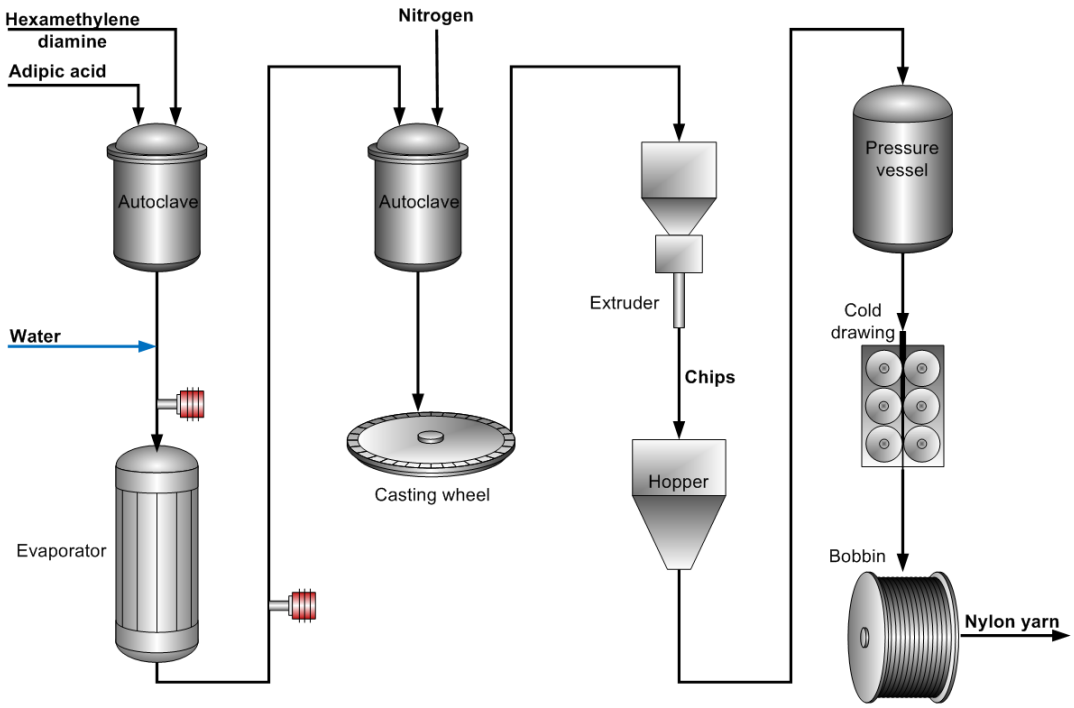
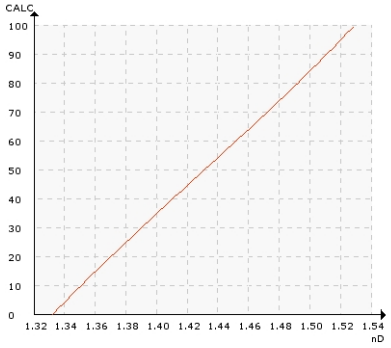


POLYAMIDE FIBER, NYLON SALT

Typical end products

Synthetic fibers, Nylon fibers, Nylon 6, Nylon 6-6

Chemical curve: Nylon salt R.I.per Conc% b.w. at Ref. Temp. of 20˚C



Introduction

Nylon 6-6 was the first commercially made all-synthetic fiber. The product resulting from the polymerization reaction of adipic acid and hexamethylene diamines is called Nylon 6-6. The name comes from the molecular chains of the two raw chemical components, containing six carbon atoms each.

Application

The reaction between adipic acid and hexamethylene diamine produces hexamethylene diammonium adipate, commonly called nylon salt. It is essential for the material to be polymerized so that high quality fibers, with very few impurities, can be achieved. Different types of nylons can be made by using a variety of processes.

In the batch process the hexamethylene diammonium adipate solution is concentrated in an evaporator and acetic acid is added to stabilize the chain length. After evaporation the salt solution is heated and the remaining water removed. TiO_2 dispersion is added and the polymerization takes place. After the polymerization is completed, the molten viscous polymer is forced out through the bottom of the autoclave, onto a casting wheel and extruded as rapidly as possible.

Nylon is also produced by continuous processing, which is more economical for large quantity production, whereas the flexibility of the batch process allows end product variations.

Nylon 6, or caprolactam, is a polymeric fiber derived from only one constituent, caprolactam. It has a lower melting point than nylon 6-6 but has superior

dyeability, elasticity and resistance to light, etc. Other types of nylons also have useful differing properties.

Installation

The K-Patents Process Refractomete PR-23-GP is used to monitor and control the nylon salt, caprolactam and polymer solution concentrations.

Typical measurement range for nylon salt is 1.33-1.41 R.I. and the process temperature is 60ºC (140ºF). Typical measurement range for caprolactam is 1.3370-1.3570 R.I.

Instrumentation	Description
	K-Patents Process Refractometer PR-23-GP is an industrial refractometer for large pipe sizes and tanks, cookers, crystallizers and kettles. Installation through a flange or clamp connection.
Measurement range:	Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 % by weight.