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FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

20-0056

As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Southern Heat Exchanger Corporation: Tuscaloosa, AL Division, 6100 Old Montgomery Highway, Tuscaloosa, AL 35405
(Name and address of Manufacturer)

2. Manufactured for Westrock, North Charleston, SC
(Name and address of Purchaser)

3. Location of installation Westrock, North Charleston, SC
(Name and address)

4. Type Horizontal Heat Exchanger 20-0056
(Horizontal, vertical, or sphere) (Tank, separator, jkt. vessel, heat exch., etc.) (Manufacturer's serial number)
None SB 200056-1 15649
(CRN) (Drawing number) (National Board number)
5. ASME Code, Section VIII, Div. 1 2019 None None
(Edition and Addenda, if applicable (date)) (Code Case number) (Special service per UG-120(d))

Items 6-11 incl. to be completed for a single wall vessels, jackets of the jacketed vessels, shell of heat exchangers, or chamber of multichamber vessels.

6. Shell:	(a) Number of course(s)			4			(b) Overall length			21'-3 1/2"				
Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment		
No.	Diameter, in.	Length (ft. & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time	
2	33 3/4"	5'-11"	SA-240 304L	3/8"	1/16"	1	Spot	85%	1	Spot	85%			
1	33 3/4"	6'-8 15/16"	SA-240 304L	3/8"	1/16"	1	Spot	85%	1	Spot	85%			
1	37"	0'-10 13/16"	SA-240 304L	3/8"	1/16"	1	Spot	85%	1	Spot	85%			

Body Flanges on Shells												
No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Matl	Washer(OD,ID,thk)	Washer Matl
1	RFWN	33"	38 3/8"	3 1/4"	3/8"	SA-182 F 304L	Welded	Shell	(36)-3/4"	SA-193 B8		
1	RFWN	33"	41 5/8"	3 13/16"	3/8"	SA-182 F 304L	Welded	Shell	(36)-3/4"	SA-193 B8		
1	RFWN	36 1/4"	41 5/8"	3 1/4"	3/8"	SA-182 F 304L	Welded	Shell	(36)-3/4"	SA-193 B8		

7. Heads (a)		SA-240 304L				(b)								
		(Material spec. number, grade or type) (H.T. - time and temp)				(Material spec. number, grade or type) (H.T. - time and temp)								
	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	End	0.25"	1/16"			2:1					X	N/A	None	-
(b)														

Body Flanges on Heads												
	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Matl	Washer(OD,ID,thk)	Washer Matl
(a)												
(b)												

8. Type of jacket None Jacket closure (Describe as ogee weld, bar, etc.)

If bar, give dimensions; if bolted, describe or sketch

9. MAWP 101 N/A psig at max. temp. 250 N/A °F Min. design metal temp. -20 at 101 psig
Internal External Internal External

10. Impact test No per UHA-51 at temperature of °F
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. Test pressure 140 psig hydro Proof test

Items 12 and 13 to be completed for tube sections.

12. Tubesheet	SA-240 304L	38 3/8"	1 3/4"	1/8"	Bolted
	Stationary (material spec. no.)	Diameter (subject to press.)	Nominal thickness	Corr. allow.	Attachment (Welded or Bolted)
	SA-240 304L	32 3/4"	1 3/4"	1/8"	Rolled
	Floating (material, spec., no.)	Diameter	Nominal thickness	Corr. allow.	Attachment
13. Tubes	SA-249 304L	1 1/2"	18 BWG	214	Straight
	Material spec., no., grade or type	O.D.	Nominal thickness	Number	Type (straight or U)

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 Manufacturer's Serial No. 20-0056 CRN None National Board No. 15649

Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: (a) No. of course(s) 1 (b) Overall length 2'-2 7/8"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft. & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	33 3/4"	1'-1"	SA-240 304L	3/8"	1/16"	1	Spot	85%	1	Spot	85%		

Body Flanges on Shells												
No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Matl	Washer(OD,ID,thk)	Washer Matl
1	RFWN	33"	38 3/8"	3 1/4"	3/8"	SA-182 F 304L	Welded	Lt. Bon.	(36)-3/4"	SA-193-B8		

15. Heads: (a) SA-240 304L (Material spec., number, grade or type)(H.T.- time and temp.) (b) SA-240 304L (Material spec., number, grade or type)(H.T.- time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	End	1/4"	1/16"			2:1					X	N/A	None	-
(b)	End	0.4063"	1/8"	20"						X	X	N/A	None	-

Body Flanges on Heads												
	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Matl	Washer(OD,ID,thk)	Washer Matl
(a)												
(b)	Head	Ring	31 7/8"	35 5/8"	2 5/8"	N/A	SA-182 F 304L	Welded	(36)-3/4"	SA-193 B8		

16. MAWP 118 N/A psig at max. temp. 250 N/A *F Min. design metal temp. -20 at 118 psig
 Internal External Internal External

17. Impact test No per UHA-51 at temperature of *F
 [Indicate yes or no and the component(s) impact tested]

18. Hydro., pneu., or comb. Test pressure 160 psig hydro Proof test

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	Attach. Details		Loc. (Insp. Open)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet/Outlet	2	8"	150#	SA-312 304L	SA-182 F 304L	0.322"	1/16"	Inherent	e	RFWN	
Inlet/Outlet	2	12"	150#	SA-312 304L	SA-182 F 304L	0.375"	1/16"	Inherent	e	RFWN	
Vent/Drain	2	3/4"	6000#	N/A	SA-182 F 304L	N/A	1/16"	Inherent	z-1	Thd. Cplg.	

20. Supports: Skirt No Lugs N/A Legs N/A Others (2) Saddles Attached Shell, Welded
 (Yes or no) (Number) (Number) (Describe) (Where and how)

21. Manufacturer's Partial Data Reports properly identified and signed by the Commissioned Inspectors have been furnished for the following items of the report (list the name of part, item number, Manufacturer's name, and identifying number):

22. Remarks

All 304/304L material shall be dual certified.
 Bundle Length 19' - 11 3/4".

Manufactured by Southern Heat Exchanger Corporation: Tuscaloosa, AL Division, 6100 Old Montgomery Highway, Tuscaloosa, AL 35405
 Manufacturer's Serial No. 20-0056 CRN None National Board No. 15649

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.

U Certificate of Authorization Number 7037 Expires 11/29/20
 Date 8/26/20 Name Southern Heat Exchanger Corporation Signed [Signature]
 (Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by OneCIS Insurance Company of Lynn, MA

have inspected the pressure vessel described in this Manufacturer's Data Report on 8.26.20, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer make any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for personal injury or property damage or the loss of any kind arising from or connected with this inspection.

Date 8.26.20 Signed [Signature] Commissions NB11166
 (Authorized Inspector) (National Board Authorized Inspector Commission number)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements in this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number Expires

Date Name Signed
 (Assembler) (Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by

of , have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items , not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of . By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date Signed Commissions
 (Authorized Inspector) (National Board Authorized Inspector Commission number)