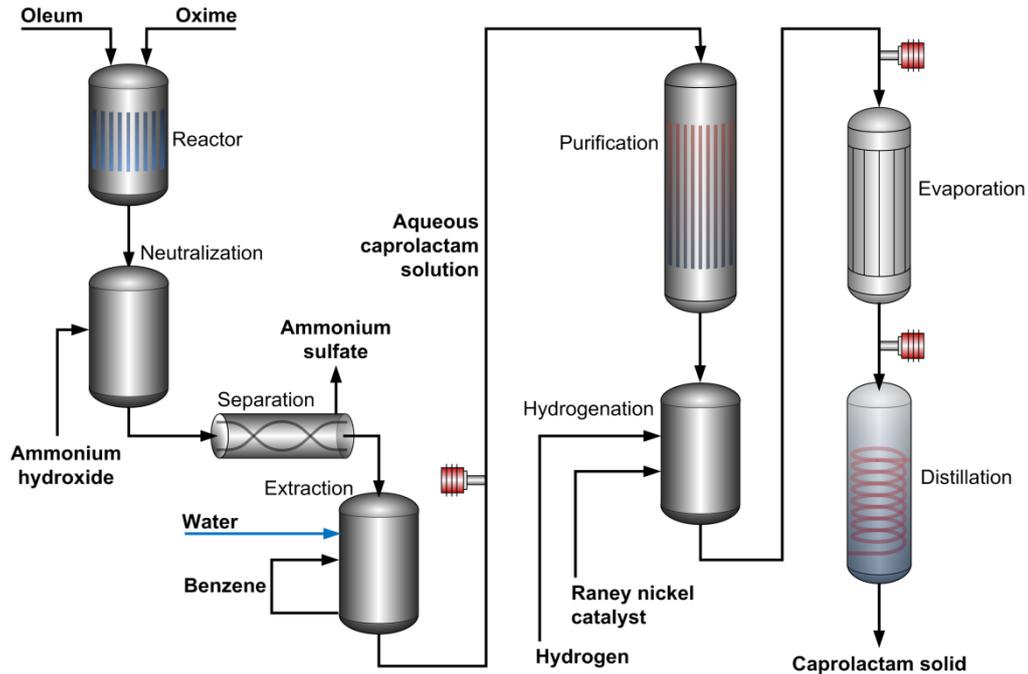


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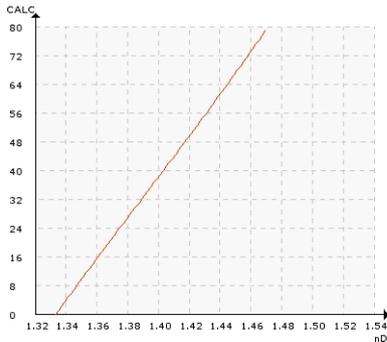


CAPROLACTAM $C_6H_{11}NO$, CYCLOHEXANONE $(CH_2)_5CO$

Typical end products

Nylon-6, Cyclohexanone

Chemical curve: Caprolactam R.I. per Conc% b.w. at Ref. Temp. of 20°C



Introduction

Caprolactam ($C_6H_{11}NO$) is the raw material for Nylon-6 plastics and fibres engineering.

Caprolactam is a chemical compound consisting of carbon, nitrogen, oxygen and hydrogen. It is made by using either cyclohexane or phenol. When caprolactam is at temperatures above its melting point, it becomes a colorless liquid. Cyclohexanone $(CH_2)_5CO$, an intermediate of caprolactam, is an organic ketone and has the appearance of clear water.

Application

Conventional caprolactam technology is based on the key intermediate cyclohexanone, which is usually produced by the oxidation of cyclohexane, but can also be made from phenol or toluene.

Separately, hydroxylamine sulfate is manufactured by the oxidation of ammonia to nitrous oxide. This is followed by hydrogenation in the presence of sulfuric acid. Then, the hydroxylamine sulfate is reacted with the cyclohexanone to produce cyclohexanone oxime. This is followed by a Beckmann rearrangement, using oleum to yield caprolactam.

Installation

The K-Patents Process Refractometer PR-23-GP is used to measure the concentration of aqueous caprolactam solution after the initial extraction to control and maintain high extraction efficiency.

The K-Patents refractometers are also used for evaporation process control. The K-Patents refractometer is mounted in the outlet of the evaporator. It provides a signal to a controller to regulate the concentration value by varying the inlet flow through the evaporators. If the concentration value increases, the inlet regulating valve increases the product flow rate through the evaporators, thereby bringing the concentration back to the required value.

Instrumentation	Description
 The image shows a K-Patents Process Refractometer PR-23-GP. It consists of a white rectangular control unit with a digital display showing '25.31' and a stainless steel probe with a red protective cap. The probe is designed for installation through a flange or clamp connection.	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.