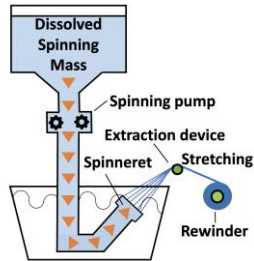


# Spinning Processes (4 A)

## Wet Spinning



### Definition

In the wet-spinning process, fibres are made from polymer solutions such as liquefied pulp, which are spun out into a chemical bath.

### Procedure

When entering a so-called precipitation bath, the chemicals re-solidify the dissolved polymers so that they coagulate. The spinneret is located in the precipitation bath for this purpose. The still soft filaments can be easily stretched. In a post-treatment, the fibres are cleaned of the chemicals. Wet spinning is used for fibre raw materials that are very temperature-sensitive or cannot be melted, or whose processing is only possible in special solvent systems.

### Examples of fibres

The wet-spinning process is used, for example, to produce the cellulosic man-made fibres viscose and modal.

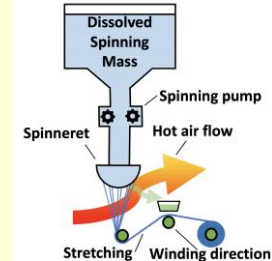


Did you know that this spinning process, which is about 100 years old, originated from the desire for a substitute fibre for silk?



# Spinning Processes (4 B)

## Dry Spinning



### Definition

In the dry spinning process, the spinning mass is dissolved in an organic solvent.

### Procedure

The dissolved spinning mass is spun out by a stream of warm air into a spinning shaft several meters high. In the process, the solvent evaporates, whereupon the fibre solidifies. In order not to stick together, the filaments must not touch each other during spinning. The solvent is recovered from the spinning shaft and can be reused.

### Examples of fibres

The dry spinning process produces, for example, polyacrylic and acetate. Acetate is obtained from cellulose and is called artificial silk because it is very similar in appearance and properties to real silk.



Did you know that acetate, because it is not a pure cellulose fibre, has different properties than viscose and modal? It resembles a synthetic fibre in its property profile.





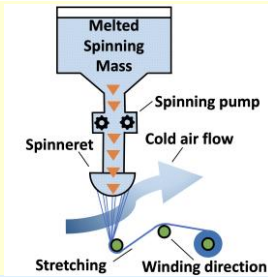
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# Spinning Processes (4 C)

## Melt Spinning

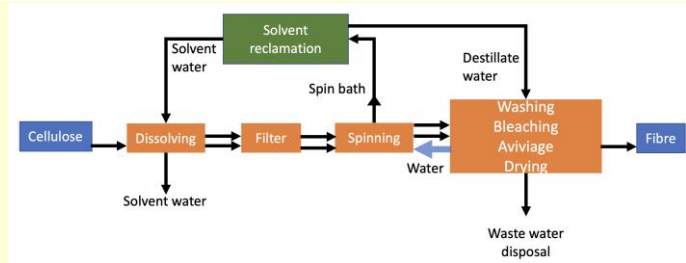


<p><b>Definition</b></p>	<p>The melt spinning process is only suitable for thermoplastic fibre raw materials that do not decompose at their melting temperature.</p>
<p><b>Procedure</b></p>	<p>The spinning mass is melted, filtered and then forced through the spinneret. In the spinning chute, which is several meters high, the hot spinning jets are cooled under a stream of cool air, causing them to solidify rapidly at very high take-off speeds. At the end, they are drawn and wound up. It is the simplest and most economical spinning process with high take-off speeds of the fibre.</p>
<p><b>Examples of fibres</b></p>	<p>The melt spinning process is used to produce the thermoplastic synthetic fibre polyester, polyamides and polypropylene.</p>
<p><b>?!</b></p>	<p>Did you know that beverage bottles made of PET - the raw material for polyester - are crushed, cleaned and remelted to save raw materials and energy?</p>



# Spinning Processes (4 D)

## Lyocell Process



<p><b>Definition</b></p>	<p>The solvent process is an ecological special spinning process for the cellulosic man-made fibre Lyocell.</p>
<p><b>Procedure</b></p>	<p>The pulp is dissolved with the organic solvent N-methylmorpholine-N-oxide (NMMO) in an aqueous system to form a viscous spinning solution. This is filtered to remove coarse components and then spun out through spinnerets into an air gap. The filaments are then coagulated in a bath of aqueous NMMO solution. The lyocell fibres are washed and aftertreated, and over 99% of the remaining NMMO is recovered and recycled.</p>
<p><b>Examples of fibres</b></p>	<p>Lyocell is a shiny, skin-friendly fibre that is strong both when dry and wet and retains a lot of moisture, making it suitable as a next-to-skin layer for functional sportswear.</p>
<p><b>?!</b></p>	<p>Did you know that Lyocell for clothing is produced by Lenzing AG under the brand name Tencel™?</p>





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