18086-A Rev 2
drawing #

B-8004
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 **Vertical** (Horizontal, vertical, or sphere) | **Heat Exchanger** (Tank, separator, jkt. vessel, heat exch., etc.) | **B-8004** (Manufacturer's serial number)

N/A (CRN) | **18086-A rev. 2** (Drawing number) | **8005** (National Board number) | **2014** (Year built)

5. ASME Code, Section VIII, Div. 1 **2013/ N/A** [Edition and Addenda, if applicable (date)] | **N/A** (Code Case Number) | **N/A** [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) **1** (b) Overall length **10' 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	12.75" OD	10' 9.50"	SA-312TP-304	0.188"	0.00"	1	None	85%	7	None	100%	N/A	N/A

Body Flanges on Shells												
									Bolting			
No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	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

7. Heads: (a) **N/A** (Material spec. number, grade or type) (H.T. - time and temp.) (b) **N/A** (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)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A

Body Flanges on Heads												
									Bolting			
No.	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	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

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 **75 psi** (Internal) **N/A** (External) at max. temp. **320 °F** (Internal) **N/A** (External) Min. design metal temp. **0 °F** at **75 PSi**

10. Impact test **No per Paragraph UHA-51** [Indicate yes or no and the component(s) impact tested] at test temperature of **N/A**

11. Hydro., pneu., or comb. test pressure **Hydrotest at 104 PSI** Proof test **N/A**

Items 12 and 13 to be completed for tube sections.

12. Tubesheet **SA-182F-304** [Stationary (material spec. no.)] | **12.25"** [Diameter (subject to press.)] | **1.25"** (Nominal thickness) | **0.00"** (Corr. allow.) | **Welded** Attachment (welded or bolted)

N/A [Floating (material spec. no.)] | **N/A** (Diameter) | **N/A** (Nominal thickness) | **N/A** (Corr. allow.) | **N/A** (Attachment)

13. Tubes **SA-249TP-304** (Material spec. no., grade or type) | **3/4"** (O. D.) | **0.049"** (Nominal thickness) | **104** (Number) | **Straight** [Type (Straight or U)]

FORM U1-(Cont'd)

NB Number 8005

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) **N/A** (b) Overall length **N/A**

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
	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

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

15. Heads: (a) **SA-403WBP-304** (Material spec. number, grade or type) (H.T. - time and temp.) (b) **SA-403WBP-304** (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)	TOP	0.0625"	0.00"	N/A	N/A	2:1	N/A	N/A	N/A		X	S	None	100%
(b)	BOTTOM	0.0625"	0.00"	N/A	N/A	2:1	N/A	N/A	N/A		X	S	None	100%

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)	ENDS	RFSO	12.88"	19.00"	1.25"	0.75"	SA-182F-304	Welded	12 - 1"	SA-193-B7	N/A	N/A

16. MAWP **FV & 75** (Internal) **N/A** (External) at max. temp. **320 °F** (Internal) **N/A** (External) Min. design metal temp. **0 °F** at **FV & 75 PSI**.

17. Impact test **No Per Paragraph UHA-51** [Indicate yes or no and the component(s) impact tested] at test temperature of **N/A**.

18. Hydro., pneu., or comb. test pressure **Hydro. at 104 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/Outlet/Aux	3	2"	150# RFSO	SA-312TP-304	SA-182F-304	0.154"	0.00"		UW-16.1(d)	Fig. 2-4(3)	
Aux.	1	1.5"	150# RFSO	SA-312TP-304	SA-182F-304	0.145"	0.00"		UW-16.1(d)	Fig. 2-4(3)	
Inlet/Outlet/Vent	3	1.5"	150# RFSO	SA-312Tp-304	SA-182F-304	0.145"	0.00"		UW-16.1(d)	Fig. 2-4(3)	

20. Supports: Skirt **No** (Yes or no) Lugs **(2)** (Number) Legs **N/A** (Number) Others **N/A** (Describe) Attached **Welded to Shell** (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: 11' 0.0"
Unit is not designed for Lethal Service
UG-46(a)
User or 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** (Manufacturer) Signed Brandi D Hollinger (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 18, 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 03/18/2015 Signed (Authorized Inspector) Commissions: **14877A, NJ1060** [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 _____ (Assembler) Signed _____ (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 _____ (Authorized Inspector) Commission _____ [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 **Vertical** (Horizontal, vertical, or sphere) **B-8004** (Manufacturer's serial number) **N/A** (CRN)

18086-A rev. 2 (drawing no.) **8005** (National Board number) **2014** (Year built)

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:	units:	units:	units:	units:
Design	N/A	75	FV	75	320	320	320	320	0.0	0.0
Operating	N/A	75	FV	75	137	112	112	112	-0.029	0.0
	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	Remarks
N/A	

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

Date **03/10/2015** Name **Perry Products Corporation** (Manufacturer) Signed *Brandi L Holzinger* (Representative)

Date **03/18/2015** Signed [signature] (Authorized Inspector) Commissions: 14877A, NJ1060 (National Board Authorized Inspector Commission number)

NB444 Rev.0