

Polystyrene

Polystyrene plastic (PS), also known as polystyrol, has a density of 1.05 g/cm³, which makes it lighter than acrylic. Historically supplied in clear sheets, polystyrene is currently only supplied in milky white sheets. It is available in 25 x 25 cm sections of varying thickness.

Nominal thickness	Polystyrene	Model
1/51 in	0.5 mm	601-0020
1/32 in	0.8 mm	601-0032
1/16 in	1.6 mm	601-0062
1/8 in	3.2 mm	601-0125
1/4 in	6.3 mm	601-0250
1/2 in	12.7 mm	601-0500
1 in	25 mm	601-1000
2 in	50 mm	601-2000

Sections with Chamber Cavity

1 in	Farmer chambers except PR-06C	636-001
1 in	Capintec PR-06C	636-011
1 in	PTW N31013/N31003 – 0.3 cm ³	636-311
1 in	PTW N31011/31005 – 0.125 cm ³	636-511
1 in	PTW Markus N23343	636-701
1 in	PTW N23342	636-915
1 in	Capintec PS-033	636-711

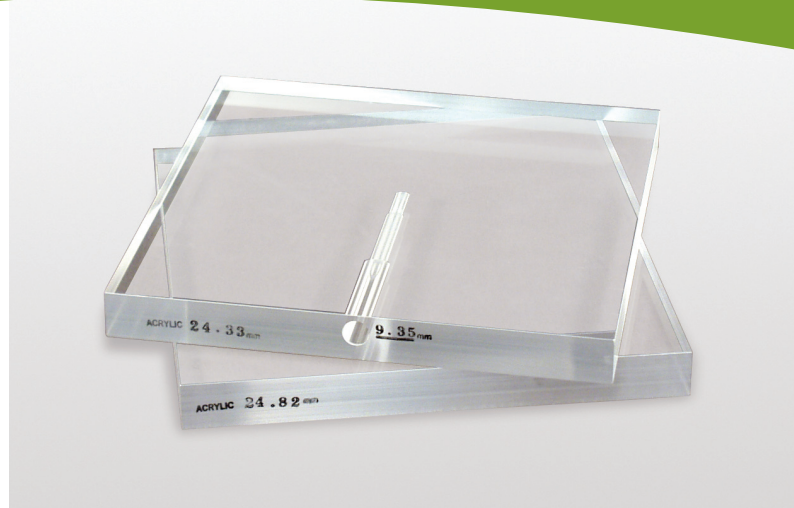
Acrylic

Acrylic phantom material is a clear plastic with the chemical formula (C₅H₈O₂)_n, polymethylmethacrylate (PMMA). It is also known under the trade names Lucite, Plexiglas and Perspex. Acrylic has a density of 1.185 g/cm³. It is available in 25 x 25 cm sections of varying thickness.

Nominal thickness	Acrylic	Model
1/32 in	0.8 mm	602-0032
1/16 in	1.6 mm	602-0062
1/8 in	3.2 mm	602-0125
1/4 in	6.3 mm	602-0250
1/2 in	12.7 mm	602-0500
1 in	25 mm	602-1000
2 in	50 mm	602-2000

Sections with Chamber Cavity

1 in	Farmer chambers except PR-06C	636-002
1 in	Capintec PR-06C	636-012
1 in	PTW N31013/N31003 – 0.3 cm ³	636-312
1 in	PTW N31011/31005 – 0.125 cm ³	636-512
1 in	PTW Markus N23343	636-702
1 in	PTW N23342	636-916
1 in	Capintec PS-033	636-712



Acrylic & Polystyrene Phantom Materials

A typical acrylic or polystyrene phantom is a 25 cm cube consisting of one of each fractional thickness, eight 1 in thick sections and one 1 in thick section which has an ion chamber cavity drilled at 1 cm from the nearest surface. This allows the calibration depth to be adjusted in 0.8 mm (1/32 in) increments over 1 cm for photon beams. A section for a plane-parallel chamber is machined to position the chamber flush with one surface. In this manner, depths can be achieved for calibrating electron beams in 0.8 mm (1/32 in) steps.

Economy is achieved by using standard thickness material in English System dimensions. Although the thickness tolerance can vary ±5%, the thickness of each section is individually measured and marked with permanent ink in metric units.

Separate sections are available for adding to an existing phantom or to assemble a phantom with custom dimensions.

Applications

- ▶ Output calibration
- ▶ Energy check
- ▶ Electron beam calibration
- ▶ Film dosimetry