

# about us

ITW ECPS has 50 years of experience as a solution provider to electronic packaging systems. Over the years, through continuous effort in product innovation and customers collaboration in identifying and defining their needs, ITW ECPS has been able to continuously provide innovative technical services and products to our customers globally.

At ECPS, we are committed to invest in R&D, ensuring that we will continue to innovate and to roll out best in class service and unique product offerings in electronic packaging systems for our customers.

We are part of Illinois Tool Works, a global conglomerate listed in the New York Stock Exchange with USD 15 billion plus annual revenues.



physical and ESD protection for sensitive  
electronic components

barrier protection that resist all of nature's  
elements, including heat, fire, wind, UV,  
pests, and allergens

a vast array of electronic  
components and  
end-system  
products

we  
cover

Semiconductor



LED devices



Wafer



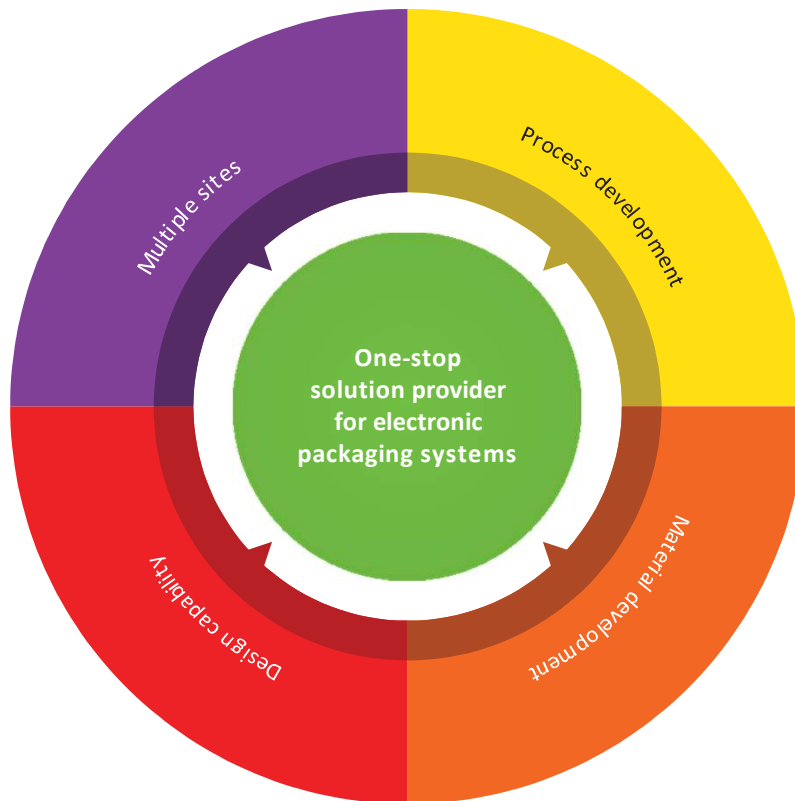
Data storage



Sockets, connectors,  
resistors, switches

## What separates us from the competition?

### Global Company, Local Presence



## One-stop solution provider backed by unique enablers.

### Design capability

- Design for manufacturability
- Build quality right from design

### Material development

- Leverage on ITW global suppliers network
- Solid understanding of material science - from commodity to engineering plastics
- "The right material for the right job"

### Process development

- Expert manufacturing capabilities in extrusion, injection molding, precision thermoforming and multi-layer barrier sheet lamination
- Continuous improvement initiatives

### Multiple manufacturing sites/strategic warehouses

- "The right quantity and quality at the right time"
- Proven experience in Just in time, Ship-to-Line, Supplier Managed Inventory, etc

# Wafer packaging systems

Our wafer packaging systems product line is your cost effective solution to secure storage and transport of semiconductor wafers, ranges from 150 mm to 300 mm. Since 1999, our customers have enjoyed higher yields through a significant reduction in wafer breakage during storage, handling and transport between front end and back end sites.

Our horizontal canister boxes are engineered solutions designed for the secure storage and transport of up to 25 wafers within a single box. These solutions are particularly suited to robotic recognition and auto-handling equipment utilized within wafer packaging operations.

The systems come with a comprehensive ancillary product solutions consist of

- Wafer separators
- Wafer foam cushions
- Clean moisture barrier and shielding bags
- Shipping boxes(outer boxes)



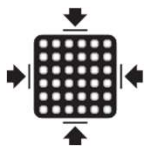




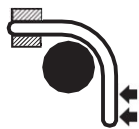
## Jedec trays

We offer Jedec trays that reflect our relentless pursuit in design philosophy to combine the best of both worlds - maximum durability and light weight.

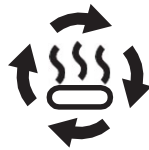
Each of our tray designs is subjected to rigorous testing and qualification.



Chip Fit Analysis



Load flex and deflection test



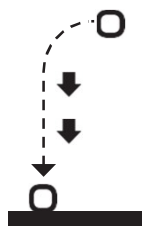
Multi-cycle bake test



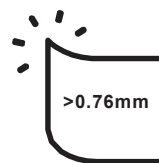
Strapping test



Impact test



Drop test



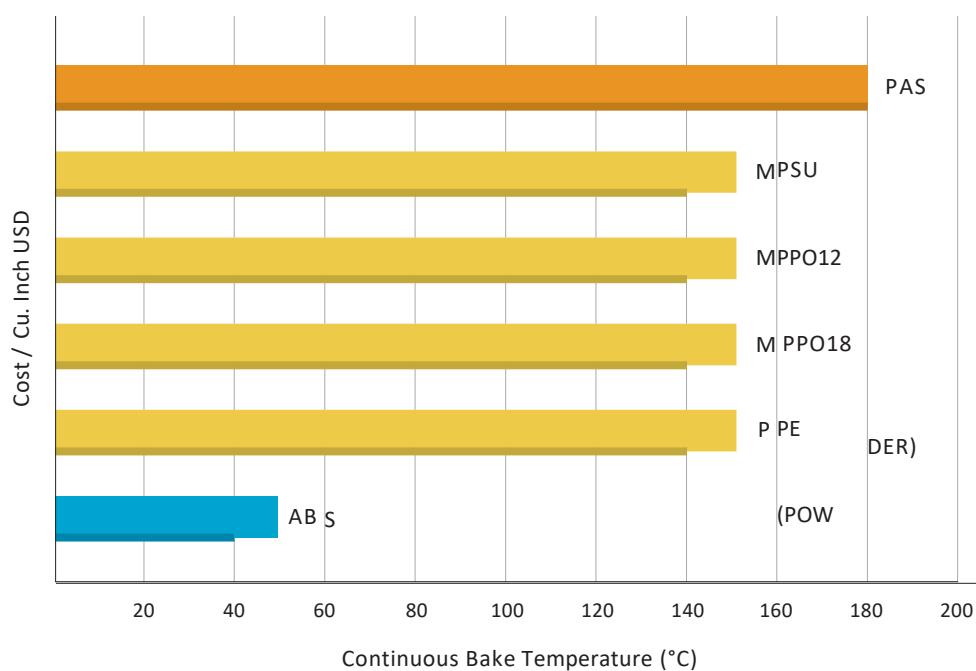
Warp test



ESD test

Features	Benefits
<ul style="list-style-type: none"> <li>Proprietary and unique design techniques</li> <li>Deliver maximum tray structure strength with optimum use of materials</li> <li>Precise and accurate pocket pitching</li> <li>Incorporating many poka yoke design features</li> </ul>	<ul style="list-style-type: none"> <li>Durable yet light weight</li> <li>Design for maximum reuse cycles</li> <li>Freight cost saving</li> <li>Critical for small and light devices error free placement</li> <li>A breakthrough design for 2.5 x 2.5 mm LGA flippable tray - the world's smallest to-date</li> <li>Prevent device misplacement and damage</li> </ul>

We offer various materials for a wide range of operational temperature requirements. Our full range of materials offering will be able to satisfy your cost and performance considerations.





## Carrier tape

Match Metal Technology (MMT) is our unique manufacturing capabilities, which combine proprietary automated high speed pocket embossing and hole punching equipment with precision embossing dies, deliver several advantages - such as consistent indexing hole pitch, low pocket dimension variation and uniform wall thickness.

### Features

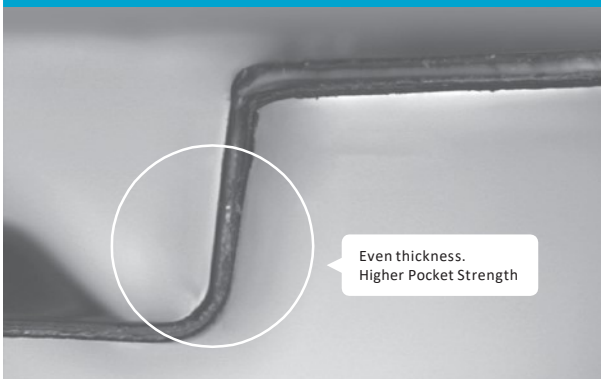
- Strong pocket
- Uniform wall thickness
- Smaller wall draft angles
- Consistent sprocket hole pitch
- Trilaminate cPS-ABS-cPS structure
- Proven carrier - cover tape system

### Benefits

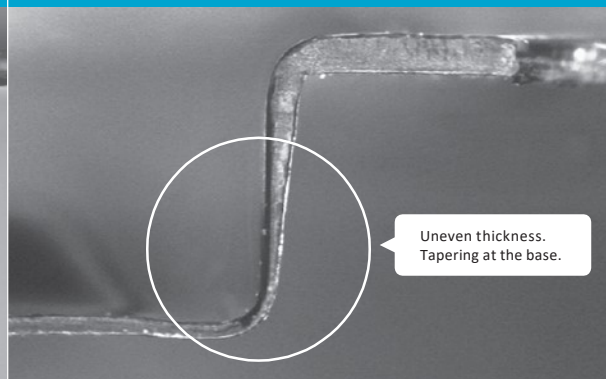
- Maximum device protection
- Prevent device tilting
- Designed for high speed operating environments
- High material strength
- Cover tape tear-free, broken-seal free

### MMT forming vs conventional vacuum/compressed air pressure forming

#### MMT forming



#### Conventional vacuum/compressed air pressure forming



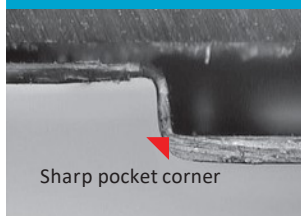




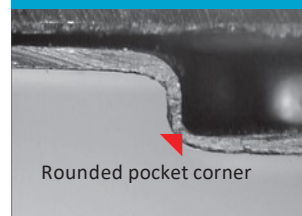
## Our Wafer level CSP carrier tape

is your answer to the industry challenge in bare die and wafer level applications. We offer Polycarbonate material and male rotary forming technology that deliver high performance for this "mission critical" application. Sharp pocket corners, low ionic contamination and stable dimensions are the *must haves in your selection criteria.*

Male tool rotary formed pocket



Typical, female tool rotary formed pocket



### Features

- Sharp pockets
- Low ionic contaminant and clean room compatibility
- Conductive Polycarbonate
- Unit clearance to pocket clearance complies to EIA763
- Corner relief feature

### Benefits

- Secure chip placement
- Prevent device tilt
- Avoid vision false alarm triggers
- Reduced unnecessary machine stoppages
- Prevent chip contamination
- Maintain excellent solderability
- Stable dimensions and high material strength
- Designed for high speed operating environments
- Zero sharp device edges getting stuck or chipping in pocket



## Cover tape

When it comes to reliability performance, carrier tape and cover tape system compatibility is extremely important. Our systems are simulated under hot and cold conditions to ensure they hold up under extreme weather conditions.

### ST Cover Tape and 24mm Carrier Tape

Sealing Machine : Systemation  
 Peeling Machine : GPD PBFT Model 856VS  
 Sealing Shoe : 0.45mm x 80mm  
 Sealing Pressure : 35 PSI  
 Carrier Tape Part : 24mm Carrier Tape

Sealing Temperature : 200° C  
 Dwell Time : 0.25 sec.  
 Peeling Speed : 300 mm/ minute  
 Test Length : 120 mm

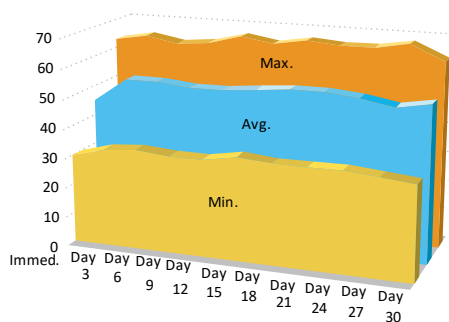
### Cold (-18°C)

	Immed.	Day 3	Day 6	Day 9	Day 12	Day 15	Day 18	Day 21	Day 24	Day 27	Day 30
<b>Min.</b>	30	33	34	33	33	35	34	34	34	33	32
<b>Max.</b>	63	65	63	64	67	65	67	66	66	68	63
<b>Avg.</b>	45	53	53	52	52	53	54	54	53	51	53
<b>Range</b>	33	32	29	31	34	30	33	32	32	35	31

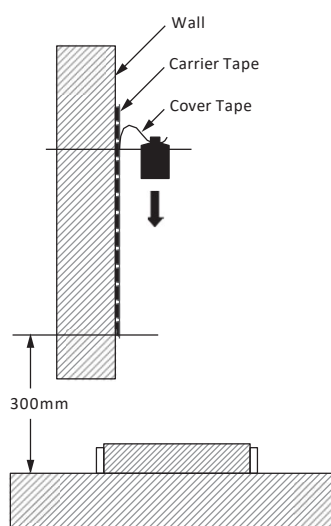
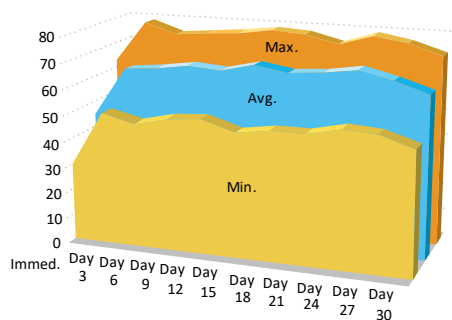
### Hot (+52°C)

	Immed.	Day 3	Day 6	Day 9	Day 12	Day 15	Day 18	Day 21	Day 24	Day 27	Day 30
<b>Min.</b>	30	51	48	51	52	48	50	50	53	52	48
<b>Max.</b>	63	79	75	76	77	79	78	75	79	77	73
<b>Avg.</b>	45	64	65	67	66	69	67	68	70	67	63
<b>Range</b>	33	28	27	25	25	31	28	25	26	25	25

Cold (-18°C)



Hot (+52°C)



High speed cover tape tear test.

Today's PCB assembly industry going for higher throughput can push detaping speeds up to 10,000 mm/minute. At these speeds, a robust system is a must. We don't take chances. We simulate our tape and reel system to survive these conditions, which mean we go above typical industry peel force tests of 300 mm/minute.



## ST series cover tape

### Features

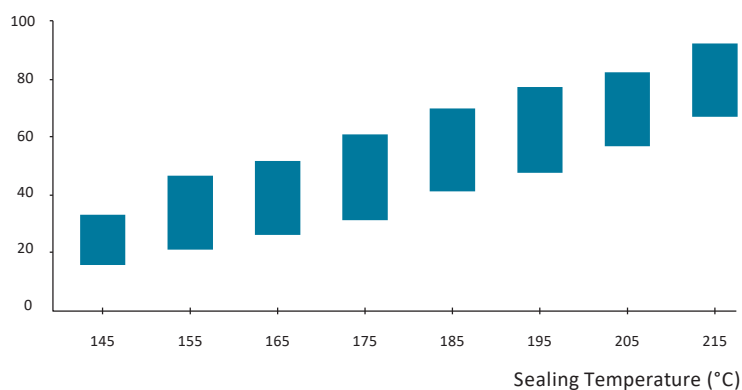
- Wide range of sealing temperatures
- Stable antistatic properties
- Consistent seal within EIA 481 specification

### Benefits

- Wide sealing process window
- Machine adjustment friendly
- No static cling
- Superior ESD protection
- Cover tape tear-free, broken-seal free

### Bond profile

Peel Force (gm)



### ST cover tape

Tape Tested : 12mm CPS carrier tape  
 Sealing Pressure : 35psi  
 Dwell time : 250ms  
 Sealing shoe : 80mm (L) x 0.45mm(W)



## STi series cover tape

### Features

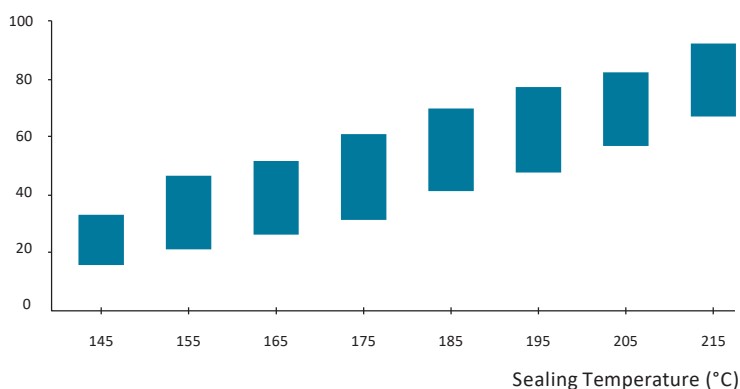
- 40% stronger
- Reinforced top layer
- Excellent clarity and transparency
- Low variation at different temperature ranges
- Sealant side treated to  $10^9$  level surface resistivity

### Benefits

- Designed for high speed operating environments
- Ease device visual inspection
- Minimal machine and process adjustment during part change over
- Superior ESD protection
- No static cling

### Bond profile

Peel Force (gm)



### STi cover tape

Tape Tested : 12mm CPS carrier tape  
 Sealing Pressure : 35psi  
 Dwell time : 250ms  
 Sealing shoe : 80mm (L) x 0.45mm(W)



# Shipping reels

We have a wide range of High Impact Polystyrene (HIPS) shipping reel open tools. They are available in antistatic treated, static dissipative or conductive materials. Two choices of designs are available to meet your needs.

## Ultra sonic welded reels



### Features

- Light weight
- Poka yoke features
- One way hub insertion or one-way labeling surface.
- Anti-static coated or conductive available

### Benefits

- Freight cost saving
- Reduced human errors



## Snap fit reels

### Features

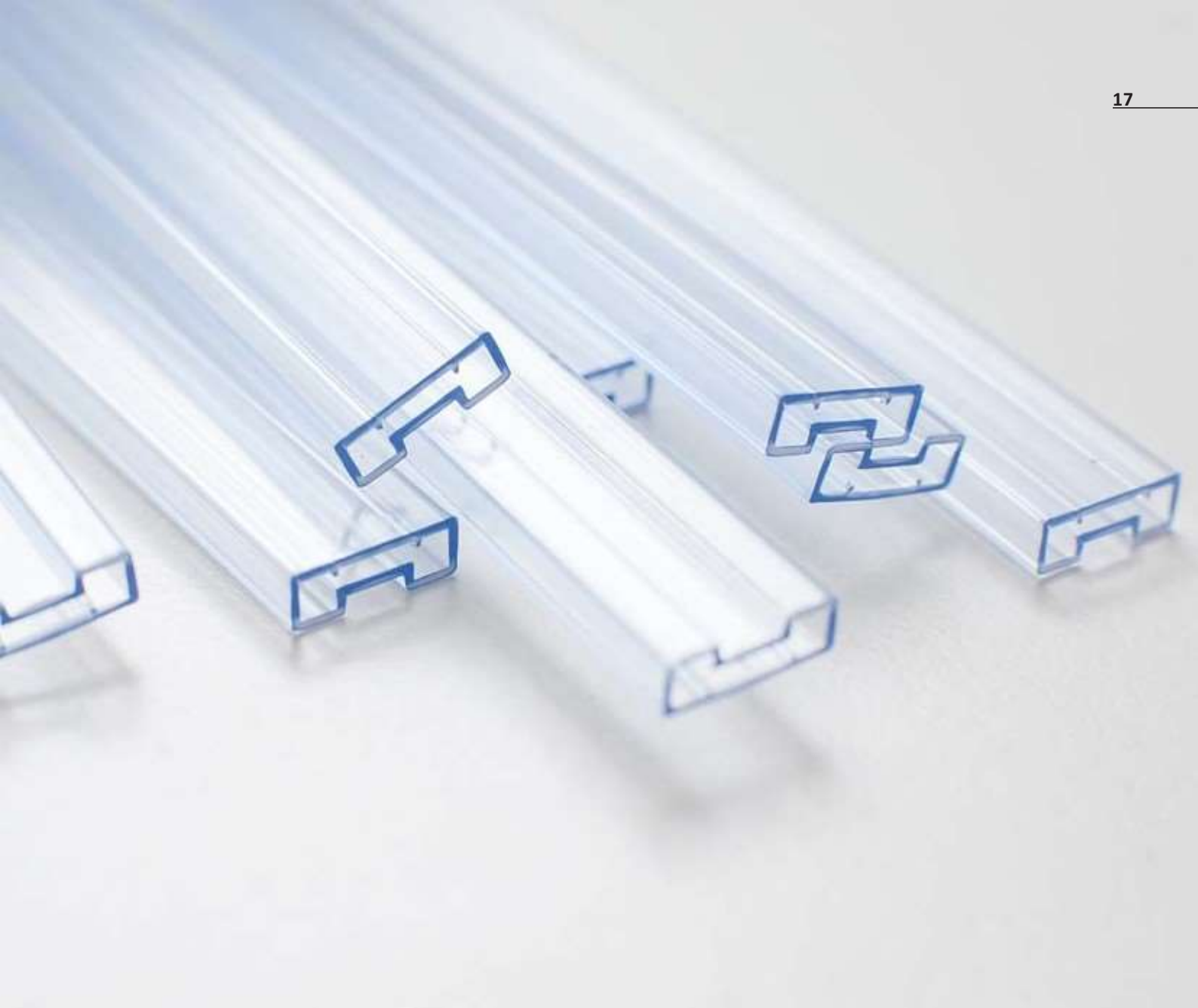
- Ship in halves
- Assemble by snapping 2 halves together
- Rigid flange
- Only 4 hub widths needed to cater 7 carrier tape width configurations (8 to 56 mm)

### Benefits

- Compact. Freight cost saving
- Secure locking
- Design for heavy duty and re-use
- Lower inventory holding

# Shipping tubes





## Standard PVC

For more than 50 years, the semiconductor industry has been relying on shipping tubes as the main medium to carry their components between Assembly and Test operations or to their end customers. Its popularity remains today for two simple reasons - economy and flexibility. We carry more than one thousand open tools that run from through-hole, surface mount to leadless packages (QFN, MLP, etc). Our products also serve the connector, LED and passive component customers.

### Features

- Good impact strength
- Stable dimension
- Critical dimension control within +/- 5 mils
- Short cycle time

### Benefits

- Crack free tubes
- Excellent smooth interfacing with handlers
- Higher productivity, more man-to-machine ratio
- Short lead time



## Polycarbonate

Polycarbonate shipping tubes are our high performance shipping tube series. Our deep knowledge in shipping tube design, polymer science and extrusion processing technology allows us to produce shipping tubes with +/- 2 mils (+/- 50 microns) of dimensional tolerance control. This unique tight tolerance capability helps many of our customers to improve their machine uptime, reduce scrap and minimize rework.

### Features

- Tight tolerance.  
Critical dimension control +/- 2 mils
- Superb clarity/transparency
- Package guide profile design
- High impact strength

### Benefits

- Accurate unattended high speed device loading and unloading
- Ease of visual inspection
- Prevent device piggy back, shingling and unit rotation
- Ideal for MSOP and TSSOP square body packages



## "Green materials"

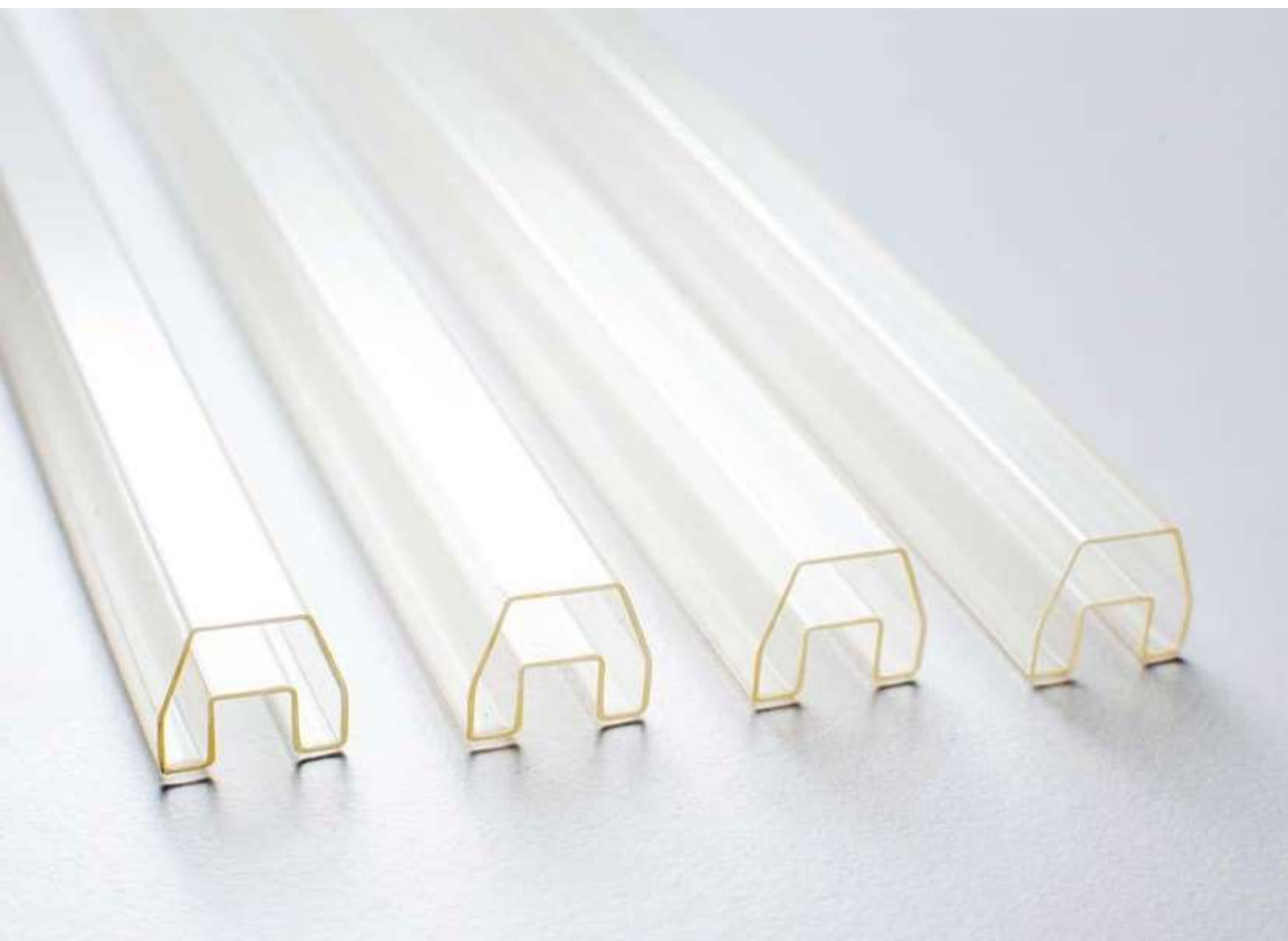
We are committed to global environment preservation by building a strong sustainability mindset across our organization. We walk the talk.

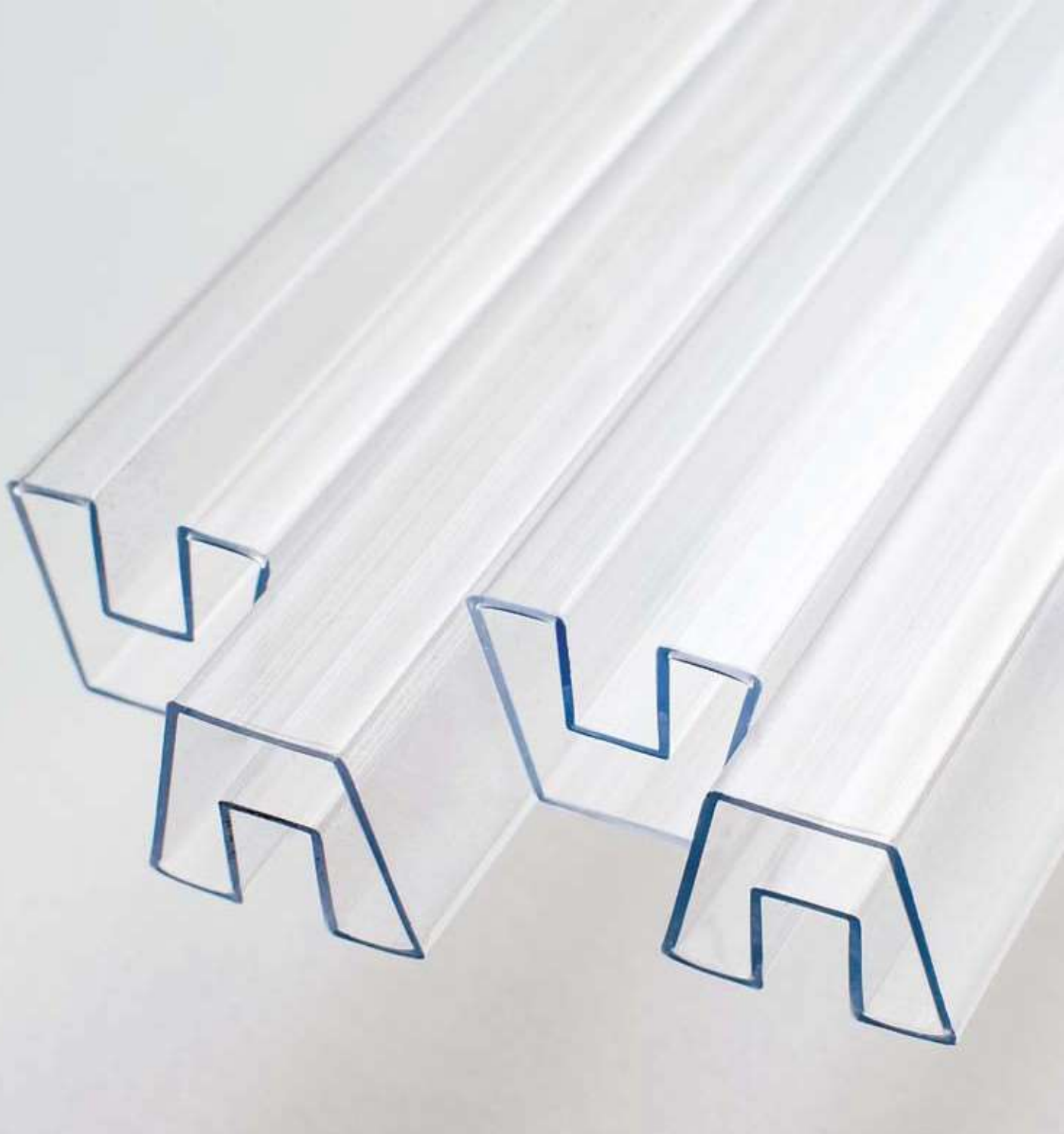
We actively support the 3R concept -- Reduce, Reuse and Recycle.

We are constantly looking for opportunities to introduce products that can help to minimize the impact to the environment. A wide choice of "green materials" such as PS<sup>1</sup>, PC<sup>2</sup> and PETG<sup>3</sup> polymer products are a testimony to delivering that commitment.

## PS<sup>1</sup> shipping tubes

Features	Benefits
<ul style="list-style-type: none"><li>● Halogen free</li><li>● Improved clarity/transparency and impact strength</li><li>● Available in clear or translucent</li></ul>	<ul style="list-style-type: none"><li>● Reduced environmental impact</li><li>● Good clarity/transparency without compromising impact strength</li></ul>





## PETG<sup>3</sup> shipping tubes

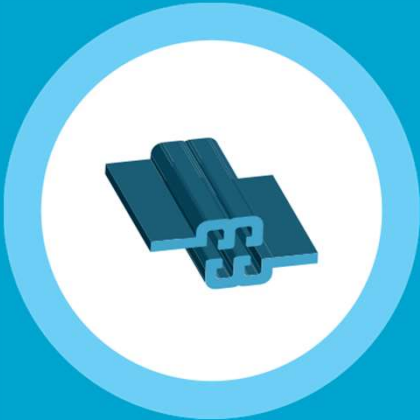
Features	Benefits
<ul style="list-style-type: none"><li>● Halogen free</li><li>● Strongest impact strength</li><li>● Excellent clarity/transparency</li></ul>	<ul style="list-style-type: none"><li>● Reduced environmental impact</li><li>● Excellent for heavy duty big packages</li><li>● Application examples: microprocessor heat sink and ceramic TO packages.</li></ul>

1. Polystyrene (PS)
2. Polycarbonate (PC)
3. Polyethylene Terephthalate Glycol (PETG)

# maxiGrip

You can rely on MaxiGrip's barrier closure protection products in unpredictable environments. Our state-of-the-art barrier technology joining solutions are ideal for applications that must withstand extreme conditions. Our products keep what is inside an assembly protected from the environment and prevents undesired external elements that cause damage or contamination from entering.

We offer flat or horizontal plane closures (MaxiGrip) and top or vertical closures (U-MaxiGrip) that are re-sealable and practical.



MaxiGrip









U-MaxiGrip

MX series zipper(MaxiGrip)

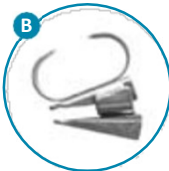
MaxiGrip products are available in a variety of strengths and sizes with different closure tools

Features	Benefits
<ul style="list-style-type: none"><li>● In-line/horizontal type closure</li><li>● Slider actuated opening and closure</li><li>● Roller actuated closure for long runs</li><li>● Cut to length with optional easy end termination</li></ul>	<ul style="list-style-type: none"><li>● Standard closure/attachment/seal replacement</li><li>● Liquid and gas resistant barrier/seal</li><li>● Modular connections and seals</li><li>● Weld, glue, or sew on</li></ul>

Model	No. of Tracks	Slider & Rollers
MX20	 2 Track	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C
MX28	 2 Track	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C
MX39	 2 Track	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C
	 3 Track	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C
MX53	 3 Track	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C
MX59	 2 Track	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C



Slider

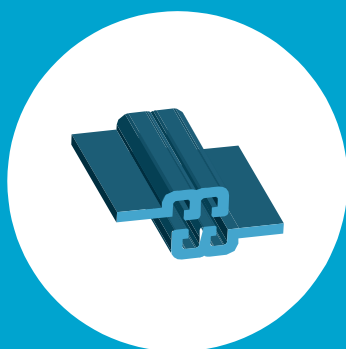


Slider



Roller





MaxiGrip













U-MaxiGrip

## UMX series (U-MaxiGrip)

U-MaxiGrip is a heavy duty zip locking closure specified for top or vertical seal applications.

UMaxiGrip plastic zippers are available in a variety of strengths and sizes with different closure tools.


Features	Benefits
<ul style="list-style-type: none"> <li>Vertical/top-of-bag type closure</li> <li>Manual opening and closure</li> <li>Air &amp; liquid tight barrier/seal</li> <li>Quiet operation</li> </ul>	<ul style="list-style-type: none"> <li>Liquid &amp; Gas tight barrier/seal</li> <li>Bags, long term storage, secondary containment applications</li> <li>Pressure and/or vacuum barriers</li> <li>Weld or glue on</li> </ul>

Model	No. of Tracks	Slider & Rollers
UMX20	 2 Track	 Manual by hand
UMX28	 2 Track	 Manual by hand
UMX39	 2 Track	 Manual by hand and Roller
	 2 Track 1 Fold-back flanger	
	 2 Track 2 Fold-back flangers	
	 2 Track 2 Stand-Up flangers	
	 3 Track	



Roller





## Specialized flexible protective bags

We are one of the pioneers in the development of ESD oriented plastics and laminates. We continue to maintain the ranking as a leading supplier of superior engineered moisture barrier bags and clean room packaging.

### Drypack DB 3000 series moisture barrier bag

Drypack DB 3000 series is specifically designed to provide superior moisture vapor barrier yet fully transparent. This proprietary film lamination structure enables you to see through to the contents and perform barcode scanning.

#### Features

- Low MVTR @ <0.05g/100in<sup>2</sup>/day
- Transparent
- Minimal charge retention

#### Benefits

- Enhanced contents protection from moisture
- Easy content identification and bar code scanning
- Safeguards static sensitive devices



## Drypack DB 38XX series moisture barrier bag

Drypack DB 38XX series is a high barrier foil laminated film developed for semiconductor industry. It is a popular choice to vacuum pack tape and reel, IC trays or shipping tubes.

### Features

- Superior MTVR, < 0.0003 g/100 in<sup>2</sup>/day
- A solid Aluminum foil middle layer
- More than 25 lbs puncture resistant

### Benefits

- Excellent vacuum retention
- Total EMI/ESD protection
- Prevent bag puncture against sharp corners of IC tray or shipping tube



# Nylon PE series

Nylon PE is ideal for packing sharp objects such as fastener where puncture resistance and durability are required. The film is transparent clear, strong and vacuum heat sealable.



## Features

- Reinforced with nylon
- Transparent clear

## Benefits

- High puncture resistant
- Contents remain visible while protected
- Readily heat sealable

## Selection Chart

			Nylon PE Bag	RCAS 4150/ES 2150	Drypack DB 3000 Series	Drypack DB 38XX Series
				Static Shielding Bag	Moisture Barrier Bag	Moisture Barrier Bag
Physical Properties						
	Test Method	Unit				
Thickness	ASTM D374	Mil	2.5-8.0	3.0	3.0	3.6-7.0
Light Transmission		%	100	40	55	None
Puncture Resistance	FTMS 101C Method 2065	lbs	>15	>12	>15	>25
Heat Seal Strength	ASTM F88-99	lbs/in	>13	>10	>11	>15
Moisture Vapor Transmission Rate (MVTR)	ASTM-F-1249-90 (37.8°C, 90%RH)	g/100in²/day	N/A	N/A	<0.05	<0.0003
Electrical Properties						
	Test Method	Unit				
Surface Resistivity	EOS/ESD S11.11	ohm/sq	< 1x10 <sup>12</sup>	< 1x10 <sup>12</sup>	< 1x10 <sup>12</sup>	< 1x10 <sup>12</sup>
Electrostatic Decay	FTMS 101C Method 4046	sec	N/A	< 0.05	< 0.05	< 0.05
Energy Test	EOS/ESD S11.31	nanojoules	N/A	< 20	< 15	< 10
Capacity Probe	EIA-541	volts	N/A	< 25	< 25	< 25
Cleanliness Properties						
	Test Method	Unit				
LPC	@>0.5um	counts/cm²	<3000	<3000	< 3000	<3000
Outgassing	GC-MS	ng/cm²	< 1709	< 1709	< 1709	< 1709
Ionic Contamination	Chloride	ng/cm²	< 10	< 10	< 10	< 10
	Nitrate	ng/cm²	< 100	< 100	< 100	< 100
	Sulphate	ng/cm²	< 10	< 10	< 10	< 10

# Contact

## Manufacturing Facility/ Sales Office

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