# Polyester Manipulation ideas.

**What happens:** When exposed to very high temperatures polyester reforms permanently, eventually melting. This is because it is fundamentally plastic, a similar chemical composition as the PET we see in plastic bottles, but processed differently. It will only reshape if extreme heat is applied again. It is thermo plastic.

## Materials needed:

For all sampling:
Light weight polyester. For learning 100% polyester lining material is ideal. 30cm square cut on the straight grain a good size.
For steamed samples:
- String, masking tape.
- Electric vegetable steamer.
- Paper labels for each student to tie onto their sample and leave string and label OUTSIDE the vegetable steamer, for identification.

For Ironed samples:
- Polyester ribbons (chocolate box, sewing)
- Silicon paper (to fold and cover both sides of ribbon before ironing).
- Iron with steam setting,
- Metal pins if needed.

For hairdryer samples - not for primary school use:
- Hairdryer with high heat setting.
- Heat resistant surface.
- Masking tape to hold fabric roughly in place.
- Heat resistant gloves (e.g. gardening) is ideal if fabric has to be held in place.

## Fabric options suggested for projects:

- 100% polyester netting, 100% polyester georgette (or similar very fine cloth). Good for immediate melting/burning/holes.
- 100% polyester light weight plain woven fabric (e.g. lining fabric as used for sampling) good for seeing texture changes (as examples below).
- 100% polyester light weight knitted cloth e.g. old sports T shirt, is good for crinkles/melting. This knitted material should work with the steamed techniques below but the effect will not be as obvious because of the fabric structure.

*Mixed fibres will not work.*

## To avoid:

Using Flame - melting polyester can burn, fire can spread easily, fumes can cause breathing problems. This should only be done under controlled circumstances with a teacher, if at all. Gloves, a metal tray, tongs to hold the material and ventilation required.

### Additional learning option:

Have a sample piece of 100% cellulosic lining fabric e.g. Cupro, Viscose, Acetate. Select one of the processes listed below and the students will see that cellulosic cloth does not reform with heat. Despite the polyester and cellulosic fabrics looking almost identical.
Cellulosic fibres are derived from wood pulp and treated with chemicals to make into yarn therefore they are based on natural fibre, not plastics, and will not reform with heat.

**Sample fabric preparation for vegetable steamer:**


Cut a square of 100% Cut a square of 100% polyester fabric, for sampling an ideal size is 30x30cm.
Make sure the square is cut on the straight grain of the cloth (see illustration).

**Random creases.** Randomly squeeze fabric in o a ball and secure tightly with elastic bands.

**Concertina.** Concertina fabric horizontally equally, then concertina fold again into a small square. Fix with paperclips.

**Hozontal gathers**. Gather the fabric horizontally (without folding it as far as possible). Then wrap elastic bands tightly at intervals.

**Coins**. Wrap fabric around coins or other small metal objects and secure them with elastic bands.

## Process:

**Fish scales**. Cut a length of string that is longer than the fabric corner to corner on the diagonal.

1. Tape all the fabric corners down except the lower right. Fold the string in two and place the centre in the lower right corner.
2. Securely roll the fabric round the string tightly, across the fabric, corner to corner.
3. Then pull the string tightly and fasten.

**All fabric samples should be put into the vegetable steamer on high heat for a minimum of 40 minutes. Left to cool for a while before opening.**
**Don't forget to label your samples!**

## Ribbons changed on an ironing board.

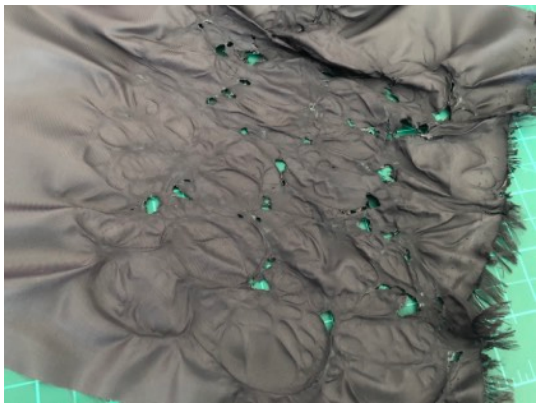
Always use silicon paper **underneath and on top** of the ribbon.  Don't melt it onto the iron!

Use a running stitch to sew two ends of ribbon together to make a circle.  Using running stitch, gather the inner edge of the ribbon together.  Cover with Silicon paper and iron until it is as set as you wanted. This finely woven polyester ribbon came from a chocolate box and melted quickly.

Pin the ribbon onto the ironing board in the pattern you want. Cover with Silicone paper and put a high heat iron on top until reset.

Another chocolate box ribbon, gathered on one edge, arranged and pinned into place.
Cover with Silicon paper and iron until it is as set as you wanted.

## Using a Heat Gun to heat up and almost burn cloth - supervised.




On a heatproof surface, loosely pin down the fabric with masking tape.  Put on gloves and and heat material with the higher setting on the heat gun  Initially nothing will happen and then it will quickly reform and melt.  The results create a look of destruction.