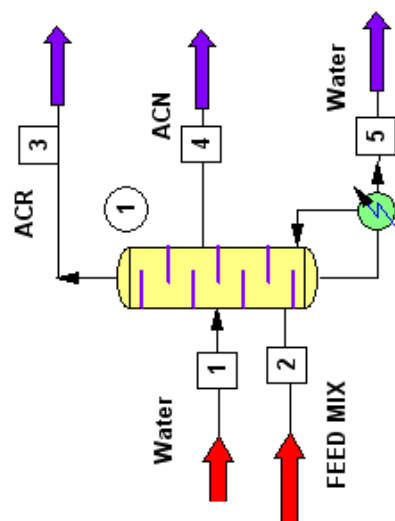


CHEMCAD 5.0

Acetonitrile-Acrylonitrile Separation by Extractive Distillation

Stream No.	1	2	3	4	5
Name	Water	FEED MIX	ACR	ACN	Water
- - Overall - -					
Molar flow kmol/hr	13599.8	17244.0	674.8	206.0	29963.0
Mass flow kg/hr	245000.0	327000.0	28142.7	4074.1	539782.1
Temp C	20.0	84.4	75.8	104.2	108.3
Pres bar	1.8	1.4	1.2	1.3	1.4
Vapor mole fraction	0.0000	1.000E-005	1.000	1.000	0.0000
Enth MJ/hr	-3.8905E+006	-4.6443E+006	32902.	-44268.	-8.3719E+006
Actual vol m3/h	245.5	349.6	15878.6	5004.1	567.2
Sed liq m3/h	245.0	332.8	33.7	4.3	539.9
Sed vap 0 C m3/h	304820.6	386500.2	15124.2	4617.2	671579.4
Component mass fractions					
Acrylonitrile	0.0000	0.0740	0.8598	0.0005	0.0000
Acetonitrile	0.0000	0.0020	0.0003	0.1582	0.0000
Water	1.0000	0.9240	0.1399	0.8413	1.0000



Nor-Par a.s

Acrylonitrile/Acetonitrile Extractive Distillation with Sensitivity Study

DESCRIPTION:

This example presents a very difficult problem where the range of desired operation is extremely narrow. A purge or pasteurization column is used to separate two very close boiling organics, acetonitrile (ACN) from acrylonitrile (ACR). These cannot be separated by conventional distillation, so large excess of water is added, causing a shift in relative volatilities, thus making the separation feasible.

This is a typical example for extractive distillation.

The process is extremely difficult to calculate due to complex thermodynamics. The Sensitivity Study option saves time needed by the engineer to find the carefully balanced process conditions.

