ON Semiconductor

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION #16556

Generic Copy

Issue Date: 12-Oct-2011

TITLE: LFBGA Mold Compound and Epoxy Change in ATP3

PROPOSED FIRST SHIP DATE: 12-Jan-2012

AFFECTED CHANGE CATEGORY(S): Mold Operation – New Mold Compound

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:
Contact your local ON Semiconductor Sales Office or Sarah Sanico< ffxxxh@onsemi.com >

SAMPLES: Contact your local ON Semiconductor Sales Office

ADDITIONAL RELIABILITY DATA: Available
Contact your local ON Semiconductor Sales Office or Phine Guevarra<phine.guevarra@onsemi.com>

NOTIFICATION TYPE:

Final Product/Process Change Notification (FPCN)

Final change notification sent to customers. FPCNs are issued at least 90 days prior to implementation of the change.

ON Semiconductor will consider this change approved unless specific conditions of acceptance are provided in writing within 30 days of receipt of this notice. To do so, contact <quality@onsemi.com>.

DESCRIPTION AND PURPOSE:

The change is to convert from standard to green mold compound and die attach epoxy for all LFBGA in AMKOR due to discontinuance of Cookson (mold compound manufacturer) in producing of SMT B1LV because of low product demand. Majority of products are now going to green.

Propose Change	Package Affected	From	To
D/A Material	LFBGA	QMI 596	ABLEBOND 2300
Mold compound		SMT B1LV	GE100L

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION #16556

RELIABILITY DATA SUMMARY:

The assembly qualification tests have concluded with passing results. Qualification was run according to ON Semiconductor Global Specification 1000019, ON Semiconductor Assembly Reliability Qualification. ON Semiconductor releases the package and materials set under consideration for dry pack level 3 of IPC/JEDEC standard J-STD-020 (Moisture/Reflow Sensitivity Classification for Non-Hermetic Solid State Surface Mount Devices).
This qualification covers LFBGA's with maximum die size area of 47.58 mm2 and maximum body size of 17 mm x 17 mm assembled at Amkor Technology, Philippines.

TEST	CONDITIONS	CHECKPOINTS	RESULT
Moisture Preconditioning • Bake • Humidity Soak • Reflow	 125°C 30°C / 60% RH 225°C	 21 hrs 192 hrs 3 cycles	PASSED
Scanning Acoustic Microscopy	Not Applicable	Pre and Post MSL	PASSED (see Figure 1 and 2)
Temperature Cycling	-55°C/125°C	1000 cycles	PASSED
Preconditioning Temperature Cycling	-55°C / 125°C	100 cycles	PASSED
Temperature Humidity Unbiased	85°C / 85% RH	1000 hrs	PASSED
High Temperature Bake	150°	500 hrs. 1000 hrs	PASSED
Bond Pull Test	Not Applicable	Not Applicable	PASSED (see Figure 4)
Bond Shear Test	Not Applicable	Not Applicable	PASSED (see Figure 5)
Solder ball Shear Test	Not Applicable	Not Applicable	PASSED (see Figure 6)
Electrical Testing	SW3, 70°C	Not Applicable	PASSED
External Visual	Not Applicable	Not Applicable	PASSED (see Figure 7)
X-ray Inspection	Not Applicable	Not Applicable	PASSED

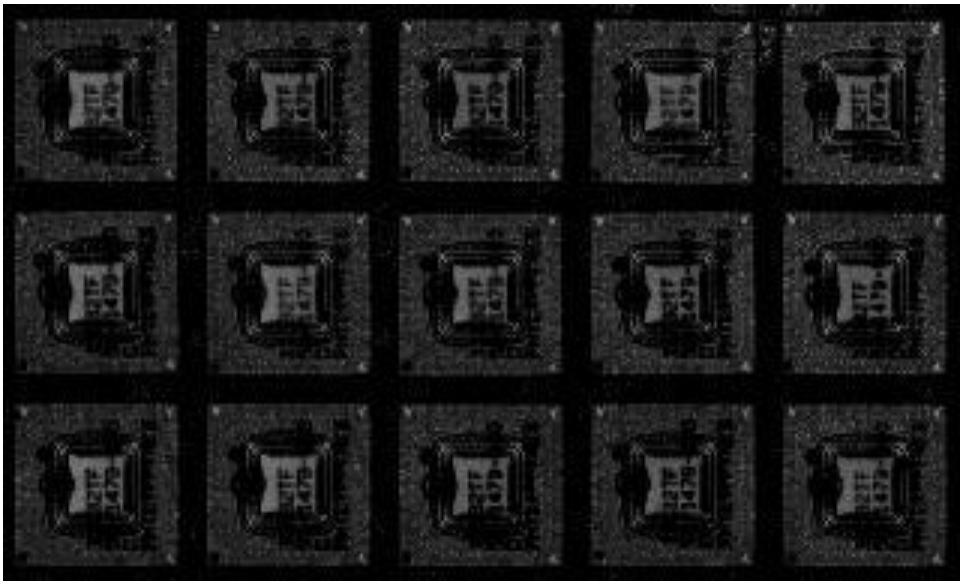

Figure 1. Acoustic Microscopy Image prior Moisture Resistance test.

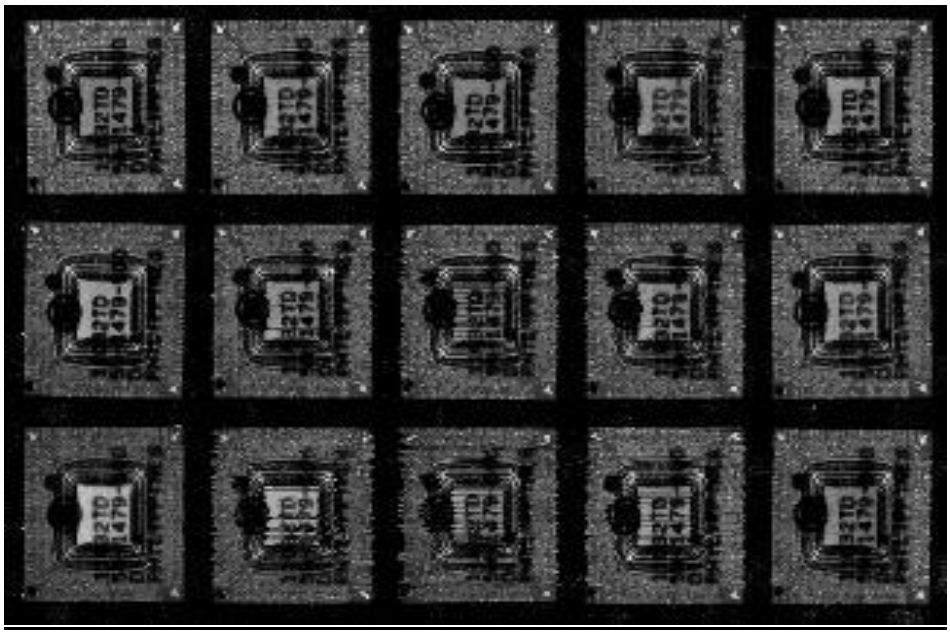

Figure 2. Acoustic Microscopy Image after Moisture Resistance test.

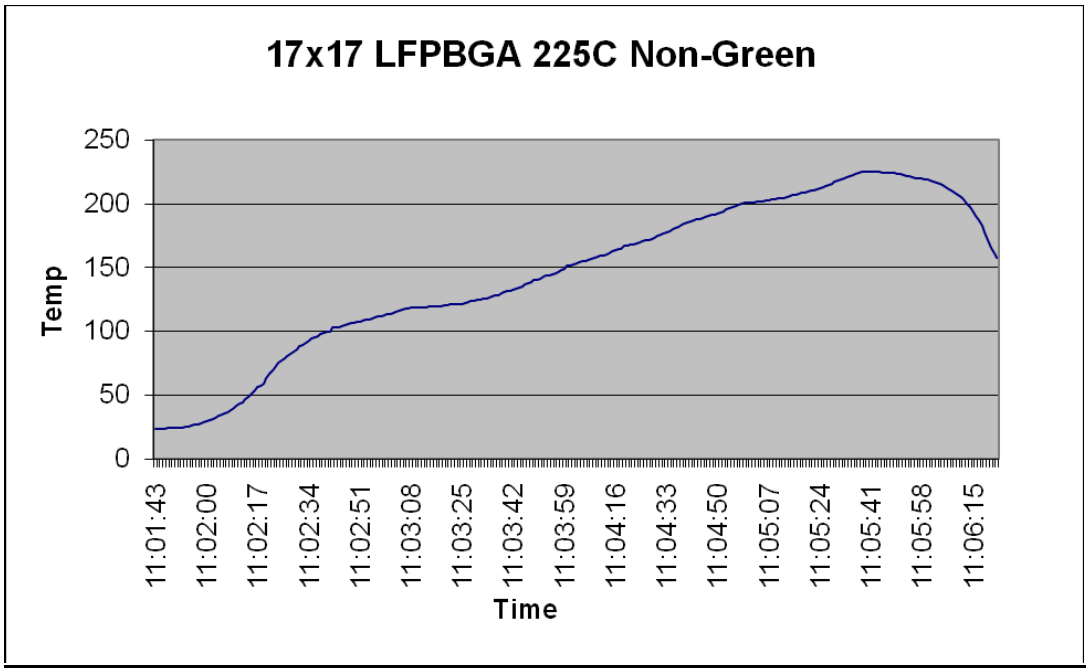

Figure 3. Reflow oven profile for LFBGA package at 225 deg C

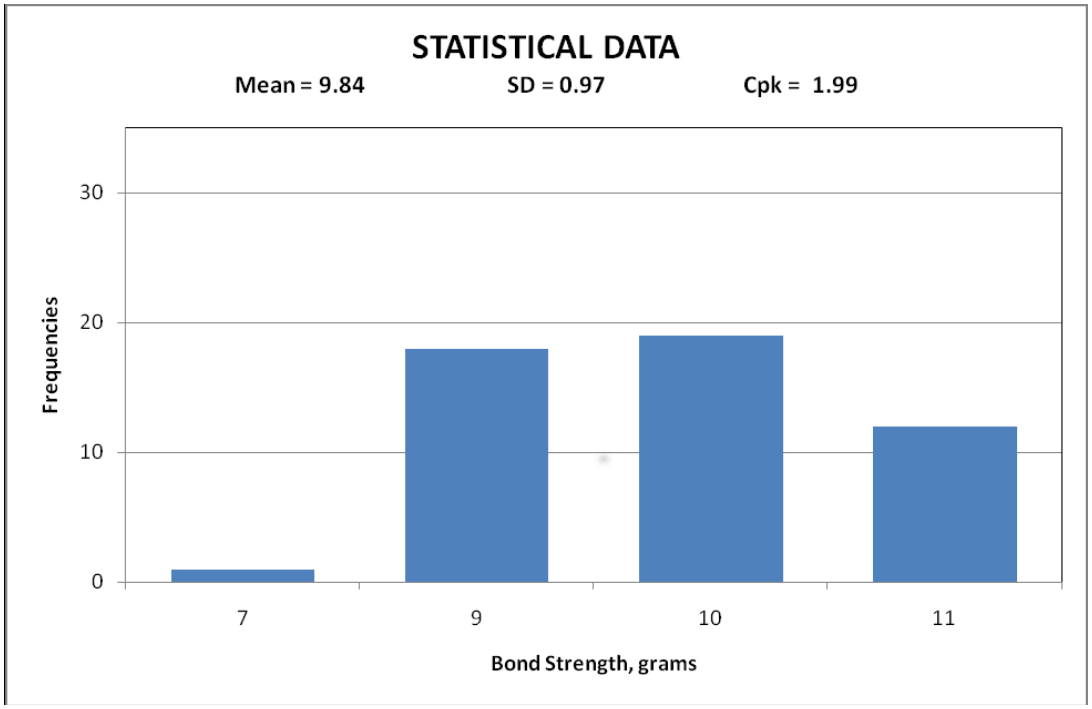

Figure 4. Histogram of Bond Pull Test result.

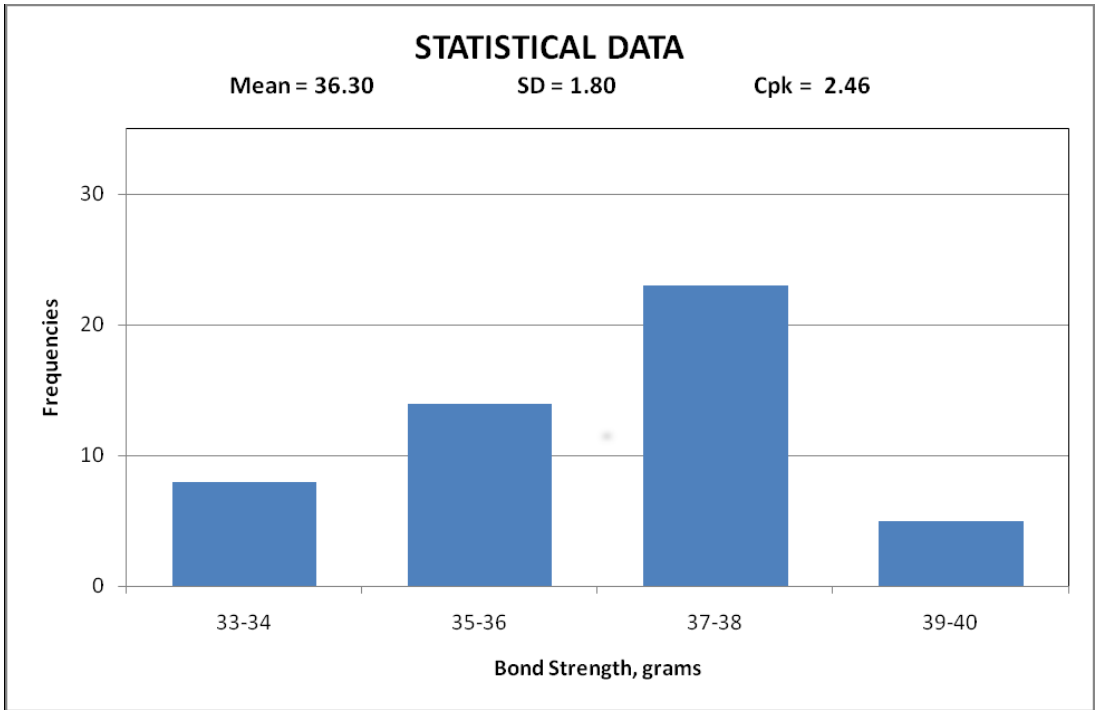

Figure 5. Histogram of Bond Shear Test result.

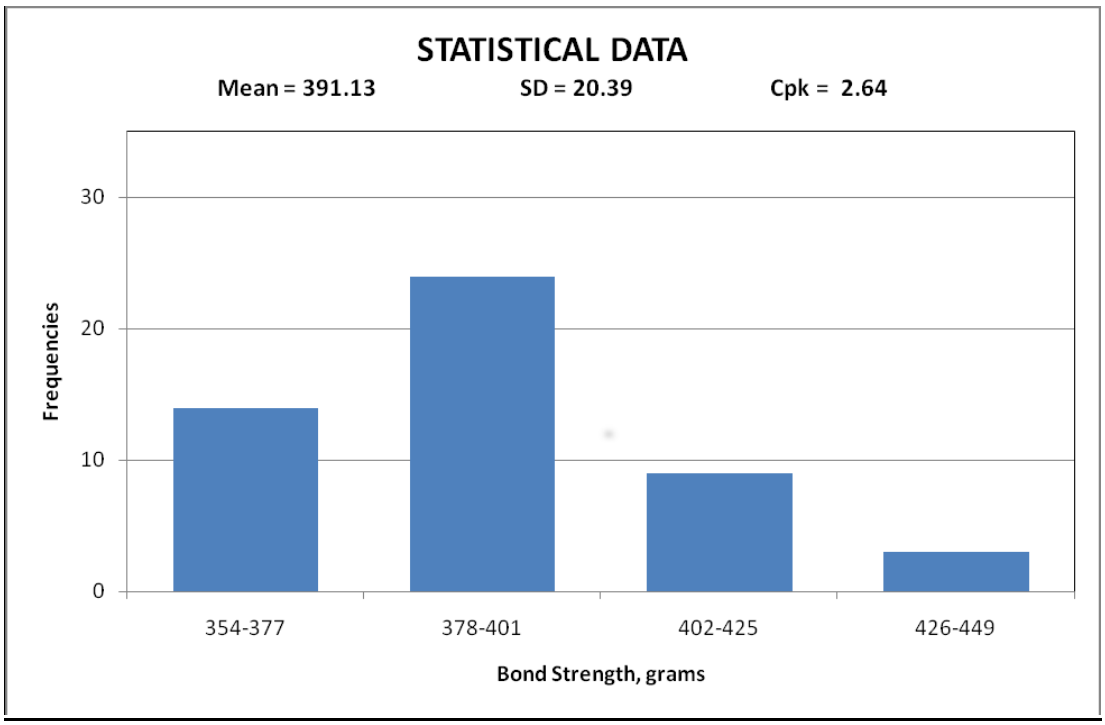

Figure 6. Histogram of Solder Ball Shear Test result.

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION #16556

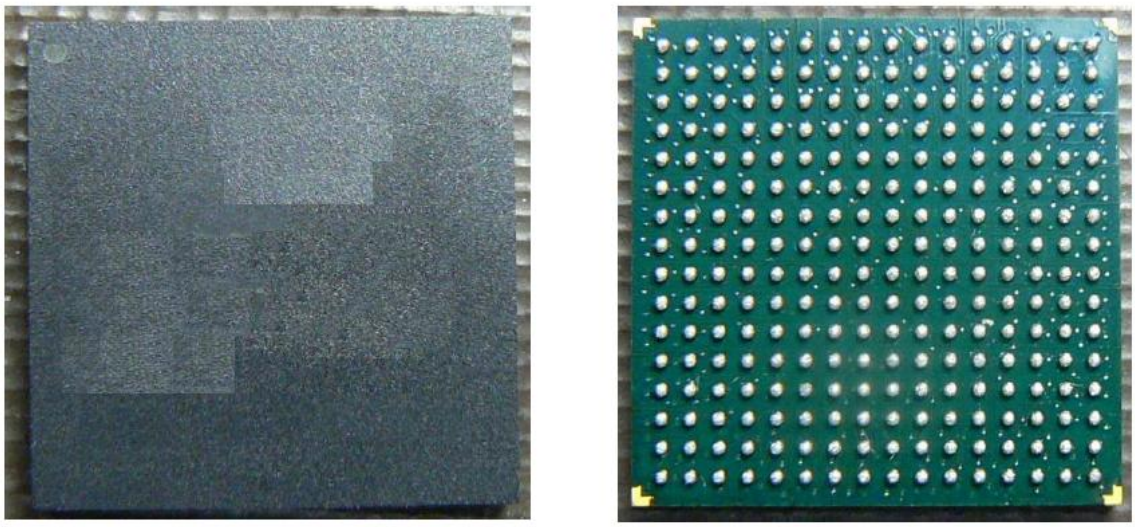

Figure 7. Top (left-side) and bottom (right-side) view of the LFBGA package.

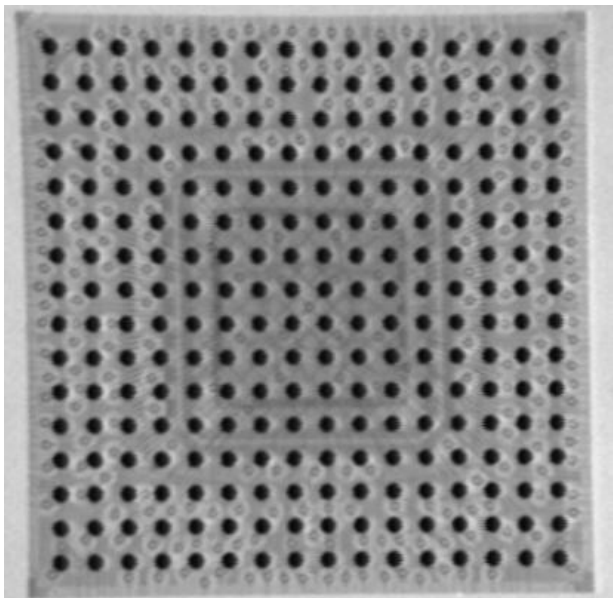

Figure 8. X-ray image of the LFBGA package.

CHANGED PART IDENTIFICATION:

No Change in ONSEMI part number.

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION #16556

List of affected Customer Specific Parts:

12095-802-XTP
13509-508-XTD
13517-508-XTD
13828-004-XUD
13925-442-XTD
13925-443-XTD
13925-444-XTD
14962-004-XUD
19063-004-XTD
19066-001-XTD
19490-001-XTD
19490-904-EPT
19598-003-XTD
19867-001-XTD
20405-001-XTD
06805-064-XTD
13925-001-XTD
13925-441-XTD
19490-004-XTD
19490-901-EPT