A Low Cost Manufacturing Solution – Low Temperature Super-Fast Cure And Flow Reworkable Underfill

YINCAE Advanced Materials, LLC **WHITE PAPER**

2016

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ABSTRACT:

In order to meet the increasing demand of device miniaturization, high speed, more memory, more function, low cost, and more flexibility in device design and manufacturing chain, underfilling has increasingly become an essential process for the good reliability of electronic devices. Filled capillary underfill has been selected for used in package-level where there is large thermal stress caused by CTE mismatch issue, but the underfill is usually not reworkable. Unfilled capillary underfill has been used for board-level application such as BGA/CSP, POP, WL-CSP where there is need for mechanical shock resistance, the underfill is usually reworkable.

The strong competition of the electronic industry has dramatically driven the price of electronic devices down but still with reasonable profit. Manufacturing high performance and low cost products is the key to winning in this rigorous competition field. The manufacturers are focusing on how to lower down (1) the cost of components, substrate and materials; (2) the cost of manufacturing process such as throughput and defect rate. In order to reduce the manufacturing cost, some cheap substrates have been used in the electronic devices and some finer pitch size and smaller IC components are increasingly being used. However current underfill materials have encountered some challenges to meet this advancement of electronic devices. The high curing temperature of underfill materials (above 120 °C) is obviously big hurdle for the cheap substrates. The longer curing time of underfill materials (above 15 min) is bottleneck for the manufacturing of cheap electronic devices such as RFID.

In order to meet the demand of electronic devices' advancement, YINCAE Advanced Materials, LLC has developed a novel low temperature fast flow and fast cure reworkable underfill – SMT 88U underfill series. SMT 88U underfill series can be dispensed at room temperature and flow into the underneath of components during curing process. SMT 88U can be cured 150 °C for 1 second, 120 °C for 8 seconds or 88 °C for 5 min. The features of friendly storage condition, excellent reliability and reworkability make SMT 88U underfill materials more attractive. The details will be discussed in our full papers.

Keywords: fast flow and fast cure, capillary underfill, reowrkability

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(WP-1010-01/2016)