

Aspen Tutorial 2: Simplified organosolv pretreatment of biomass

Input data

- Chemicals

Name	Source	MW	Solid enthalpy of formation (J/kmol)	VSPOLY Solid molar volume (m ³ /kmol)	CPSP01/1 Solid heat capacity (J/kmol.K)	CPSP01/2
Water	Database					
Ethanol	Database					
H ₂ SO ₄	Database					
Glucose	Database					
Xylose	Database					
Cellulose	User defined	162.1436	-976362000	0.106	-11704	672.07
Xylan	User defined	132.117	-762416000	0.0864	-9529.9	547.25
Lignin	User defined	122.493	-1592659000	0.0817	31431.7	394.427

- Thermodynamic model: NRTL
- Setup: MIXCISLD
- Feeds (kg/h)

	Water	Ethanol	H ₂ SO ₄	Cellulose	Xylan	Lignin
Biomass (MIXED)	7.7					
Biomass (CISOLID)				44.9	23	24.4
Solvent	200	200				
Acid			1			

- Reactor – 1.8 MPa, 180°C

Reaction	Conversion (%)
Cellulose + water → glucose	3
Xylan + water → xylose	95
Lignin → soluble lignin	5

- Filter

Fraction of solids-to-solid outlet	1
Fraction of liquid-to-liquid outlet	0.9

Process flow diagram

