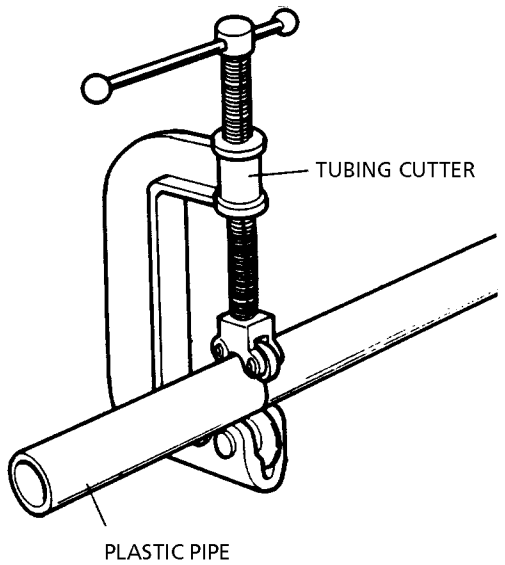
HOW-TO BOOKLET #3012

PLASTIC PIPE

TOOL and MATERIAL CHECKLIST

- ❑ Plastic Pipe/Fittings
- ❑ Plastic Pipe Adhesive
- ❑ Tape Measure
- ❑ China Marker
- ❑ Plastic Pipe Cleaner
- ❑ Plastic Pipe Hangers
- ❑ Tube Cutter or Hacksaw and Miter Box
- ❑ Medium Grit Abrasive

Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above.



Plastic tube cutter is recommended for plastic pipe. Cutter keeps tubing ends perfectly square.

Plastic pipe is a do-it-yourselfer's dream product. It's lightweight. It's easy to assemble with basic tools. It will last 100 years and probably more without replacement. It won't rust or corrode. And it is fairly inexpensive to buy compared with its copper and galvanized steel pipe cousins.

TYPE OF PLASTIC PIPE

There are four basic types of plastic pipe sold by home center and building material stores. They are polyvinyl chloride (PVC); chlorinated polyvinyl chloride (CPVC); polybutylene (PB); acrylonitrile-butadiene-styrene (ABS and sometimes called "Polypipe").

CPVC and PB pipe may be used for hot and cold water installation. You'll probably use this product more than the other types of pipe.

Other plastic pipe such as ABS may be used for drain and vent purposes. Some may be used for hot water; others may be used for cold water only. Application data usually is noted on the package label. Be sure to check this label as it pertains to hot and cold water installations.

Rigid pipe such as CPVC is assembled with plastic pipe cement. Flexible pipe such as PB is assembled with clamps that are similar to the clamps used to connect auto water systems hoses. Some pipe is assembled with insert fittings and clamps. However, this joining system usually is limited to outdoor pipe installations.

PLASTIC PIPE FITTINGS

Compression fittings used for joining PB pipe consist of a nut, a stainless steel locking ring, and a sealing washer that makes a watertight connection with the fitting.

There is one caution with these type fittings: the stainless steel locking ring has a razor-sharp edge, so handle it with care during assembly.

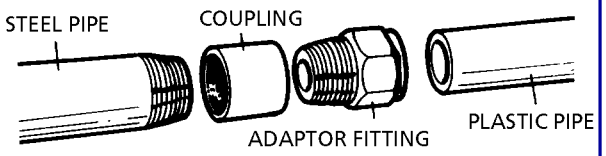
Flare-fittings. Most brands of PB and CPVC pipe come in the same size as copper tubing and can be flared to accept standard flare fittings. Using the flare fittings makes it convenient to connect to faucets and other fixtures and appliances. (See How-To Booklet #3013 for additional information.)

A standard flaring block is used after the end of the pipe has been softened in warm water to prevent its cracking when flared. It is necessary to make an absolutely square cut for a flared end, otherwise the flare will not seal in the flare fitting. As with copper tubing, remember to slip on the flare nut before making the flare on the pipe with the flaring block.

MEASURING AND SPECIAL PIPE CHARACTERISTICS

Fittings—45- and 90-degree elbows, straight couplings, tees, etc.—are used to assemble plastic pipe and the pipe is recessed into these fittings approximately 1/2- to 5/8-inch. Therefore, you must buy enough pipe to match the pipe run plus the extra pipe needed for the fittings at each end or throughout the run.

Most fittings have a shoulder inside the fitting. The end of the pipe fits tightly against this shoulder when it is assembled. Because of this fit against the shoulder, the pipe must be cut square. You can buy a tube cutter to cut plastic pipe and it is recommended. Or, you can use a hacksaw. If you choose the hacksaw, also use a miter box with the saw to make sure that the cuts are square. Do not lay the pipe over a knee and saw it freehand.



Plastic pipe may be joined to steel and copper pipe with adaptors specially made for this purpose.

Plastic pipe expands and contracts. In long pipe runs, the pipe should be offset by two 45-degree fittings every 13 to 15 feet. That is, create a zig-zag in the pipe to allow for expansion and contraction. Include this in your measurements.

If the pipe will go through a framing member or wall, drill the hole a tad oversize—also for expansion and contraction of the pipe.

Plastic pipe must be supported by hangers or it will sag and cause trouble. The hangers should be installed every 3 feet. of pipe run; be sure to include hangers on your shopping list. They're inexpensive.

Buy and work with the same brand of plastic pipe and fittings, if possible. One brand may have a slightly different formula than another brand. However, if the products meet ASTM standards and local codes, and you know for sure that they do, you can use different manufacturer's pipe and fittings. If you don't know, stick with the same brand products.

If you will solvent-weld the pipe, you must also clean the pipe with a plastic pipe cleaner before the pipe cement is applied. The cleaner removes grease and oil left by your fingers, both of which can cause a poor cemented connection or "weld."

PLASTIC PIPE ASSEMBLY PROCEDURES

Organization—or a plan—is the very best way to assemble plastic pipe. Here's the plan—or procedures that you ought to follow:

1. Measure, mark and cut the pipe according to the run. Measure twice; cut once.

   You can use a hacksaw for cutting. A tube cutter made especially for plastic pipe is better and easier; the investment is not prohibitive, as mentioned.

   If you use a hacksaw in a miter box, you will have to deburr the cut made by the saw. Use medium-grit sandpaper for deburring and be very careful not to remove any "hard" plastic on the pipe: just remove the cutting debris left by the saw.

2. Assemble the pipe run with the fittings. Put everything together as it would be when the project is completed. But do not solvent-weld the pipe at this time.

   If, as you assemble the run, the pipe has to be re-cut, do so at this time, deburring it. If you have cut the pipe too short, you can add length with a short piece of pipe and a straight coupling. Make this adjustment at this time.

3. If you are satisfied with the run and the pipe assembly fits properly, start at either end of the run and disassemble the pipe at each fitting and then clean the pipe with plastic pipe cleaner. Some craftsmen skip the cleaning step. Don't take the chance of the pipe being clean enough by just rubbing it lightly with sandpaper. The pipe must be cleaned with cleaner to remove any grease, oil, or foreign matter that would prevent the solvent from reaching the plastic surface. It takes just a second to use the cleaner and it is good insurance against a leak later on. Cleaner is inexpensive.

As you reassemble the pipe in the fitting, draw a line along the fitting and the pipe with a China marker pencil. You will use this mark later in aligning the pipe inside the fitting.

4 Check the pipe run once again. Is it exactly what you want? If not, go back at this point and make any necessary changes.

5 Start at either end of the run and disassemble one fitting at a time. Apply the plastic pipe cement liberally on the pipe and sparingly in the socket of the fitting.

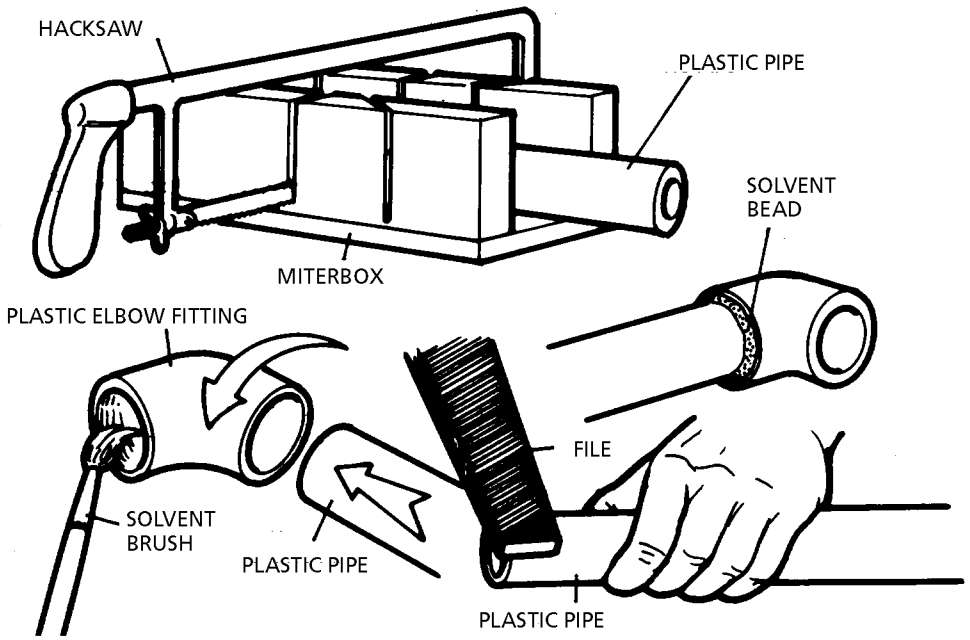
Push the pipe into the fitting so it stops against the shoulder in the fitting. Then twist the pipe so the China marker line on the fitting and the line on the pipe match or align perfectly.

As you put the pipe into the fitting, you will have to offset it about 1/4-inch, and then twist it back to the China marker line. The twisting will assure a complete adhesive bond between the fitting and the pipe. Also, you can use the mark to align the run; for example, a tee take-off fitting on existing pipe.

The adhesive sets almost immediately. Once set, the pipe joint can't be moved. If you discover a mistake at this point, the only way you can correct it is to recut the pipe and refit it—throwing away the misfit piece of pipe. Use straight couplings.

As you apply the pipe cement, don't be stingy with it. Any excess will be squeezed out of the fitting when you insert the pipe. The occasional leaks that occur in plastic pipe are often due to a lack of adhesive. Try not to overdo it, of course, because the excess cement does not look good, and it is almost impossible to remove. In short, be generous, not sloppy.

Flexible connections. Flexible plastic pipe is usually joined with a ringed insert fitting and steel clamps—similar to auto hose clamps.



A hacksaw cut is okay, but use a miter box and deburr the saw debris with either steel wool or a file. If you use a file, be careful that you don't dig the file into the plastic material. Apply solvent with brush.

The pipe should be cut as square as possible, but squareness is not as critical as for rigid pipe. However, get it as square as you can. It is recommended that you cut this pipe with a hacksaw in a miter box and deburr it with sandpaper.

You insert the fitting into both ends of the pipe after you thread the clamps onto both sections of the pipe. The pipe goes over the ridges; the clamps go about 1/2-inch from each end of the pipe. Then tighten the clamps, using a standard slot screwdriver. An adjustable wrench may work, too.

If clamps are used, you can run water through the pipe just as soon as it's assembled. If you use adhesive to assemble the pipe, wait about 1 hour before running water through the pipes.

DWV PLASTIC PIPE

Drain-waste-vent (DWV) pipe also is available at home center and building supply stores.

These pipes are just as easy to assemble as their smaller cousins—either with plastic pipe cement or sleeves and clamps.

There are two types of DWV pipe available. One type is called "Schedule 30". Another is "Schedule 40". Schedule 30 pipe is used in 2x4 framing, while Schedule 40 is used in 2x6 framing. The Schedule 40 pipe will not fit between 2x4s. There may be a difference in adhesive for Schedule 30 and Schedule 40 pipe. If so, the difference is noted on the label of the adhesive container.

However, with the modern cements, you may find that an all-purpose plastic pipe adhesive can be used for either Schedule 30 or Schedule 40 pipe.

The advantage of Schedule 30 is that you do not have to build out a wall using 2x6s, as is ordinarily done in a bathroom and kitchen to provide room for the larger pipe. Both types of pipe have the same inside diameter; the difference between the two types is the thickness of the pipe wall. Because the Schedule 30 "in-the-wall" pipe is so easy to install, it is accepted by many plumbing codes.

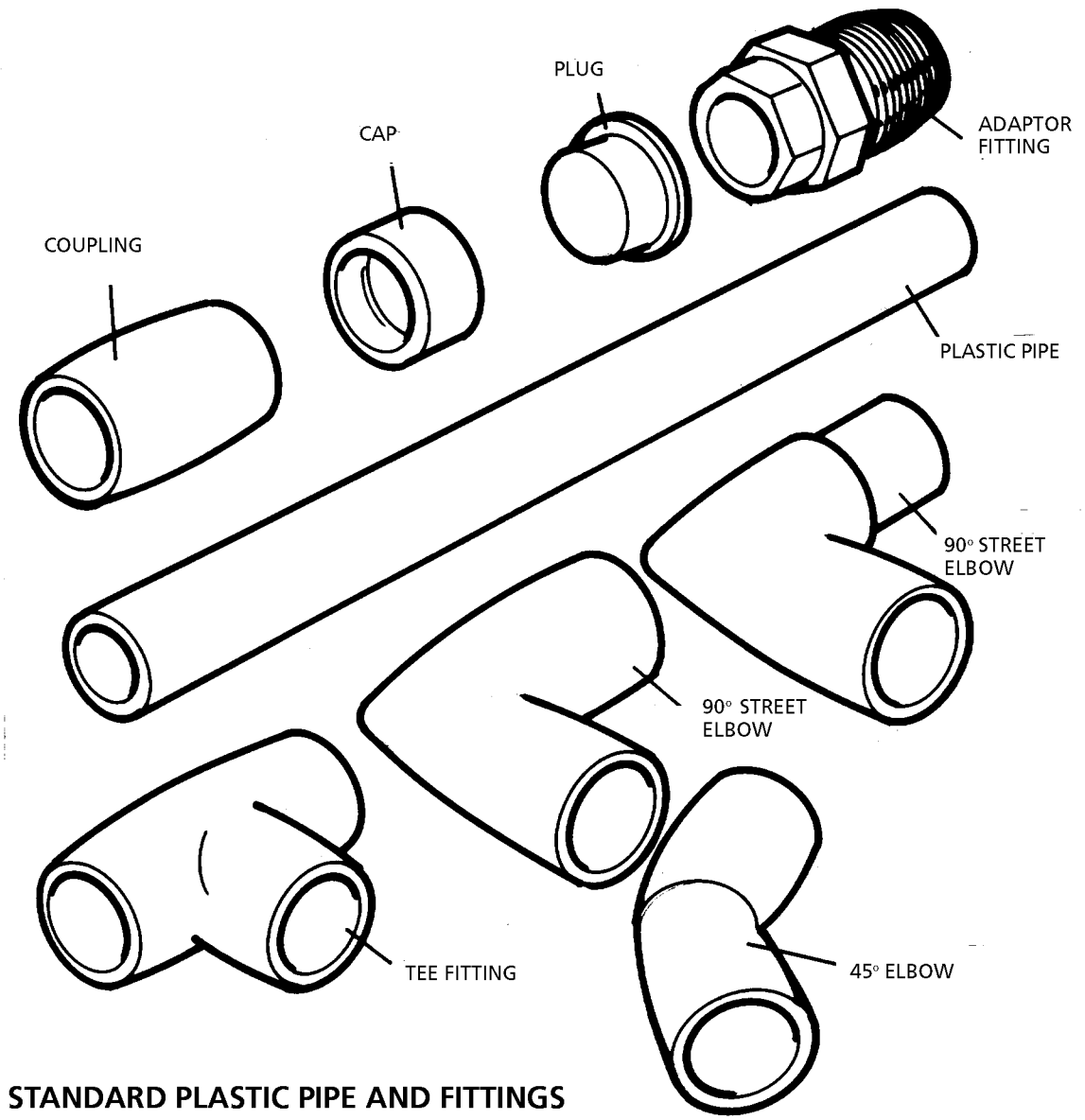
Plastic Pipe and Codes

Plastic pipe and fittings are accepted by most national Plumbing Codes, but some local codes will not accept the plastic products. This may be the restriction of trade groups, not because the product is an inferior material or badly manufactured.

Plastic pipe also can be used in private sewer systems. There are perforated pipes for seepage or septic fields, and solvent-welded pipe can be used from the house to the septic tank or cesspool.

As to local codes and plastic pipe, check the office of the local Building Department in your community, if you are in doubt. Stores in which plastic pipe is sold often serve several different communities where plastic pipe is approved.

Almost always, plastic pipe is okay to use to hook up underground sprinkler systems and as a water supply to a garden area. The larger pipes usually can be used for foundation drainage and to hook up dry wells from the rain-carrying system on your house (gutters and downspouts). Plastic pipe is rated usually for as least 120 pounds pressure (PSI) which means that plastic can be used for private well water systems. But check the codes in you area before buying the material for well connections.



STANDARD PLASTIC PIPE AND FITTINGS