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Tech Note #2  
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## MATERIALS: EXTRUDED FOAM

Extruded polyethylene foam, manufactured for insulation in house walls, has many useful properties for theatrical use: it's lightweight, not very expensive, and easy to carve; it can be glued together and painted. It is mostly not a structural material as far as theater is concerned. N.B.: It's distinct from your standard styrofoam, which is beaded and tends to splinter in chunks if carved.

Suggested problems to solve using this material:

- Large moldings (theater scale) that are relatively inexpensive and not overly heavy
- Carved items, such as gravestones and statuary, to your specifications
- Possibly for walls which need to be broken for each show, using the thinnest type (we did this for a show in high school which involved destroying the evil machine near the end of each show, but it was kind of a mess)

## Purchasing Extruded Foam

Extruded foam typically comes in panels of 2'x8' or 4'x8' and in thicknesses of 1", 1.5", and 2". It is sold as insulation for housing and can be found at Home Depot and lumber yards. This foam is often pink, but also comes in blue and white, which sometimes have different grains or fineness. The cost is around \$10-20/sheet.

## Joining Foam

Panels can be joined face-to-face to make thicker panels, and at corners to build structures. Whatever adhesives you use, test them first on a little bit of the foam, as anything containing organic solvents may dissolve the foam. Cement-type adhesives work well for joining large flat areas: coat both surfaces, let dry, then stick them together and weight down. Liquid nails for foam can be used to join panels along edges, but is less useful for joining large surfaces because it will take a very long time to dry.

## Cutting and Carving Foam

Extruded foam may be cut and carved with any sort of blade, such hack-saw blades and utility knives. Finer shaping can be done with sand paper. For carved letters and other designs that look like stone-cutting, it may be useful to project the letters onto the foam and trace before cutting, make a full-size paper template, or sketch directly on the foam. It's best to draw only where foam will be removed unless you're sure your marker ink won't bleed through your paint later. One way to carve neat letters is to use a 'Dremel drill'-type rotary tool for the cutting. N.B.: you will have foam bits everywhere after cutting or sanding by any method.

Extruded foam can also be cut with hot wire tools, but this produces fumes and so should only be done outdoors or somewhere with good ventilation. Even so I was unable to find out just how bad the fumes are but I'd avoid cutting it in this manner altogether. It does give a nice clean edge and you can shape different points to carve with if you make your own tool modifications.

### Painting & Finishing Extruded Foam

The foam takes paint pretty well. Oil-based paints are unsuitable for painting foam because they will dissolve it (!) so use only water-based paints.

To help your piece last longer, you can coat it in "Foam Coat" or a similar agent which is designed to bond to the foam and form a hard protective outer layer. Typically this type of coat can be sanded and then painted. Even a foam piece that is mounted high and out of the way on stage is unlikely to survive unscathed to the next show in storage if not foam-coated.

Sources consulted:

<http://www.minionsweb.com/gate.htm>

The owner of this site describes the process of building a life-size gate with a pair of "stone" pillars, large carved "stone" arch and "wooden" doors, all from extruded foam.

A website about building over-constructed gravestones which I can't find now (doh!)

Miscellaneous websites yielding information by consensus... E.g. the cost of foam.