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Shelf Life of SolderQuik™ BGA Preforms

Application Notes

Winslow Automation's SolderQuik products may be stored for up to two years after delivery provided that storage conditions are well controlled.

Six Sigma, the contract services division of Winslow Automation, Inc., successfully reballs thousands of grid array devices using BGA Preforms that have been stored up to two years under the following conditions:

- Relative Humidity <60%
- Ambient Temperature 60 – 80° Fahrenheit
- In a dark environment

Exposure to high relative humidity >50%, ambient temperature >80°F and the presence of certain airborne chemicals such as Sulfur, Ammonia or Acidic Chlorides will hasten the formation of oxides on the surface of the sphere which may result in a reduction in wetting.

The type of flux used during the reflow cycle plays an important role. Solder Alloys exposed to oxygen atmospheres at elevated temperatures (>125°C) will oxidize rapidly, while the main function of any flux is to protect the alloy and interface point while reducing the surface tension between them. Low activity flux (no-clean) has little or no capacity for dealing with existing oxides while high activity types (organic acid) will remove oxides.

The Preform's laminate carrier is a composite of water-soluble paper and plastic and is subject to moisture absorption. During the reflow cycle this moisture is driven out of the laminate due to its fast transmission characteristics and does not affect the performance of the product.

The solder sphere alloy is therefore the determining factor in the development of an in-house storage plan.