

# Packaging Material Information

## Trays

JEDEC-compliant industry standard trays are used for QFP, BGA, and PGA semiconductors. Trays are bakeable up to 150°C and can be reused without any cracking or defects to the tray for up to five 24-hour bake cycles. Customers are encouraged to either reuse the trays or recycle the trays through a local recycling company. Actel refers European customers to Semicycle and North American, South American, Asian and Middle Eastern customers to Daewon. Both companies offer a user-friendly recycling service for trays. When contacted, Semicycle or Daewon will arrange collection of empty trays and ship the trays at their expense to their recycling plant. After processing, recycled trays are offered for sale to semiconductor manufacturers. Both Semicycle and Daewon also offer trays for resale if there is a need for additional trays. To contact Semicycle please visit the company's website at [www.semicycle.com](http://www.semicycle.com). To contact Daewon please visit the company's website at [www.daewonspic.com](http://www.daewonspic.com).

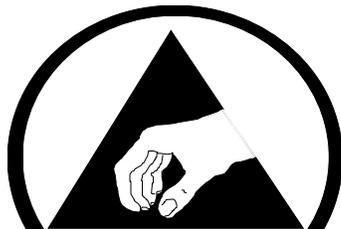
## Tubes

JEDEC-compliant industry standard tubes are used for PLCC semiconductors. Tubes can also be reused for an undefined amount of time.

## Bags

Moisture barrier bags are used to vacuum pack all product except for hermetic packages. Bags have static safe inner and outer dissipative surfaces and meet the electrical and physical requirements of EIA583, EIA541, EIA625 and MIL-PRF-81705, Type 1. All barrier bags are seven mil thick for maximum puncture resistance, heat sealable, date and lot coded for traceability, amine free, and are printed with the following industry standard ESD and moisture sensitive symbols:

**ESD Protection Symbol**



**Moisture Sensitive Device Symbol**



## Clamshells

Clamshells are used for all Ceramic QFP products with a pin count over 84. Clamshells are made of Lemcen C, a black carbon-filled polypropylene, which meets all military specifications for conductivity and is in accordance with EIA541. Clamshells have two pieces of die cut, high density, low flaking conductive foam. The foam does not contain halogen. You should reuse clamshells whenever possible, or you can return them to Actel at Actel's expense by contacting your local Actel sales office.

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## Carriers

Carriers are used for Ceramic QFP products with a pin count of 84 pins or fewer. Carriers are made with a PBT static sensitive material that meets EIA541 and are designed for ease-of-use with programming sockets and modules. Carriers are packed in tubes and should not be reused since they crack easily.

## Bubble Wrap<sup>®</sup>

Sealed Air<sup>®</sup> cellular cushioning material is used during the packing process, as required. Bubble wrap is antistatic and designed to protect sensitive electronic equipment from ESD, shock and vibration. Bubble wrap should be reused whenever possible.

## Eco-Foam<sup>®</sup>

Eco-foam is a starch-based, biodegradable, repulpable packaging material that is utilized as loosefill or void in an outer carton to protect goods during transit. Eco-foam should be re-used whenever possible, but is not harmful to the environment if discarded.

## Disposal and Recycling

To keep our environment safe from harmful substances, products must be disposed of in accordance with national and local regulations. Silicon products should be melted down and recycled whenever possible. Silicon products should not be disposed of as waste.

For more information, visit our website at <http://www.actel.com>



[www.actel.com](http://www.actel.com)

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