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Effect of Temperature on Solder Paste During Surface Mount Technology Printing

Abstract

There are lots of companies manufacturing electronic components that have commonly used the Surface Mount Technology printing process. However, the temperature of solder paste printing on the Printed Circuit Board can influence the presence of defects in Surface Mount Technology. In this paper, the experiment called Surface Mount Technology printing is built and tested to characterize the temperature of solder pastes in order to prevent the electronic waste and rejection rate of the malfunctioning electronics due to poor soldering. The microstructures of solder paste on printed circuit board and copper substrate are inspected under Scanning Electron Microscopy. It is focused on two parameters that affect the performance of a printed circuit board, which includes the filling areas of solder paste and the distance between ball grid arrays. From the experiment and analysis results, the filling area decreases as the temperature increases during the Surface Mount Technology printing process. In short, when the temperature of SAC305 increases, the viscosity and filling areas decreases. In fact, SAC305 gave the second rank of smallest area (18.86%) and distance (43.43%) after SAC307. The average area and distance are fair enough for the solder to hold the component placement, unlike SAC307 which likely causes tombstone.

Keywords

E-waste; SAC305 solder paste; Scanning electron microscope; Solder paste; Surface mount technology printing