

PRESSURE-SWING DISTILLATION OF ISOBUTYL ALCOHOL AND ISOBUTYL ACETATE

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INTRODUCTION:

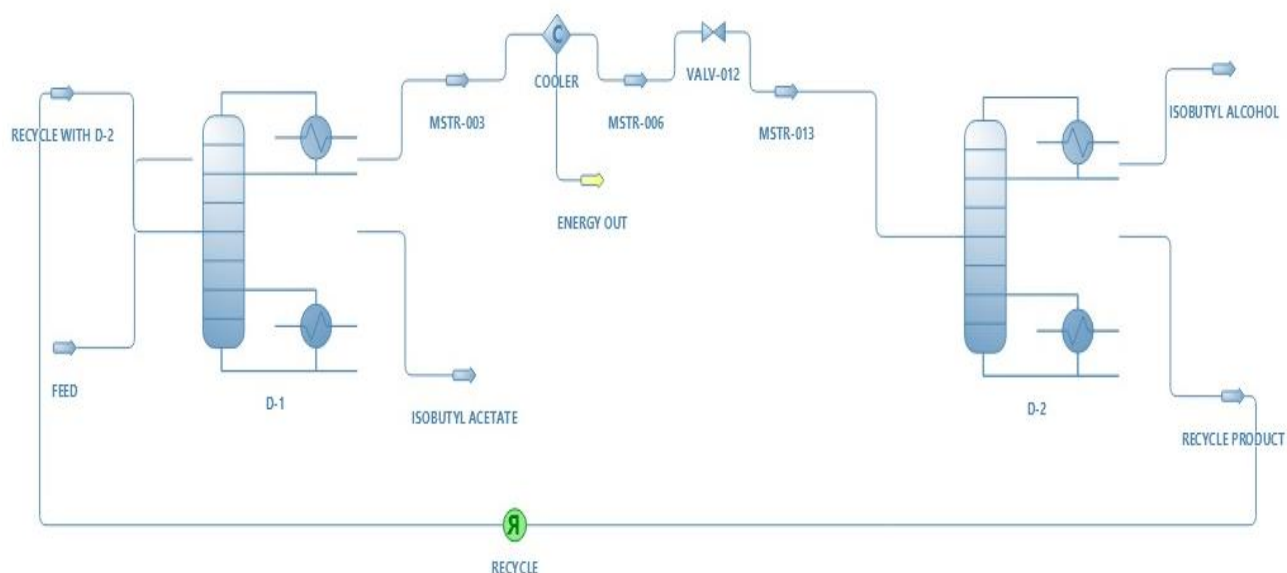
Pressure swing distillation is a method used to separate azeotropic mixture in more than one distillation column which is operated under different pressure. Binary azeotropic mixture loses their azeotropic behavior by varying pressure of the column.

Isobutyl acetate (IBAC) is widely utilized as a significant solvent in some fields including leather, perfume and pharmaceutical industry. Traditionally, isobutyl alcohol (IBA) with acetic acid is employed to synthesize IBAC. The product after reaction contains the mixture of IBAC and IBA because of the limited conversion ratio. Here Isobutyl alcohol and Isobutyl acetate are separated using pressure swing distillation.

PROCESS:

A mixture of Isobutyl alcohol and Isobutyl acetate having mole fraction 0.52 and 0.48 respectively fed to the distillation column (DC-1) which is operate at 1.01325 bar Pressure. Feed is fed to the 8th stage of DC-1. At the bottom of DC-1 0.995 mol% Isobutyl acetate were obtained. Top product feed to the 4th stage of distillation column (DC-2), which is operate at 0.19 bar Pressure. Here top product Isobutyl alcohol having 0.94 mol% is obtained. Bottom product is get recycle back and feed to the DC-1 at 8th stage.

PROCESS DIAGRAM:



RESULT:

OBJECT	FEED	RECYCLE WITH D-2	MSTR- 013	MSTR- 006	MSTR- 003	ISOBUTYL ACETATE	ISOBUTYL ALCOHOL	RECYCLE PRODUCT	
TEMPERATURE	107.54	68.2097	66.7005	66.67	108.067	116.737	68.2072	68.2097	C
PRESSURE	2	0.19	0.19	1.01325	1.01325	1.01325	0.19	0.19	Bar
MOLAR FLOW	15.907	825.633	826.454	826.454	826.454	7.16924	0.820842	825.633	Kmol/h
MOLAR FLOW (MIXTURE)/ ISOBUTYL ACETATE	7.63536	49.4398	49.4838	49.4838	49.4838	7.13339	0.043872	49.4398	Kmol/h
MOLAR FLOW (MIXTURE)/ ISOBUTYL	0.52	0.940119	0.940125	0.940125	0.940125	0.005	0.946553	0.940119	

REFERENCE:

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