

Heat Exchangers		
Tag	Heat transfer Area (m2)	Purchase Cost (USD)
C101	7.15	4167
C201	4.39	3703
C202	4.39	3703
C501	4.10	3645
H301	18.28	16305
H501	22.45	16821
H601	6.06	4000
HX201	2.12	3157
S102 Condenser	12.63	15607
S103 Condenser	0.76	2616
S105 Condenser	2.19	3180
S105 Reboiler	1.34	2886
S201 Condenser	5.83	3962
S201 Reboiler	5.56	3916
S202 Condenser	1.13	2800
S202 Reboiler	4.31	3687
S303 Condenser	0.43	2394
S501 Condenser	15.57	15970
S503 Condenser	14.18	15798
S504 Condenser	11.52	15469

Electric Heaters		
Tag	Duty (W)	Purchase Cost (USD)
H101	7315	9495
H201	762	10634
H202	2799	21516
H302	44817	260988
H303	55685	9495
H401	50743	260988
H402	24057	9495
S102 Reboiler	34193	9497
S201 Reboiler	111593	10637
S303 Reboiler	95156	9495
S501 Reboiler	26874	9495
S503 Reboiler	1114160	9495
S504 Reboiler	22839	9495

Reactors			
Tags	Volume (m3)		Purchase Cost (USD)
R101	0.92		40107
R201	3.93		76045
R301	0.02		20855
R401	2.75		34791
R501	0.70		63565
R601	0.60		36515

Packed Columns				
Tag	Diameter (ft)	Height (ft)	Shell mass (pounds)	Purchase Cost (USD)
S102	0.54	10.77	84.01	2308
S103	1.29	25.80	481.71	7622
S105	1.32	26.35	502.51	7832
S201	1.89	37.81	1034.95	12387
S202	1.63	32.67	772.46	10302
S203	1.97	39.49	1128.52	13077
S303	1.30	25.99	488.83	7694
S501	0.53	10.67	82.37	2274
S503	4.30	86.02	5356.15	34158
S504	0.46	9.12	60.25	1789

Flash Vessels				
Tag	Diameter (ft)	Height (ft)	Shell mass (pounds)	Purchase Cost (USD)
S301	0.68	0.83	26.73	882
S401	0.58	0.70	19.31	626
S502	0.65	0.79	24.19	798

Decanters				
Tag	Diameter (ft)	Height (ft)	Shell mass (pounds)	Purchase Cost (USD)
S101	1.64	8.22	195.42	4201
S302	0.39	1.96	11.14	292

Crystallizers			
Tag			Purchase Cost (USD)
S104			16706
S504			25798

Wash Columns			
Tag			Purchase Cost (USD)
S106			16668

Refrigeration System		
Equipment		Purchase Cost (USD)
Refrigerator		18626
Pumps		19310

Storage (Buffer) Tanks		
Tag	Volume (m3)	Purchase Cost (USD)
D101	156.68	41824
D102	141.82	39545
D202	9745.23	617254
D203	71.00	27438
D502	72.75	27772
D601	286.55	59610
T101	11.38	13401
T102	3.14	10196
T301	4.43	10794
T401	2.83	10042
T501	3.54	10386
T601	5.32	11174

Mixers		
Tag	Flowrate (m3/s)	Purchase Cost (USD)
M101	0.000129	16310
M201	0.000250	17777
M301	0.000051	15667
M601	0.000062	15735
M602	0.000176	16833

Pumps		
Tag	Duty (W)	Purchase Cost (USD)
P101	893	4641
P201	1692	4648
P202	246	4636
P301	290	4637
P302	289	4637
P303	180	4636
P304	348	4637
P401	222	4636
P501	66835	5686
P601	417	4637

Fans		
Tag	Flowrate (m3/s)	Purchase Cost (USD)
F201	18.81	6296
F301	360.25	10108
F302	20.97	6332
F401	394.05	10421

Granulators		
Tag	Output (tonne/year)	Purchase Cost (USD)
G201	832.40	24621
G501	814.69	24621

Waste Treatments		Purchase Cost (USD)
Type		
Bioreactor		20107
Absorption		18033
Filter		12839