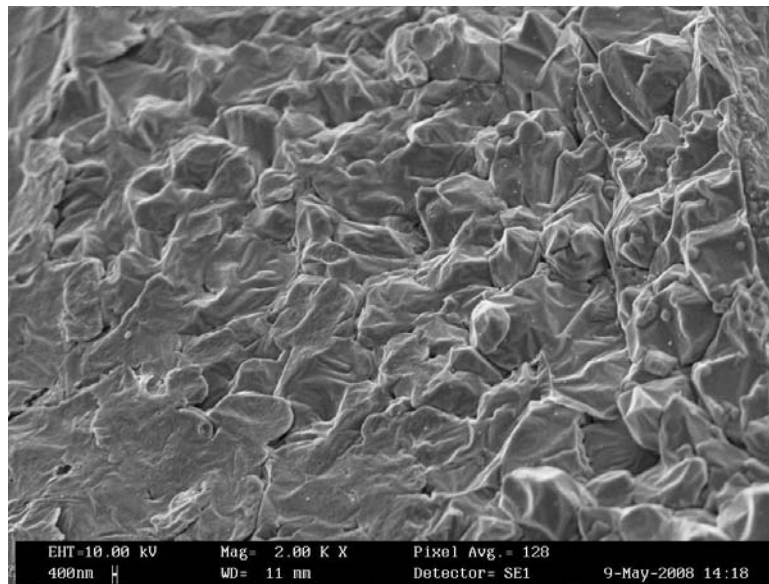
SEM Photo: Precondition A (No precondition) + HTH4000



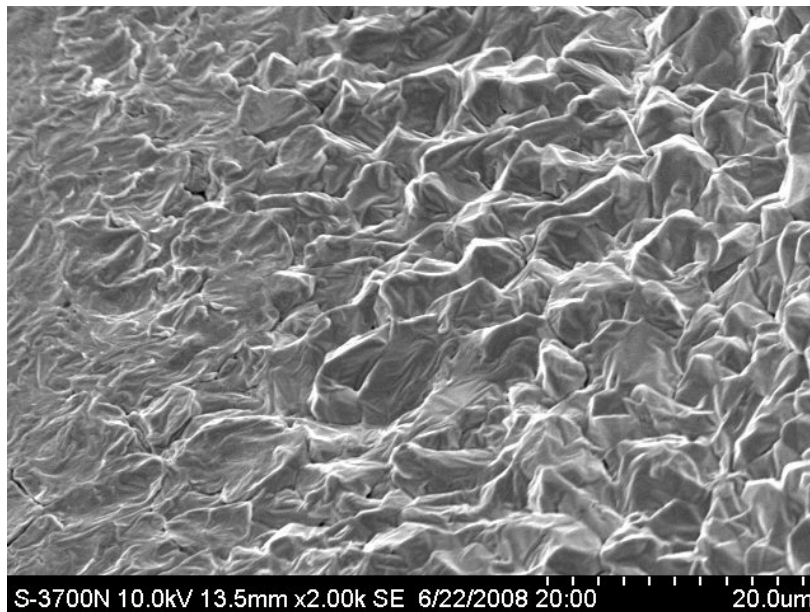
SEM Photo: Precondition D (Pb free reflow) + HTH1000



SEM Photo: Precondition D (Pb free reflow) + HTH2000



SEM Photo: Precondition D (Pb free reflow) + HTH3000



SEM Photo: Precondition D (Pb free reflow) + HTH4000

