

**HEAT EXCHANGER SPECIFICATION SHEET**

Released to the following company:

**SI Units**SC  
SSD

Job No.

Customer	PAD JAM PETROCHEMICAL		Reference No.	
Address			Proposal No.	
Plant Location	ASSALOUYEH	Date	4/8/2024	Rev 1
Service of Unit	Evaporator	Item No.		
Size	600 - 924.32 x 2500 mm	Type	BKU Horizontal	Connected In 1 Parallel 1 Series
Surf/Unit (Gross/Eff)	61.76 / 58.956 m <sup>2</sup>	Shell/Unit	1	Surf/Shell (Gross/Eff) 61.76 / 58.956 m <sup>2</sup>

**PERFORMANCE OF ONE UNIT**

Fluid Allocation	Shell Side		Tube Side	
	Propane		Styrene	
Fluid Name				
Fluid Quantity, Total	kg/hr	3104.1		40623
Vapor (In/Out)		1346.2	3104.1	
Liquid		1757.8		40623 40623
Steam				
Water				
Noncondensables				
Temperature (In/Out)	C	1.24	1.00	15.20 5.00
Specific Gravity		0.5331		0.9100 0.9184
Viscosity	mN-s/m <sup>2</sup>	0.0076 V/L 0.1294	0.0076	0.8200 0.9600
Molecular Weight, Vapor				
Molecular Weight, Noncondensables				
Specific Heat	kJ/kg-C	1.7859 V/L 2.4339	1.7838	1.6040 1.5780
Thermal Conductivity	W/m-C	0.0161 V/L 0.1090	0.0160	0.1500 0.1500
Latent Heat	kJ/kg	375.43	375.75	
Inlet Pressure	bar	4.813		3.000
Velocity	m/s	0.18		0.67
Pressure Drop, Allow/Calc	bar	0.050	0.036	0.500 0.118
Fouling Resistance (min)	m <sup>2</sup> -K/W	0.000170		0.000200

Heat Exchanged	0.1832 MegaWatts	MTD (Corrected)	7.9 C
Transfer Rate, Service	391.37 W/m <sup>2</sup> -K	Clean	524.10 W/m <sup>2</sup> -K
		Actual	431.04 W/m <sup>2</sup> -K

**CONSTRUCTION OF ONE SHELL**

Sketch (Bundle/Nozzle Orientation)

		Shell Side	Tube Side	
Design/Test Pressure	barG	22.000 /	6.800 /	
Design Temperature	C	120.00	85.00	
No Passes per Shell		1	4	
Corrosion Allowance	mm	3	3	
Connections	In mm	1 @ 92.050	1 @ 77.927	
Size & Rating	Out mm	1 @ 146.33	1 @ 77.927	
	Intermediate	@	@	

Tube No.	188U	OD	19.050 mm	Thk(Avg)	1.651 mm	Length	2.500 m	Pitch	23.813 mm	
Tube Type	Plain	Material	SA-334 6		Tube pattern	30				
Shell	SA-516 70N	ID	600.00	OD	622.22 mm	Shell Cover	SA-516 70N	(Integ.)		
Channel or Bonnet	SA-516 70N	Channel Cover	SA-516 70N							
Tube-sheet-Stationary	SA-350 LF2 CL.1	Tube-sheet-Floating								
Floating Head Cover		Impingement Plate	Circular plate							
Baffles-Cross	Carbon steel	Type Support	%Cut (Diam)		Spacing(c/c)	612.70	Inlet	mm		
Baffles-Long		Seal Type	None							
Supports-Tube		U-Bend								
Supports-Tube		Type	Full support							
Bypass Seal Arrangement	pairs seal strips	Tube-Tube-sheet Joint	Expanded (2 grooves)							
Expansion Joint		Type	None							
Rho-V2-Inlet Nozzle	714.96 kg/m-s <sup>2</sup>	Bundle Entrance	Bundle Exit		kg/m-s <sup>2</sup>					
Gaskets-Shell Side	Mach. Mtl. (Kammprofile)\Flex. Face)	Tube Side	Mach. Mtl. (Kammprofile)\Flex. Face)							
- Floating Head	Mach. Mtl. (Kammprofile)\Flex. Face)									
Code Requirements		TEMA Class	R							
Weight/Shell	2077.4 kg	Filled with Water	4053.1 kg	Bundle	836.05 kg					

Remarks: Supports/baffle space = 3.

Full Vacuum on Shell Side and Tube Side will be considered.

Note: Reported duty and flow rates include a user-specified multiplier of 1.10.

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