

18076-A Rev.2
drawing #
B-7994
Mfg SN

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

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

1. Manufactured and certified by

Perry Products Corporation, 25 Mount Laurel Road, Hainesport, New Jersey, 08036, USA

(Name and address of Manufacturer)

2. Manufactured for

Daramic, LLC., 5525 US 60 East, Owensboro, Kentucky, 42303, USA

(Name and address of Purchaser)

3. Location of installation

Daramic, LLC., 5525 US 60 East, Owensboro, Kentucky, 42303, USA

(Name and address)

4. Type

Horizontal

Heat Exchanger

B-7994

(Horizontal, vertical, or sphere)

(Tank, separator, jkt. vessel, heat exch., etc.)

(Manufacturer's serial number)

5. ASME Code, Section VIII, Div. 1

2013/ N/A

7995

2015

[Edition and Addenda, if applicable (date)]

(National Board number)

[Special Service per UG-120(d)]

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

6. Shell: (a) Number of course(s)

4

(b) Overall length

9' 9.50"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	18.0" OD	7' 0.125"	SA-312TP-304L	0.188"	0.00"	1	None	85%	1	None	70%	N/A	N/A
1	18.0" OD	2' 0.875"	SA-312TP-304L	0.188"	0.00"	1	None	85%	1	None	70%	N/A	N/A
2	18.0" x 30.0"	4.25"	SA-240-304L See Line 7	0.25"	0.00"	S	None	85%	1	None	70%	N/A	N/A

Body Flanges on Shells

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting				
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

7. Heads: (a)

SA-240-304L Flanged & Flued Exp. Joint

(Material spec. number, grade or type) (H.T. - time and temp.)

(b)

SA-240-304L Flanged & Flued Exp. Joint

(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)	Middle	0.25	N/A	N/A	0.75"	N/A	N/A	N/A	N/A	X	X	S	None	85%
(b)	Middle	0.25	N/A	N/A	0.75"	N/A	N/A	N/A	N/A	X	X	S	None	85%

Body Flanges on Heads

No.	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting				
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material	
(a)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A

8. Type of jacket

N/A

Jacket closure

N/A

(Describe as ogee & weld, bar, etc.)

If bar, give dimensions

N/A

If bolted, describe or sketch.

9. MAWP

FV & 75

N/A

at max. temp.

300 °F

N/A

Min. design metal temp.

-20 °F

at

FV & 75 PSI

(Internal)

(External)

(Internal)

(External)

10. Impact test

No Per Paragraph UHA-51

at test temperature of

N/A

[Indicate yes or no and the component(s) impact tested]

11. Hydro., pneu., or comb. test pressure

Hydrotest at 98 PSI

Proof test

N/A

Items 12 and 13 to be completed for tube sections.

12. Tubesheet

SA-240-304L

17.5"

1.25"

0.00"

Welded

[Stationary (material spec. no.)]

[Diameter (subject to press.)]

(Nominal thickness)

(Corr. allow.)

Attachment (welded or bolted)

N/A

N/A

N/A

N/A

N/A

[Floating (material spec. no.)]

(Diameter)

(Nominal thickness)

(Corr. allow.)

(Attachment)

13. Tubes

SA-249TP-304L

3/4"

0.049"

234

Straight

(Material spec. no., grade or type)

(O. D.)

(Nominal thickness)

(Number)

[Type (Straight or U)]

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) 2 (b) Overall length 1' 7.25"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	18.0" OD	12.375"	SA-516-70	0.25"	0.125"	1	None	70%	1	None	70%	N/A	N/A
1	18.0" OD	6.875"	SA-516-70	0.25"	0.125"	1	None	70%	1	None	70%	N/A	N/A

Body Flanges on Shells												
No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
2	Rings	18.125"	22.625"	2.0625	N/A	SA-516-70	Welded	END	24 - 7/8"	SA-193-B7	N/A	N/A

15. Heads: (a) SA-234-WPB (Material spec. number, grade or type) (H.T. - time and temp.)						(b) SA-234-WPB (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	0.1811"	0.125"	N/A	N/A	2:1	N/A	N/A	N/A		X	S	None	85%
(b)	END	0.1811"	0.125"	N/A	N/A	2:1	N/A	N/A	N/A		X	S	None	85%

Body Flanges on Heads												
No.	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

16. MAWP 75 psi N/A at max. temp. 300 °F N/A Min. design metal temp. -20 °F at 75 PSI.
(Internal) (External) (Internal) (External)

17. Impact test No Per Paragraph UG-20(f), UGS-66(a), UHA-51 at test temperature of N/A.
[Indicate yes or no and the component(s) impact tested]

18. Hydro., pneu., or comb. test pressure Hydro. at 98 PSI Proof test N/A

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet	1	6"	150# RFSO	SA-312TP-304L	SA-182F-304L	0.280"	0.00"		UW-16.1(d)	Fig. 2-4(3)	
Outlet	1	3"	150# RFSO	SA-312TP-304L	SA-182F-304L	0.216"	0.00"		UW-16.1(d)	Fig. 2-4(3)	
Outlet	1	2"	150# RFSO	SA-312TP-304L	SA-182F-304L	0.280"	0.00"		UW-16.1(d)	Fig. 2-4(3)	
Inlet/Outlet	2	3"	150# RFSO	SA-106-B	SA-105	0.216"	0.125"		UW-16.1(d)	Fig. 2-4(3)	
Vent/Drain	4	3/4"	Full Coupling	SA-105		6000#	0.125"		UW-16.1(d)		
Vent/Drain	2	1/2"	Full Couplings	SA-182F-304L		6000#	0.00"		UW-16.1(d)		

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

21. Manufacturer's Partial Data Reports properly identified and signed by 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):

N/A

22. Remarks

Length of tubes: 10' 0.0"

UG-46(a)

Unit not designed for Lethal Service

User or His or Her Designated Agent is responsible for Overpressure protection per UG-125.

Form U-5 Attached....

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 **4328** Expires **November 17, 2015**

Date 03/10/2015 Name Perry Products Corporation Signed Brandi P. Hoyer
(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

HSB Global Standards, of Hartford, CT

have inspected the pressure vessel described in this Manufacturer's Data Report on March 10, 2015, 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 makes 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 any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 03/10/2015 Signed [Signature] Commissions: 14877A, NJ1060
(Authorized Inspector) [National Board (incl. endorsements)]

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements made 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 _____,

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 this 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 _____ Commission _____
(Authorized Inspector) [National Board (incl. endorsements)]

FORM U-5 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET

SHELL-AND-TUBE HEAT EXCHANGERS

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

1. Manufactured and certified by Perry Products Corporation, 25 Mount Laurel Road, Hainesport, New Jersey, 08036, USA
(Name and address of Manufacturer)

2. Manufactured for Daramic, LLC., 5525 US 60 East, Owensboro, Kentucky, 42303, USA
(Name and address of Purchaser)

3. Location of Installation Daramic, LLC., 5525 US 60 East, Owensboro, Kentucky, 42303, USA
(Name and address)

4. Type Horizontal B-7994 N/A
(Horizontal, vertical, or sphere) (Manufacturer's serial number) (CRN)

18076-A, Rev. 2
(drawing no.)

7995
(National Board number)

2015
(Year built)

FIXED TUBESHEET HEAT EXCHANGERS

FIXED TUBESHEET HEAT EXCHANGERS										
Name of Condition	Design/Operating Pressure Ranges				Design/Operating Metal Temperature				Allowable Axial Differential Thermal Expansion Range	
	Shell Side		Tube Side		Shell	Channel	Tubes	Tubesheet		
	Min.	Max.	Min.	Max.					Min.	Max.
	units:	units:	units:	units:					units:	units:
Design	FV	75	FV	75	300	300	300	300	0.0	0.0
Operating	FV	75	FV	75	300	70	70	70	0.0	0.0082
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Data Report Item Number N/A Remarks

Certificate of Authorization: Type "U" No. 4328 Expires November 17, 2015

Date 03/10/2015 Name Perry Products Corporation Signed Brandi S. Holinger
(Manufacturer) (Representative)

Date 03/10/2015 Signed [Signature] Commissions 14877A, NJ1060
(Authorized Inspector) (National Board Authorized Inspector Commission number)