

## PLASTRUCT PLASTICS

### The most commonly used plastic materials are:

1. **ABS** - known for its strength, durability and workability.
2. **BUTYRATE** - pliable, machinable and durable.
3. **STYRENE** - compatible, strong and workable.
4. **ACRYLIC** - rigid, strong and generally brittle.
5. **COPOLYESTER** - pliable, stress resistant and durable.

Plastic has been used whenever possible because it is easier and faster to work with than wood, metal or cardboard. Plastic can be sawed, blade cut, drilled, lathe-turned, carved, sanded and filled. Most standard woodworking tools may be used on plastic and it will not splinter. Plastic parts join in seconds with small amounts of liquid solvent cement. For bonding plastic sheet materials to foam, wood or Masonite, Contact Cement can be used. For large sheet stock, many professionals prefer to use counter sunk screws for attachment. A spray adhesive is sometimes easier for small jobs.

### **ABS**

ABS has been hailed by professional modelmakers as "the best all-around construction material since wood" Stronger and more rigid than many metals; easier and more flexible to work with than any previous plastic; cleaner and more durable than wood, ABS structural shapes by PLASTRUCT have been used for engineering design models on an international scale since their introduction. ABS is also one of the best plastics for heat or vacuum forming and, of course, has excellent bonding characteristics, not only to itself but to other commonly used plastics.

PLASTRUCT Traditional Structural Shapes are all carefully molded and extruded to extremely close tolerance and in the colors to best represent the materials being simulated. The plastic we have selected (an ABS formulation) best meets our specifications for stability with just the desired amount of flexibility to minimize shock.

ABS is a thermoplastic terpolymer combining the best qualities of the Acrylics, Butyrates, and Styrenes. It is more than half again as rigid as its cousin, Styrene, and size for size, is nearly as rigid as brass. Extremely resistant to most acids and alkalis, the ABS lustrous surface is unaffected by most chemicals, even lacquer - a property unheard of in the early plastics.

Unlike wood and brass, PLASTRUCT ABS Traditional Structural Shapes require no priming, sanding, or sealing to enhance its hard finish. But like even the most primitive plastics, ABS bonds easily, quickly, and with a minimum of fuss.

### **BUTYRATE**

The material used in our Traditional Round Tubing medium is Butyrate plastic. It has proven to be ideal because it is so convenient to work with. It can be cut, turned, drilled, painted and easily cemented. The Tubing and Tubing Fittings are manufactured to provide a good friction fit and maintain the outside diameter; splines on the male Fittings accomplish tight fit and prevent undesired rotation and still allow intentional turning. This feature permits cementing to be a final operation. The telescoping sizes of the pipe combined with the workability makes improvisation quite simple.

Butyrate can be lathe-turned in the same manner as brass or Cast Acrylic. Grind the cutting tool to provide chip clearance. The resultant turnings will have a polished surface. This material can also be drilled, tapped, carved or saw cut. Very slow speed is required for machine sanding.

Fittings can be more readily attached to Tubing, particularly in sizes 5/16" and over, if the pipe is screwed onto the Fitting. Always rotate the Tubing in the same direction whether attaching or removing the Fitting.

### **STYRENE**

Styrene (also known as Hi-Impact PolyStyrene) is the most commonly used plastic in molded plastic kits (Model Railroad, Automobile, Airplane and Ship). For that reason, we have chosen Styrene as the medium in our New FineLine Structural model parts for compatibility in kit-bashing. It may be combined with wood, metal and other plastics using special glues or cements. Styrene has a tendency to be brittle, especially after lengthy U.V. exposure or painting. It is easily warped by solvents, so care must be taken when cementing flat sheets for walls, and reinforcement bracing is recommended. When constructing closed tanks or structures, venting is recommended to allow the inside and outside temperatures to equalize. Styrene has excellent forming characteristics and bonds rapidly and permanently. Styrene plastic cuts easily using the "scribe and break" method. Only use Enamel, Alkyd Oil, Latex or Acrylic paints specified for Styrene plastics.

### **ACRYLIC**

Acrylic is the most rigid and brittle of these plastics. Acrylic is processed in three methods; cast, extruded and molded. It is usually warp-free. When used for model making, Acrylic is usually used in tubing and thick sheet form, cubes and balls, and round, square and triangular rod. Acrylic accepts most paints, including lacquer.

### **COPOLYESTER**

Copolyester (also known as P.E.T.G.) is tougher and less prone to split or shatter than Acrylic. It has excellent clarity in sheet form, and is resistant to stress whitening. It is easily formable and not prone to warp. Copolyester is quite stable and bonds well to itself, however with most other plastics, a special industrial grade Cyanoacrylate Glue is recommended. Accepts most paints, including lacquer.

## WORKING WITH PLASTRUCT

### PAINTING

While certain types of paint adhere better than others on various types of plastic, almost any type of paint may be used. Alkyd oils are probably the best all around paints and are available in flat or satin finishes. Use Floquil brushable paints for painting basswood. The pigment in this paint is specially ground to provide good coverage without hiding detail. Latex paints are only suitable when the surface offers some mechanical bond (matte finish). Water colors and poster paints are not recommended. Lacquers are ideal for ABS and Butyrate but are not compatible with Styrene. Minwax stain is excellent for Basswood. Be sure to pre-stain all parts before gluing as the glue seals the wood and prevents the stain from penetrating.

### HEAT FORMING

Heat forming, shaping and bending plastics can be done easily in as simple a device as a kitchen oven, provided that the upper heat range can be controlled. The most widely used plastic sheet materials for forming are ABS, Butyrate and Styrene. A new material which also has excellent forming properties is Copolyester plastic sheet. The best temperature to work with these materials is approximately 200° - 250° F (120° C), and, unless you actually want to melt the material to a near liquid, don't exceed about 400° F (205° C) under any circumstances.

### TOOLS

Possibly the single most useful tool for most model builders is a hobby knife (X-Acto style) with a #11 blade. Add to this a heavy steel rule or straight edge, a triangle or square, hobby saw, an assortment of small files, a mitre box, tweezers or hemostats, a sheet plastic cutting tool, dividers, hand drills, pin vise and bits and you have the contents of a basic toolbox. For most projects, small table top power equipment can be used for a more professional approach and quicker completion. These might include a disc sander, circular saw, drill press, belt sander, a mini drill and bit assortment, and possibly a lathe. Care should be taken when cutting, drilling or machining plastic material to avoid excessive speed or pressure by the tool to the materials, as melting and gumming will result.

### PLASTIC WELD CEMENT

Instantly tacky. Sets in minutes - bonds permanently overnight. Economical to use. Special formulation dissolves a thin layer of each surface to be joined. It evaporates quickly and forms a welded joint; one as strong as the surrounding plastic. Apply with a small brush or blunted syringe-type applicator. Capillary action will spread it the length and breadth of the joint for a continuous solid weld. Plastic Weld works on most dissimilar Styrene, Butyrate, ABS and Acrylic applications.

### BONDENE CEMENT

Bonds instantly. Sets in seconds - bonds permanently in minutes. Economical to use. Special formulation dissolves a thin layer of each surface to be joined. It evaporates quickly and forms a welded joint; one as strong as the surrounding plastic. Apply with a small brush or blunted syringe-type applicator. Capillary action will spread it the length and breadth of the joint for a continuous solid weld. Bondene works on all "alike" Styrene, Butyrate, ABS, Acrylic and Copolyester applications.

### WELDENE CEMENT

Bonds instantly. Sets in minutes - bonds permanently in hours. Special NON-TOXIC formula. It evaporates quickly and forms a welded joint; one as strong as the surrounding plastic. Apply with a small brush or blunted syringe-type applicator. Capillary action will spread it the length and breadth of the joint for a continuous solid weld. Weldene works ONLY on Styrene.

### CEMENT GUIDE

For the various materials found in this Catalog, the following cements are recommended:

#### Styrene

Similar plastics - BOND-2, WELD-2 and PPC-2  
Dissimilar plastics - PPC-2, EPX and CYC  
Acrylic sheet, wood & foam - Contact Cement, EPX and CYC

#### Acrylic

Similar plastics - BOND-2, PPC-2 and WOC-3  
Dissimilar plastics - PPC-2 and CYC  
Acrylic sheet, wood & foam - Contact Cement, EPX and CYC

#### ABS

Similar plastics - BOND-2 and PPC-2  
Dissimilar plastics - PPC-2 and CYC  
Acrylic sheet, wood & foam - Contact Cement, EPX and CYC

#### Butyrate

Similar plastics - BOND-2 and PPC-2  
Dissimilar plastics - PPC-2 and CYC  
Acrylic sheet, wood & foam - Contact Cement and CYC

#### Copolyester

Similar plastics - BOND-2 and PPC-2  
Dissimilar plastics - CYC-10  
Acrylic sheet, wood & foam - CYC-10 and Contact Cement

#### Urethane Foam (Foam)

Foam - Hot Glue or Contact Cement  
All others - Contact Cement

#### Expanded Polystyrene Foam (Foam)

Foam - Spray Adhesive and White Glue  
All others - Spray Adhesive, White Glue and Contact Cement

#### Basswood and Balsawood

Wood - Aliphatic Resin  
Paper - White Glue  
All others - Contact Cement