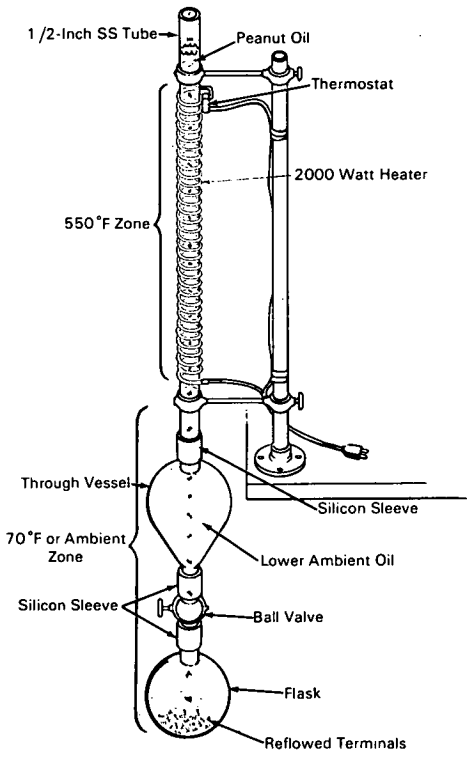
NASA TECH BRIEF

Device for Reflowing Electrodeposited Solder on Terminals



The problem:

Electrodeposited solder-covered circuit-board terminals are preferred to silver- or gold-plated terminals. However, the 0.0002- to 0.0005-inch-thick electrodeposited solder is subject to a short shelf-life because of age stresses and cracks. Attempts at reflowing the solder have been costly and unsatisfactory because of the requirement to fixture the terminals individually to prevent surface flaws as a result of physical contact with each other and/or the container while the solder is molten.

The solution:

A cover coating can be reflowed and rehardened evenly without contact flaws if the items can be individually passed through the two heat zones necessary to accomplish this action. Based upon this concept, a laboratory setup has been assembled whereby the terminals are reflowed in a hot strata and solidified in a cooler strata, without physical contact with each other, any fixturing, or the container.

How it's done:

A reflow flask filled with peanut oil has an electrical heating element wound around the reflow tube and is thermostatically controlled for 550°F. The lower portions of the reflow flask remain at ambient temperature (near 70°F). The terminals are inserted into the top of the tube, a few at a time. The terminals then descend through the hot oil, which reflows the solder. As the terminals reach the lower ambient oil, the solder is again solidified. A ball valve permits the lower flask to be replaced so that the accumulated reflowed electrical terminals can be removed from the system. By proper loading of the terminals in the reflow tube, the terminals descend without touching each other or the container.

Note:

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B69-10670

Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act

(continued overleaf)

[42 U.S.C. 2457 (f)] to the Rocketdyne Division, North American Rockwell Corporation, Canoga Park, California.

Source: Wendell C. Johnson of
North American Rockwell Corporation
under contract to
Marshall Space Flight Center
(MFS-13821)