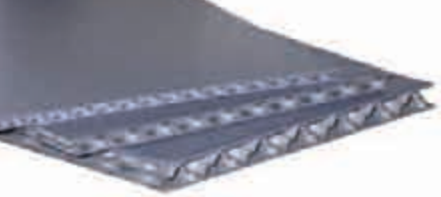
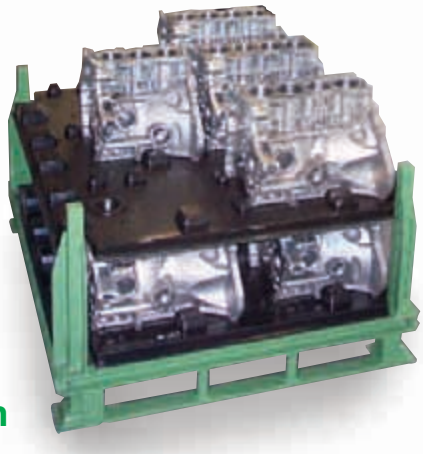
SohnerPlastics

Intelligent Automation Packaging



- Precision Thermoformed Box Trays
- Precision Reversed Trays
- Thermoformed Dividers
- Stack & Nest 180° Trays
- Special Materials
- Twin Sheet Trays & Shipping Containers
- Thermoforming Applications
- Mega-Pack Shipping Containers
- TriPly®
- Cross X
- AntiBak
- Packaging Solutions
- Robotics & Gripper Solutions
- Engineering Capabilities
- Quality Control



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ISO 9001:2001

Precision Automation Thermoformed Trays

Precision Automation Thermoformed Box Stacking Trays

Stacking containers for shipping and automation inserts.

Sohner's special production process makes it possible to mold precision plastic trays and returnable containers at economical prices. The mold cost is 1/10 the cost of an injection mold. These stackable trays are designed to hold parts in place via specially engineered pockets. This prevents damage resulting from part movement and vibration during shipping and handling. Sizes are available up to: 76"x 37"x 20".

	Length		Width	
Part #	Imperial	Metric	Imperial	Metric
0909	9 in	229 mm	9 in	229 mm
1209	12 in	305 mm	9 in	229 mm
1311	13 in	330 mm	11 in	279 mm
1512	15 in	381 mm	12 in	305 mm
1615	16 in	406 mm	15 in	381 mm
1717	17.5 in	445 mm	17.5 in	445 mm
1816	18 in	457 mm	16 in	406 mm
2115	21 in	533 mm	15.5 in	394 mm
2415	24 in	610 mm	15 in	381 mm
2319	23 in	585 mm	19.5 in	495 mm
2422	24 in	610 mm	22 in	559 mm
3220	32 in	813 mm	20.5 in	521 mm
3224	32 in	813 mm	24 in	610 mm
3230	32 in	813 mm	30 in	762 mm
3632	36 in	915 mm	32 in	813 mm
4024	40 in	1016 mm	24 in	610 mm
4832	48 in	1219 mm	32 in	813 mm

Standard Sizes (adjustable height)

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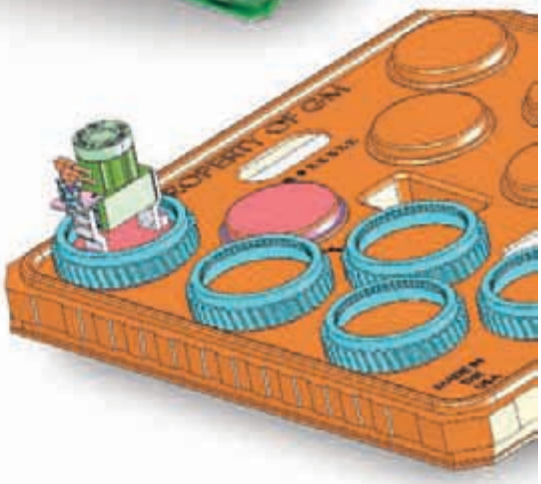
Reverse Trays

This model has been developed for robotic parts handling and automatic handling of trays for transport and storage. The outside contour of the tray forms a fixed coordinate system for each of the specifically molded inside pockets.

Typical positional accuracy of the pocket relative to the outside walls is ±0.10". It is a cost effective alternative to expensive, complicated positioning devices, and injection molded trays.

	Length		Width	
Part #	Imperial	Metric	Imperial	Metric
1209	12 in	305 mm	9 in	229 mm
1311	13 in	330 mm	11 in	279 mm
1512	15 in	381 mm	12 in	305 mm
1615	16 in	406 mm	15 in	381 mm
1717	17.5 in	445 mm	17.5 in	445 mm
1816	18 in	457 mm	16 in	406 mm
2115	21 in	533 mm	15.5 in	394 mm
2415	24 in	610 mm	15 in	381 mm
2319	23 in	585 mm	19.5 in	495 mm
2422	24 in	610 mm	22 in	559 mm
3220	32 in	813 mm	20.5 in	521 mm
3224	32 in	813 mm	24 in	610 mm
4024	40 in	1016 mm	24 in	610 mm
4832	48 in	1219 mm	32 in	813 mm



Dividers for pallets and rack systems.

Dividers are custom designed thermoformed to support and separate parts as well as for stacking on pallets or upon themselves.

Many times they are used with steel racks.

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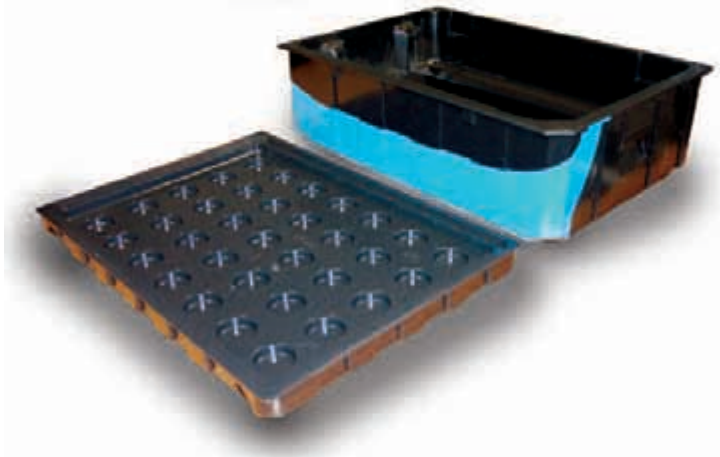
Twin Sheet Extra Rigid Trays

Precision part shipping and storage containers.

We have state-of-the-art Twin Sheet Thermoforming machinery and technology with the capability of producing big trays designed to protect finished surfaces as well as precision machined parts. Crank shafts, for example, have large diameter cams, which might easily be damaged in handling and shipping. These parts are also very heavy, close to 2,000 lbs/container, and stacking them might damage the parts. We have developed special Twin Sheet containers which allow our automotive customers to safely handle the finished crank shafts in their plant or even when shipping them overseas, fully protected in our containers.

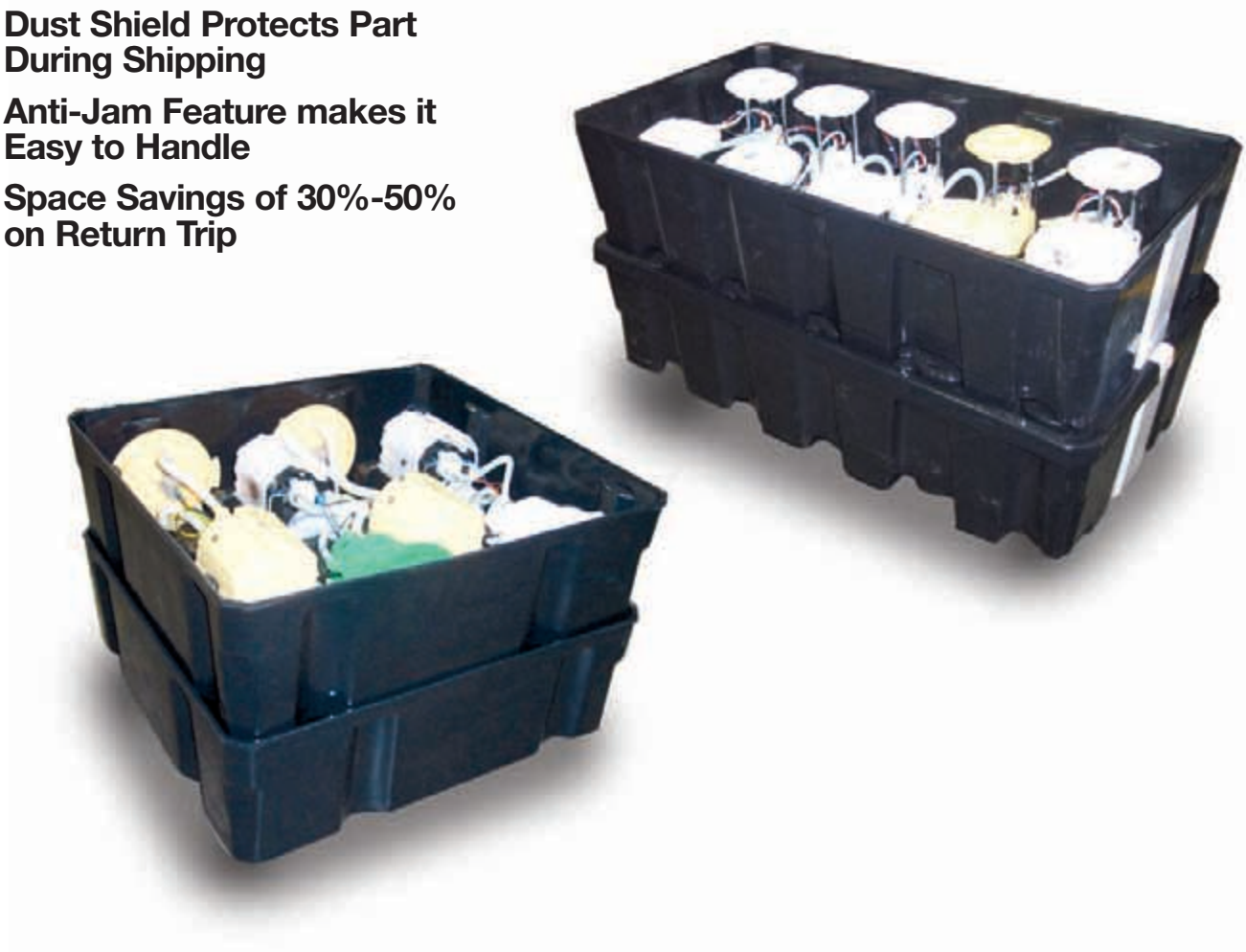


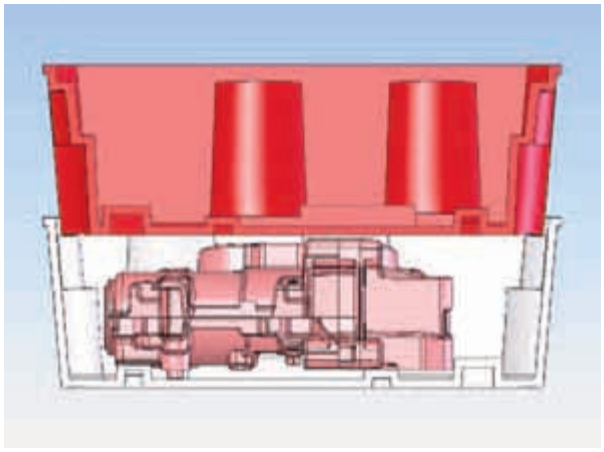
Twin Sheet Automation trays are very rigid, low profile, and have a flat bottom for easy transport over roller conveyors.

180° Stackable and Nestable Trays

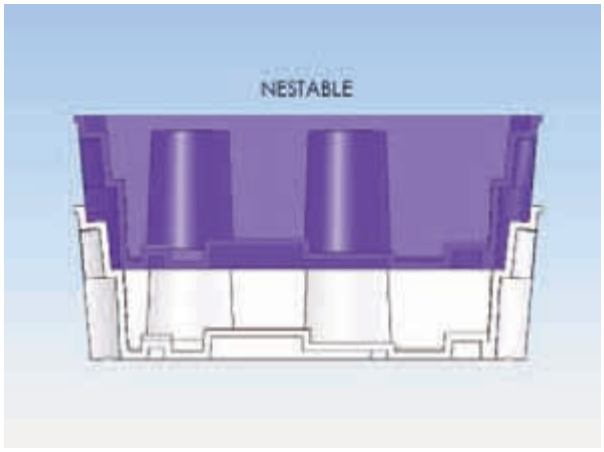
Stack and nest, turn 180° trays offer the advantage of volume reduction on the return trip, when they are empty. This saves a lot of money in shipping costs, especially for deep trays.

- **Dust Shield Protects Part During Shipping**
- **Anti-Jam Feature makes it Easy to Handle**
- **Space Savings of 30%-50% on Return Trip**





Trays stack together protecting the part during storage or transport.



Rotate trays 180° to nest them together, reducing volume and shipping costs.

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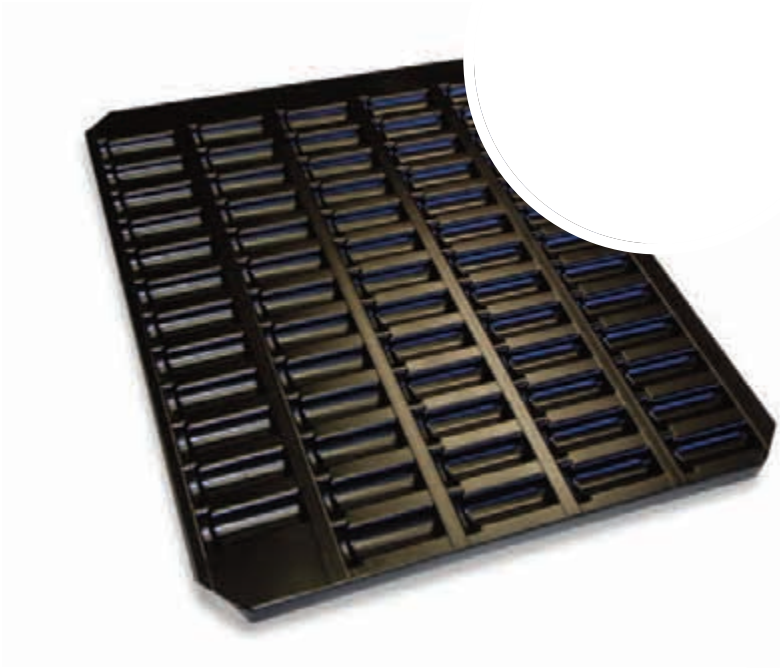
Precision Thermoformed Ammunition Trays and Cases

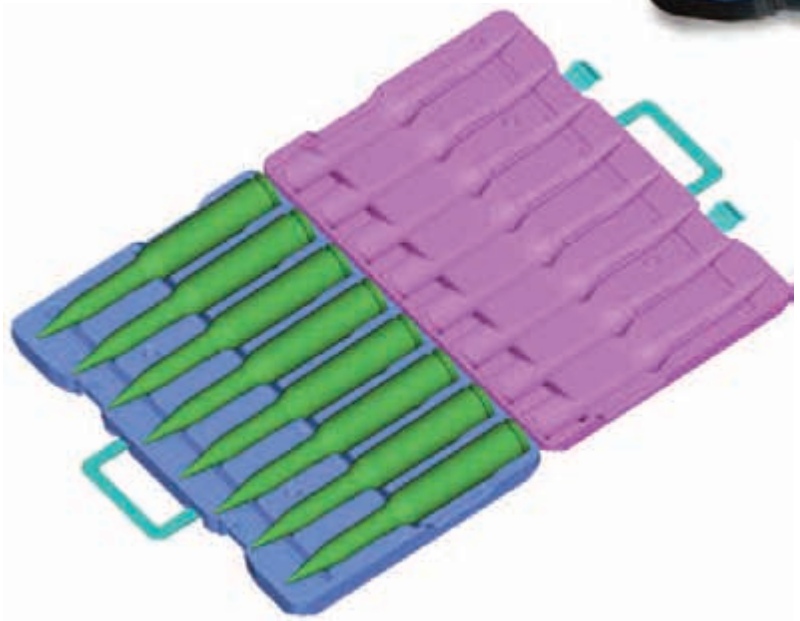
Designed for the Defense industry

Ammunition Trays

Precision Automation Trays for Robotics



Ammunition Cases



- **Custom Designs Available for any Shells**
- **ESD-Conductive Material**
- **Protect Shells in Shipping**
- **Easy Transport in the Field**

- ABS/TPU - Anti-Shaving
- ABS - Virgin and Recycled
- HMWPE - Virgin and Recycled
- Polystyrene
- Food Grade - FDA Approved
- Polypropylene
- Coextruded Recycled Base with Virgin Cap
- Coextruded Recycled Base with Virgin Cap and Color Stripe
- High Temperature Polycarbonate
- Conductive - PS Prime & ESD
- Conductive HDPE
- Disapative - PS
- Multi-colored - ABS & HDPE
- Outdoor UV Resistant
- High Impact ABS

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Sohner Plastics

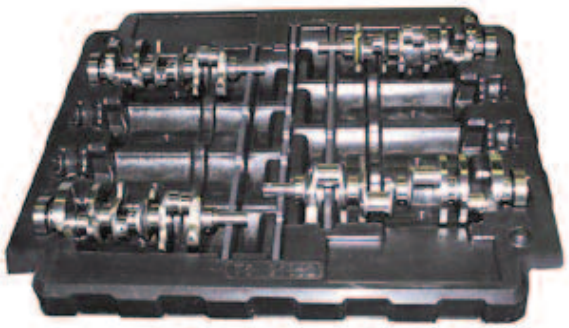
New plastics manufacturing helps DaimlerChrysler “come clean” with the shipping of engine components

Sohner Plastics, Germany, has been working with DaimlerChrysler engineers in Germany to solve the problem of Plastic Tray “shavings” in the shipping of Engine Blocks, Cylinder Heads, Transmission Rings and other components with sharp, machined edges.

The parts with sharp machined edges were “shaving” the plastic shipping trays causing slivers of plastic to attach to the parts requiring them to be re-cleaned and inspected before final assembly.

Sohner Plastics has developed new Thermoformed Trays with a special material, ABS/TPU, that cannot be cut by the sharp machined edges of the parts. This eliminates the need to clean the parts before final assembly in the engine with great savings in time and money.

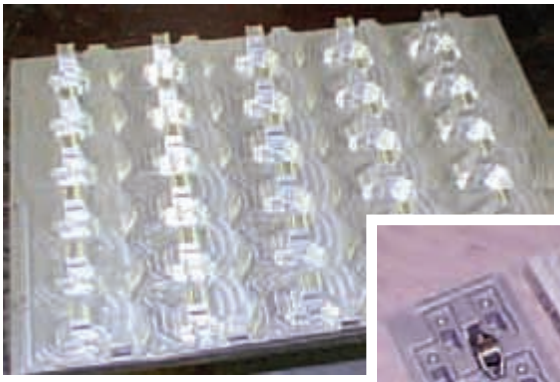
This unique material it is co-extruded with a rigid base layer of ABS and a cut resistant cover of TPU and requires special thermoforming tooling and techniques.



Vibration Test for General Motors

Standard HPDE produces plastic shavings

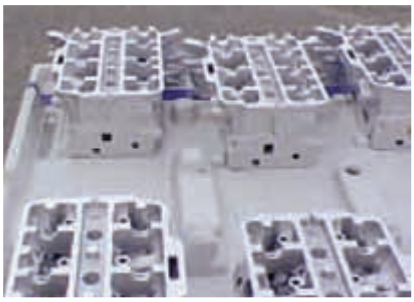
ABS/TPU produces no shavings



Sample Nest CNC Machined Tooling

CNC Machined Singlesheet Tool

Cylinder Head Divider Sheets



Twinsheet Bearing Block

Camshaft Cap Tray

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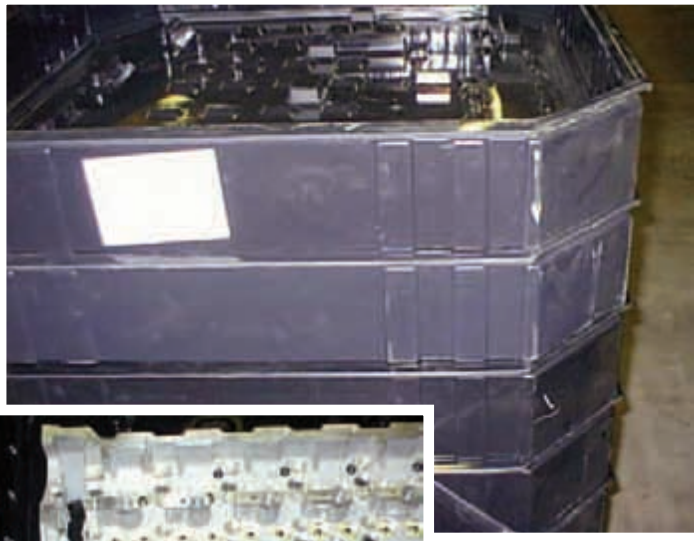
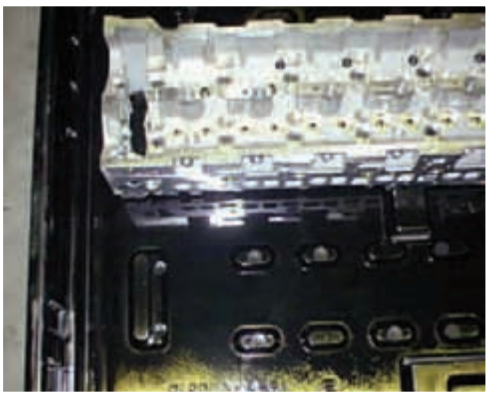




Cylinder Head Tray
with Urethane Plugs
for Anti-Shaving

Engine Block
Divider Sheet

Bearing Block Tray
18.00" Depth

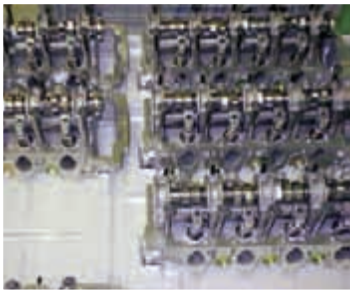
Steel Rack Dividers

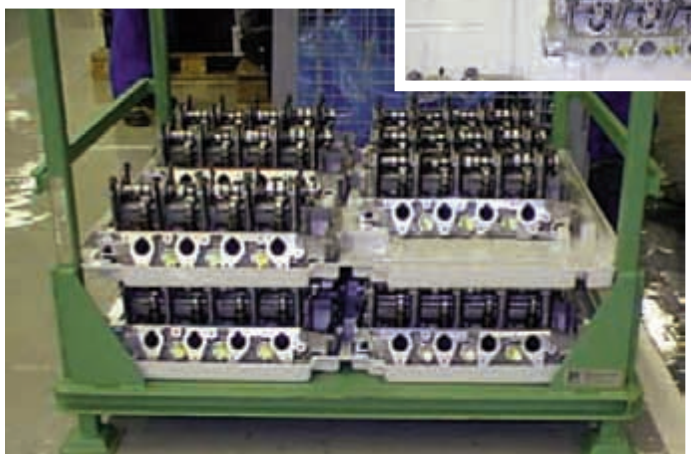
Instrument Panel Tray

Stacking Trays

Steel Rack Partition

Engine Block Divider





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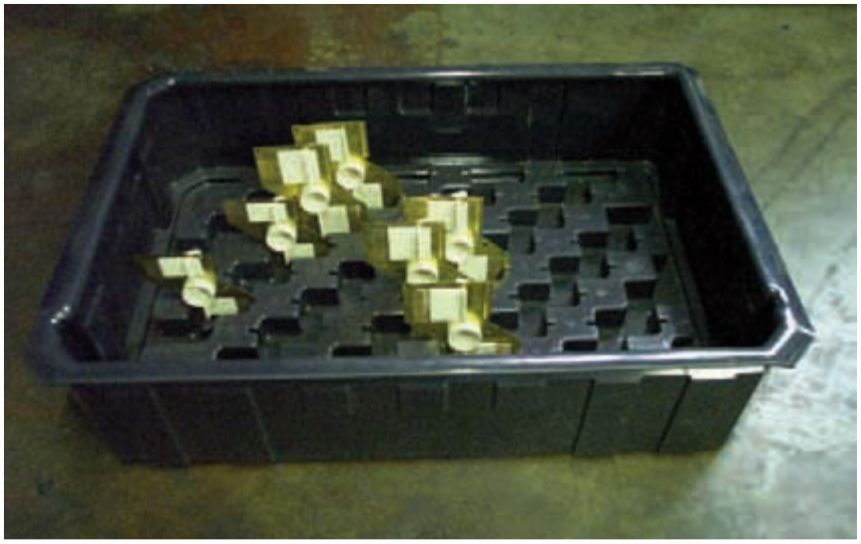
Cluster Assembly
Conductive Insert

Box Partition

Fuel Module Tray with Lid

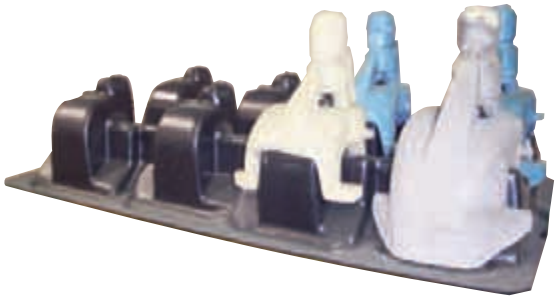
Piston Tray

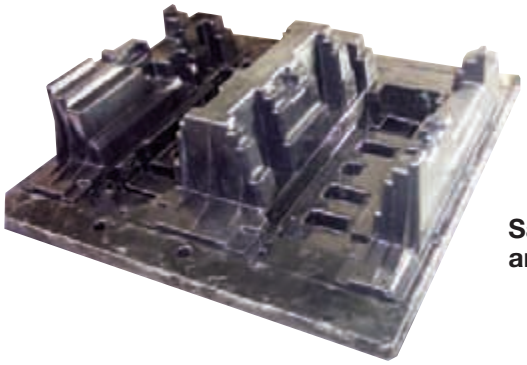


Electronic Modules Tray

Gear Tray

Interior Cockpit Components





Sandcore Storage and Transport Trays

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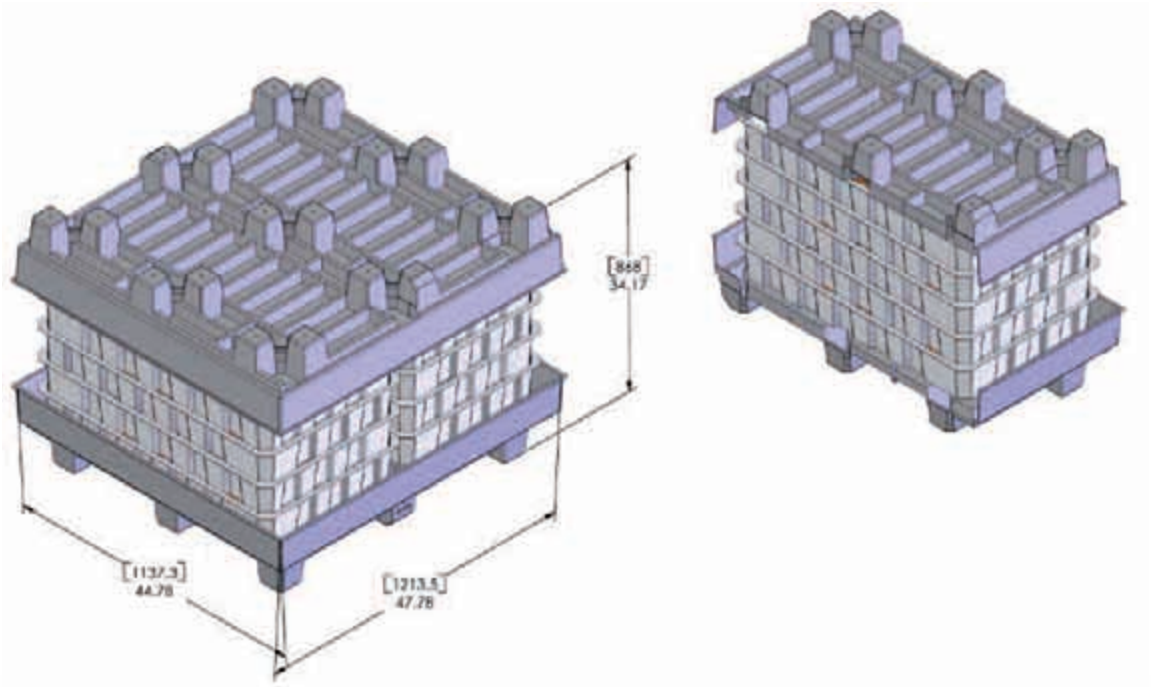
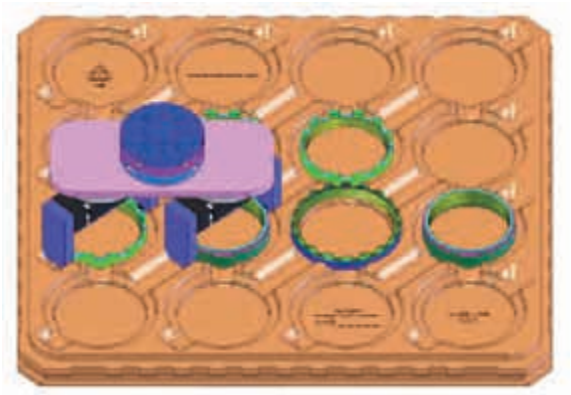
Packaging Solutions

We work very closely with our customers to develop the most appropriate packaging solution for their particular situation. Each situation is different and requires detailed engineering to determine the size of the Tray and the Pallet or Container, the material and load capacity, dust protection, static electricity discharge, over land or ocean shipping, interface with automatic loading and unloading equipment, labels and identifications, etc.

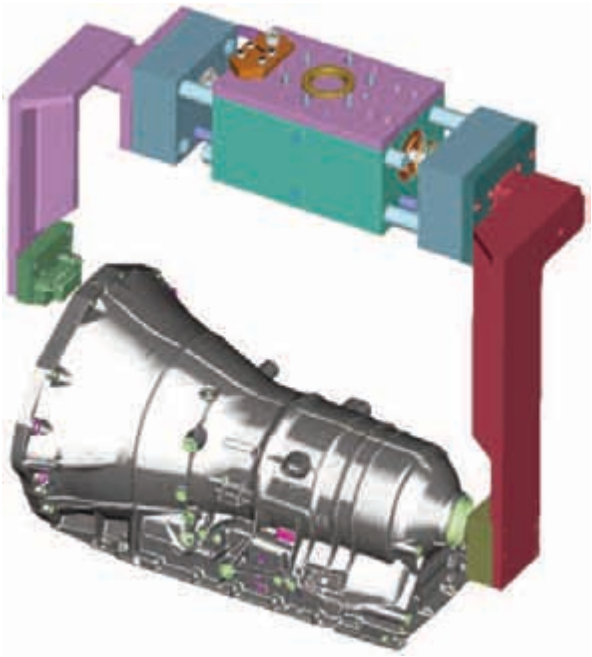


Robotics & Gripper Solutions

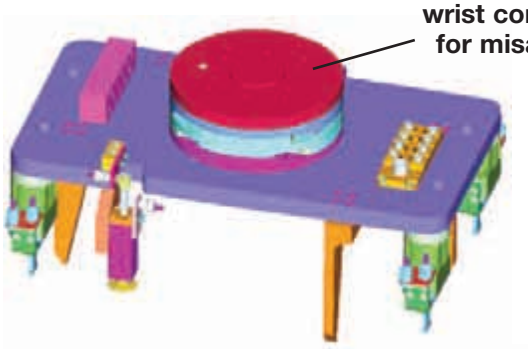
We can engineer, design and build the Precision Trays, the Gripper, Tool Change Station and Tray Positioning Mechanism, assuring seamless functionality for tray Load-Unload and easy interface with the rest of the Automation System.
Many times the gripper can handle the part and also the tray.



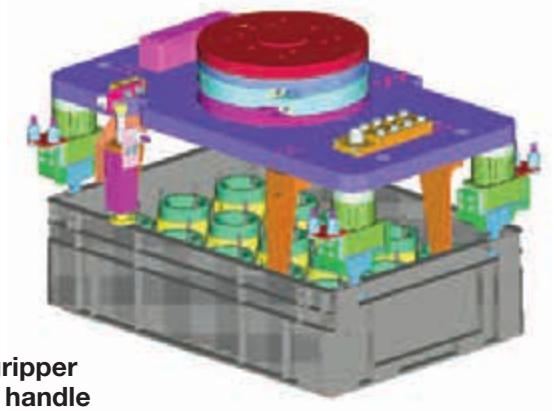
Double Gripper handles (2) parts at a time



Large Part Gripper



Compliance wrist compensates for misalignment



Complex gripper system can handle the parts or the tray

Complete Robot Cell

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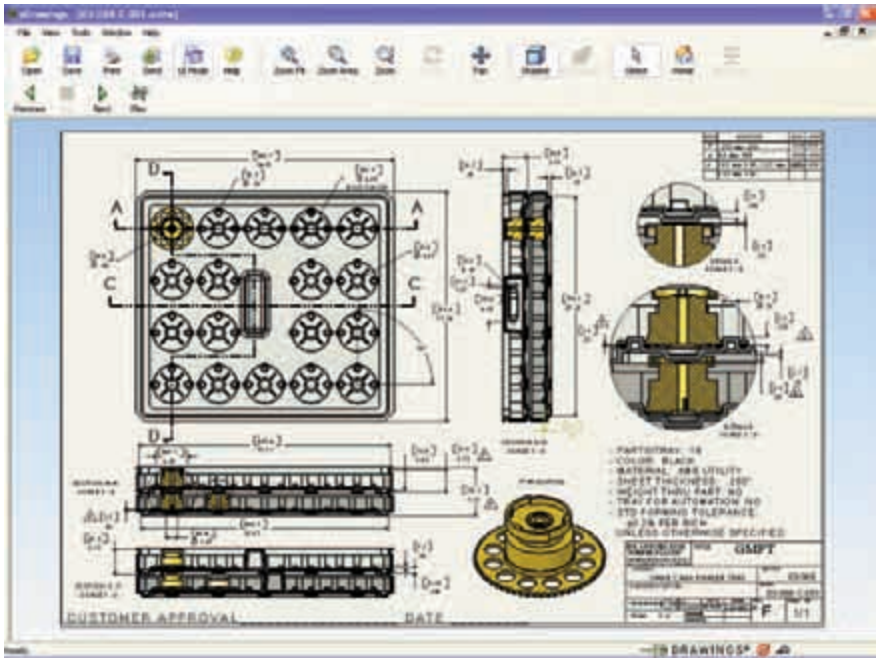
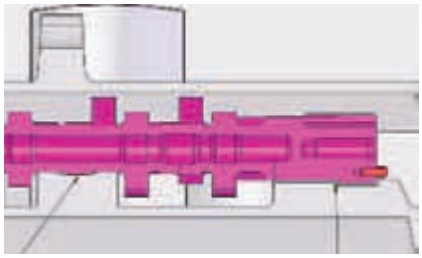
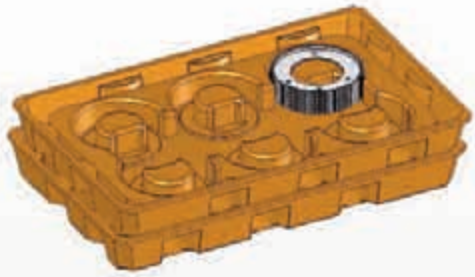
Complete Engineering Capabilities

We start with a thorough analysis of the application, and discuss all aspects of the system with the Customer and his Suppliers. Based on the information received we determine the pocket design, tray size, the type of tray best suited for the application, material, interface with automation equipment like grippers and tray positioners and then we engineer the tray. We submit a Quotation and Concept drawing; we submit the information in DWG or E-drawing. We can work with most software systems commonly used in the industry. After drawing approval we manufacture a “Sample Nest” to test part fit in the pocket and any interferences.



Section View



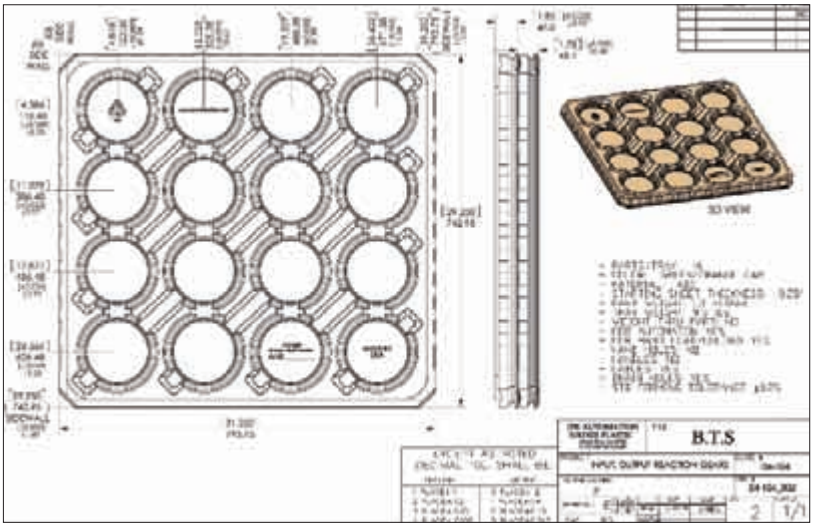


Section View

Quality Control

Using state of the art equipment we are able to perform ongoing inspection of thermoforming products as they are produced on site in our manufacturing facility. With the use of a Faro Technologies portable CMM we utilize CAD-to-Part-analysis to ensure all parts are within tolerances and analyze trends. The reports generated are used to establish and maintain high quality production in each project and ensure design criteria are maintained.

Measuring pocket to pocket repeatability with the faro arm



Drawing of CAD 3D model with tolerances

Plastic Consistency

(This value is given as a percentage of distance from one feature to another)

ABS (utility) ± 0.2%

ABS (virgin) ± 0.1%

HDPE (utility) ± 0.5%

HDPE (50/50) ± 0.3%

CMM REPORT OF (R1-238)

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APPLICATION DATA SHEET

Quote #……

Customer information

Name……. Tel……Fax……
Company……
Email…… Website……
Street……City……State……

Part information

a. Part description……
b. Part number…….. c. Part size L=……W=…….H=……d. Part weight…….
e. Part finish…… f. Part temperature……. g. Part picture……
h. Part drawing…… i. Part samples……j. Special requirements……..

Process information

a. Temperature…… . b. Washing parts……. c. Automation…….. d. Returnable……
e. Stacking…….. f. Nest and Stack 180* ……. g. Stacking orientation……
h. Inprocess in plant…… i. Shipping to……
i. Pallet or container size; L=……W=……..H=…….. k. Lid…….

Tray information

a. How many parts per tray……b. Tray size…….. c. Tray or Upside down…….
d. Divder inside container…… e. Weight through the part…….. f. Central support……..…
g. Material…… h. Mat'l thickness…… i. Color……....
j. Maximum weight per tray……. k. Quanity……...
l. Sample nest……...……. m. Drain holes……..…...…. n. Hand holes……....…….
n. Labels……....…….

Hand sketch

Quote Form

Fax:

Quotation No: 02-200
Date: 1/1/02

Revision:
Revision Date:

Part Name:
Part Number:

Ref. Number:
Drawing Number:

TRAY SPECIFICATIONS

Type	Size	Height	Material	Material Grade	Initial Matl. Thickness	Color	Weight (lb.)	No. Parts per Tray

PRICING

Tooling:
Box **x**
Divider
Nest-Stack

Description	Qty.	Unit $	Ext. $
Tray and Nest Design	1	$0.00	$0.00
Sample Nest	1	$0.00	$0.00
Tooling	1	$0.00	$0.00
		TOTAL	**$0.00**

Set Up Charge: **$300** *** (Applicable on orders less than 300 pieces)**

Trays:

Min. Qty.	Max. Qty.	Unit $ ea.	* Set Up $

Prepared by:

TERMS

Pricing:	**Valid for 30 days**	
FOB:	**Origin - on all shipments**	
Tooling:	**NET 30**	Invoiced upon acceptance of sample nest
Trays:	**NET 30**	

DELIVERY

Nest Design and Samples:	4-5 weeks ARO, sample part and part drawing
Tooling & Production Samples:	5-6 weeks after written approval of sample nest
Production Trays:	Begin shipping approximately 2 weeks after written approval of production sample and receipt of raw materials

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Mega-Pack

Reusable/Collapsible Shipping Containers & Dividers

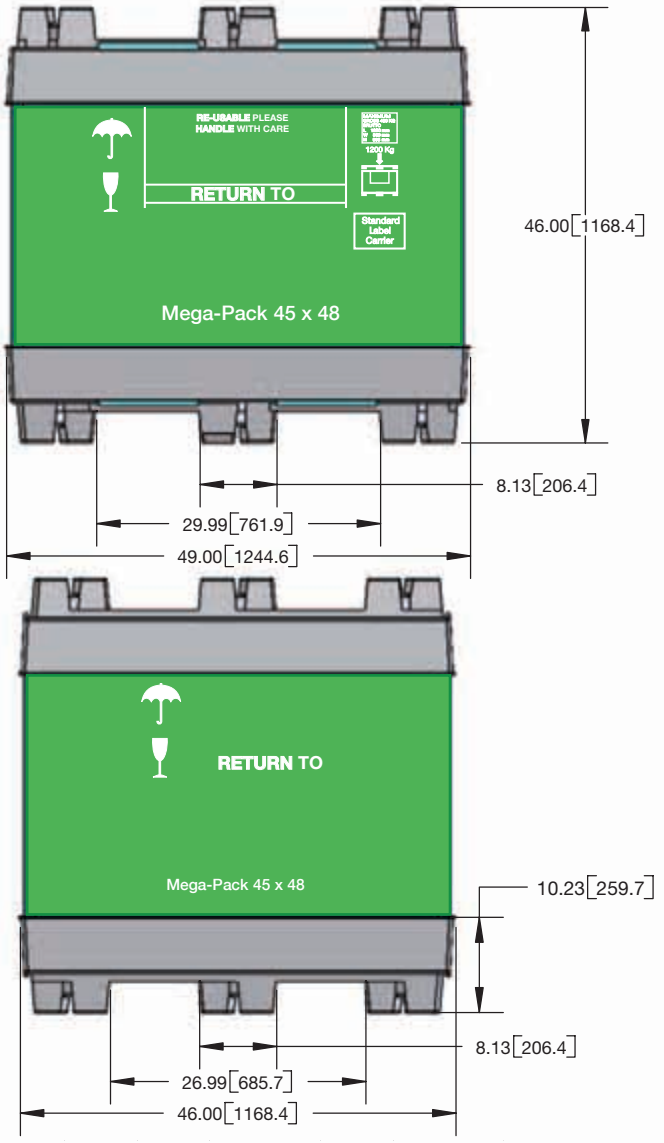
The Mega-Pack consists of a thermoformed base pallet with locking mechanisms, a sleeve and a lid/pallet on top.

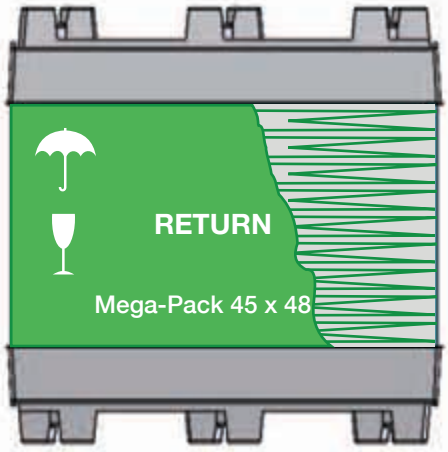
It is the ideal modular shipping system that offers standard components and custom inserts and dividers.

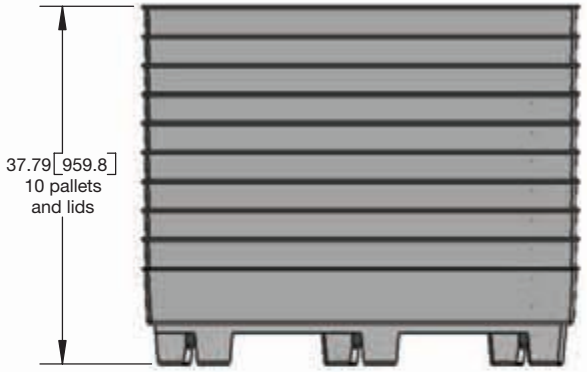
- Economical Shipping Containers
- Space Saving 7:1 Empty Return Ratio
- Recyclable 100%
- Lightweight, Easy to Handle
- Sleeve made of Triple Wall TriPly, Single Corrugated, and Twin Sheet
- Available in Standard and Custom Sizes
- Custom Thermoformed Dividers Available

Horizontal or Vertical Insert and Dividers Protect Components from Damage during shipping.

Mega-Pack Reusable/Collapsible Containers 45in x 48in







Dimensions and Weights

Dimensions:	
Outside L x W x H	49 x 46 x 46.0 [1244.5 x 1168.5 x 1168mm]
Inside L x W x H	46.8 x 44.1 x 35.5 [1187 x 1120.1 x 901.7mm]
Weights:	
Pallet	26 lbs [11.8 kg]
Lid	26 lbs [11.8 kg]
Loading Capacities:	
Corrugated	550 lbs [250 kg]
TriPly	1100 lbs [500 kg]
Twin Sheet	2200 lbs [1000 kg]

Types/Option

- Material: Pallet and Lid Made of HDPE
- Material of Sleeves:
  Triple-Wall, TriPly
  Twin Sheet, HDPE
  Single Wall Plastic Corrugated
- Height of Sleeves:
  Standard and Custom Sizes Available
- Print on Sleeves:
  1 Color / 2 Color
- Pallet and Lid Black / Color / with Colored Stripes
- Standard Label Carrier

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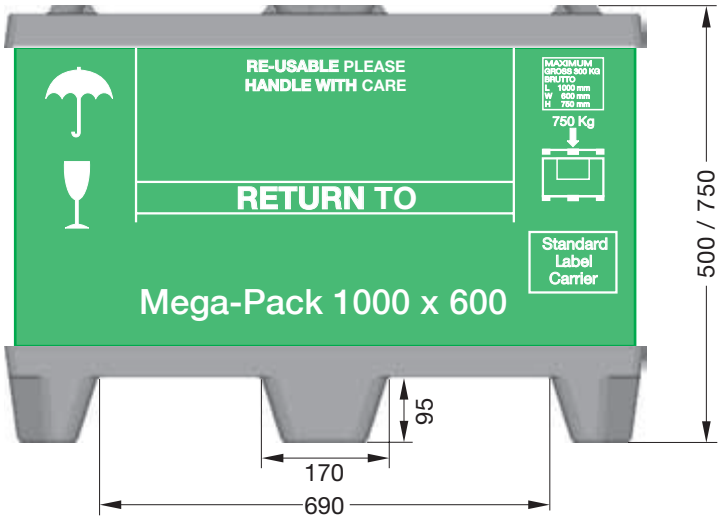
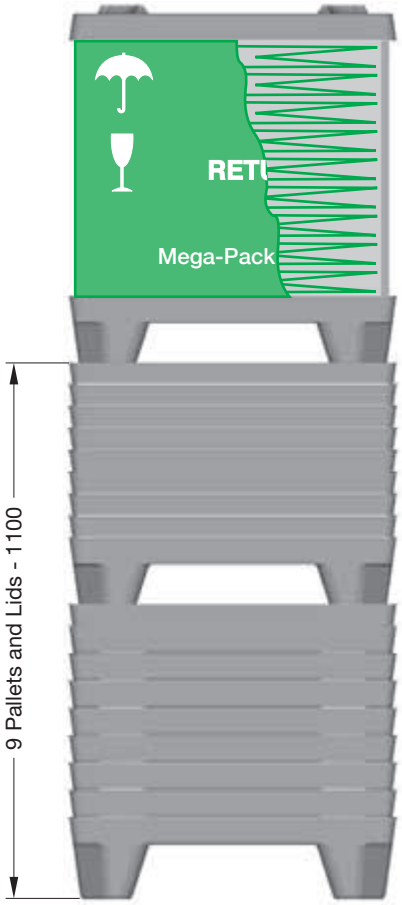


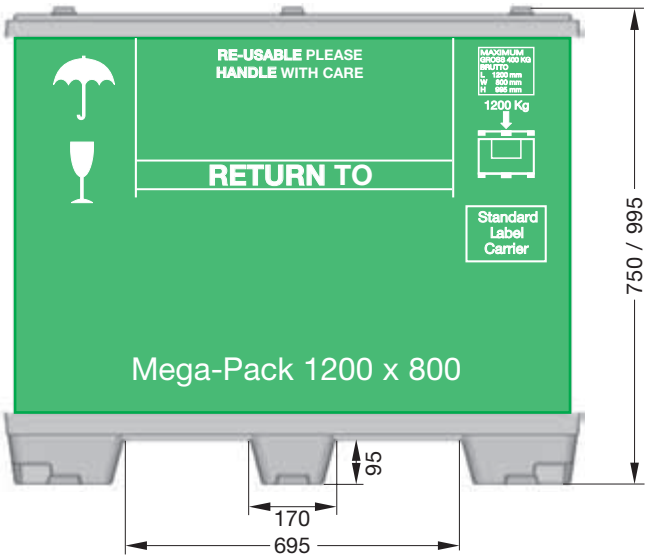


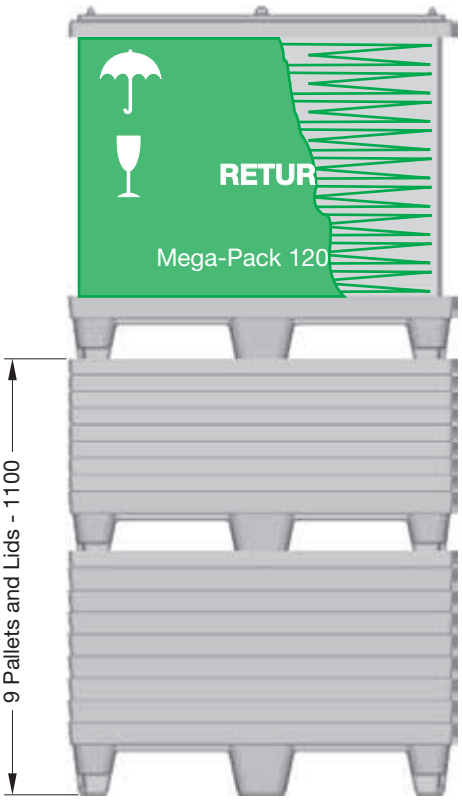
Types/Option

- Material: Pallet and Lid Made of HDPE
- Material of Sleeves:
  Triple-Wall, TriPly
  Twin Sheet, HDPE
  Single Wall Plastic Corrugated
- Height of Sleeves:
  Standard and Custom Sizes Available
- Print on Sleeves:
  1 Color / 2 Color
- Pallet and Lid Black / Color / with Colored Stripes
- Standard Label Carrier

Dimensions and Weights

Dimensions:	
Outside L x W x H	1000 x 600 x 500/750mm
Inside L x W x H	945 x 540 x 315/565mm
Weights:	
Pallet	12 lbs [5.5 kg]
Lid	9 lbs [4.0 kg]
Loading Capacities:	
Corrugated	550 lbs [250 kg]
TriPly	1100 lbs [500 kg]
Twin Sheet	2200 lbs [1000 kg]





Dimensions and Weights

Dimensions:	
Outside L x W x H	1200 x 800 x 750/995mm
Inside L x W x H	1130 x 730 x 530/775mm
Weights:	
Pallet	19 lbs [8.5 kg]
Lid	12 lbs [5.5 kg]
Loading Capacities:	
Corrugated	550 lbs [250 kg]
TriPly	1100 lbs [500 kg]
Twin Sheet	2200 lbs [1000 kg]

Types/Option

- Material: Pallet and Lid Made of HDPE
- Material of Sleeves:
  Triple-Wall, TriPly
  Twin Sheet, HDPE
  Single Wall Plastic Corrugated
- Height of Sleeves:
  Standard and Custom Sizes Available
- Print on Sleeves:
  1 Color / 2 Color
- Pallet and Lid Black / Color / with Colored Stripes
- Standard Label Carrier

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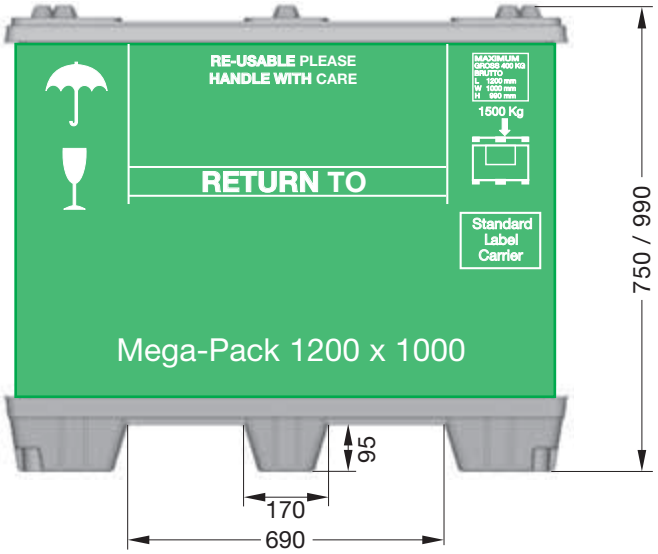
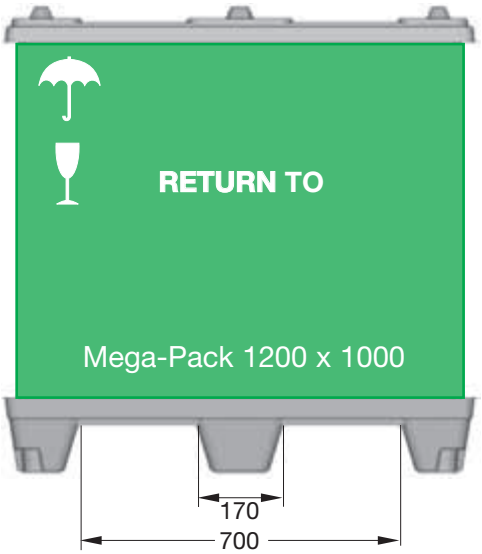
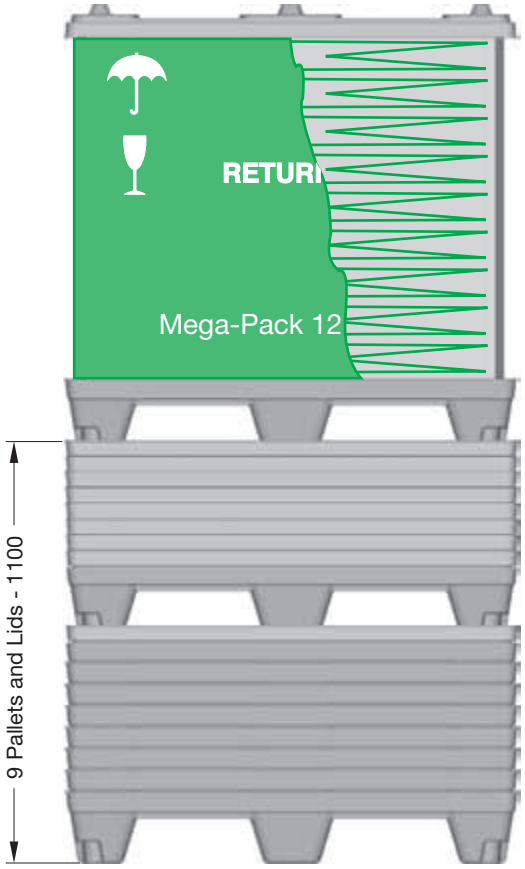
Mega-Pack Reusable/Collapsible Containers 1200mm x 1000mm







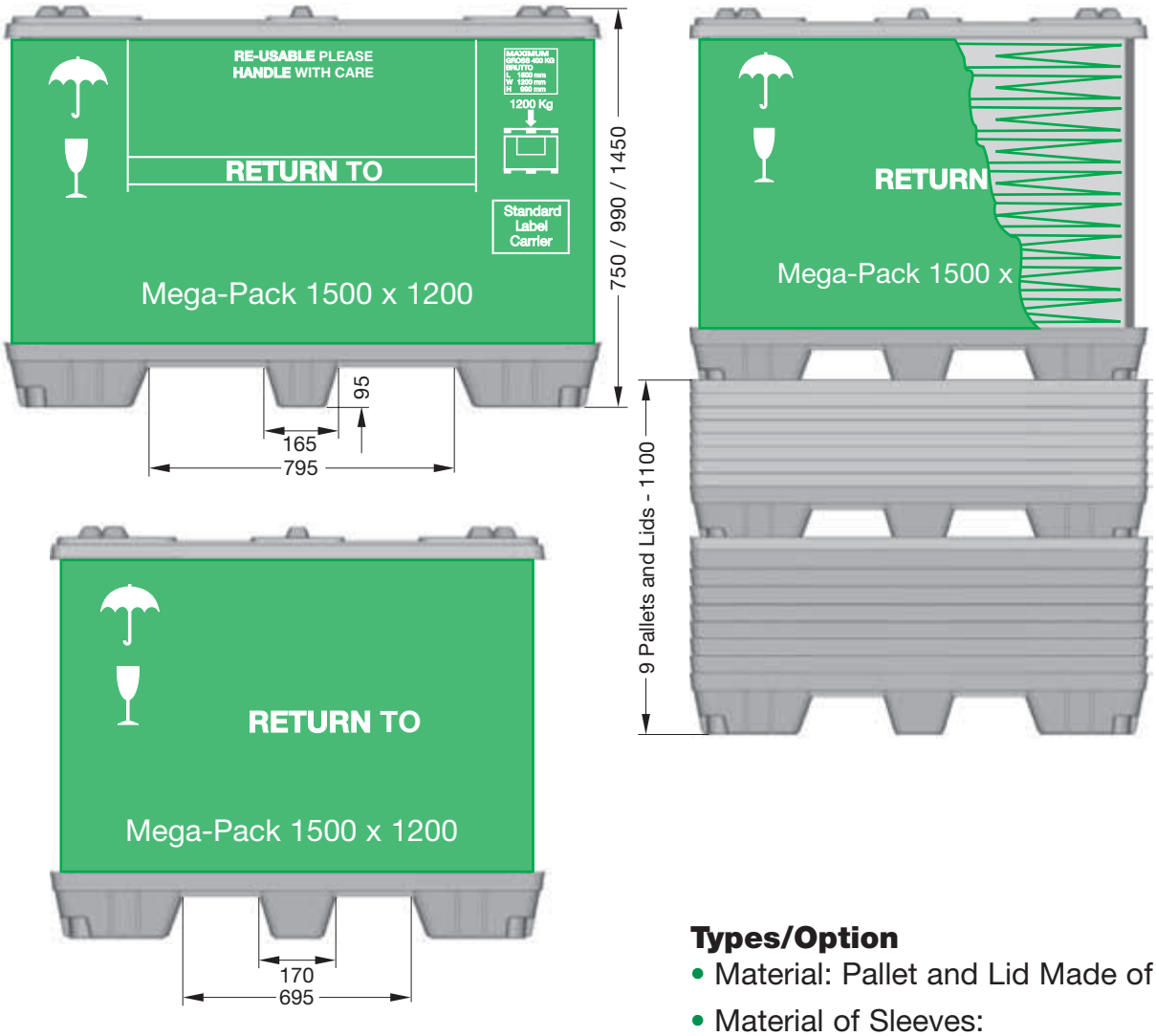
Dimensions and Weights

Dimensions:	
Outside L x W x H	1200 x 1000 x 750/990mm
Inside L x W x H	1130 x 930 x 515/755 mm
Weights:	
Pallet	23 lbs [10.5 kg]
Lid	15.5 lbs [7.0 kg]
Loading Capacities:	
Corrugated	550 lbs [250 kg]
TriPly	1100 lbs [500 kg]
Twin Sheet	2200 lbs [1000 kg]

Types/Option

- Material: Pallet and Lid Made of HDPE
- Material of Sleeves:
  Triple-Wall, TriPly
  Twin Sheet, HDPE
  Single Wall Plastic Corrugated
- Height of Sleeves:
  Standard and Custom Sizes Available
- Print on Sleeves:
  1 Color / 2 Color
- Pallet and Lid Black / Color / with Colored Stripes
- Standard Label Carrier

Mega-Pack Reusable/Collapsible Containers 1500mm x 1200mm



Dimensions and Weights

Dimensions:	
Outside L x W x H	1500 x 1200 x 750/990/1450mm
Inside L x W x H	1430 x 1130 x 555/795/1255mm
Weights:	
Pallet	41 lbs [18.5 kg]
Lid	26.5 lbs [12.0 kg]
Loading Capacities:	
Corrugated	550 lbs [250 kg]
TriPly	1100 lbs [500 kg]
Twin Sheet	2200 lbs [1000 kg]

Types/Option

- Material: Pallet and Lid Made of HDPE
- Material of Sleeves:
  Triple-Wall, TriPly
  Twin Sheet, HDPE
  Single Wall Plastic Corrugated
- Height of Sleeves:
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- Print on Sleeves:
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- Pallet and Lid Black / Color / with Colored Stripes
- Standard Label Carrier

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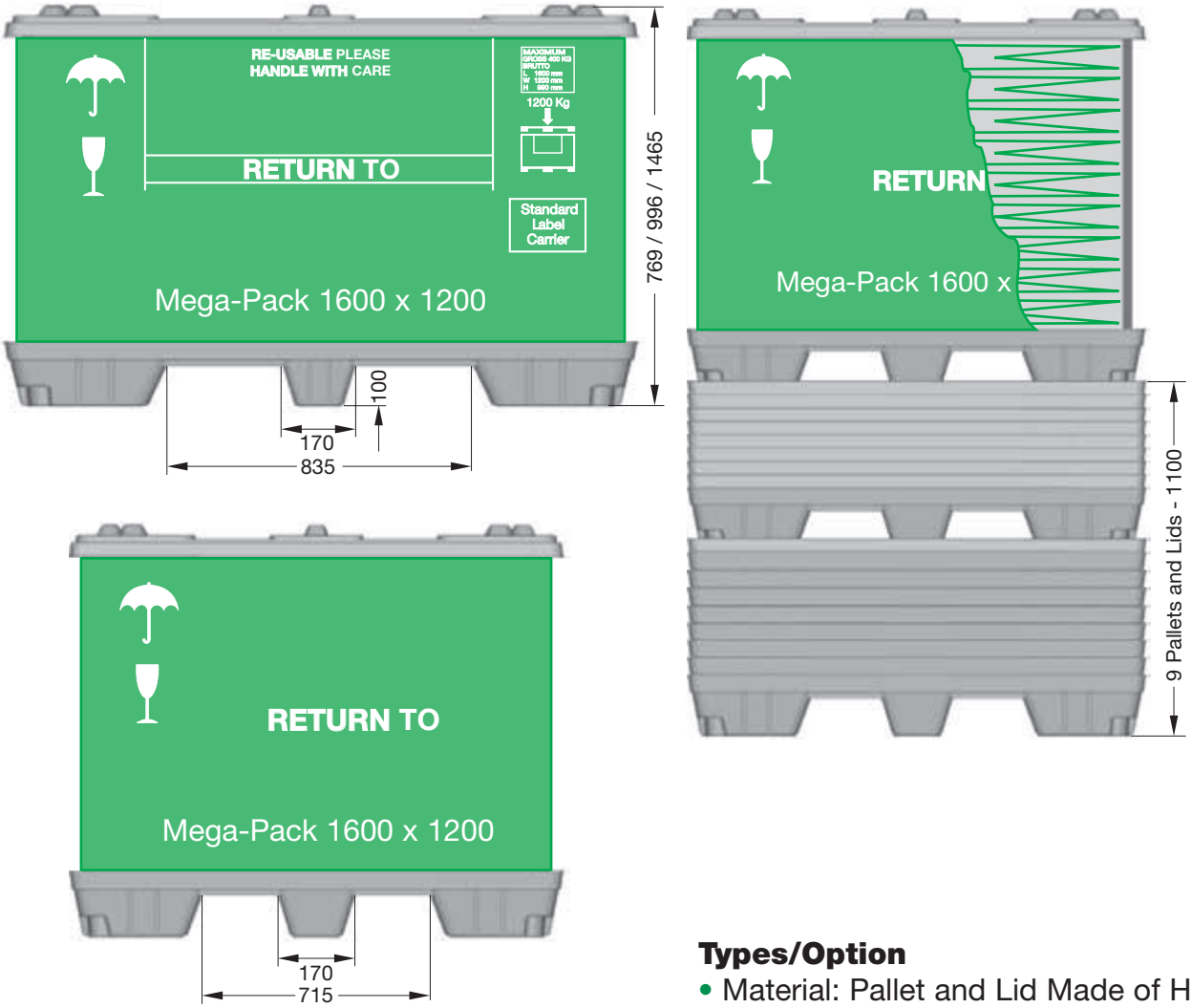
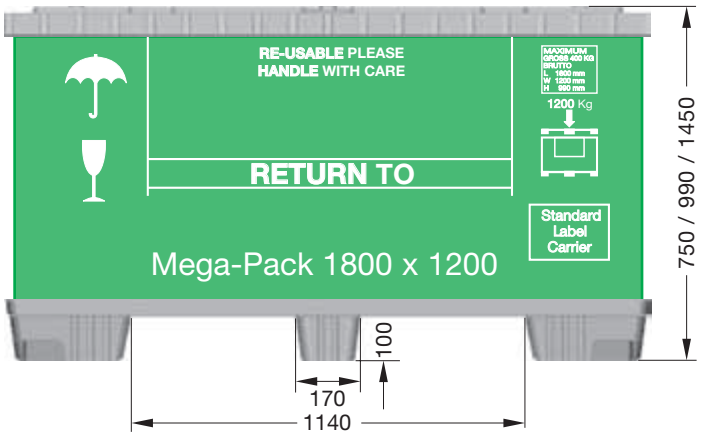


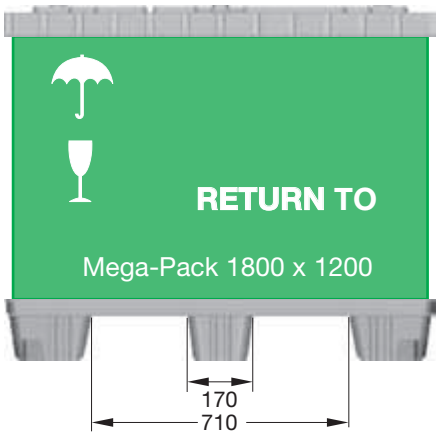
Dimensions and Weights

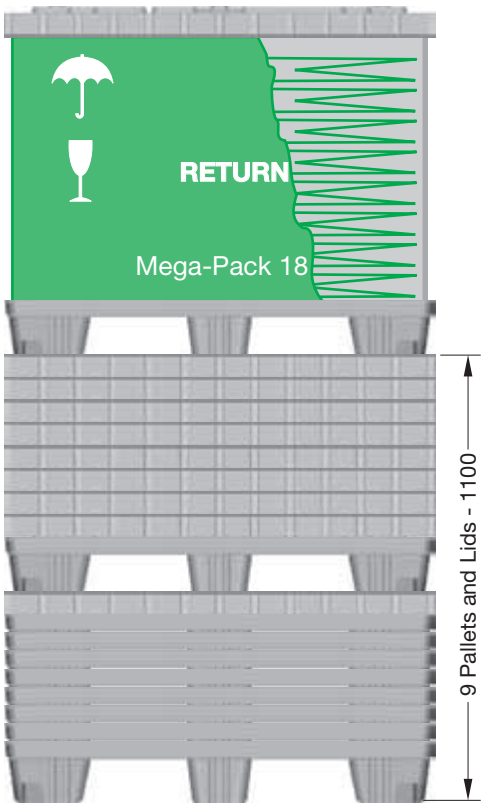
Dimensions:	
Outside L x W x H	1600 x 1200 x 750/990/1450mm
Inside L x W x H	1530 x 1130 x 545/785/1245mm
Weights:	
Pallet	37.5 lbs [17.0 kg]
Lid	23 lbs [10.5 kg]
Loading Capacities:	
Corrugated	550 lbs [250 kg]
TriPly	1100 lbs [500 kg]
Twin Sheet	2200 lbs [1000 kg]

Types/Option

- Material: Pallet and Lid Made of HDPE
- Material of Sleeves:
  Triple-Wall, TriPly
  Twin Sheet, HDPE
  Single Wall Plastic Corrugated
- Height of Sleeves:
  Standard and Custom Sizes Available
- Print on Sleeves:
  1 Color / 2 Color
- Pallet and Lid Black / Color / with Colored Stripes
- Standard Label Carrier







Dimensions and Weights

Dimensions:	
Outside L x W x H	1800 x 1200 x 750/990/1450mm
Inside L x W x H	1750 x 1150 x 545/785/1245mm
Weights:	
Pallet	45 lbs [20.5 kg]
Lid	27.5 lbs [12.5 kg]
Loading Capacities:	
Corrugated	550 lbs [250 kg]
TriPly	1100 lbs [500 kg]
Twin Sheet	2200 lbs [1000 kg]

Types/Option

- Material: Pallet and Lid Made of HDPE
- Material of Sleeves:
  Triple-Wall, TriPly
  Twin Sheet, HDPE
  Single Wall Plastic Corrugated
- Height of Sleeves:
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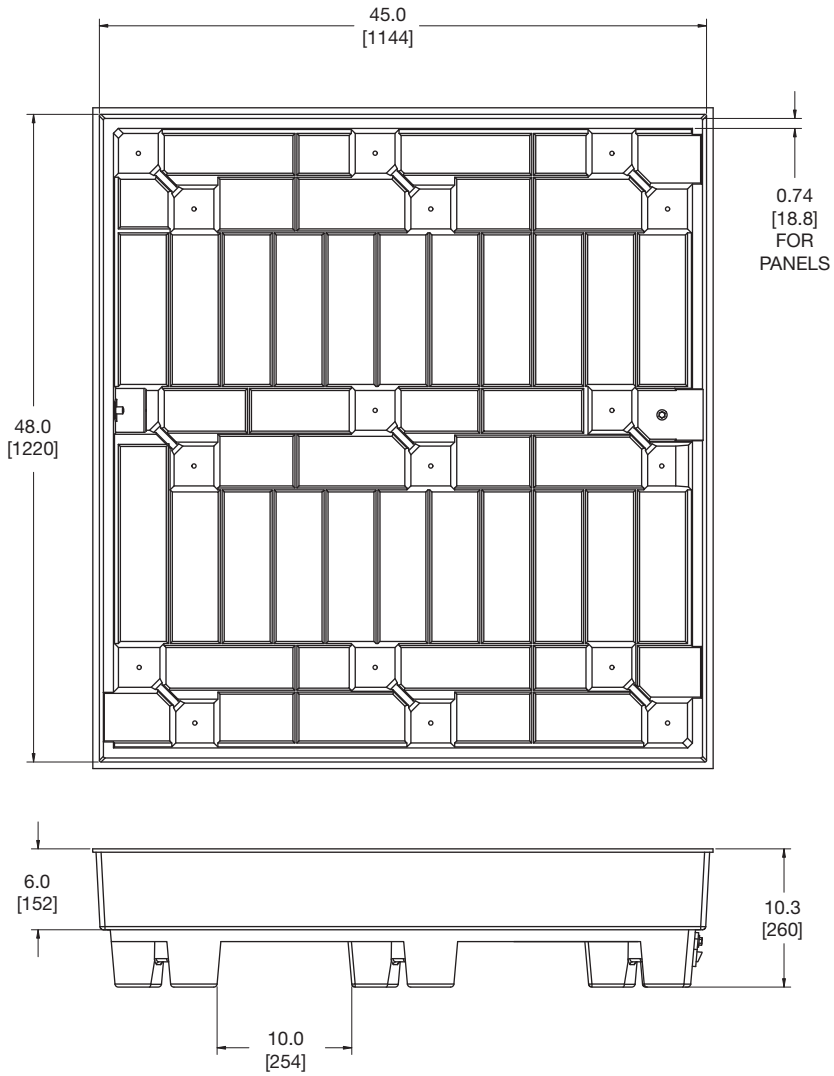
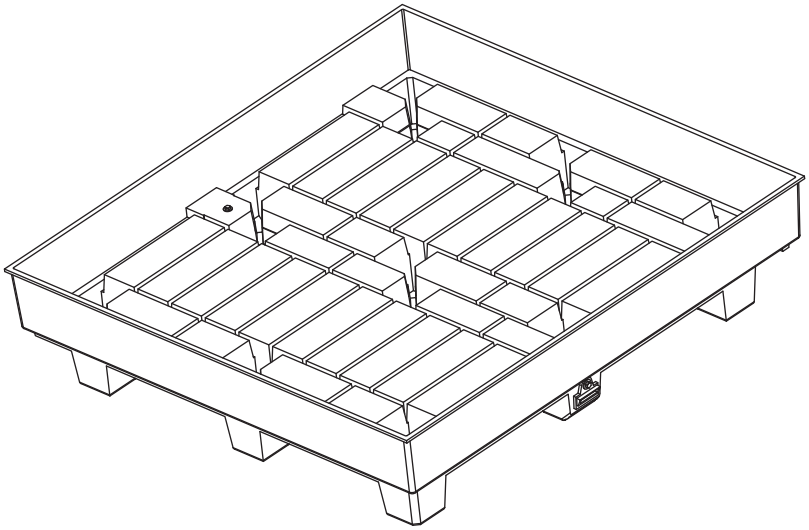
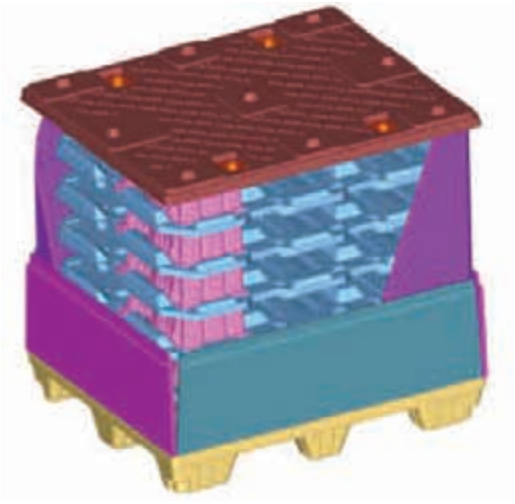
Mega-Pack Returnable Pallet 45 in x 48 in

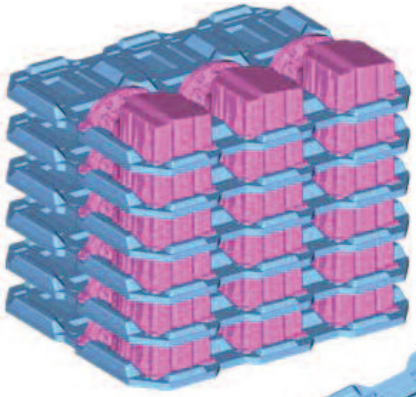


Types/Option

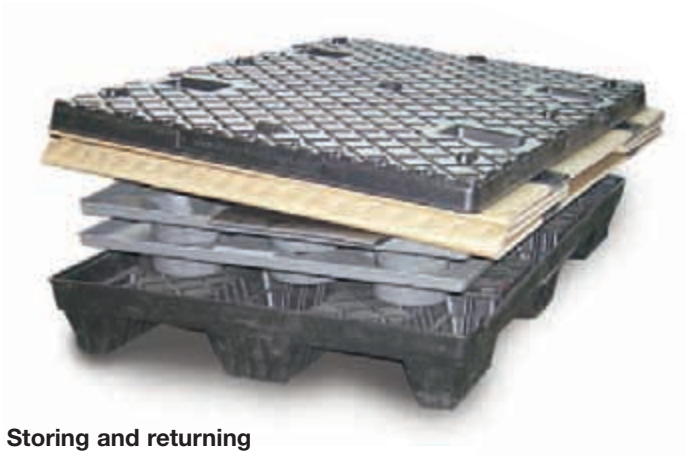
- Single Sheet Design
- Made of HMWPE
  Standard: 0.280” Thickness
  Heavy Duty: 0.360” Thickness
- Available with/without Cargo Belts
- Wall Height from 1” to 6”
- May also be used as a lid
- Inside channel to fit side panels
- Nestable to reduce cost on return
- **Capacity:**
  Standard: 2000 lbs [907 Kg]
  Heavy Duty: 3500 lbs [1590 Kg]
- **Max. Static Load:**
  Standard: 5000 lbs [2270 Kg]
  Heavy Duty: 7000 lbs [3175 Kg]







Special designed dividers used inside the Mega-Pack will protect parts during shipping. They are lightweight, durable and easy to use.



Storing and returning the empty Mega-Pack and dividers takes 50% less space!

Custom Thermoformed Dividers can be made in any size and configuration, vertical or horizontal, to better protect the components during shipping

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Step 1

Step 2

Step 3

Step 4

Step 5

Step 6

Mega-Pack 45 x 48 System

The 45 x 48 standard U.S. Mega-Pack system consists of two mirror-image pallets with “seat belt” straps and a collapsible “sleeve” made of triple plastic corrugated material capable of up to 3000 lb payload.

Features:

- Standard 45” x 48” Size
- Drop-down Door
- Standard and Custom Wall Heights
- Lightweight, Easy to Handle
- High-Quality, High-Strength Pallet and Sleeve
- Custom Printing and Graphics
- Protects Contents from Dust and Dirt
- Custom Thermoformed Dividers Available

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Sohner Plastics

Mega-Pack Compression Test

Compression test of a 1.2x1.0m MEGA-PACK with Twinsheet-Foldable Sleeve

Under 1000kg Load

The lids 25mm locator bosses have collasped but the twinsheet-sleeve (side panels) and the pallet show no deformation.

Under 4000kg Load

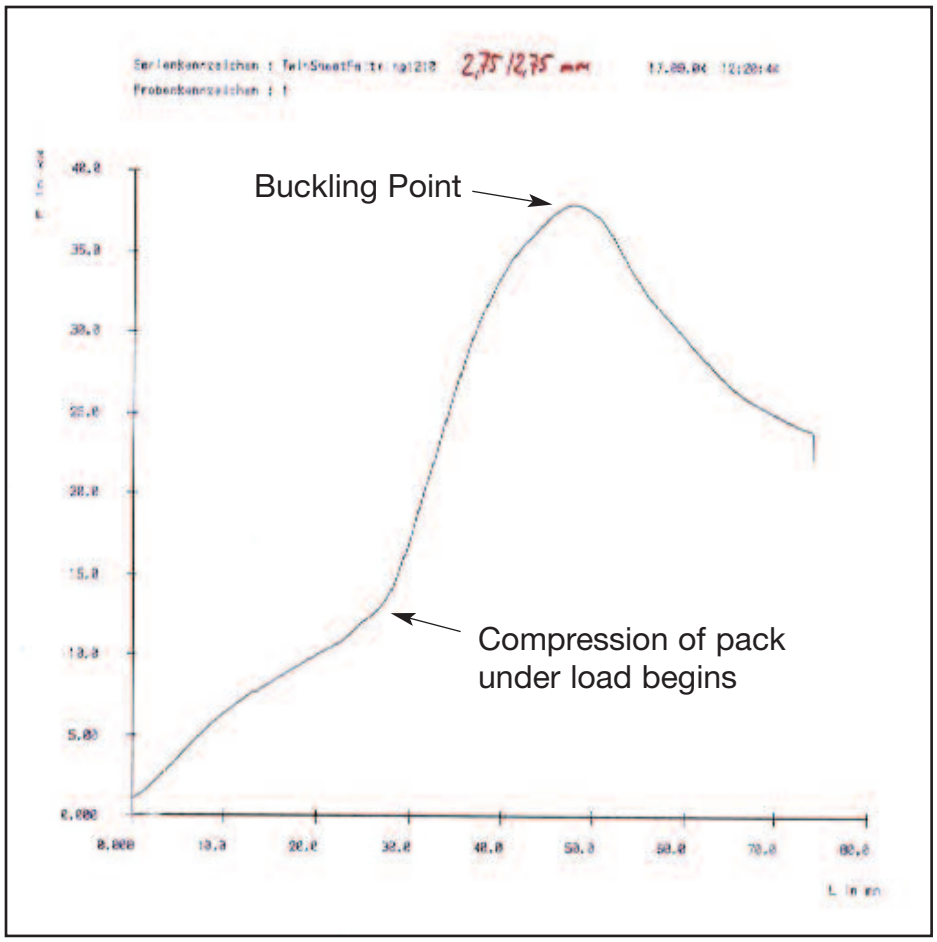
The loading flap begins to open, the twinsheet-sleeve begins to buckle. The whole system is compressed 18mm.

All parts inside container are still undamaged.

Compressed 75mm

Buckling occurs in the twin-sheet-sleeve near the door flap when unit is compressed by 75mm.

Mega-Pack Compression Test



Force vs. Compression

The pack begins to compress with forces over 1000kg. It compressed 18mm before buckling at just under 4000kg.

The pallet and lid, with the exception of the locator bosses, were undamaged by the load.

Examination of pack one day after pressure test

The HDPE sleeve has returned to its proper shape.

Only on the inside of the sleeve can you see traces of the damage from the extreme (4000 kg) load.

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Mega-Pack Crash Test

Exteme side load test with same pack

Forklift crash test

The pack was set against a wall and a fork lift was driven into the side of the unit.

Because of the huge force the lid pops off and the sleeve is crunched inward. The pallet and the lid are undamaged but the sleeve is deformed.

One minute after the test

Shortly after the fork lift crash, the sleeve has returned to about 90% of it's original shape.

There is no serious damage to the sleeve!

Only the locks in the pallet and lid are twisted due to the force of the impact. They still work and the sleeve can be set back in the groove and locked back into place.

Mega-Pack Crash Test

One hour after the crash test

The only evidence of the accident are the small marks of the high-low forks in the side of the sleeve. The unit has been restored and is ready to be reused again.

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Sohner Plastics

Roll Mega-Pack 1200x1000

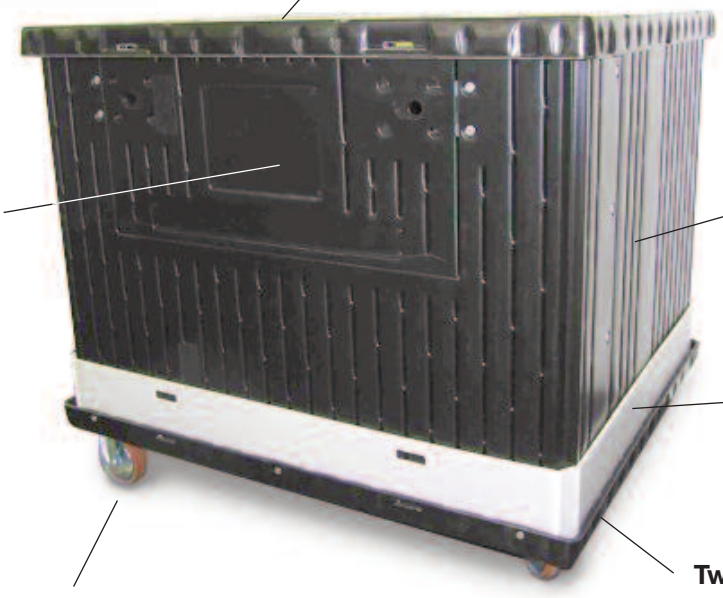
Collapsible Rolling Container System

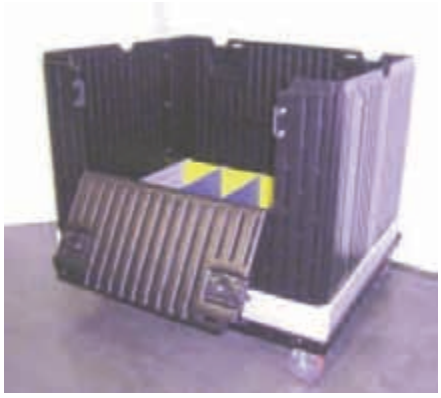
1200x1000

External Dims: ..... 1200w x 1000d x 1030h mm
Internal Dims: ..... 1110w x 920d x 780h mm
Volume Reduction: ..... 1 to 3 - 330mm height
Total Weight:..... 46 kg*

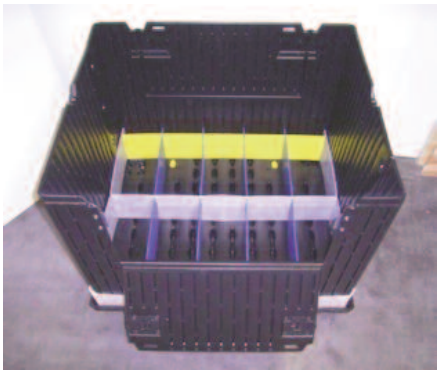
*The units weights can be reduced by using a single sheet thermoformed pallet, lid or sleeve.

NEW!



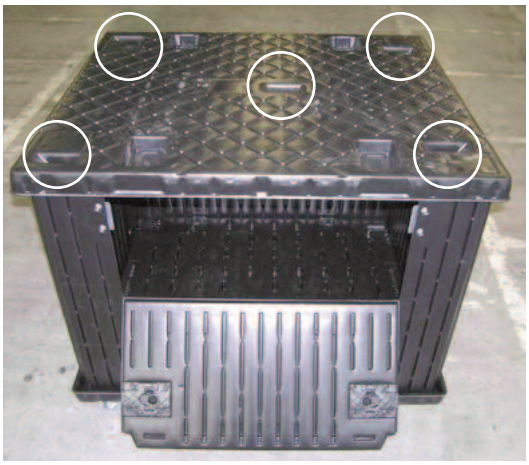


Door stays open with Velcro®

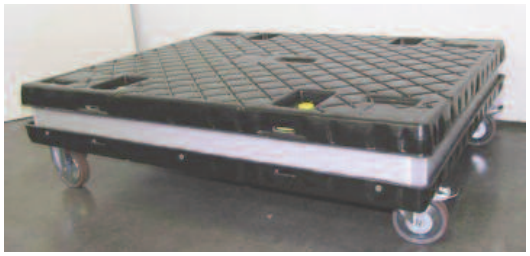


Shelving Latch Option

1 to 3 Volume Reduction



Cover contains cavities that allow for the stacking of units on top of each other



Single collapsed container

Stacked, collapsed containers

Unique collapsible design allows for optimal volume reduction (1:3) for return shipments

Allows for optional 5th caster installation for high load applications

Collapsed container stacked on top on full-size container

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Sohner Plastics

Mega-Pack/Solar

Solar Panel Returnable Packaging

Sohner Plastics has developed a new concept in returnable packaging for Solar Panels based on our standard |collapsible containers, Mega-Packs.

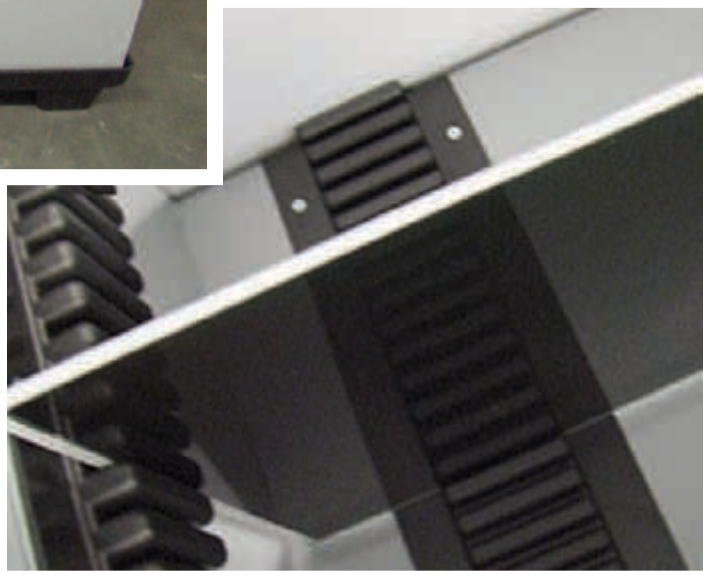
Our standard line of Mega-Packs come in many different sizes (visit us at www.sohnerplastics.com). The Mega-Pack consists of a Base Pallet and matching Lid with locking mechanism and a Sleeve. They fold down for the return trip, saving money in shipping costs. They are lightweight, easy to handle by one person; no need for a fork lift.

We developed special inside dividers to safely contain the Solar Panels. The dividers are either Thermoformed or fabricated out of Foam, for Class "A" surfaces and increased cushioning in shipping. These specially designed dividers perfectly contain the Solar Panel during shipping.

This new packaging offers increased protection in shipping, drastically reducing damage in shipping of the Solar Panels. It is very easy to load and unload the Mega-Pack, with no waste packaging material going to the dump. The new Solar Panel Returnable Packaging actually saves money and pays for itself in less than 3 months. The Mega-Packs are very durable and under normal conditions can last up to 5 years.

Thermoformed Dividers for Solar Panels

Complete Mega-Pack ready for shipping



Special Dividers protect the Solar Panel in shipping

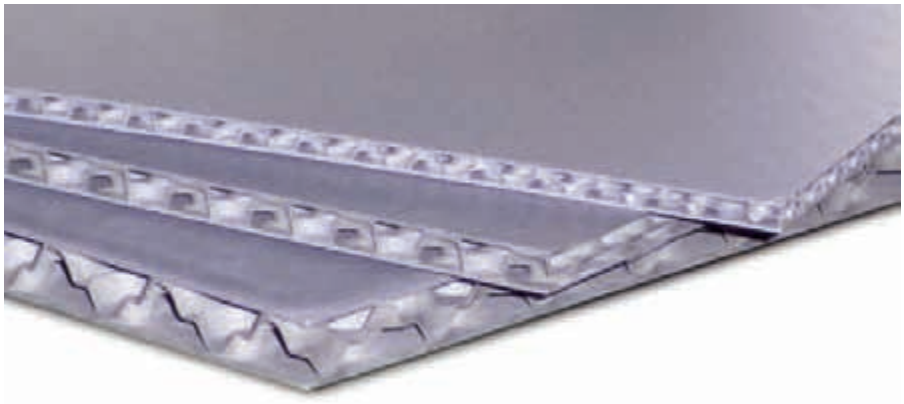
Notes:

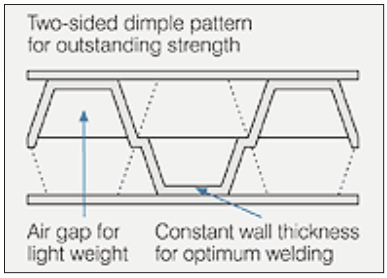
TriPly®

Tri-Laminate Material

Triply® is a three-layer polypropylene composite consisting of a central structural sheet sandwiched between two smooth exterior sheets. The key feature is the design of the geometry of the middle structural sheet which provides the exceptional rigidity in all directions. Constant wall thickness improves the quality of the welded bond between the structural middle and the outer sheets, further improving rigidity.

Polypropylene is 100% recyclable. It is manufactured in 2,100mm width and any required length. Available in standard gray or any custom color. Options include: talcum additive for increased strength, UV resistant, ESD conductivity of 10/4 to 10/8 ohms, custom imprinting.





ADVANTAGES:

- Extremely Lightweight and Rigid
- High Compressive and Impact Strength
- Smooth and Level Surface
- Moisture Resistance
- Suitable for Contact with Food and Water
- Compatible with most Printing Processes
- Excellent Insulation
- Excellent Chemical Resistance
- Custom Sizes Available

AVAILABLE SIZES:

- Standard sheet size: 1,981mm x 2,235mm (78"x88")
- Special Order up to 2,100mm Wide by any Required Length
- Custom Fabricated Modules and Sleeves.

OPTIONS:

- Custom Sizes
- Custom Colors
- Custom Imprinting
- ESD Conductive 10/4 to 10/8 ohms
- UV Resistant
- Talcum Additive for Increased Strength

TriPly 3.5
Specific Weight: ..... **1000 g/m²**
Thickness: ..... **3.5 mm**

TriPly 3.8
Specific Weight: ..... **1500 g/m²**
Thickness: ..... **3.8 mm**

TriPly 5.0
Specific Weight: ..... **1000 g/m²**
Thickness: ..... **5.0 mm**

TriPly 5.4
Specific Weight: ..... **1500 g/m²**
Thickness: ..... **5.4 mm**

TriPly 5.9
Specific Weight: ..... **2000 g/m²**
Thickness: ..... **5.9 mm**

TriPly 6.5
Specific Weight: ..... **2500 g/m²**
Thickness: ..... **6.5 mm**

TriPly 9.7
Specific Weight: ..... **2000 g/m²**
Thickness: ..... **9.7 mm**

TriPly 10.0
Specific Weight: ..... **2500 g/m²**
Thickness: ..... **10.0 mm**

TriPly 10.3
Specific Weight: ..... **3000 g/m²**
Thickness: ..... **10.3 mm**

TriPly 10.4
Specific Weight: ..... **3500 g/m²**
Thickness: ..... **10.4 mm**

TriPly 11.0
Specific Weight: ..... **4000 g/m²**
Thickness: ..... **11.0 mm**

Note: Sheet Thickness Tolerance is +/- 5%

Excellent Alternative to Con-Pearl®

Con-Pearl is a Registered Trademark of Friedola Gebr. Holzapfei GMBH

TriPly: Performance Data

Properties:	TriPly 3 1000 g/m²	TriPly 5 1500 g/m²	TriPly 10 3000 g/m²
Area Weight:	1059 g/m2	1638 g/m2	2939 g/m2
Overall Thickness:	3.1 mm	5.8 mm	10.7 mm
Density:	0.34 g/cm³	0.29 g/cm³	0.28 g/cm³
Tensile Strength MD:	1026 N/50 mm	1677 N/50 mm	2353 N/50 mm
Tensile Strength TD:	1220 N/50 mm	1506 N/50 mm	2179 N/50 mm
Elongation at Break MD:	42 %	41 %	15 %
Elongation at Break TD:	38 %	31 %	17 %
Flexural Strength MD:	11.3 N/mm²	11.4 N/mm²	8.9 N/mm²
Flexural Strength TD:	11.2 N/mm²	10.8 N/mm²	8.1 N/mm²
Flexural Modulus of Elasticity MD:	489 N/mm²	797 N/mm²	918 N/mm²
Flexural Modulus of Elasticity TD:	577 N/mm²	734 N/mm²	772 N/mm²
Puncture Resistance Ultimate Force:	576 N	954 N	1052 N
Puncture Resistance Work:	5.0 J	9.6 J	13.8 J
Edge Crush Resistance:	9.3 kN/m	27.8 kN/m	53.4 kN/m
Surface Crush Resistance:	775 kN/m²	1300 kN/m²	750 kN/m²
Dimensional Stability:	< 0.1 %	< 0.1 %	< 0.1 %
Cold Impact Strength:	250 mm	250 mm	230 mm
Combustion Behaviour:	29 mm/min	20 mm/min	27 mm/min

MD = Machine Direction
TD = Traverse Direction

Source of data: Test report 63820/04 from Süddeutsches Kunststoff-Zentrum (SKZ). Although all data provided is correct and reliable, users are advised to conduct their own tests to determine suitability for their specific application.

Chemical Resistance of Plastic Resins

	PP (TriPly)	*PE*	*PB*	*Rigid PVC*	*Flexible PVC*	*PS*	*SB*	*SAN*	*ABS*	*ASA*	*PMMA*	*PC*
Acetic acid, concentrated:	●	●	●	◐	○	◐	◐	○	◐	○	○	○
Acetone:	●	◐	○	○	○	○	○	○	○	○	○	○
Alcholic beveages:	●	●	●	●	●	●	●	●	●	●	◐	●
Ammonia, aqueous:	●	●	●	●	●	●	●	●	●	●	●	○
Benzene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Diesel fuel:	●	●	●	●	◐	◐	●	●	●	●	●	●
Dishwashing soap:	●	●	●		◐							●
Flourinated hydrocarbons:	◐	○	◐	○	○	○	○	○	○	◐	◐	○
Fruit juices:	●	●	●	●		●	●	●	●	●	●	●
Hydroflouric acid, up to 20%:	●	●	●	●		●	●	●	●	●	◐	●
Hydroflouric acid, up to 35%:	●	●	●	●	◐	●	●	◐	◐	●	◐	◐
Lundry detergents:	●	●	●	●	◐	●	●	●	●	●	●	●
Methanol:	●	●	●	●	○	●	●	◐	◐	◐	○	○
Milk:	●	●	●	●	◐	●	●	●	●	●	●	●
Motor oil:	●	●	●	●	◐	◐	◐	●	●	●	●	●
Ozone:	◐	◐	◐	●	◐	●	◐	●	●	●	●	●
Petrol (gasoline):	◐	◐	◐	●	○	○	○	●	●	●	●	●
Potassium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Silicone oil:	●	●	●	●	●	●	●	●	●	●	●	●
Soap solution, aqueous:	●	●	●	●	●	◐	◐	●	●	●	●	●
Sodium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Sulfuric acid, up to 40%:	●	●	●	●	◐	●	●	●	●	●	◐	●
Toluene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Trichloroethylene:	○	○	○	○	○	○	○	○	○	○	○	○
Vegetable oils/vegetable fats:	●	●	●	●	○	●	●	●	●	●	●	●
Water/salt water, cold:	●	●	●	●	●	●	●	●	●	●	●	●
Water, hot:	●	●	●	◐	◐	●	●	●	●	●	●	◐

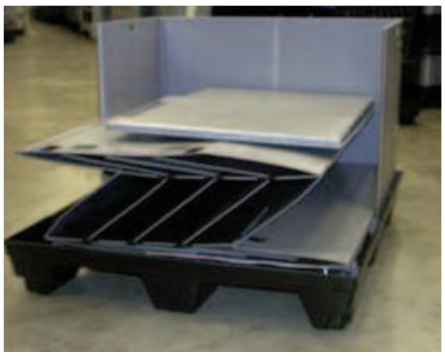
● = Resistant ◐ Conditionally Resistant ○ Not Resistant

All information above, while provided to the best of our knowledge and experience, is provided soley as a general guide and should be confirmed by testing users' specific applications.

Special Applications:

Sohner Plastics utilizes TriPly in the manufacturing of it's durable MEGA-PACK returnable/reusable packaging systems, pallet sleeves, dividers, and more.

We can design and manufacture any custom application to your exact needs.



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Visit us on the Internet at: **http://www.sohnerplastics.com**

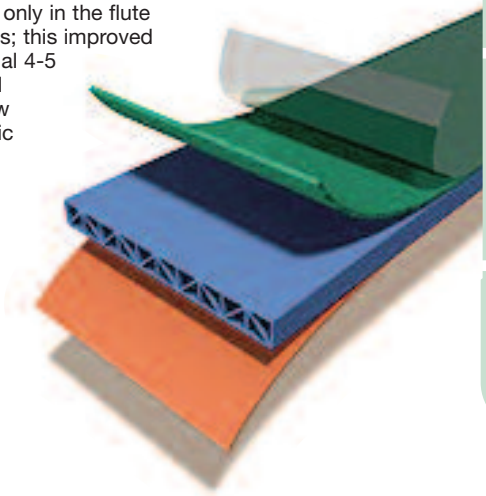
Sohner Plastics

Cross X

Double-Wall, Extra Rigid Polypropelene Sheets

Totally new design with cross members forming the medium and connected to the inner and outer walls. The vertical walls offers exceptional strength and rigidity to the polypropylene sheet. The structural cross members allows the structure to take forces in all directions not only in the flute direction like standard plastic corrugated sheets; this improved cross section design makes the Cross X material 4-5 times stronger and more durable than standard plastic corrugated sheet. The tests results show that Cross X exceeds the performance of plastic corrugated many times over. Cross X achieves this performance at a comparable price to traditional plastic corrugated.

The new Cross X polypropylene material can be used in all the standard applications where plastic corrugated is used, like packaging, boxes, sleeves etc. but with significant cost savings due to the increased durability of the Cross X material over the standard plastic corrugated.



Cross X 8.0

Specific Weight: ..... **2000 g/m²**
Thickness: ..... **8.0 mm**

Cross X 9.0

Specific Weight: ..... **1750 g/m²**
2000 g/m²
Thickness: ..... **9.0 mm**

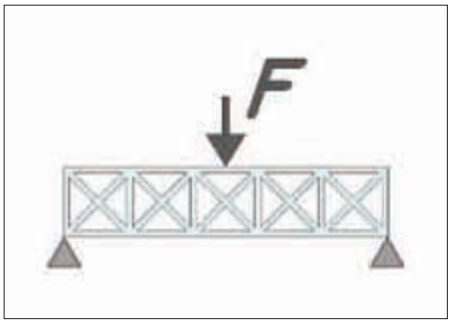
Cross X 10.0

Specific Weight: ..... **1800 g/m²**
2000 g/m²
2500 g/m²
2700 g/m²
Thickness: ..... **10.0 mm**

Cross X 12.0

Specific Weight: ..... **2700 g/m²**
3000 g/m²
Thickness: ..... **12.0 mm**

Note: Sheet Thickness Tolerance is +/- 5%



The internal structural design distributes the bending forces over the diagonal and vertical members, conferring exceptional strength and rigidity to the material.

ADVANTAGES:

- **Extremely Lightweight and Rigid**
- **High Compressive and Impact Strength**
- **Smooth and Level Surface**
- **Moisture Resistance**
- **Suitable for Contact with Food and Water**
- **Compatible with most Printing Processes**
- **Excellent Insulation**
- **Excellent Chemical Resistance**
- **Custom Sizes Available**

OPTIONS:

- **Corona Treated**
- **Custom Sizes**
- **Custom Colors**
- **Custom Imprinting**
- **ESD Conductive 10/4 to 10/8 ohms**
- **UV Resistant**
- **Talcum Additive for Increased Strength**
- **Fire Resistant**

AVAILABLE SIZES:

- **Standard sheet size: 1,981mm x 2,235mm (78"x88")**
- **Special Order up to 2,400mm (94.5") Wide by any Required Length**
- **Custom Fabricated Modules and Sleeves.**

Cross X: Performance Data

Properties:	
Area Weight:	3000 g/m2
Overall Thickness:	10 mm ± 0.5mm
Tolerance:	0.1 %
Tensile Strength:	2200 N/mm²
Elongation at Break:	20 %
Surface Crush Resistance:	800 kN/m²

Bending Strength:	Bending in mm:	
Load kN/m²	**Cross**	**Parallel**
12	8	11
24	15	19
37	20	25
49	26	33
61	34	42

Note: Sheet Thickness Tolerance is +/- 5%

Chemical Resistance of Plastic Resins

	PP (Cross X)	*PE*	*PB*	*Rigid PVC*	*Flexible PVC*	*PS*	*SB*	*SAN*	*ABS*	*ASA*	*PMMA*	*PC*
Acetic acid, concentrated:	●	●	●	◐	○	◐	◐	○	◐	○	○	○
Acetone:	●	◐	○	○	○	○	○	○	○	○	○	○
Alcholic beveages:	●	●	●	●	●	●	●	●	●	●	◐	●
Ammonia, aqueous:	●	●	●	●	●	●	●	●	●	●	●	○
Benzene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Diesel fuel:	●	●	●	●	◐	◐	●	●	●	●	●	●
Dishwashing soap:	●	●	●		◐							●
Flourinated hydrocarbons:	◐	○	◐	○	○	○	○	○	○	◐	◐	○
Fruit juices:	●	●	●	●		●	●	●	●	●	●	●
Hydroflouric acid, up to 20%:	●	●	●	●		●	●	●	●	●	◐	●
Hydroflouric acid, up to 35%:	●	●	●	●	◐	●	●	◐	◐	●	◐	◐
Lundry detergents:	●	●	●	●	◐	●	●	●	●	●	●	●
Methanol:	●	●	●	●	○	●	●	◐	◐	◐	○	○
Milk:	●	●	●	●	◐	●	●	●	●	●	●	●
Motor oil:	●	●	●	●	◐	◐	◐	●	●	●	●	●
Ozone:	◐	◐	◐	●	◐	●	◐	●	●	●	●	●
Petrol (gasoline):	◐	◐	◐	●	○	○	○	●	●	●	●	●
Potassium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Silicone oil:	●	●	●	●	●	●	●	●	●	●	●	●
Soap solution, aqueous:	●	●	●	●	●	◐	◐	●	●	●	●	●
Sodium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Sulfuric acid, up to 40%:	●	●	●	●	◐	●	●	●	●	●	◐	●
Toluene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Trichloroethylene:	○	○	○	○	○	○	○	○	○	○	○	○
Vegetable oils/vegetable fats:	●	●	●	●	○	●	●	●	●	●	●	●
Water/salt water, cold:	●	●	●	●	●	●	●	●	●	●	●	●
Water, hot:	●	●	●	◐	◐	●	●	●	●	●	●	◐

● = Resistant ◐ Conditionally Resistant ○ Not Resistant

All information above, while provided to the best of our knowledge and experience, is provided soley as a general guide and should be confirmed by testing users' specific applications.

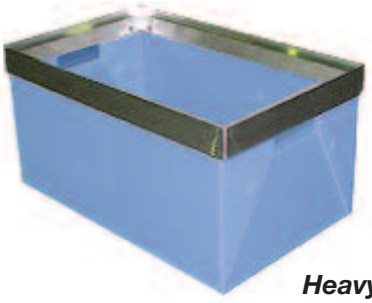
Special Applications:

Sohner Plastics utilizes CrossX in a variety of applications.

We can design and manufacture any custom application to your exact needs.

Shows and POS Displays

Partitions



Heavy-Duty Boxes

Interiors for RV's and Specialty Vehicles

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Visit us on the Internet at: **http://www.sohnerplastics.com**

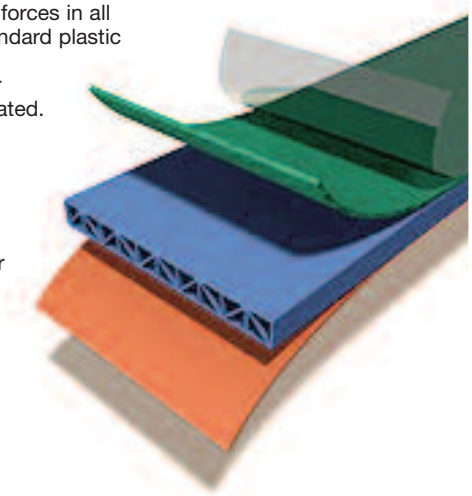
Sohner Plastics

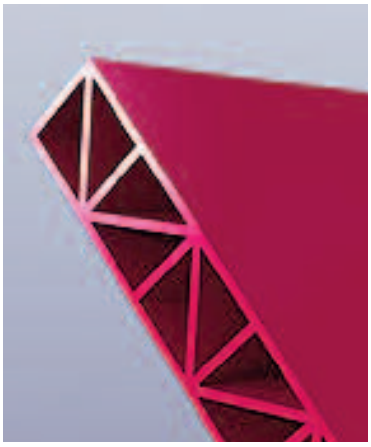
Cross M

Double-Wall, Extra Rigid Polypropelene Sheets

Totally new design with diagonal members, in addition to the vertical ones, connecting the double outside walls and the vertical walls confers exceptional strength and rigidity to the polypropylene sheet. The structural diagonal members allows the structure to take forces in all directions not only in the flute direction like standard plastic corrugated; this improved cross section design makes the Cross M material 4-5 times stronger and more durable than standard plastic corrugated. The tests results of equivalent materials shows that Cross M performance exceeds many times, in all respects the plastic corrugated, at about the same cost.

The new Cross M polypropylene material can be used in all standard applications as used for standard plastic corrugated. Applications include packaging, boxes, sleeves, etc., but with significant cost savings due to the increased durability of the Cross M material over the standard plastic corrugated.





ADVANTAGES:

- Extremely Lightweight and Rigid
- High Compressive and Impact Strength
- Smooth and Level Surface
- Moisture Resistance
- Suitable for Contact with Food and Water
- Compatible with most Printing Processes
- Excellent Insulation
- Excellent Chemical Resistance
- Custom Sizes Available

OPTIONS:

- Corona Treated
- Custom Sizes
- Custom Colors
- Custom Imprinting
- ESD Conductive 10/4 to 10/8 ohms
- UV Resistant
- Talcum Additive for Increased Strength
- Fire Resistant

AVAILABLE SIZES:

- Standard sheet size: 1,981mm x 2,235mm (78"x88")
- Special Order up to 2,400mm (94.5") Wide by any Required Length
- Custom Fabricated Modules & Sleeves.

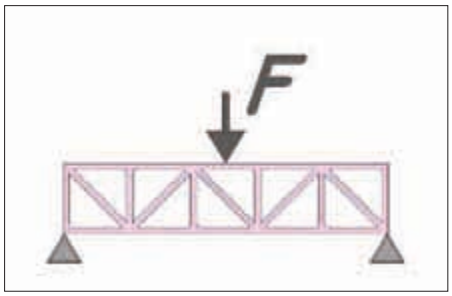
Cross M 5.0

Specific Weight: ..... **1250 g/m²**
1500 g/m²
Thickness: ..... **5.0 mm**

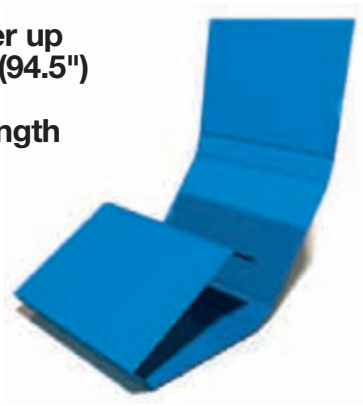
Cross M 6.0

Specific Weight: ..... **1500 g/m²**
1800 g/m²
Thickness: ..... **6.0 mm**

Note: Sheet Thickness Tolerance is +/- 5%



The internal structural design distributes the bending forces over the diagonal and vertical members, conferring exceptional strength and rigidity to the material.



Cross M: Performance Data

Properties:	
Area Weight:	1500 g/m2
Overall Thickness:	5 mm ± 0.5mm
Tolerance:	0.1 %
Tensile Strength:	2200 N/mm²
Elongation at Break:	20 %
Surface Crush Resistance:	600 kN/m²

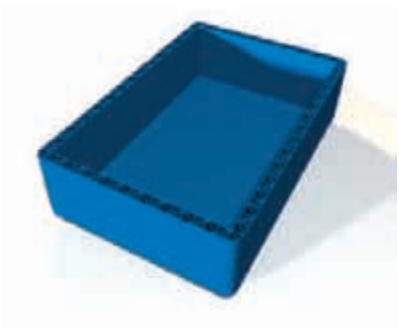
Bending Strength:	Bending in mm:	
Load kN/m²	**Cross**	**Parallel**
12	18	20
18	22	26
24	29	34
31	36	48

Note: Sheet Thickness Tolerance is +/- 5%

Special Applications:

Sohner Plastics utilizes Cross M in a variety of applications.

We can design and manufacture any custom application to your exact needs.



Chemical Resistance of Plastic Resins

	PP (Cross M)	*PE*	*PB*	*Rigid PVC*	*Flexible PVC*	*PS*	*SB*	*SAN*	*ABS*	*ASA*	*PMMA*	*PC*
Acetic acid, concentrated:	●	●	●	◐	○	◐	◐	○	◐	○	○	○
Acetone:	●	◐	○	○	○	○	○	○	○	○	○	○
Alcholic beveages:	●	●	●	●	●	●	●	●	●	●	◐	●
Ammonia, aqueous:	●	●	●	●	●	●	●	●	●	●	●	○
Benzene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Diesel fuel:	●	●	●	●	◐	◐	●	●	●	●	●	●
Dishwashing soap:	●	●	●		◐							●
Flourinated hydrocarbons:	◐	○	◐	○	○	○	○	○	○	◐	◐	○
Fruit juices:	●	●	●	●		●	●	●	●	●	●	●
Hydroflouric acid, up to 20%:	●	●	●	●		●	●	●	●	●	◐	●
Hydroflouric acid, up to 35%:	●	●	●	●	◐	●	●	◐	◐	●	◐	◐
Lundry detergents:	●	●	●	●	◐	●	●	●	●	●	●	●
Methanol:	●	●	●	●	○	●	●	◐	◐	◐	○	○
Milk:	●	●	●	●	◐	●	●	●	●	●	●	●
Motor oil:	●	●	●	●	◐	◐	◐	●	●	●	●	●
Ozone:	◐	◐	◐	●	◐	●	◐	●	●	●	●	●
Petrol (gasoline):	◐	◐	◐	●	○	○	○	●	●	●	●	●
Potassium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Silicone oil:	●	●	●	●	●	●	●	●	●	●	●	●
Soap solution, aqueous:	●	●	●	●	●	◐	◐	●	●	●	●	●
Sodium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Sulfuric acid, up to 40%:	●	●	●	●	◐	●	●	●	●	●	◐	●
Toluene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Trichloroethylene:	○	○	○	○	○	○	○	○	○	○	○	○
Vegetable oils/vegetable fats:	●	●	●	●	○	●	●	●	●	●	●	●
Water/salt water, cold:	●	●	●	●	●	●	●	●	●	●	●	●
Water, hot:	●	●	●	◐	◐	●	●	●	●	●	●	◐

● = Resistant ◐ Conditionally Resistant ○ Not Resistant

All information above, while provided to the best of our knowledge and experience, is provided soley as a general guide and should be confirmed by testing users' specific applications.

Call Us Today at: **734-222-4847** e-mail: **sales@sohnerplastics.com**
Visit us on the Internet at: **http://www.sohnerplastics.com**

Sohner Plastics

Standard H

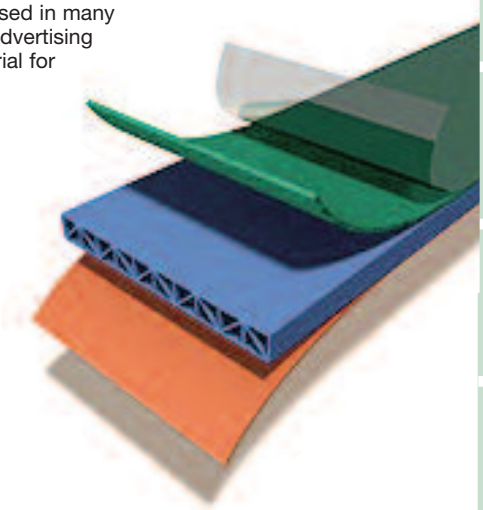
Thin Wall Polypropelene Sheets

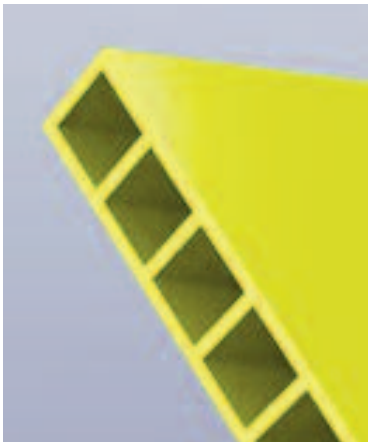
Our standard fluted plastic corrugated polypropylene sheets are manufactured to the highest quality using modern “air cushion” system to produce a flat surface with satin effect.

Light weight and durable this material can be used in many applications instead of corrugated paper. The advertising and graphic houses have been using this material for political campaigns, point of sale signage and boxes, indoor or outdoor signs, special event advertising, etc

The Standard H sheets are used successfully in fabricating boxes and containers with or without laminating protective spun bond, or other materials for Class A surfaces.

The polypropylene is 100% recyclable and environmental friendly. Testing of comparable materials indicates that plastic corrugated performance exceeds many times that of cardboard.





Extra Flat Surface.
Perfect for Printing.
Corona Treated.

Standard H 2.0

Specific Weight: ..... **280 g/m²**
350/400 g/m²
Thickness: ..... **2.0 mm**

Standard H 2.5

Specific Weight: ..... **350 g/m²**
450 g/m²
Thickness: ..... **2.5 mm**

Standard H 3.0

Specific Weight: ..... **450 g/m²**
600/800 g/m²
Thickness: ..... **3.0 mm**

Standard H 3.5

Specific Weight: ..... **650 g/m²**
800 g/m²
Thickness: ..... **3.5 mm**

Standard H 4.0

Specific Weight: ..... **650 g/m²**
800/1000 g/m²
Thickness: ..... **4.0 mm**

Standard H 5.0

Specific Weight: ..... **650 g/m²**
1250/1500 g/m²
Thickness: ..... **5.0 mm**

Standard H 6.0

Specific Weight: ..... **1750 g/m²**
2000 g/m²
Thickness: ..... **6.0 mm**

Note: Sheet Thickness Tolerance is +/- 5%

ADVANTAGES:

- **Extremely Lightweight and Rigid**
- **High Compressive and Impact Strength**
- **Smooth and Level Surface**
- **Moisture Resistance**
- **Suitable for Contact with Food and Water**
- **Compatible with most Printing Processes**
- **Excellent Insulation**
- **Excellent Chemical Resistance**
- **Custom Sizes Available**

AVAILABLE SIZES:

- **Standard sheet size: 1,981mm x 2,235mm (78"x88")**
- **Special Order up to 2,400mm (94.5") Wide by any Required Length**
- **Custom Fabricated Modules and Sleeves.**

Chemical Resistance of Plastic Resins

	PP (Standard H)	PE	PB	Rigid PVC	Flexible PVC	PS	SB	SAN	ABS	ASA	PMMA	PC
Acetic acid, concentrated:	●	●	●	◐	○	◐	◐	○	◐	○	○	○
Acetone:	●	◐	○	○	○	○	○	○	○	○	○	○
Alcholic beveages:	●	●	●	●	●	●	●	●	●	●	◐	●
Ammonia, aqueous:	●	●	●	●	●	●	●	●	●	●	●	○
Benzene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Diesel fuel:	●	●	●	●	◐	◐	●	●	●	●	●	●
Dishwashing soap:	●	●	●		◐							●
Flourinated hydrocarbons:	◐	○	◐	○	○	○	○	○	○	◐	◐	○
Fruit juices:	●	●	●	●		●	●	●	●	●	●	●
Hydroflouric acid, up to 20%:	●	●	●	●		●	●	●	●	●	◐	●
Hydroflouric acid, up to 35%:	●	●	●	●	◐	●	●	◐	◐	●	◐	◐
Lundry detergents:	●	●	●	●	◐	●	●	●	●	●	●	●
Methanol:	●	●	●	●	○	●	●	◐	◐	◐	○	○
Milk:	●	●	●	●	◐	●	●	●	●	●	●	●
Motor oil:	●	●	●	●	◐	◐	◐	●	●	●	●	●
Ozone:	◐	◐	◐	●	◐	●	◐	●	●	●	●	●
Petrol (gasoline):	◐	◐	◐	●	○	○	○	●	●	●	●	●
Potassium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Silicone oil:	●	●	●	●	●	●	●	●	●	●	●	●
Soap solution, aqueous:	●	●	●	●	●	◐	◐	●	●	●	●	●
Sodium hydroxide, conc.:	●	●	●	●	◐	●	●	●	●	●	◐	○
Sulfuric acid, up to 40%:	●	●	●	●	◐	●	●	●	●	●	◐	●
Toluene:	○	◐	◐	○	○	○	○	○	○	○	○	○
Trichloroethylene:	○	○	○	○	○	○	○	○	○	○	○	○
Vegetable oils/vegetable fats:	●	●	●	●	○	●	●	●	●	●	●	●
Water/salt water, cold:	●	●	●	●	●	●	●	●	●	●	●	●
Water, hot:	●	●	●	◐	◐	●	●	●	●	●	●	◐

● = Resistant ◐ Conditionally Resistant ○ Not Resistant

All information above, while provided to the best of our knowledge and experience, is provided soley as a general guide and should be confirmed by testing users' specific applications.

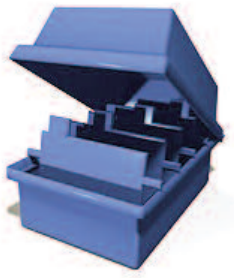
Special Applications:

Sohner Plastics utilizes Standard H in a variety of applications.

We can design and manufacture any custom application to your exact needs.



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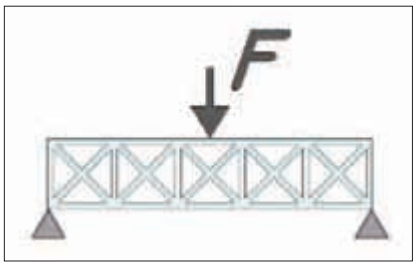
Sohner Plastics

AntiBak

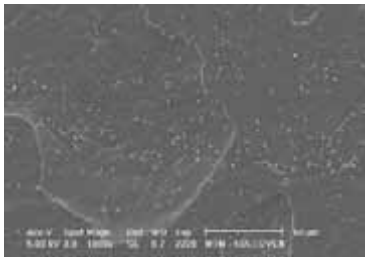
Antibacterial Polypropylene Sheet

AntiBak is our antibacterial sheet eliminating micro-organisms such as E. Coli, Salmonella, Pseudomonas A, Listeria, MRSA (commonly known as the "hospital bug") and many, many more. Total elimination of the bacteria population is reached in less than 24 hrs. Depending on the application (Hospital OR's, Clean Rooms ...), a shorter elimination time can be engineered. We match the elimination time to your needs!

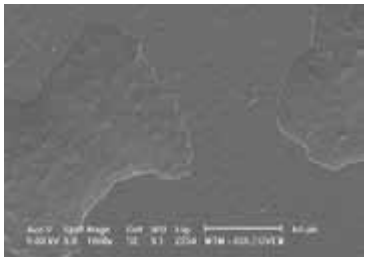


The internal structural design distributes the bending forces over the diagonal and vertical members, conferring exceptional strength and rigidity to the material.

Laboratory tests conducted at Industrial Microbiology Service Ltd., Hants, UK

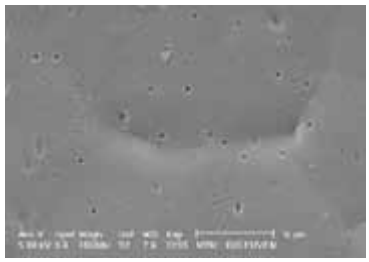


Regular Polypropylene Sheet



AntiBak Polypropylene Sheet

ESEM images taken after approx. 24 hr incubation with E. Coli.



AntiBak does not show any microbial growth!!

Cross X 8.0

Specific Weight: ..... **2000 g/m²**
Thickness: ..... **8.0 mm**

Cross X 9.0

Specific Weight: ..... **1500 g/m²**
2000 g/m²
Thickness: ..... **9.0 mm**

Cross X 10.0

Specific Weight: ..... **1800 g/m²**
2000 g/m²
2500 g/m²
2700 g/m²
Thickness: ..... **10.0 mm**

Cross X 12.0

Specific Weight: ..... **2700 g/m²**
3000 g/m²
Thickness: ..... **12.0 mm**

Cross X 13.0

Specific Weight: ..... **3000 g/m²**
3500 g/m²
Thickness: ..... **13.0 mm**

Cross M 5.0

Specific Weight: ..... **1250 g/m²**
1500 g/m²
Thickness: ..... **5.0 mm**

Cross M 6.0

Specific Weight: ..... **1500 g/m²**
1800 g/m²
Thickness: ..... **6.0 mm**

Protect Your Patients. AntiBak Kills Bacteria 24 Hours a Day.

ADVANTAGES:

- **Over 99% bacteria are removed after 24 hrs**
- **Shorter elimination times are possible**
- **"Everlasting" performance**
- **Patented controlled release antibacterial technology**
- **No disinfectants or aggressive chemicals needed**
- **Outdoor & indoor applications**
- **Non-toxic**
- **Permanent protection**
- **Non-corrosive**

APPLICATIONS:

- **Wall Panels (Clean Room, Hospital ORs)**
- **Ceiling Tiles**
- **POP Display Stands**
- **Toilet partitions**
- **Partitioning Panels**
- **Hospital Partitioning Walls and Furniture**
- **Fish/Poultry Farms**
- **Farm Stables**
- **Industrial Kitchens**
- **(Mobile) Toilet Cubicles**

AntiBak Kills All Bacteria:

Such as MRSA - Methicillin Resistant - At the moment there are 27 known pathogenic serotypes:

Staphylococcus aureus:
Aerobic Gram-positive coccus. Part of the normal flora of the skin, intestinal and genital tracts and mucous membranes of warm blooded animals. An opportunistic pathogen causing a wide variety of infections.

Escherichia coli:
Facultative anaerobic Gram-negative bacillus, a commensal organism, part of the normal intestinal flora of humans and animals. An opportunistic pathogen, causing enteric diseases. Commonly responsible for food poisoning outbreaks.

Escherichia coli 0157 H7:
Facultative anaerobic gram-negative bacillus serotype, found in animal intestines and faeces. Strain 0157 H7 is particularly pathogenic, causing gastroenteritis, sometimes fatal.

Listeria monocytogenes:
Gram-positive aerobic non spore forming bacillus, found in the intestinal tract of humans. Pathogenic if it enters the bloodstream, causing Listeriosis.

Pseudomonas aeruginosa:
Aerobic Gram-negative bacillus, colonies forming a characteristic blue green pigment with a urine-like odor. Ubiquitous in nature. Pathogenic, being a major cause of hospital acquired infections.

Salmonella enteritidis:
Gram-negative bacillus, with over 1000 known pathogenic serotypes, causing enteric or typhoid fever in humans. Found in the gut of animals, birds, and human carriers. Infection is passed through poor hygiene.

Does Not Create Resistant Bacteria.

Technical Specifications:

Property	Standard	Unit	Value
Antibacterial Performance (std grade)			
Bacterial reduction @24 hrs	JIS Z2801	%	>99.99
Physical Properties			
Density	ISO1183	g/cm³	0.9
Mechanical Properties			
Elongation at break	ISO 527-1	%	50
E-Modulus	ISO 527-1	MPa	1400 - 2000
Impact strength (notched)			
23° C	ISO 179	kJ/m²	40 - 45
0° C		kJ/m²	8 - 10
-20° C		kJ/m²	4 - 6
Thermal Properties			
Coefficient of Thermal Expansion	ISO 75	mm/m°C	0.11 – 0.15
Heat Deflection Temp. B	ISO 75	°C	95
Vicat Softening Temp. A	ISO 306	°C	150

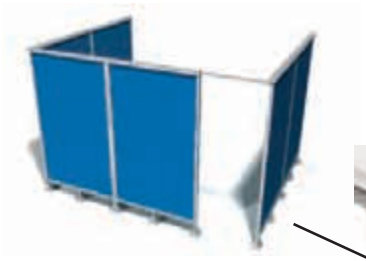
Standard Colors
Natural White, Black, Grey. Other colors available on request.

Standard Size
2400mm x 3000mm. Special sizes available on request.

Antibacterial Protection
Complete antibacterial protection on top, bottom and throughout material.

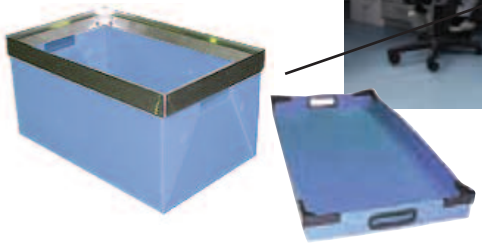
Special Applications:

Sohner Plastics utilizes AntiBak in a variety of medical and food service applications. We can design and manufacture any custom application to your exact needs. We also manufacture Thermoformed Plastic Trays, Bins and Boxes in antibacterial material.



Partitions, Walls and Shelving

Binders



Heavy-Duty Boxes and Trays

Table Tops

Interiors for Medical and Specialty Vehicles and more...

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Sohner Plastics

Thermoformed Pallet Feet

Custom made to fit any size pallet

The Thermoformed Pallet Feet come standard in HDPE but could be made of other materials. The Pallet Feet come in “corner” or “middle” design. They can be thermoformed in any material thickness, but we carry in stock 3 thicknesses: .160", .200" and .250".

They can be used for boxes or special size pallets, using TriPly or Cross X material for the deck of the pallet. The “lip” design allows for increased rigidity and payload.”

PF 160

Thickness: ..... **.160 in**
Material..... **HMWPE**
Maximum Payload..... **300 lbs**

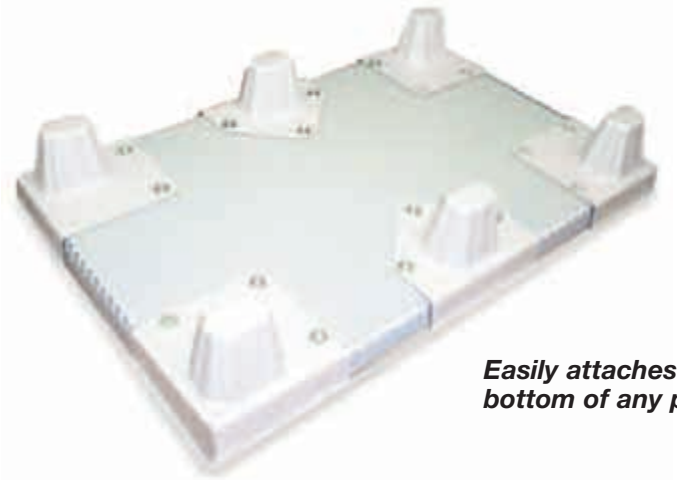
PF 200

Thickness: ..... **.200 in**
Material..... **HMWPE**
Maximum Payload..... **700 lbs**

PF 250

Thickness: ..... **.250 in**
Material..... **HMWPE**
Maximum Payload..... **1,100 lbs**

Available in 3 thicknesses for up to 1,100 lbs of payload.



Easily attaches to the bottom of any pallet.

Keeps product off the floor and allows for use of forklift.

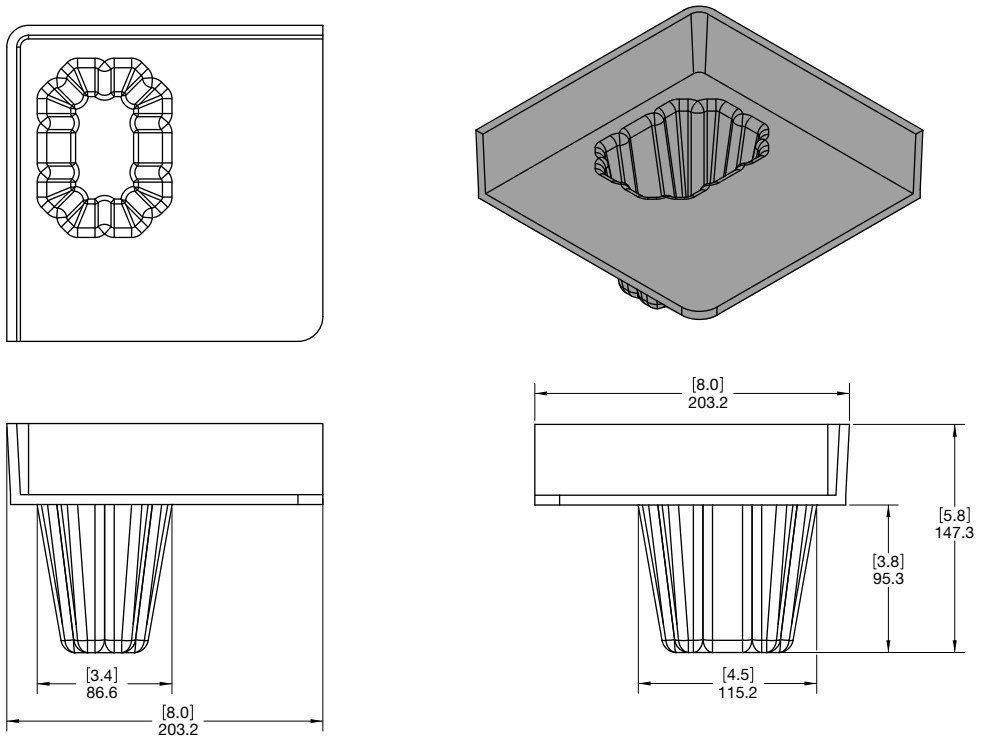
ADVANTAGES:

- **Extremely Lightweight and Rigid**
- **High Compressive and Impact Strength**
- **Moisture Resistance**
- **Suitable for Contact with Food and Water**
- **Excellent Chemical Resistance**

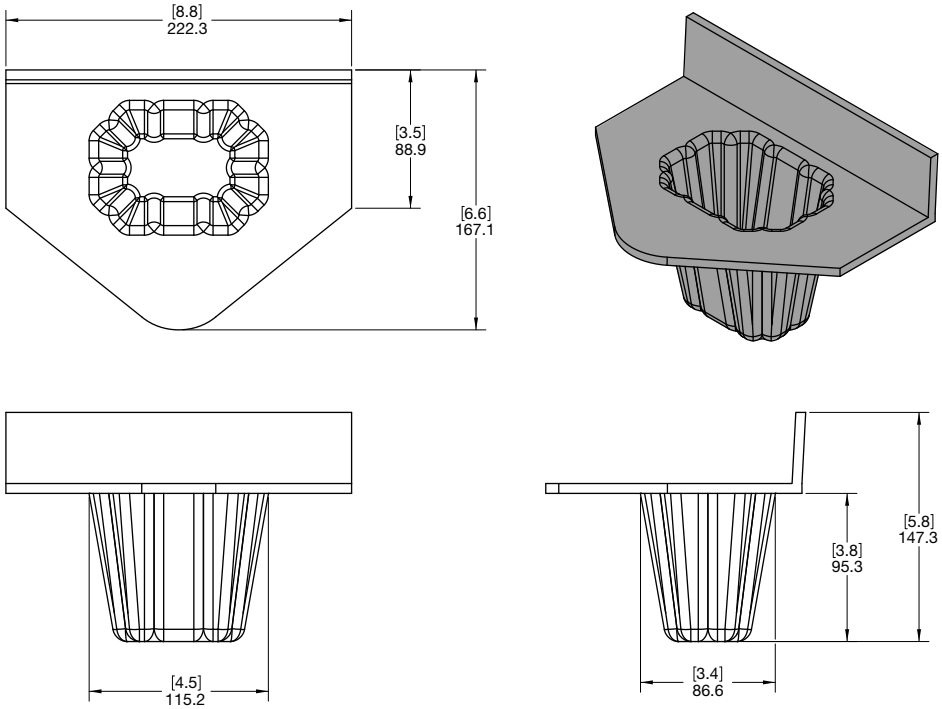
OPTIONS:

- **Custom Sizes**
- **Custom Colors**
- **Custom Imprinting**
- **ESD Conductive 10/4 to 10/8 ohms**
- **UV Resistant**

CORNER FOOT



CENTER FOOT



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Sohner Plastics

ISO 9001:2000 Certification

NSF-ISR

NSF International Strategic Registrations, Ltd.

A Subsidiary of NSF International
789 North Dixboro Road, Ann Arbor, Michigan 48105
(888) NSF-9000

NSF-ISR

Certificate of Registration

This certifies that the Quality Management System of

IPR AUTOMATION - SOHNER PLASTIC, L.L.C.

160 Staebler Rd.
Suite D
Ann Arbor, MI 48103

has been assessed by NSF-ISR and found to be in compliance to the following standard(s):

ISO 9001:2000

NSF

Scope of Registration:
Manufacturing of thermoformed plastic part trays for robotic equipment.

Quality System Registered to:
ISO 9001:2000

ANSI-RAB ACCREDITED

NSF-ISR Registration Program is Accredited by the American National Standards Institute - Registrar Accreditation Board

RVA MGMT. SYS. 8 v A C 238

Industrial Classification:

IAF:	14
SIC:	308
NACE:	DH 25

Certificate Number:	5Z381-1
Certificate Issue Date:	09/03/2002
Initial Registration Date*:	09/03/2002

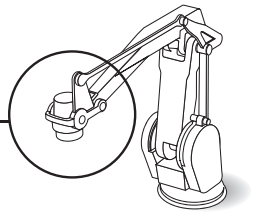
Kevan P. Lawlor, President
NSF-ISR

Authorized Registration and Accreditation Marks

This certificate is the property of NSF-ISR and must be returned upon request. *Company is audited for compliance at regular intervals. To verify registration call (888) NSF-9000 or visit our web site at www.nsfisr.org

"German Quality, American Ingenuity"

SohnerPlastics
Intelligent Automation Packaging



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