

Major Equipment List with Details

	Splitting Columns
Design Temp	288°C
Design Press	850 psig
MOC	Clad 316L
Dimensions	27m High 1.1m OD

Glycerine	Pre Drier	Evaporator	Condensing Col	Stripping Col
Design Temp	160°C	250°C	160°C	200°C
Design Press	5.2 Bar	40 Bar / -1 Bar	1 Bar / -1 Bar	1 Bar / -1 Bar
MOC	316L	316L	316	316Ti
Dimensions	4.9m High 1.1m dia	9.9m Long 1.2m dia	10.4m Long 2m dia	5.02m Long 0.8m dia

Number 3 distillation unit consists of a topper, main still, and back end still:

Fatty Acid	Pre-Still	Main Still	Back Ends Still
Design Temp	250°C	275°C	250°C
Design Press	30 mm Hg abs	Full Vacuum	Full Vacuum
MOC	316Ti	316Ti	316
Dimensions		11.5m Long 2.4m dia	4.5m Long 1.3m dia

Number 4 distillation unit consists of a main still and back end still:

Fatty Acid	Main Still	Back End Still
Design Temp	250°C	250°C
Design Press	Full Vacuum/2 Barg	Full Vacuum/2 Barg
MOC		
Dimensions	10.4m Long 2.75m dia	4.23m Long 1.5m dia

Separation	Crystallizer Bank (12)	WAS Mixer
Design Temp	100°C/100°C	150°C
Design Press	6 / 5 Bar	2.9Barg
MOC	316Ti	316
Dimensions	8.45m long .368m ID	2.9m T/T 1.2m dia

5 Heine Centrifuge	Krauss HZ80 S0321	Krauss HZ100 S0305
316 SS	316 SS	316 SS
	Bowl dia 0.8m	Bowl dia 1.0m

Hydro	Drier Vessel	Reactor Vessel	Filtration Tank
Design Temp	200°C	350°C	110°C
Design Press	Full Vacuum/2 Bar	35 Barg	15psi
MOC	316	316 S11	Stainless Steel
Dimensions	6.3m High 2.5m dia	5.5m T/T 2.4m ID	4.9m High 3.0m dia

Ester Plt	Pre-weigh Vessel	Reactor	Bleaching Vessel
Design Temp		300°C	200°C
Design Press		82.8 barg (coils) FV – 7.0 barg (Shell)	FV - 3 barg (shell) FV - 7 barg (tube)
MOC	316 shell	316 shell, 254 SMO Coils	316 shell & tubes
Dimensions	Approx 35m ³ volume + agitation	Approx 35.8m ³ volume + agitation	Approx 43.5m ³ volume

Sorbitan	Pre-Reactor	Reactor
Design Temp	232°C (Shell)	370°C (Shell)
Design Press	FV – 3.67 barg (Shell)	FV – 3.5 barg
MOC	EN58J liner/ CS outer (shell) 904L Coils	316 (shell) 904L (coils)

Triacetin	Bubble Column	Reactor 1	Reactor 2	Reactor 3
Design Temp	150°C (Shell)	250°C (Shell) 250°C (Tubes)	250°C (Shell) 250°C (Tubes)	250°C (Shell) 250°C (Tubes)
Design Press	4.0 barg (Shell)	3.0 barg (shell) 20.0 barg (tubes)	2.0 barg (shell) 20.0 barg (tubes)	2.0 barg (shell) 20.0 barg (tubes)
MOC		316 shell/254SMO tubes	316 shell/904L tubes	316 shell/904L tubes
Dimensions		3.5m ³	2.7m ³	2.7m ³

Triacetin	No. 1 Still Col	No. 1 Still Reboiler	No. 2 Still Reboiler Vessel	No. 2 Still Thermo-siphon	Deodorizer
Design Temp	200°C	200°C	200°C	200°C	200°C
Design Press	10.0 barg	2.0 barg	2.0 barg	20.0 barg	3.0 barg
MOC	904L	316	316	316	
Dimensions	0.85 dia x 7.5m		1.3m ³ working	20m ²	