APPLICATION NOTE

Storage, Handling, and Shelf Life of Solder Preforms, Wire, and Ribbon

Storage Conditions

Solder preforms, wire, and ribbon are manufactured and packaged to minimize oxidation. Since no container offers complete isolation from oxygen in ambient air, solder will slowly oxidize, which may result in a reduction in wetting. The rate of oxidation is proportional to the surface area, humidity, temperature, time, and available oxygen. High lead-containing preforms are particularly sensitive to humidity.

Unopened containers of solder preforms should be stored at or below normal room temperature (~70°F/21°C) and under 65–70% relative humidity. Ordering frequency and package size should be adjusted to daily or weekly usage rates. A FIFO (first in, first out) inventory system should be practiced to ensure proper stock rotation. Preforms should be used prior to the expiration date listed on the packaging label.

Containers should be opened just prior to use. Quickly return unused preforms to their original container. The container should then be tightly resealed. There is no effect to the original shelf life of preforms under this proposed operation. Ideally, previously opened containers of preforms should be stored in an inert gas dry box.

These materials have also been tested successfully to pass the ISTA 2A Standard for in-transit shipping: conditioning is 38°C (100°F) for 72 hours.

Handling

Solders are soft metals. To avoid dimensional damage and scratching, avoid shaking or excessive vibration when handling preform containers. Excessive scratching increases surface area, which results in higher oxide level formation. The flux coating (where applicable) can also be reduced by vibration, resulting in variable soldering results.

To avoid contamination, it is recommended that a vacuum pick-up system be used. If a vacuum pick-up system is not available, avoid contamination by handling parts using lint-free gloves or other instruments designed to avoid contaminants.

Personal Hygiene

When handling solder preforms and fabrications, observe normal standards of industrial hygiene and any other requirements noted in the relevant SDS. These include (but are not limited to):

1. Avoid unnecessary skin contact
2. Avoid process fumes
3. No smoking or eating when handling solder preforms and associated processing chemicals
4. Wash hands after use

Shelf Life Statement

The shelf life of any solder product is only a guideline and is dependent on the customer's application, storage, and handling conditions. To maximize the shelf life, storage conditions should reduce the potential for outside contamination and oxidation. Below are the recommended storage conditions for Indium Corporation soldering products.

Solder Preforms and Ribbon

Solder preforms and ribbon should be stored in their original unopened container in a nitrogen dry box to optimize their shelf life. This inhibits growth of oxides that can compromise the wetting performance. Stored properly, preforms can have a shelf life of up to 5 years.

Since lead-containing alloys are more prone to oxidation, they should be used within 6 months of the manufacture date. However, by following proper storage conditions, they can be used up to 2 years after the date of manufacture.

Flux-coated preforms should also be stored in a clean, dry, and cool environment for the same periods of time as noted above. The main concern is that flux-coated preforms at the end of their shelf life tend to adhere to each other. When the flux coating is activated, it should remove any oxides that have formed.

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Solder Wire

When stored in a cool, dry environment, there is no reason that Indium Corporation's cored wire cannot retain its intended soldering properties for many years. The main causes of degraded cored wire reflow performance are the buildup of a thick oxide layer on the surface of the wire, caused by prolonged exposure to higher-than-normal temperature and humidity conditions, or the buildup of lead carbonate on high-lead (>90%) alloy cored wire shipped or stored under very high humidity conditions.

	Warrantied	Practical*
Tin-Lead Alloys	3 years from DOM	Indefinite
Lead-Free Alloys	3 years from DOM	Indefinite
>90% Lead Alloys	1 year from DOM	Indefinite

**When stored at less than 40°C and less than 80% RH*

Heat-Spring®

To avoid any outside contamination, it is recommended that Heat-Spring® be stored in the original container and closed securely. It is important to store Heat-Spring® in a manner that will avoid any form of physical distortion, as a potentially folded corner could double the thickness at the point of contact and may otherwise restrict contact. Another storage option for Heat-Spring® is in an inert atmosphere such as a nitrogen dry box. Standard shelf life for Heat-Spring® in its original bundle pack is 2 years. Standard shelf life for Heat-Spring® packaged on tape & reel and sealed in a metallized bag is one year.

Contact our engineers: askus@indium.com
Learn more: www.indium.com

ASIA +65 6268 8678 • CHINA +86 (0) 512 628 34900 • EUROPE +44 (0) 1908 580400 • USA +1 315 853 4900

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