

CAPD 培训班练习一作答

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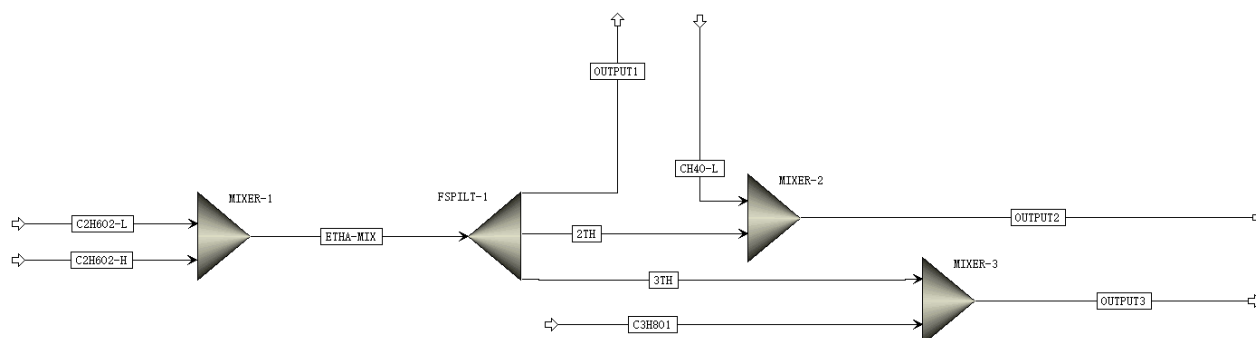
课程: 化工过程模拟及软件应用——AspenPlus应用

1 目的

1. 练习用 Aspen Plus 进行流程仿真的基本步骤
2. 掌握 Mixer、FSplit、Mult、Dupl 的用法

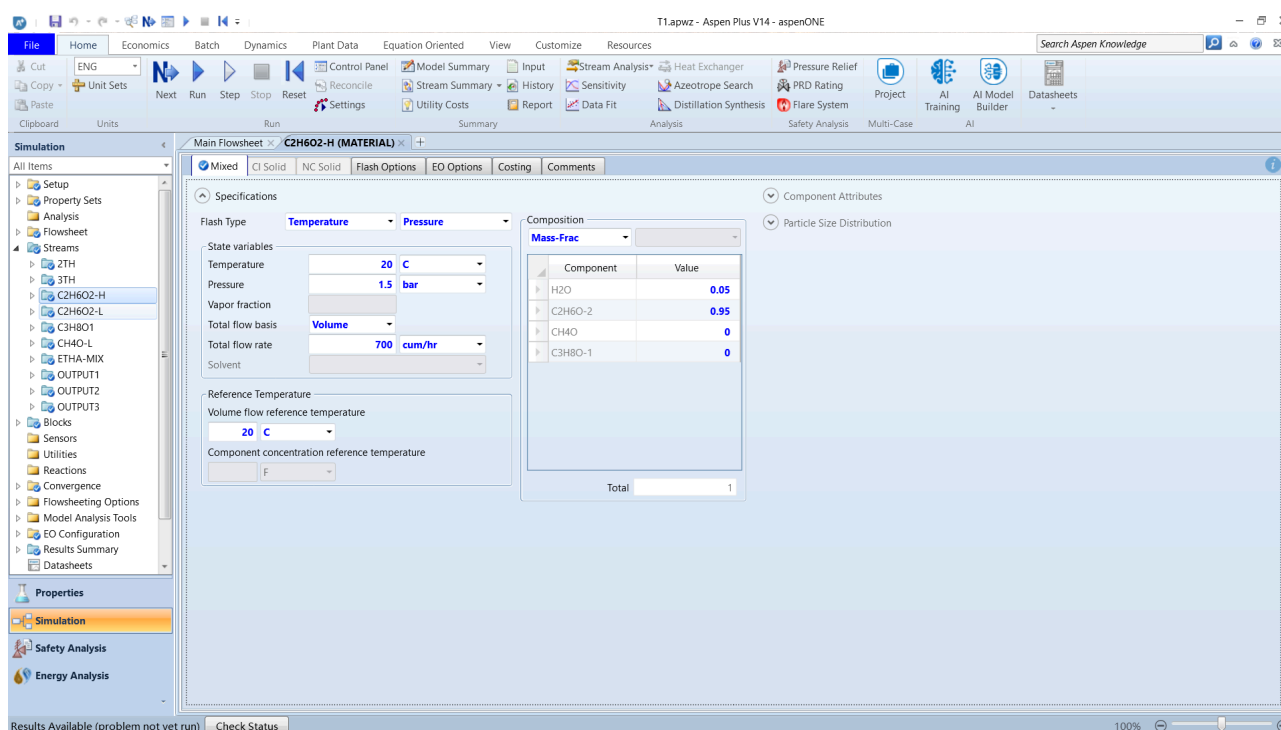
2 问题1

2.1 流程图



2.2 输入参数

2.2.1 高浓酒精



2.2.2 低浓酒精

Simulation - Main Flowsheet - C2H6O2-L (MATERIAL)

Flash Type: Temperature Pressure

State variables:

- Temperature: 30 C
- Pressure: 1 bar
- Vapor fraction: (blank)
- Total flow basis: Volume
- Total flow rate: 1000 cum/hr
- Solvent: (blank)

Reference Temperature:

- Volume flow reference temperature: 30 C
- Component concentration reference temperature: F

Composition: Mass-Frac

Component	Value
H2O	0.7
C2H6O-2	0.3
CH4O	0
C3H8O-1	0
Total	1

Results Available (problem not yet run) Check Status

2.2.3 正丙醇溶液

Simulation - Main Flowsheet - C3H8O1 (MATERIAL)

Flash Type: Temperature Pressure

State variables:

- Temperature: 20 C
- Pressure: 1.2 bar
- Vapor fraction: (blank)
- Total flow basis: Mass
- Total flow rate: 600 kg/hr
- Solvent: (blank)

Reference Temperature:

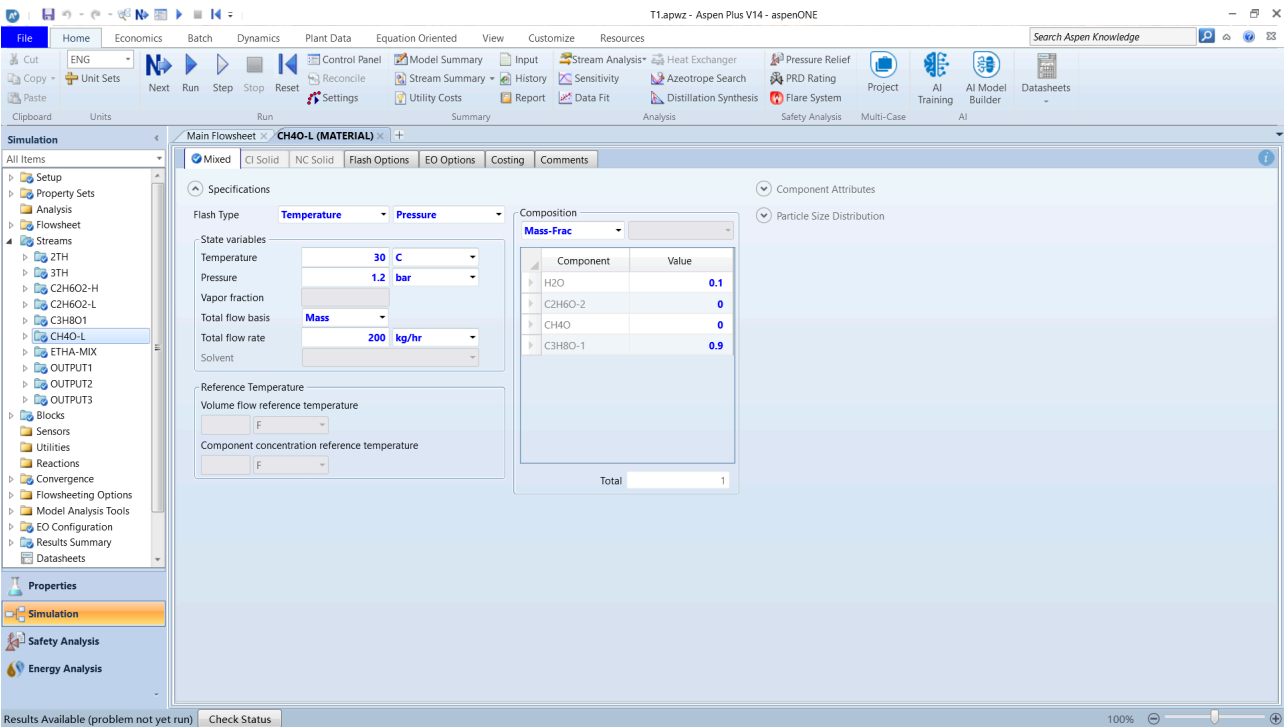
- Volume flow reference temperature: F
- Component concentration reference temperature: F

Composition: Mass-Frac

Component	Value
H2O	0.02
C2H6O-2	0
CH4O	0.98
C3H8O-1	0
Total	1

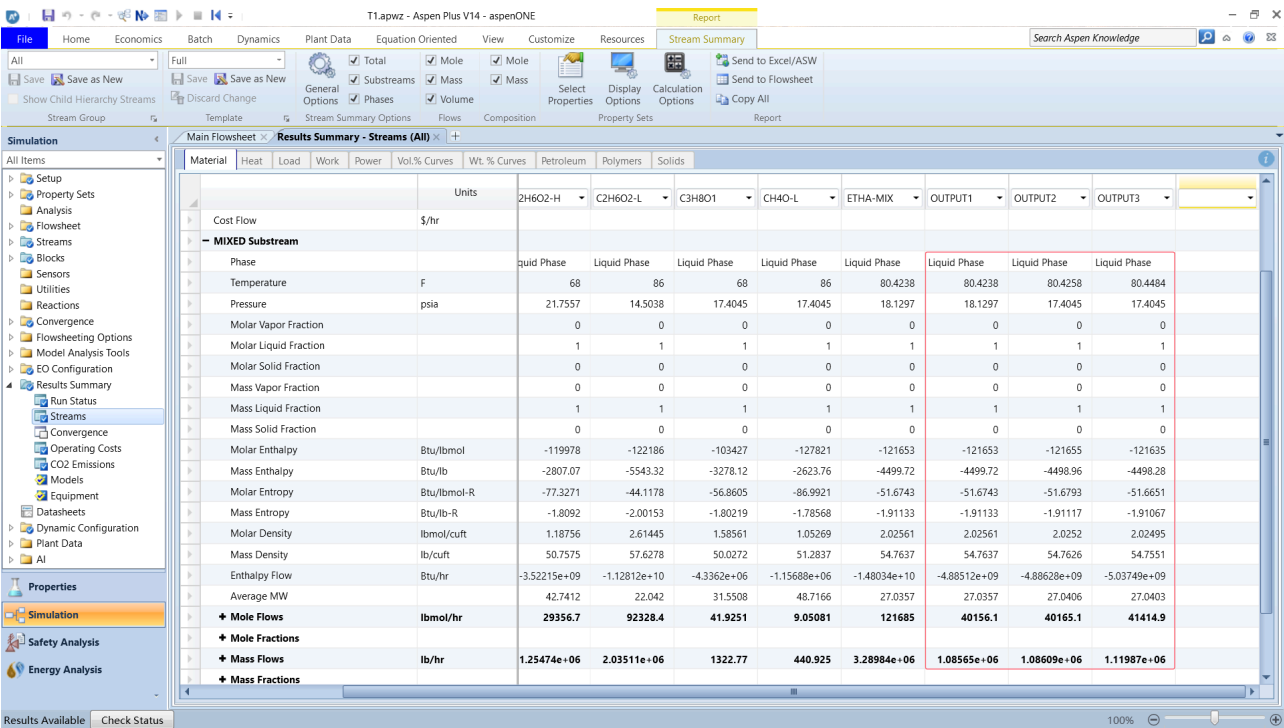
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2.2.4 甲醇溶液



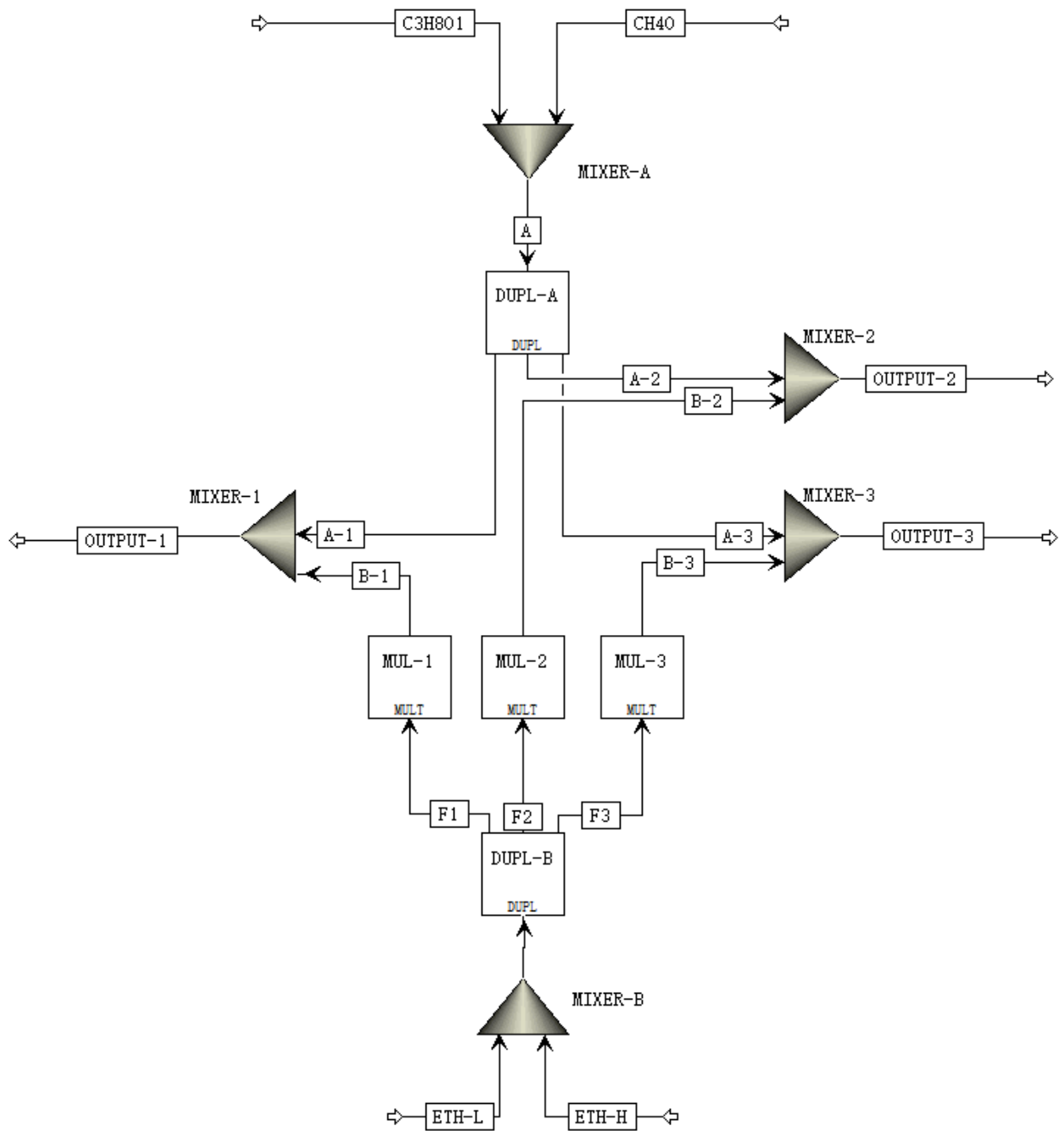
2.3 结果分析

根据仿真结果图:



3 问题2

3.1 流程图



3.2 输入参数

与问题1相同,不再重复列出。

3.3 结果分析

根据仿真结果图:

T2.apwz - Aspen Plus V14 - aspenONE

File Home Economics Batch Dynamics Plant Data Equation Oriented View Customize Resources Stream Summary

Search Aspen Knowledge

All Save Save as New Show Child Hierarchy Streams Stream Group Template Stream Summary Options Flows Composition Property Sets Calculation Options Display Options Copy All Report

Simulation Main Flowsheet Results Summary - Streams (All) [+]

All Items

Material Heat Load Work Power Vol.% Curves Wt.% Curves Petroleum Polymers Solids

	Units	TH-H	ETH-L	F1	F2	F3	OUTPUT-1	OUTPUT-2	OUTPUT-3
-- MIXED Substream									
Phase		Liquid Phase	Liquid Phase	Liquid Phase	Liquid Phase	Liquid Phase	Liquid Phase	Liquid Phase	Liquid Phase
Temperature	F	68	86	82.2546	82.2546	82.2546	82.3043	82.2795	82.2712
Pressure	psia	21.7557	14.5038	14.5038	14.5038	14.5038	14.5038	14.5038	14.5038
Molar Vapor Fraction		0	0	0	0	0	0	0	0
Molar Liquid Fraction		1	1	1	1	1	1	1	1
Molar Solid Fraction		0	0	0	0	0	0	0	0
Mass Vapor Fraction		0	0	0	0	0	0	0	0
Mass Liquid Fraction		1	1	1	1	1	1	1	1
Mass Solid Fraction		0	0	0	0	0	0	0	0
Molar Enthalpy	Btu/lbmol	-119734	-122293	-121700	-121700	-121700	-121688	-121694	-121696
Mass Enthalpy	Btu/lb	-2679.97	-5548.19	-4458.66	-4458.66	-4458.66	-4457.21	-4457.93	-4458.17
Molar Entropy	Btu/lbmol-R	-80.7819	-44.661	-52.7785	-52.7785	-52.7785	-52.7736	-52.7755	-52.7763
Mass Entropy	Btu/lb-R	-1.80811	-2.02617	-1.93362	-1.93362	-1.93362	-1.93301	-1.93329	-1.9334
Molar Density	lbmol/cuft	1.12872	2.61445	1.99926	1.99926	1.99926	1.99852	1.99889	1.99901
Mass Density	lb/cuft	50.4286	57.6278	54.57	54.57	54.57	54.5623	54.5662	54.5674
Enthalpy Flow	Btu/hr	-3.34087e+09	-1.12912e+10	-1.4632e+10	-1.4632e+10	-1.4632e+10	-7.32151e+09	-1.46375e+10	-2.19535e+10
Average MW		44.6776	22.042	27.2951	27.2951	27.2951	27.3013	27.2982	27.2972
◆ Mole Flows	lbmol/hr	27902.3	92328.4	120231	120231	120231	60166.3	120282	180397
◆ Mole Fractions									
◆ Mass Flows	lb/hr	1.24661e+06	2.03511e+06	3.28171e+06	3.28171e+06	3.28171e+06	1.64262e+06	3.28348e+06	4.92433e+06
◆ Mass Fractions									
Volume Flow	cuft/hr	24720.3	35314.7	60137.7	60137.7	60137.7	30105.4	60174.2	90243.1

Results Available (problem not yet run) Check Status

100%