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## Packaging and Shipping of HD MicroSystems Products

The proper packaging and shipping of polyimides and associated ancillary products can be an important matter for the users of these products in production volumes. Factors such as how to keep these products cold during shipment, product shelf life on the production floor and available inventory space at the fab or production site need to be considered in determining the proper container size and shipping quantities.

Following is a menu of containers and packaging materials kept in stock at the HD MicroSystems, Parlin Plant. Some container types and packaging configurations may require slightly longer lead times and/or an additional fee. Your HDM Technical Representative or Customer Service Representative will be happy to discuss your requirements and recommend which container size, order quantity, packaging and carrier that might be best for your facility and application.

### Containers and Packaging for Cold Shipment of Polyimides

**Standard Polyimide Containers:** High-density polyethylene, cleanroom bottles either translucent white or brown opaque (photodefinable polyimides).

- **1 kilogram**
- **4 kilogram**

**Nowpak Containers\*:** Wide mouth bottle. Outer shell is either translucent white or amber high density polyethylene. Lining is two ply Teflon® PTFE, 2.5 mil thickness. Smartcaps keyed to specific products also available.

- **1 kilogram**
- **2.5 kilogram**
- **4 kilogram**
- **6 kilogram**

\*additional charge assessed

### ***Styrofoam Lined Shipping Cartons:***

- Disposable
- Contents cooled with **chemical ice packs** (<10°C, 48hrs.) typically for domestic shipments or **dry ice** (<0°C, 96hrs.) for overseas air shipments.
- Carton sizes range from single bottles up to 25 kilograms, depending on bottle type, cooling medium and destination.

### ***Thermotainers:***

- Re-usable aluminum shipping containers, cooled by re-usable eutectic plates (<10°C, 96hrs) or dry ice (<0°C, 96hrs).
- Thermotainers are to be returned to Parlin, NJ, by the customer.
- Capacity varies with bottle type and destination. This is the only container available for shipping 4Kg bottles overseas with dry ice.

### **Containers and Packaging for Ancillary Solvents**

#### **Ancillary Containers:**

- **1 Gallon Glass** Amber, for all developers and rinses
- **1 Gallon HDPE** VM-652 adhesion promoter and misc. products
- **5 Gallon Pail** HDPE cube style
- **55 Gallon Drum** 20 gauge steel tighthead enclosing a 100 mil HDPE liner with two 2" buttress fittings.

#### ***Corrugated Cardboard Cartons:***

- One gallon glass bottles are shipped two to a box. A single bottle will be shipped with the void filled with packing peanuts.
- No orders for odd numbers of one gallon bottles above two will be accepted.

### **Carriers**

HD MicroSystems uses **DHL** or **Federal Express** air express for most shipments. Due to the hazardous nature of our products, they can only be shipped on cargo aircraft. Large domestic orders may be shipped by express motor freight. Large international shipments of ancillary products may be shipped by ocean freight.

All packaging has been tested and certified based on DOT / United Nations 4G drop, vibration and pressure differential tests conducted in accordance with the Department of Transportation Title 49 Code of Federal Regulations.

Temperature monitoring devices are available for an additional fee.