

Data Sheet for Rigid PVC Foam Sheet (sometimes referred to as "Foamex")

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Introduction

Rigid PVC Foam Sheet is an excellent, cost effective lightweight material for plastic fabrication. Available in black or white (plus red, yellow, green and blue to special order) 3mm thick. The sheet sizes are 605x605mm but 1220x1220mm size sheets can be ordered as a special. The material provides versatility unmatched by other fabricating plastics.

- Both faces semi matt, ideal for printing and painting.
- Self extinguishing Class 1 fire rating.
- Weather and rot resistant.
- Can be nailed without splitting.
- Easy to machine, no specialist tooling.
- Fully thermoformable.

Shaping and Machining

Cutting and Sawing. Cut using a Stanley knife or saw it with woodsaws, bandsaws or similar but avoid using saws with very fine teeth eg. hacksaws as these tend to cause excess friction and leave a poor finish. For best results use tools designed for cutting plastics. Use a cutting speed of about 9500ft/min and a feed of 95ft/min. Poor finish can usually be attributed to blunt tools, poorly set up work, vibration and excess friction caused by too finely toothed blades.

Drilling. Use conventional drill bits and countersinks with no special sharpening. For best results the tip angle should be 100-110° with a pitch angle of 30°, cutting speed 150-1000ft/min.

Milling and Routering Horizontal, vertical or universal milling is straight forward providing the sheet is securely clamped between pieces of wood to protect its surface. Cutting speed 3000ft/min.

Edge and Surface Finishing. For smooth edges any normal woodworking or plastic cutting tools eg. Files, planes, sanders etc can be used. Avoid excessive heat caused by friction. Surface finishing is not recommended as it will damage the surface and expose open cells.

Fixing and Joining

Nailing Unlike many plastics Rigid PVC Foam Sheet can be nailed within 6mm from its edge without splitting, provided the nail point has been blunted. If bolts or screws are being used ensure that large enough washers are used to spread the compressive load.

Adhesive Bonding For trouble free bonding ensure that surfaces are clean and free from grease, and most importantly are flush to each other. Suitable adhesives include most solvent types designed for rigid PVC or Tensol and Fusion Cements. For sticking the sheet to other materials most popular contact adhesives can be used such as EvoStick Impact or EvoStick TX 528.

Thermoforming

Bending Line bending is swift and easy using conventional equipment. The sheet should be evenly heated and after bending it should be supported until cool. Timing will be less than with solid PVC materials.

Vacuum Forming The uniform closed cell structure of the sheet allows it to be vac formed using any standard machines designed for sheet plastics although if complex or deep drawn forms are being considered then a double sided heater will be necessary. The working cycle will generally be shorter and both the radii and draw depth are limited to the extent that the material will stretch. In its thermo elastic range is 115-130°C the material has good extensibility and retains its smooth surface a maximum draw ratio H:D of approx 1:1.25 is possible although contour definition is somewhat limited. To improve contour definitions a thermoplastic temperature range of 160-170°C is required, extensibility is then somewhat reduced and there will also be some limited changes in surface finish. As the material has a low heat capacity low conductivity plug materials are essential and moulds need designing to ensure rapid material flow. Fine temperature control is vital as the material decomposes at temperatures above 180°C

Surface Finishes

Painting. Paint adheres well to the semi matt surface and primers are not normally required. Suitable paints include vinyls, acrylic lacquers, two part polyurethanes and other paints suitable for PVC.

Printing The screen print process gives outstanding results using conventional screen inks. For a "stay clean" white background apply a clear lacquer prior to printing. Be sure to choose air drying material as Rigid PVC Foam Sheet can not be oven dried.

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