

JOINING PLASTICS

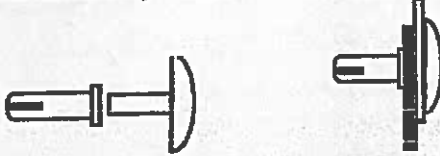
Mechanical fixing

Rigid plastics such as Acrylic can be drilled, tapped and held together with screws suitable for metal. (see worksheet 29b)

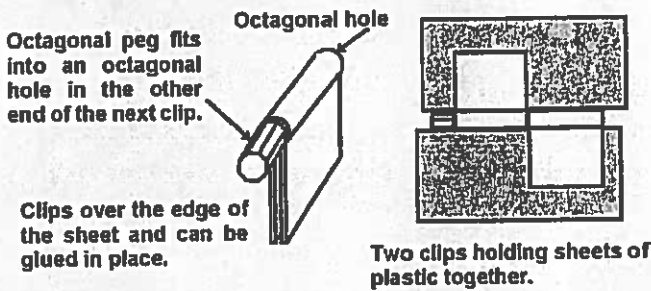
Lightweight flexible plastic can be joined by plastic rivets. The rivet comes in two parts, which are snapped together when in place.

Separated rivet ready for use

Snapped rivet in use



Rigid sheets of plastic can be clipped together using using a two part plastic 'Octaclip'. Angles of 90°, 45° and 180° are possible.



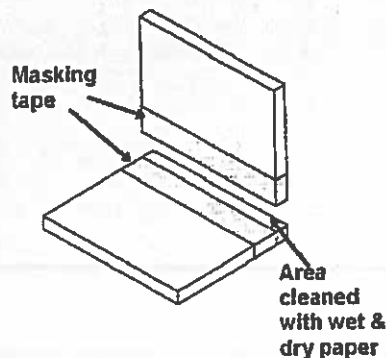
The clips can have a revolving peg which makes them suitable for use as hinges.

Adhesive fixing

Adhesives used for plastic are often called plastic cements. The cement works by dissolving the surfaces of the plastics that they are applied to and then evaporating dry. When two plastic surfaces are joined by a cement, the surfaces both dissolve to a depth of approximately 0.25mm; the dissolved plastic mixes together and then sets as one piece when the cement evaporates away. It is therefore very important that the joining surfaces are completely clean when the cement is applied. The best cleaning method is to rub the surfaces with wet & dry abrasive paper.

A commonly used cement is 'Tensol No.12', for Acrylic.

Any cement spillage or seepage from the joint will permanently mark the surface. To stop this, masking tape is used to cover and protect the surfaces in the area of the joint. The joint needs to be held together for between 30 mins and 1 hour. (the longer the better)



Caution:

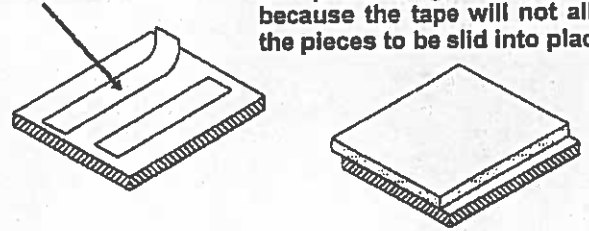
Cements are spirit based and can cause major problems if sniffed. They should only be used in very well ventilated areas, by an open window, or outside if possible.

Adhesive tape

When large areas of contact are involved, such as overlapping sheets of plastic, double sided tape can be used. This is not a suitable process for edge joining.

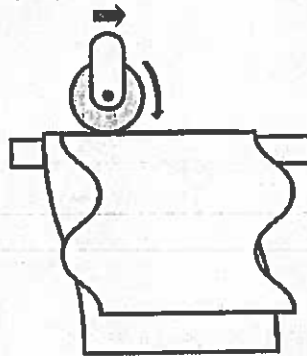
Double sided tape

The positioning must be exact because the tape will not allow the pieces to be slid into place.




Welding

Soft plastic sheets, such as those made from polyethylene, can be welded together using heated tool.



A heated wheel to welding together sheets of polyethylene along a straight line. This method can be used for sealing plastic bags.

KEY WORDS Plastic cement: Double sided tape:

1. You need to hold two sheets of PVC together at an angle of 45°, as shown below. Show how you would do this. 
2. Why do you need to use masking tape when making a joint with plastic cement?
3. Explain a safety hazard associated with using a plastic cement.
4. Under what circumstances can you use double sided tape to join two plastic sheets together?
5. Explain how you can weld two sheets of polyethylene together.