

# *EPS* Test Table Lt



## User Manual

## Introduction

The Absolute EMC **EPS Test table Lt.** 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

### *Disassembled Table*

5 pieces, 1x top, 2x legs, 2x cross pieces

Supplies – glues and spatulas for spreading out glue

**The EPS material is soft, indentations are expected and common. Your order may arrive with some imperfections which can not be avoided. No structural cracks or indentations more significant than the size of your hand.**

## Unpacking

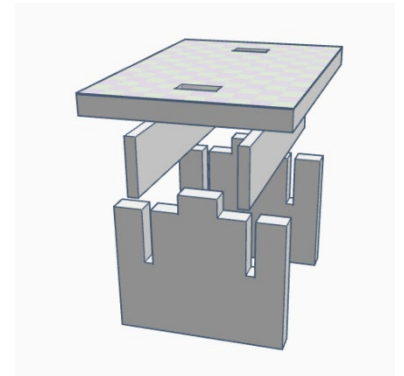
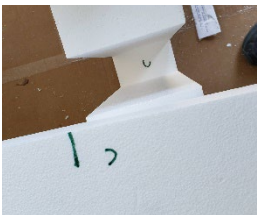
Please inspect the table upon delivery for shipping damage. If anything is noticed, please take pictures immediately and document findings in writing.

- Due to the size, it is suggested 2 people unpack the materials
- The EPS material is soft and is easily chipped and deformed if not handled with care.
- Do not cut through the Cardboard
- Do not roll or rest the table on any of its corners/edges. It must only sit flat on a surface.

Cut plastic wrap safely over wood sheets as not to cut EPS

## Build

1. The table is placed together in the following order
  - a. Stand legs up a few feet apart
  - b. Use cross supports marks to measure the distance between the legs
  - c. The cross-sections are labeled with letters corresponding to letters on the legs **Newer design is not labeled as pieces fit together more easily.**
  - d. The tabletop will fit over the top.
  - e. Once you have everything dry-fitted, you can take the top off and glue the pieces together.
2. **Glue each surface that will be touching. The glue used is polyurethane glue which is activated with water. Apply the glue to the narrow sides of the pices and wet the opposing side of each joint with a wet cloth or misting spray bottle. Make sure not to wet the glue or bottle.**
3. Be sure all pices are allined perpendiculer to each other during the gluing process



4. Use ample amount of glue and spread it out with the provided plastic spatulas. The glue will expand some filling in some gaps.
5. Once everything is glued and together. Weigh down the top with weighted materials.
6. Glue needs 24 hours to cure.

## 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
- ✓ 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 standoffs (feet) it rests on
    - It 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 the 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

A 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 1.06. 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 times not to gouge or indent the services. Sharp corners of EUTs and other objects need to be kept away. Glue is used to bond the pieces together. 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 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. HDPE can be used for distributing loads > 50 lb. up to 200lb.

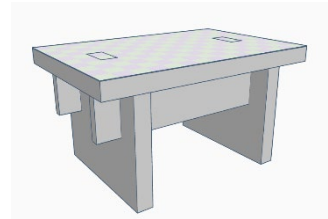
- Plywood (chipboard) is part of the packing material to ensure shipping, but this can be reused for EUT weight distribution. It can be cut to size as needed.

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

Dielectric Constant ( $\epsilon$ )		
<b>EPS</b>	1.02-1.04	
<b>Acrylic</b>	2.6	
<b>Vinyl</b>	2.8-4.5	
<b>Plywood</b>	2.5	Dry
<b>HDPE</b>	2.3-2.4	
<b>PP</b>	2.2-2.6	
<b>Glue/Epoxy</b>	2.5-6.0	

**Specifications**

**EPS Test Table Lt**



The **EPS Test Table Lt** 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 low permittivity and can be used for additional standards. The top is imprinted with a measurement grid in cm for easy EUT positioning. The table ships disassembled to allow for less expensive shipping. It can then be easily glued and assembled onsite. The total cost of the table, therefore, is greatly reduced.

<b>Table Specifications</b>			
<b>Table Size</b>	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
<b>Weight load distributed</b>		lb. (kg.)	200 (90)
<b>Table weight</b>		lb. (kg.)	50 (23)
<b>Meeting requirements for high-frequency testing</b>	CISPR 16		
<b>Removable top for storage protection</b>		¼" Acrylic	Clear
<b>PHYSICAL PROPERTIES OF EXPANDED POLYSTYRENE ASTM C578</b>			
<b>Nominal Density</b>		lb/ft <sup>3</sup> (kg/m <sup>3</sup> )	3.00 (48)
<b>Minimum Density</b>		lb/ft <sup>3</sup> (kg/m <sup>3</sup> )	3.00 (48)
<b>Electrical Properties:</b>			
<b>dielectric strength</b>			~2KV/mm
<b>Relative permittivity ε<sub>r</sub></b>		400 MHz (reduces for higher frequencies)	1.06
<b>Thermal Resistance R-Value per inch</b>	ASTM C518	25°F 40°F 75°F	5.10 5.05 4.60
<b>Compressive Strength @ 10% deformation, min.</b>	ASTM D1621	psi (kPa)	60.0 (414)
<b>Flexural Strength, min.</b>	ASTM C203	psi (kPa)	75.0 (517)
<b>Water Vapor Permeance</b>	ASTM E96	(max. perm., 1")	2.5
<b>Water Absorption</b>	ASTM C272	(max. % vol.)	2.0
<b>Capillarity</b>			none
<b>Flame Spread</b>	ASTM E84		< 25
<b>Smoke Developed</b>	ASTM E84		< 450
<b>Max. Service Temperature</b>	Long Term	°F	167
	Intermittent	°F	180

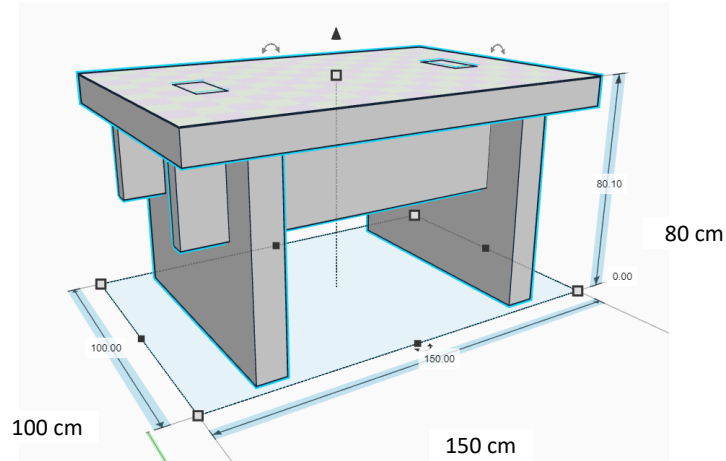
Water and aqueous solutions of salts, acids, and alkalis do not affect molded polystyrene. Most organic solvents are not compatible with EPS. This should be considered when selecting adhesives, labels, and coatings for direct application to the product. All substances of unknown composition should be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

**Options:**

Custom table sizes available, Cube, Spacers, Contact us for your needs  
(custom does not cost more)

Table with a vinyl sticker or hardened coating to protect the surface

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



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

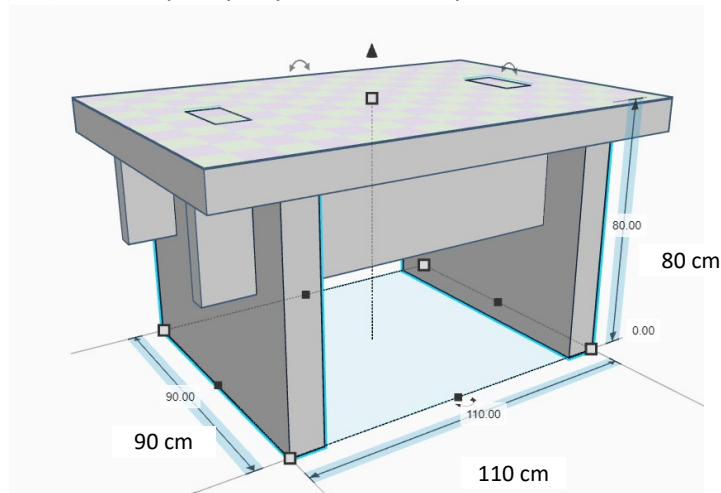


Illustration of Shipping Contents:

