

STRAPPING

- Use is made here of a rectangular cross-section multiple die, the dimensions of which vary according to the final measurements of the article
- The final cross-section of a stretched article is, in fact, proportional to the cross-section of the primary, that is to say, width and thickness vary approximately in a ratio that is equal to the square root of the stretch ratio.

Extrusion temperature

- The extrusion temperatures of the material are kept between 200 and 240°C in the barrel and 220-250°C in the die zone
- Extrusion temperature variations of 20°C with respect to those given above do not diversify the end- properties of the article.

Tempering tank

- The molten material (primary) is cooled as soon as it leaves the die by immersion in a tank of water. During this step the profile must not be allowed to stretch, since this would impair the mechanical properties of the finished product. The characteristics of the article do not vary to any appreciable extent with variation of the tempering tank temperature.
- At temperatures above 40-50°C, the extrudate tends to yield crystallization, which in addition to a loss of gloss, gives rise to difficulties during the stretching operation.

Slow rolls group

- This group must be arranged in such away that the strap has an inclination of about 180° The purpose of this is to create a force of friction such as will prevent any slipping caused by the higher speed of the following group of rolls (fast rolls).

Stretching temperature

- Stretching must take place at the lowest temperatures possible (in any case, at all times lower than the transition temperature of the materials used for such production).
- When the stretching occurs in a water tank, temperatures of 95-98°C are recommended, whereas higher temperatures (150-170°C) are adopted in the case of hot-air ovens

- As for the end-properties of the article (stretch ratio being equal), there are no appreciable differences between stretching in water and stretching in hot air. It is considered, however, that the use of the water tank gives better results as a consequence of a better homogeneity of the stretch temperature

Stretch ratio

This is the parameter that most largely affects the end-properties of the strap. Stretching, in fact, imparts on the product high tenacity and low elongation. The higher the stretch ratio the better the mechanical properties of the article.

Fast rolls group

The speed of these rolls (adjustable independently of the slow rolls group) must be such as to have, in the tank or oven, stretch ratios varying from 1:6 to 1:12

Annealing tank or oven

The purpose of this treatment is to dimensionally stabilize the strap. It is obtained by passing the article through the tank or oven at a temperature similar to the stretch temperature, but at a speed (of stretch) lower by 5-6%