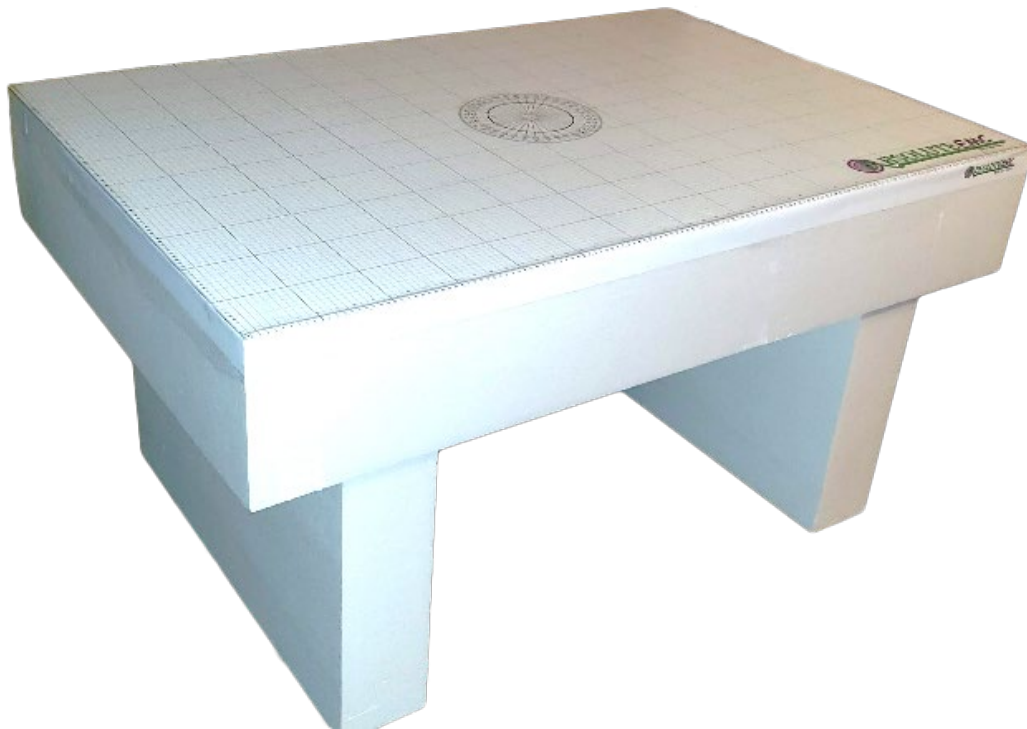


EPS Test Table



User Manual

Introduction

The Absolute EMC **EPS Test table** is designed to meet the low dielectric constant/permittivity requirements of many standards including CISPR 16. Expanded Polystyrene (EPS) is one of the few cost-effective materials available with a very low value close to Air. EPS is very similar to the trademarked material Styrofoam. The material has good compressive strength but can be compressed or damaged easily with the corners of objects. Please follow all warnings and proper care suggestions below. [See cautions on the next page.](#)

Included in shipment

Fully assembled Table

The top surface is affixed with a Vinyl Decal for surface protection.

Bottom of legs and corners have a coating for better durability, this is used sparingly.

All added materials have been selected for the best performance (low dielectric constant/permittivity). Since the other materials are not better than EPS, they are used sparingly.

Note: From the building process some imperfections on the surfaces of the table may exist at the time of delivery. None of these minor marks will affect the performance of the table.

¼" Acrylic glass

Used for protection during storage or to help distribute heavy loads from damaging the tabletop.

It comes with a protective paper coating; this can be removed.

2x sheets of fiber plywood

Used for shipping protection, can also be used for weight distribution for heavy loads approaching 500lb.

Unpacking

Please inspect the table upon delivery for shipping damage. If anything is noticed, please take pictures immediately and document findings in writing.

- Due to the size, it is suggested 2 people unpack the table.
 - The EPS material is soft and is easily chipped and deformed, if not handled with care.
 - Do not cut through the Cardboard Box, only cut tape apart to remove the box.
 - Do not roll or rest the table on any of its corners/edges. It must only sit flat on a surface.
1. Cut plastic wrap at the bottom, which is holding the table to the pallet.
The table is sitting on the short side to fit on the pallet.
Protective plywood is on the top and the bottom(legs) of the table.
 2. While it is still boxed it is possible to roll the table over so it sits on its feet (Side labeled Legs)
 3. Cut the tape to open the side which was on top, you can now see how the table is sitting
 4. Cut the tape and plastic wrap the rest of the way off of the box

Cautions

EPS is a very good product for this application but care is required to allow for a long life cycle and reduce damage.

- ✓ Do not sit or lay down on the table
- ✓ Do not lean items against the table
- ✓ Do not slide the table along the floor
 - Bottom of legs are reinforced with harden coating but lateral forces may reduce the integrity of the table
- ✓ Do not roll the table end over end, or allow the table to sit or rest on the corners
 - The corners can deform or crack
- ✓ Legs must remain flat on a flat surface to meet rated loading
- ✓ The weight of heavy objects must be distributed out over the surface of the table.
 - 3lb. EPS is rated at about 25lb per square inch, without deforming the surface.
 - For example, a 100lb. EUT which has 4 standoff (feet) it rests on
 - Needs to have a surface area of $\geq 1 \text{ in}^2$ for each foot
 - If the surface area is less, a stiff (non-conductive) material can be used to spread out the weight load.
- ✓ Do not place heavy objects on the edge or corners of the table
 - Items weight needs to be distributed as mentioned above

Moving the table

- The table can be moved with no items on top, with one person on each side (two people total)
- To move the table with one person, a furniture dolly (pictured) can be used. Pick up one end of the table and roll dolly under the leg. Set down the table and you may pick up the other end and roll the table easily on a flat surface.
Do not let the table sit on the furniture dolly for long periods.



Theory

An EUT support system with an overall low dielectric constant (permittivity) is required for higher and higher frequency testing. More standards are adding this as a requirement for testing to minimize the influence the support will have on the test results. For years wood has been used to make tables and to support EUTs. Wood is nonconductive, has good strength to hold heavy loads. However, wood can hold moisture, and over time reduce performance for such testing. The overall dielectric rating of wood is not high. But since a whole table is built out of it then the influence becomes greater. The influence of the support materials needs to be minimized.

The Absolute EMC's **EPS Test Table** is mostly made from Expanded Polystyrene (EPS) of 3lb./cubic foot density. EPS has a very low dielectric constant of about 1.04. Not many materials on the market have such a low value. It also does not absorb water over time, like wood. The major drawback to EPS is it is a softer material. Care must be taken at all time not to gouge or indent the services. Sharp corners of EUTs and other objects need to be kept away. Other materials are used to build the table and increase the function. A vinyl covering is placed on the top to help protect the surface. Vinyl has a higher Dielectric constant the EPS but it is still relatively low. It is a very thin decal, it does not add to the effects on the testing. Glue is used to bond the pieces together as well as the vinyl top. Glues are not rated with dielectric ratings. As with any material they will have some rating. However, only thin layers and amounts are used that it will not have an effect on performance.

Proper Use

The table must always be set on an even solid surface.

Lighter < 50 lb. items (EUTs) can be placed directly on top of the table.

For heavier items, care must be taken to make sure the surface will not deform. The use of materials to help distribute the weight can be used. Clear Acrylic (Plexiglass) can be used for distributing loads > 50 lb. up to 200lb. For heavier loads >200lb., additional material such as plywood can be used.

- ¼" Acrylic is provided to cover the whole tabletop. This, however, can be cut down to fit under the EUT only. It is shipped with a protective paper coating. This can be removed.
- Plywood (chipboard) is part of the packing material to ensure shipping but this can be reused for EUT weight distribution. It can be cut to size as needed.

Extra materials should be used sparingly as to reduce affects on your measurements.

Specifications

The **EPS Test Table** is a simple, inexpensive solution for your EMI testing. It is made from durable, expanded polystyrene (EPS) material and can be customized to your requirements. Complies with CISPR, ISO, & IEC requirements for having a low permittivity and can be used for additional standards. Top of the table is protected with a vinyl decal with a measurement grid in cm imprinted for easy EUT positioning

Table Specifications			
Table Size	Standard	W x L x H in. (W x L x H m.)	39.37 x 59 x 31.5 (1 x 1.5 x 0.8)
	Custom		Available
Weight load distributed		lb. (kg.)	500 (227)
Table weight		lb. (kg.)	64 (29)
Meeting requirements for high-frequency testing	CISPR 16		
Removable top for storage protection		¼" Acrylic	Clear
PHYSICAL PROPERTIES OF EXPANDED POLYSTYRENE ASTM C578			
Nominal Density		lb/ft ³ (kg/m ³)	3.00 (48)
Minimum Density		lb/ft ³ (kg/m ³)	3.00 (48)
Electrical Properties:			
dielectric strength			~2KV/mm
permittivity		up to 400 MHz	1.02-1.04
Thermal Resistance R-Value per inch	ASTM C518	25°F 40°F 75°F	5.10 5.05 4.60
Compressive Strength @ 10% deformation, min.	ASTM D1621	psi (kPa)	60.0 (414)
Compressive Strength <1% deformation		psi (kPa)	25 (172)
Flexural Strength, min.	ASTM C203	psi (kPa)	75.0 (517)
Water Vapor Permeance	ASTM E96	(max. perm., 1")	2.5
Water Absorption	ASTM C272	(max. % vol.)	2.0
Flame Spread	ASTM E84		< 25
Smoke Developed	ASTM E84		< 450
Max. Service Temperature	Long Term Intermittent	°F °F	167 180

Water and aqueous solutions of salts, acids, and alkalis do not affect molded polystyrene. Most organic solvents are not compatible with EPS. This should be taken into consideration when selecting adhesives, labels, and coatings for direct application to the product. All substances of unknown composition should be tested for compatibility.

Dielectric Constant (ε)		
EPS	1.02-1.04	
Acrylic	2.6	
Vinyl	2.8-4.5	
Plywood	2.5	Dry
Glue/Epoxy	2.5-6.0	

Cleaning Vinyl Top

Using the wrong cleaning products, however, will scratch, fade, and potentially break apart the adhesive that holds the sticker in place.

- Step 1

Moisten a paper towel with water and add a drop of liquid dish soap to the paper towel. The mild detergent will safely clean and remove grease and residue without harming or discoloring the decal.

- Step 2

Wipe the damp paper towel over the vinyl decal, using small circular movements.

- Step 3

Wipe once more with a dry paper towel to remove any leftover soap or residue.

Items you will need

Dish soap

Paper towels

Cleaning Plexiglass and Acrylic

There are a few ways to clean acrylic or plexiglass. When this type of clear plastic becomes dirty or appears slightly dull, you can use a variety of cleaning processes—all of which are detailed below. Some heavier cleaning processes even require power tools, depending on how damaged or dirty the acrylic is. Read this guide to find out all the best tricks and tips for cleaning acrylic.

Easy Clean

To clean acrylic and plexiglass that has slight blemishes or dirt, start off by clearing away any debris. Then, use a premium micro-fiber cloth with soapy water to clean the entire surface area. After wetting the cloth, be sure to lightly blot the surface, rather than applying pressure as you wipe. Too much pressure can actually result in more scratches. After you have wiped the entire piece of acrylic, use the dry side of the cloth to dry or buff the area. Buffing or polishing the acrylic surface reduces future stains. If there are any remaining streaks, rewet the cloth and dry again.



Choose Carefully: There are a couple of cleaning items that you'll want to stay away from. In fact, using the wrong cleaning product can completely damage your acrylic displays to the point that they become unusable!

- **Do not use paper towels** because they will not remove scratches and may even cause them. Stick with a micro-fiber type of cloth.
- **Avoid ammonia-based products, like Windex or other home glass cleaners,** because they contain harmful chemicals that will actually damage the surface leaving it cloudy looking. Soapy water is the safest and most effective cleaning solution for acrylic.

Advanced Cleaning & Repairing Plexiglass

A more elaborate and delicate way to get your acrylic looking as good as new is to scrape, sand, buff, or flame polish the durable plastic. Many manufactures and designers use these processes for commercial fabrication and custom-made displays. These methods are not for beginners, especially if you're unsure about damaging your products. However when done correctly, the finished surface of the acrylic will look almost new.

1. Scraping

Purchase a razor blade or another type of sharp scraping tool to eliminate any machine markings that may be left on the acrylic. Move the sharp instrument from side to side, evenly scraping off the excess and scratched acrylic. Be careful not to dig into the acrylic. You can avoid this by angling the tool at 10 degrees. Using the acrylic scraping method is also great for shaping any jagged or uneven edges.



2. Sanding

Sanding will not only remove machining marks but also produce a matte finish on your acrylic. You can use any form of sander including hand, disc, belt, or drum. The type of tool you use will probably depend on the size and surface area of your piece of acrylic.

Sand the acrylic just like you would with a piece of wood. Work your way across the surface with a more coarse sandpaper then move on to a finer sandpaper. For deep scratches, we recommend starting with a 220-grit or 320-grit paper and moving up to a 600-grit or 800-grit. Use light pressure and keep the sander moving at all times. This will avoid heat buildup and damage to the acrylic. Always wear a mask when sanding to avoid dust inhalation.



3. Buffing

Stationary polishing wheels are great for buffing acrylic back to a nice clear finish after its been sanded. To make sure you are less likely to overheat the acrylic, use an 8"-14" diameter, 2"-3" wide piece of bleached muslin with bias strips. This will allow the wheel to run much cooler. Make sure you clamp the acrylic in place so that it doesn't move when buffing.

The finished quality of the acrylic will depend on the type of polish compound you use. A medium cutting compound will result in a glossy finish. A higher, luster finish can be accomplished by applying a fast cutting compound followed by a fine compound. This is a longer process but it will give you the best finish.

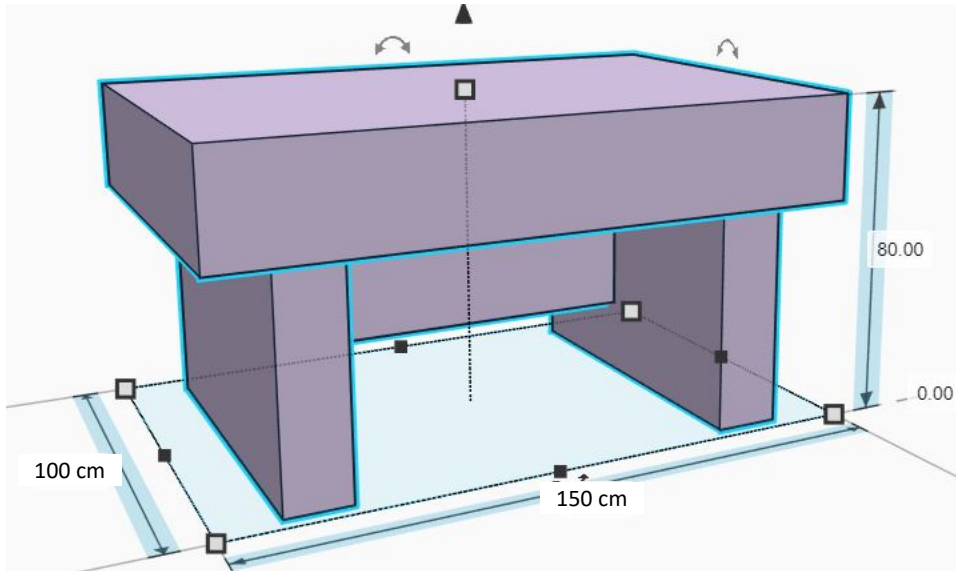


4. Flame Polishing

Using a normal hydrogen-oxygen torch with a #4 or #5 tip, gently melt the sanded, buffed, or machined edges of the acrylic. Doing so will provide a smooth glossy edge. Start by guiding the torch flame across the acrylic edge at a rate of approximately 3" - 4" per second. You want to heat the edges with swift motions. Make sure not to overshoot or heat the acrylic too closely, which will melt the acrylic and wreck the finish. If you move the flame too slowly or close stress, crazing, and bubbles will occur. If done right, the edges will have a clean, shiny finish that will make your furniture or display really stand out. Lastly, please be very careful whenever using high heat tools!



Standard Outer Dimensions (cm), Please specify any customize to your needs
Product dimensions will differ for custom sizes.



Foot Print Dimensions (cm), Please specify any customize to your needs

