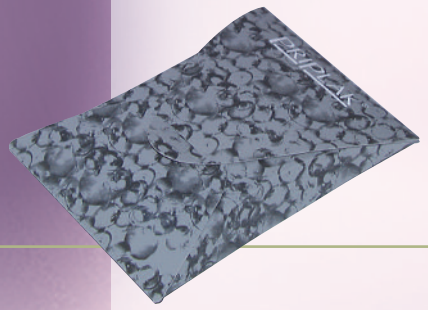
PRIPLAK

ARJOWIGGINS



MAKING MODELS IN PRIPLAK®

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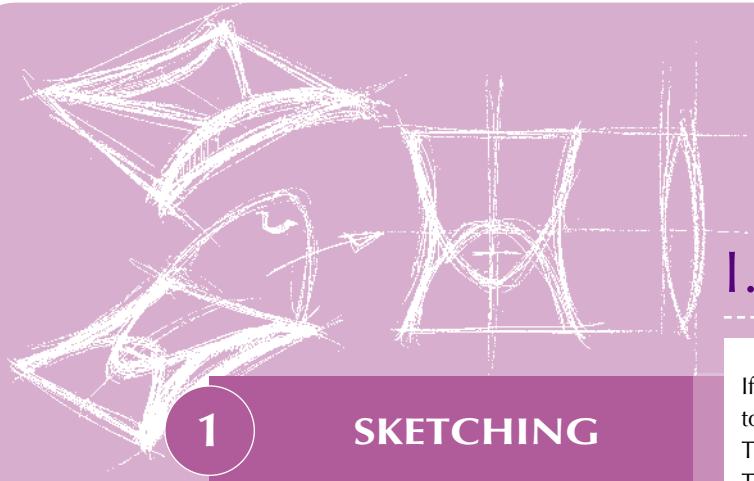
“Priplak® sheet is a modern plastic material which is easy to manipulate and with properties similar to carton board.

The following advice will enable you to create models as closed as possible to a finished product (in terms of looks, colour or texture...).”



PRIPLAK

I. DESIGN AND SKETCHING

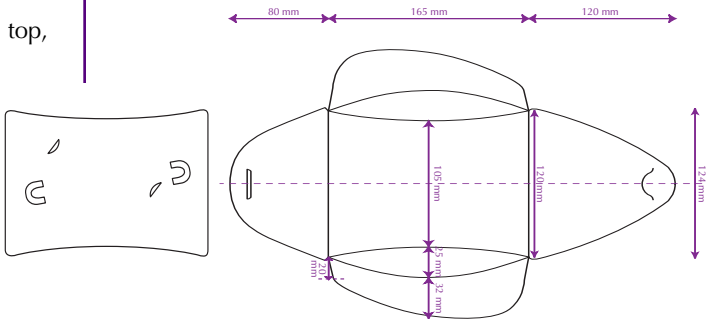
1 SKETCHING

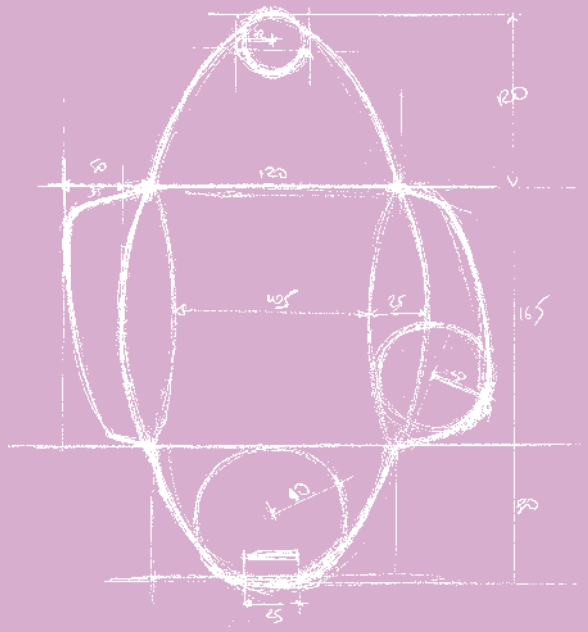
If you want to create a number of models, you will need to sketch the outlines in carton board or in Priplak®.
This way you will determine proportions and save time !
Then you enter the most important stage : the choice of material that should be perfectly suitable for your project…
The Priplak® range offers you an incomparable choice of beautiful and resistant solutions !

Make a precise sketch of all the perspectives (sides, top, etc.)
This will help you to visualise the correct place for accessories, decorations or other effects for your project.
A side view is essential so that the size of the Priplak® sheet required for the can be determined.
It will also be possible to see if a standard size sheet can be used.

Time-saving tips

- Do not forget to provide a 10 mm die cutting margin on all four sides.
- If wastage is high, extra products may be made out of the surplus material. Then, always provide for a die cutting margin between the two products.





2 COMPUTER SKETCHING

Nowadays, a ruler and a pencil seem to have been replaced by computer software such as Illustrator® or Autocad®, well known to graphic designers, model-makers, and students. This software facilitates corrections and proportional size modifications without risk of error and very quickly !

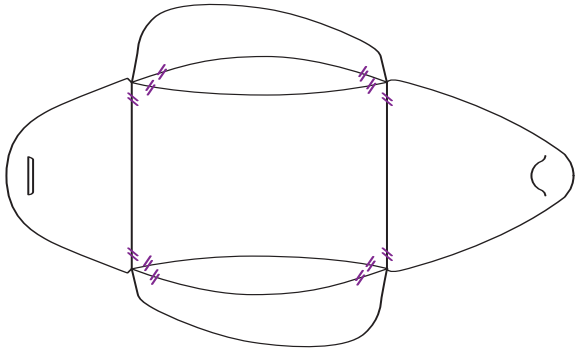
A computer-created model can be sent to a professional packaging company who can check whether it is technically possible to manufacture your model.
A plotting machine can create models that are true to a finished product. Size, material, creasing and printing decorations are observed in the smallest detail.

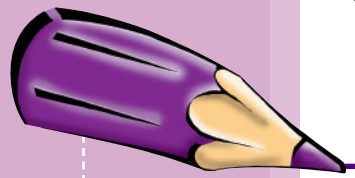
II. CUTTING AND CREASING

1 DRAWING ON PRIPLAK®

Step by step...

1. Cut out a Priplak® sheet to the size needed for the product.
2. Using a non-slip ruler (with a strong edge or on a drawing board), draw on the inside of the sheet, so that the outside is clean (HB or B pencils are ideal).
3. In order to differentiate between the lines to be cut and lines to be creased, you may mark the ends of the lines to be creased.





Time-saving tips

- Your line may be rubbed out, washed with soapy water or cleaned with trichlorethylene.
- As a general rule, use Priplak® which is of the thickness and colour of the final product when making a prototype.
- Use the sample service of Priplak®, for your models.

Your sales representative will give you all the additional information !

Good to know

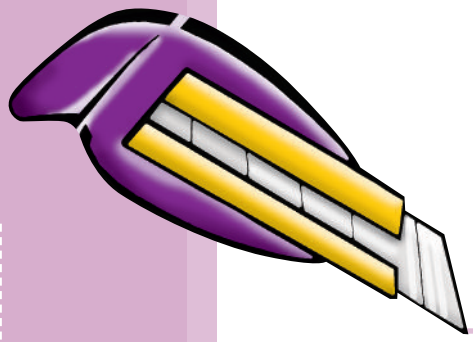
1. Print your computer plan on a sheet of paper and cut it out.
2. Using a spray glue, glue the plan on a Priplak sheet.
3. Cut the model out according the paper plan and… the work is done !

II. CUTTING AND CREASING

2 EASY AND SAFE PRIPLAK® CUTTING !

- Prepare a well-sharpened knife for neat cutting. Do not try to cut Priplak® on the first attempt, since the cut will probably not be straight. Mark the line first and then go over it several times until a clean cut has been made.
  Some parts may be cut with a special pair of heavy-duty scissors.

- To make holes, use a mini-drill with different drill bit sizes or a carton board hole puncher with side ejection struck with a hammer. This will guarantee a great result.

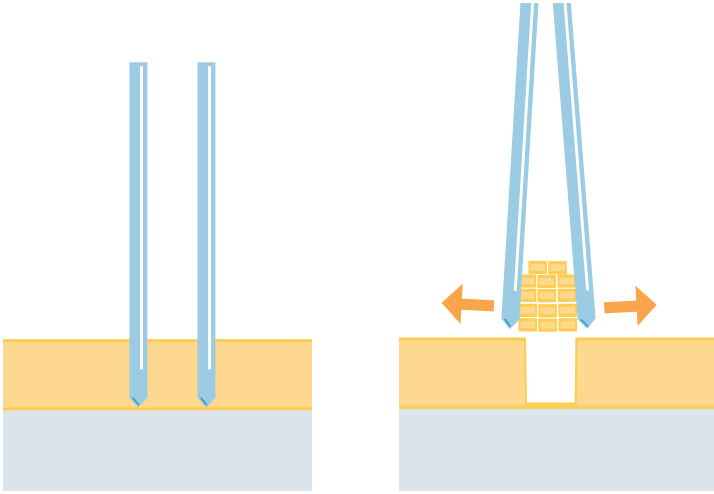


Finishing

While cutting, rounded angles are recommended. If you want a right angle, cut it out using the minimum radius of curve allowed by the tool cutting blade (around 3 mm). This will avoid sharp angles, which scratch during assembly or use.
If the model is almost finished, cut out, look at your model… and make final adjustments where necessary !

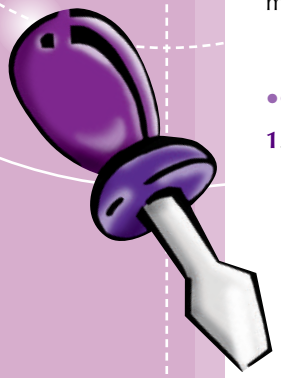
Time-saving tips

While making your model, do not design the cutting lines too close to each other, since the material could bunch up between the two blades and force them apart.



II. CUTTING AND CREASING

3 CREASING PRIPLAK®



You may use an old screwdriver (not very sharp) to apply strong pressure without cutting the Priplak®, making a groove 1 to 2 mm deep.
- We suggest using Priplak® offcuts for practice -

••• Three are stages to be completed...

1. **Mark** the crease with the screwdriver :
   - 1 to 2 times in 0.5 mm Priplak®
   - 2 to 3 times in 0.8 mm, Priplak®
   - 3 to 4 times in 1.2 mm Priplak®
   and 4 to 5 times in 1.8 mm Priplak®

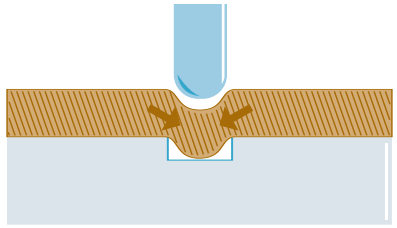
2. **Fold back** the outer side against itself.

3. **Fold back** the inner face against itself.

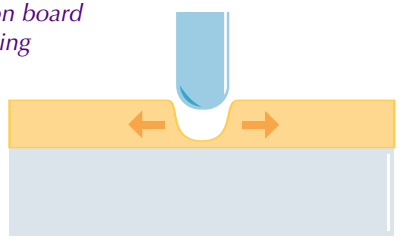
The molecules in the material become orientated as a result of this lengthening of the material. Priplak's® resistance is increased where the creases occur, and the hinge is as strong as the material made during manufacture.

••• Creasing and model design

While making your model, bear in mind that the material will lengthen…
Contrary to carton board techniques, where the creasing rule is pressed into a female die and causes contraction of the material, Priplak® creasing takes place on a flat platen and causes the material to lengthen.



Carton board creasing



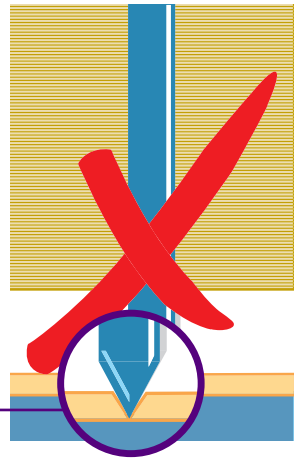
Priplak® creasing

••• 100 kg of pressure per centimetre

100 kg of pressure per centimetre of cutting and creasing rules is used. It applies only to the 0.8 and 1.2 mm thicknesses where the shapes are simples and there are no holes.
To punch out holes with side ejection tools, 250 kg of pressure is needed, for the most common diameters.
If your design has many holes or requires many assembly systems, ask your toolmaker or die cutter for advice before starting.

••• Imperative...

When manufacturing tools, **never use scoring or plotting rules** (as are used to crease carton board), as they cut into the product and may cause a disastrous and irreversible result.



Incipient crack

II. CUTTING AND CREASING

4 PLOTTER

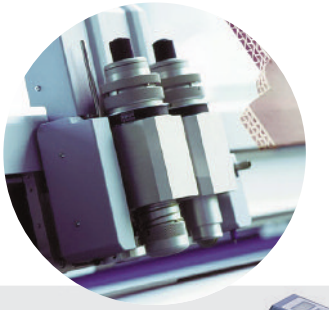
Equipped with knives and a creasing tool (entirely adaptable to material nature, its thickness…), a computer-guided plotter can finish a model in a few seconds !
Modern plotters offer additional options like creasing tools and knives with 2 or 3 tangentially controlled axes with or without pencil.

- The knives are fixed or oscillating, heads and are available with or without creasing.
- The vertical axis may be controlled by adjustment of each contour, cutting and creasing depth (an important parameter for Priplak®).

Contrary to carton board techniques, creasing polypropylene (and of plastic materials in general) is carried out by crushing and lengthening the material; that is why it requires adapted tools.

- Some software may convert design files into the language of the plotter : this guarantees more regular movement of creasing tools and knives and neater rounded angles… It also avoids unnecessary passages of the head.

An optical camera which spots one or two points outside the shape is the latest technology for the cutting table. This enables the material to be cut out for the most precise positioning of the head in relation to the sheet. Feed margin is adaptable on these tables.

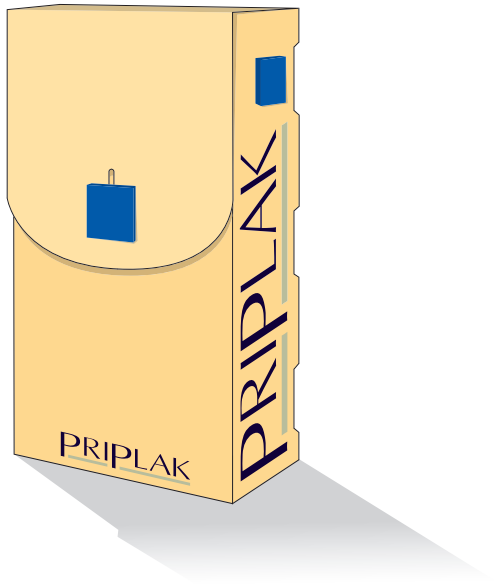


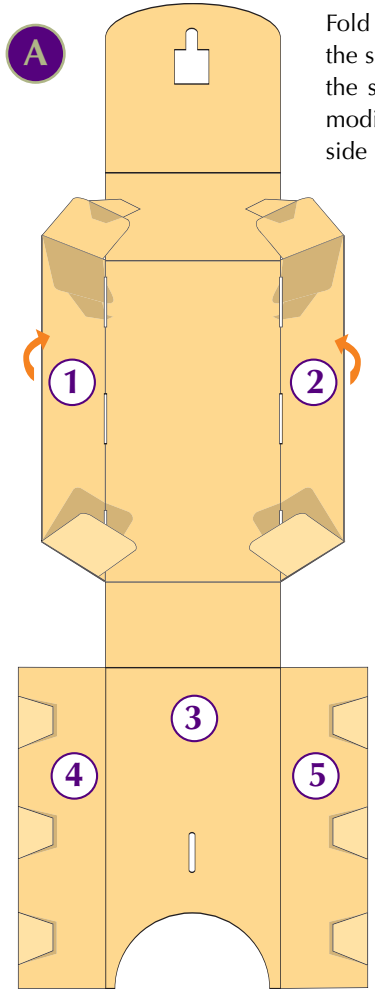
III. ASSEMBLY TECHNIQUES

1 SELF-LOCKING : TO GIVE SHAPES YOU WANT

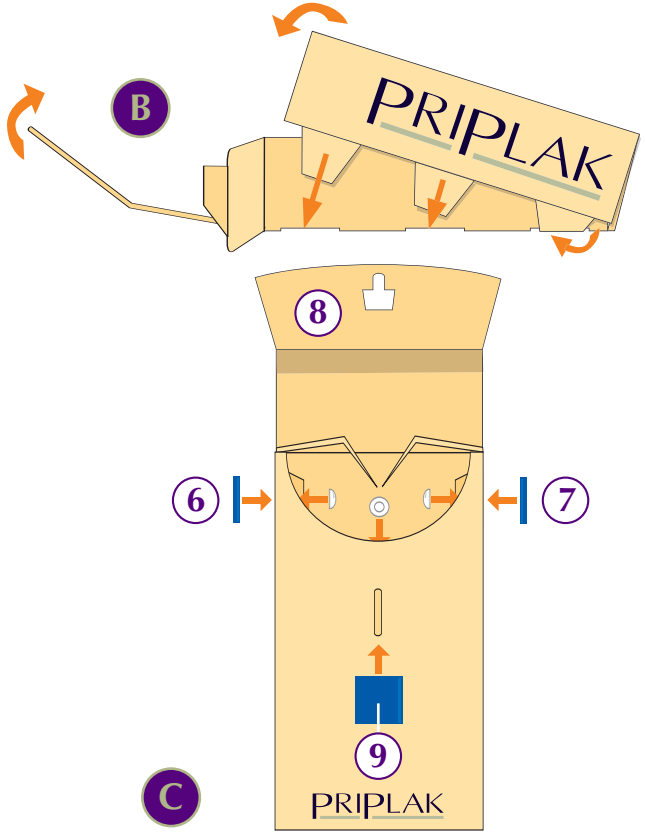
Whatever your cutting system and accessories are, you will give shape to your creation in a few seconds only… to your customer's great satisfaction !

Example of a box





Fold both sides (1 and 2) inwards and take back the lower flap (3). Superimpose the sides (4 and 5) on the sides that are already folded, then slide the tabs into the slots. Two lateral grommets (6 et 7) provide a system of fixation without modifying the total look. Now, all that remains to be done is to fold the upper side (8) and close the box, sliding the clasp (9).



III. ASSEMBLY TECHNIQUES

2 OTHER TECHNIQUES

Riveting

- If only a few models are to be made :
Use one - or 2 - piece rivets (compression rivets) easily mounted with a hammer and a suitable sized header die. A steel die the size of the rivet head will guarantee a neat result.

- If many models are to be made :
A manual riveting press equipped with a practical long arm can be used.

If the model needs dismantling for adjustment or if there are no rivets, screws may be used instead.

Welding

The most useful tool for the model maker is the welding iron, to obtain welds which are sufficiently strong.

- Welding two sheets…
Use a flat bit inserted between the two sheets, then press the place to be welded.
As soon as heat is felt, take away the bit and press down heavily.

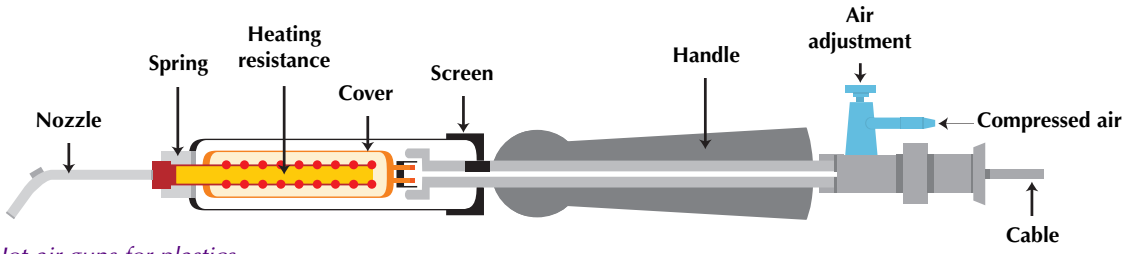
- Spot welding…
This method is usually used to weld a fine film onto thicker Priplak®.

By means of a welding iron equipped with a fine bit, the thin film must be melted onto the thicker sheet at the place where welding is required.
A bit can be made with the same profile as the industrial tooling to be used in production.
The films must be pressed together to ensure suitable cohesion.

- Ultra sonic…
Industrial tooling is needed. For model making, a welding iron will guarantee the same result without costing you time.

- Pulse…
A household plastic bag sealer may be used to weld thin films onto any thickness of Priplak®.

- Hot-air…
Practice is needed to become able to use this hot-air gun.



Hot-air guns for plastics

Sewing

It is possible to sew Priplak® prototypes. Holes must be made with an awl so that the needle will pass through even the thickest materials.
However, for professional finish, the best solution is to use a sewing machine.
Sewing enables Priplak® to be combined with many other materials of different specifications and aspects.

Binding

Two or three spiral bound models may be created by a model-maker but for more important work, it is better to use industrial binding machines.
These machines have interchangeable tools allowing quick adjustments. The resulting prototypes are thus perfectly identical to industrial products.

IV. DECORATION AND PRINTING

1 FELT PENS AND ADHESIVE PAPERS

The model-maker often has several decorative projects to suggest and only one model.
In this case it is a good idea to make the front sides in carton board.

How to make a Priplak® model beautiful... on an important surface :

Paint may be sprayed on the surface after cleaning it with a solvent (avoid thick layers which tend to flake if the base material is flexible).

- It is advised to make tests on Priplak® offcuts -

... with letters or films :

After cleaning with a solvent (see the manufacturer's directions for use), your model may be coloured or remain transparent.
Coloured or transparent adhesive papers may be used (latex-based adhesives are advised as they adhere better) which can be decorated with felt pens.

Time-saving tips

Transfer letters will also stick to Priplak®, as will adhesive letters or films.

2 UV INK JET PRINTING

U.V. ink jet printing

To print a model, U.V. ink jet printing is a perfect solution as it is made for printing of small quantities : 1 to 5000 pieces.
Model size and complexity will influence the printing cost and speed, and the quantity of the ink needed.

Priplak® models printed this way are true to finished products, so they are convincing and attractive.
"UV Ink jet machines" can make beautiful printing in four-colour process, even if they are not optimised made for flood coat whites (screen printing) their technology is changing and improving all the time.

IV. DECORATION AND PRINTING

3 ACCESSORIES AND HOW TO FIX THEM... THE FINAL TOUCH !

••• Cut-out accessories

can be cut out in the same way as the model. Some can also be taken from existing models.
In the industrial process, you may choose accessories from our great range of colours to create a most original and creative model.

••• Most plastic accessories

can be fixed by hand by a simple slotting in. Other accessories are fixed by flattening plastic dots by means of a welding iron.
A welding iron will flatten them but the accessory will not hold as well as if the work was done industrially with suitable tools.

••• Metal accessories

are fixed very often by slotting them into the model and then bending back their fixing tabs.

- A hammer and a little dexterity will resolve most difficulties ! -

••• Label holders and pockets

are usually made of transparent 0.2 mm polypropylene. Because of this thin layer, both models and industrialised holders need to be handled with great care.
It is also possible to make them in 0.5 and 0.8 mm thicknesses.
Label holders in injected plastic may be used. They are then welded or riveted onto the main product.

••• Ring binders

are generally fixed with metal rivets.