Calendering

What is calendering?

Calendering involves the raw plastics material being subjected to heat and pressure in an extruder which is then fed into a series of rollers to form into sheet.

The temperature and speed of the rollers influences the properties of the film or sheet. Calendering allows speciality surface treatments such as embossing or in-line lamination.

How does the process work?

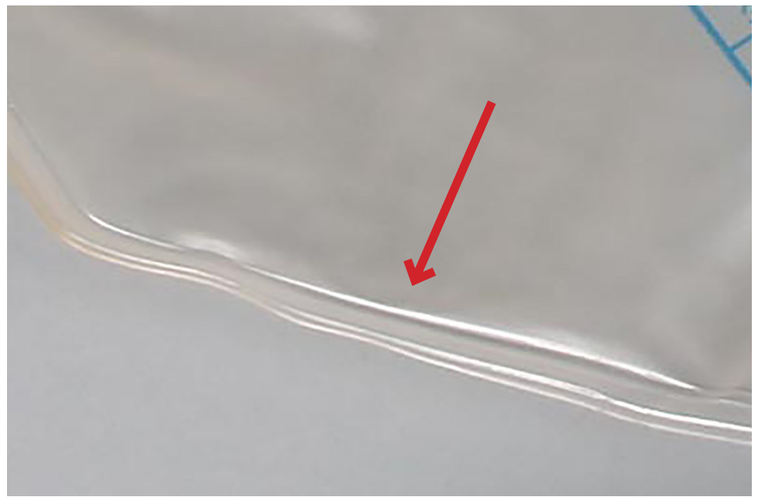
- The thermoplastic material is fed into heated rollers to start forming into a sheet.
- It then passes through a series of rollers which are set at different spacings and gradually reduce the thickness of the material as it passes through them.
- Finally it passes through a series of cooling rollers, each one reducing the temperature of the material.

What plastics materials can be used?

Polyvinyl chloride, acrylonitrile butadiene styrene, and to a lesser extent high-density polyethylene, polypropylene, and polystyrene.

What are the clues?

A continuous sheet of material.



Welding marks where seams have been closed with heat.

When was the process first introduced?

Patented for processing potash in 1790. First used to coat fabrics in 1874.

Advantages:

- High production rate.
- Medium tooling costs.
- Produces long continuous rolls without joins.

Disadvantages:

- Suited to large-scale production only.

Uses:

Films and sheet that can then be heat welded to form a variety of products including raincoats, bags, and inflatable items (including dinghies). Laminated flooring.

Find objects with calendered elements in the MoDiP collection. View the animation to see how the process works.

Museum of Design in Plastics