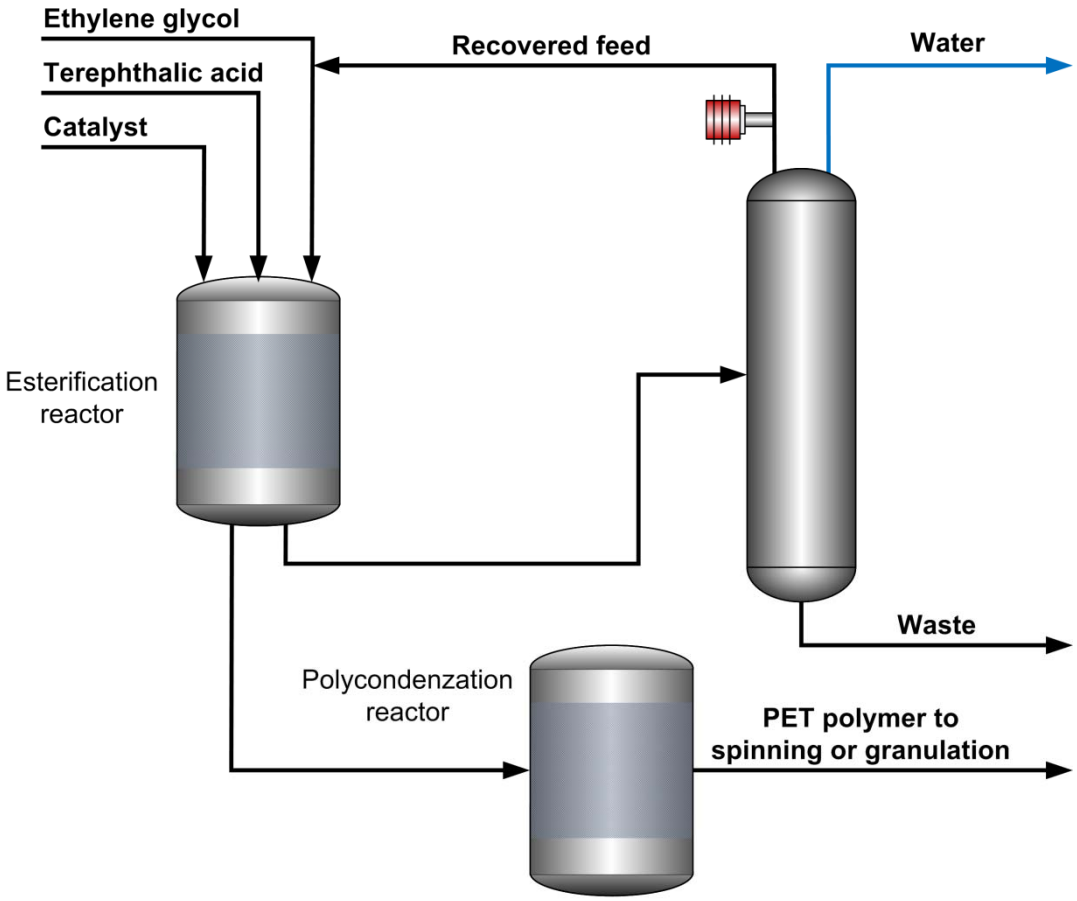
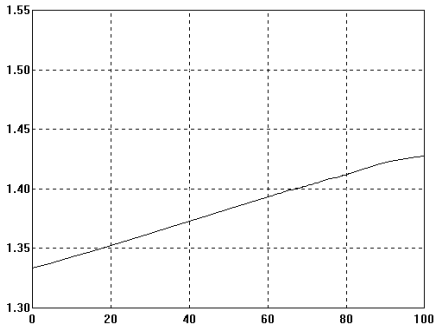


POLYETHYLENE TEREPHTHALATE (PET), ETHYLENE GLYCOL $(CH_2OH)_2$

Typical end products

Synthetic fibres, thermoforming applications, engineering resins, PET bottles

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



Introduction

Polyethylene terephthalate (PET) plastic is used to produce fibres and yarn, engineering plastics, photo and packing film, beverage and food containers. The majority of the world's PET production is for synthetic fibres (in excess of 60%) with bottle production accounting for around 30% of global demand. In discussing textile applications, PET is generally referred to as simply "polyester" while "PET" is most often used to refer to packaging applications.

Application

The monomers terephthalic acid (TPA) and ethylene glycol (EG) are reacted in the presence of a catalyst to form PET plastic.

However, all the EG does not react. The excess EG, along with other minor reaction products, such as propylene glycol (PE) and triethylene glycol (TEG), are later recovered and recycled into the fresh reactor feed. It is important to have a reliable indication of the recycling line's EG concentration in order to maintain the proper concentration of EG in the raw reactor feed.

Installation

The K-Patents Process Refractometer PR-23-GP is used to measure the concentration of ethylene glycol in the recycle stream. This is done to compensate for the unreacted EG, which is recycled back to the reactor.

Typical measurement range is from 90% to 100%. The normal process temperatures in the recycle stream will vary from 20ºC (68ºF) to 30ºC (86ºF).

It is highly recommended that a steam prism wash is used to ensure the reliability of the measurement. Appropriate equipment with hazardous and intrinsic safety approvals are available when required.

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.
Area classification:	Intrinsic safety and hazardous area approvals available.
Measurement range:	Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 % by weight.