



Toase-e Park Sanati Gohar Ofogh
Petrochemical Co.
**CONCEPTUAL, BASIC and DETAIL DESIGN
ENGINEERING OF STYRENE PARK OFFSITE**



Document Title: Chiller (Evaporator) Data Sheet

Document No.: EI027-HSE-VD –ME–DSH–007- R0

Rev. R0

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STYRENE PARK OFFSITE

Document Title:

Chiller (Evaporator) Data Sheet

Evaporator capacity shall be compatible with project documents and submitted compressors capacity.

Vendor Reply: It is confirmed that evaporator is completely match with project documents. just we have considered 10% margin on duty as the safety margin of heat exchanger. this 10% margin has been considered on each chiller.

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R0	21-02-2024	IFA	F.sh	M.O	A.M



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REVISION RECORD SHEET

Page Page	Revisions							Page	Revisions						
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1	X							41							
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HTRI		HEAT EXCHANGER SPECIFICATION SHEET		Page 1	
Released to the following company:		SC SSD		SI Units	
Customer	PAD JAM PETROCHEMICAL	Job No.		Reference No.	
Address		Proposal No.		Date 2/21/2024 Rev 0	
Plant Location	ASSALOUYEH	Item No.		Connected In 1 Parallel 1 Series	
Service of Unit	Evaporator	Surf/Unit (Gross/Eff)		76 / 58.884 m2	
Size	600 - 924.32 x 2500 mm	Type	BKU Horizontal		
PERFORMANCE OF ONE UNIT					
Fluid Allocation		Shell Side		Tube Side	
Fluid Name		Propane		Propane	
Fluid Quantity, Total	kg/hr	3104.1		3104.1	
Vapor (In/Out)		1346.2		3104.1	
Liquid		1757.9		40623	40623
Steam					
Water					
Noncondensables					
Temperature (In/Out)	C	1.00		15.20	5.00
Specific Gravity		0.5331		0.9100	0.9184
Viscosity	mN-s/m ²	0.0076	V/L 0.1295	0.0076	0.8200 0.9600
Molecular Weight					
Molecular Weight					
Specific Heat	kJ/kg-C	1.7857	V/L 2.4337	1.7835	1.6040 1.5780
Thermal Conductivity	W/m-C	0.0161	V/L 0.1090	0.0160	
Latent Heat	kJ/kg	375.46		375.79	
Inlet Pressure	kPa		480.96		300.00
Velocity	m/s		0.18		
Pressure Drop, Allow/Calc	kPa	5.000		3.429	
Fouling Resistance (min)	m ² -K/W		0.000170		
Heat Exchanged					
Transfer Rate, Service	183233 W	391.85	W/m ² -K	Clean 524.15	W/m ²
CONSTRUCTION OF ONE SHELL					
Pressure	kPaG	2200.0	Shell Side	680.00	Tube Side
Temperature	C	120.00		85.00	
Thickness	mm	1		4	
Tube Thickness	mm	3.000		3.000	
Inlet	mm	1 @ 154.05		1 @ 77.927	
Outlet	mm	1 @ 102.26		1 @ 77.927	
Intermediate		@		@	
Tube No.	188U	OD 19.050	mm	Thk(Avg) 1.651	mm
Tube Type	Plain			Length 2.500	m
Shell	SA-516 70N	ID 600.00	OD	Pitch 23.813	mm
Channel or Bonnet	SA-516 70N			Material SA-334 6	Tube pattern 30
Tubesheet-Stationary	SA-350 LF2 CL.1			Shell Cover SA-516 70N	(Integ.)
Floating Head Cover				Channel Cover SA-516 70N	
Baffles-Cross	Carbon steel	Type Support	%Cut (Diam)	Spacing(c/c) 611.90	Inlet mm
Baffles-Long				Impingement Plate Circular plate	
Supports-Tube				U-Bend	Type Full support
Bypass Seal Arrangement	pairs seal strips			Tube-Tubesheet Joint Expanded (2 grooves)	
Expansion Joint				Type None	
Rho-V2-Inlet Nozzle	91.14	kg/m-s ²		Bundle Entrance	Bundle Exit kg/m-s ²
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	2116.0	kg	Filled with Water	4073.4	kg
Weight/Bundle				872.38	kg
Remarks:	Supports/baffle space = 3.				
	Material guarantee is in vendor scope.				
	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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Evaporator quantity for each unit of specified Vendor Reply evaporator for quantity of each unit has been specified in shell/unit

Meeting Conclusion: Reported duty is for one chiller. 10% oversize already considered in duty and flow.

Meeting Conclusion: Already correct. Closed.

Meeting Conclusion: Already correct. Closed.

Shall be revised Vendor Reply: this is specific gravity and same as client duty spec

Please recheck Vendor Reply: 1500 noted and updated required in revised

Refer to client Duty Specification for Refrigeration Unit, page 5, styrene molar specific heat capacity is 167.1 and 167.4 kJ/kmol.C at 15.2 and 5°C respectively. By considering 104.2 kg/kmol as styrene molecular weight (specified in client duty specification), mass specific heat capacity is calculated (167.1/104.2=1.604 and 167.4/104.2=1.578 kJ/kg.C)

Meeting Conclusion: Already correct. Closed.

