109223

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FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules Section VIII, Division 1

10932

1. Manufactured and certified by Atlas Industrial Manufacturing Co., 81 Somerset Place, Clifton, N.J. 07012
(Name and address of Manufacturer)

2. Manufactured for Aventis CropScience USA LP P.O. Box 2631, Charleston, West Virginia, 25330.
(Name and address of Purchaser)

3. Location of Installation Aventis CropScience Route 25, Building 330, Institute, West Virginia, 25112.
(Name and address)

4. Type Horizontal (Horiz., Vert., or sphere) | Heat Exchanger (Tank, separator, jkt. vessel, heat exh., etc.) | 10637 (Mfg's serial No.)

N/A (CRN) | D-17476-3 (Drawing No.) | 9035 (Nat'l. Bd. No.) | 2000 (Year built)

5. ASME Code, Section VIII, Div. 1 1998 and A99 (Edition and Addenda (date)) | N/A (Code Case No.) | N/A (Special Service per UG-120(d))

Items 6-11 incl. to be completed for ~~[illegible]~~ shell of heat exchangers. ~~[illegible]~~

6. Shell (a) No. of course(s): 5 (b) Overall length (ft & in.): 6'- 8 3/4"

	No.	Course(s) Diameter, in.	Course(s) Length (ft & in.)	Material Spec./Grade or Type	Thickness Nom.	Thickness Corr.	Long. Joint (Cat. A) Type	Long. Joint (Cat. A) Full, Spot, None	Long. Joint (Cat. A) Eff.	Circum. Joint (Cat. A, B, & C) Type	Circum. Joint (Cat. A, B, & C) Full, Spot, None	Circum. Joint (Cat. A, B, & C) Eff.	Heat Treatment Temp.	Heat Treatment Time
*	2	28" O.D.	2'- 8 3/8"	SA-240 316	1/2"	0"	1	Spot	.85	1	None	.70	N/A	N/A
*	3	(See Line 21)	1'- 4"							1	None	.70	N/A	N/A

7. Heads: (a) N/A (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp. (b) (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp.
(or Exp. Joint)

	Location (Top, Bottom, Ends)	Thickness Nom.	Thickness Corr.	Radius Crown	Radius Knuckle	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure Convex	Side to Pressure Concave	Category A Type	Category A Full, Spot, None	Category A Eff.
(a)														
(b)														

If removable, bolts used (describe other fastening) (Mat'l Spec. No., Grade, size, No.)

8. Type of Jacket N/A Jacket closure (Describe as ogee & weld, bar, etc.)

If bar, give dimensions If bolted, describe or sketch.

9. MAWP FV&450 (internal) --- (external) psi at max. temp. 608 (internal) --- (external) °F Min. design metal temp. -20 °F at FV&450 psi.

10. Impact test No. UHA-51, UNF-65, UCS-66 (a) & UG-20 (f).
(Indicate yes or no and component(s) impact tested)

11. Hydro. ~~[illegible]~~ test press. 635 Proof test N/A

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SB-575, N10276 (Stationary (Mat'l Spec. No.)) | 29.250" (Dia., in. (subject to press.)) | 1 1/2" (Nom. thk., in.) | 0" (Corr. Allow., in.) | Welded (Attachment (welded or bolted))

N/A (Integral (Mat'l Spec. No.)) | (Dia., in.) | (Nom. thk., in.) | (Corr. Allow., in.) | (Attachment)

13. Tubes: SB-626, N10276 (Mat'l Spec. No., Grade or Type) | 3/4" (O.D., in.) | 16 GA. (A.W.) (Nom. thk., in. or gauge) | 524 (Number) | Straight (Type (Straight or U))

Items 14-18 incl. to be completed for ~~[illegible]~~ channels of heat exchangers.

14. Shell (a) No. of course(s) N/A (b) Overall length (ft & in.):

No.	Course(s) Diameter, in.	Course(s) Length (ft & in.)	Material Spec./Grade or Type	Thickness Nom.	Thickness Corr.	Long. Joint (Cat. A) Type	Long. Joint (Cat. A) Full, Spot, None	Long. Joint (Cat. A) Eff.	Circum. Joint (Cat. A, B, & C) Type	Circum. Joint (Cat. A, B, & C) Full, Spot, None	Circum. Joint (Cat. A, B, & C) Eff.	Heat Treatment Temp.	Heat Treatment Time

15. Heads: (a) N/A (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp. (b) (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp.

	Location (Top, Bottom, Ends)	Thickness Min.	Thickness Corr.	Radius Crown	Radius Knuckle	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure Convex	Side to Pressure Concave	Category A Type	Category A Full, Spot, None	Category A Eff.
(a)														
(b)														

If removable, bolts used (describe other fastening) SA-193-B7, 3/4", 24.
(Mat'l Spec. No., Grade, size, No.)

Form U-1 (Back)

16. MAWP N/A (internal) _____ (external) psi at max. temp. _____ (internal) _____ (external) °F. Min. design metal temp. _____ °F at _____ psi.

17. Impact test N/A
(Indicate yes or no and component(s) impact tested)

18. Hydro., ~~pneumatic~~ test press. N/A Proof test _____

19. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open)
				Nozzle	Flange	Nom.	Corr.		Nozzle Fig. UW-16.1	Flange Fig.	
Inlet	1	4"	300#-L.J.	SA-312W,TP316L	SA-105	.237"	0"	*SA-240, 316	(C)	1 (a)	
Outlet	1	3"	300#-L.J.	SA-312W,TP316L	SA-105	.216"	0"	*SA-240, 316	(C)	1 (a)	
Vent/Drain	2	1"	H.C.	SA-182, 316L	----	6000#	0"		(C)	---	
Instrument	4	1"	H.C.	SA-182, 316L	----	6000#	0"		(C)	---	

20. Supports: Skirt No (Yes or no) Lugs No (No.) Legs 2 (No.) Others N/A (Describe) Attached Shell Welded (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, mfg's. name and identifying number)
Expansion Joint, Item No. 6, Badger Industries, Serial No. 17993-A001.

22. Remarks: #27-84 Heat Exchanger "Shell", Tema Type E.
Aventis CropScience P.O. No. 606365, Item No. E-3715R,
Atlas Job # 10932.
"UG-46 (a)".
* Material meets all the requirements of SA-240, 316 and SA-240, 316L.
Tubes and Tubesheets only: MAWP FV & 75 PSI @ 608 Deg. F.
MDMT 30 Deg. F @ FV & 75 PSI.

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 5027 Expires APRIL 30, 2002

Date 6/21/00 Name ATLAS INDUSTRIAL MANUFACTURING CO. (Manufacturer) Signed _____ (Representative)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of NEW JERSEY and employed by H.S.B.I. & I. CO. of HARTFORD, CT. have inspected the pressure vessel described in this Manufacturer's Data Report on 6/21, 2000, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 6/21/00 Signed _____ (Authorized Inspector) Commissions NB10963AB, NJ1019 (Nat'l Board incl. endorsement), State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No. _____ Expires _____, 20____.

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/or the State or Province of _____ 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 ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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) Commissions _____ (Nat'l Board incl. endorsement), State, Province and No.)

FORM U-2A MANUFACTURER'S PARTIAL DATA REPORT (ALTERNATIVE FORM)
A Part of a Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

9035 2/3

1. Manufactured and certified by Badger Industries 100 Badger Drive, Zelienople, PA 16063 (Name and address of Manufacturer)

2. Manufactured for Atlas Industrial Mfg. Co.; 81 Somerset Place; Clifton, NJ 07012 (Name and address of Purchaser)

3. Location of Installation Atlas Industrial Mfg. Co.; 81 Somerset Place; Clifton, NJ 07012 (Name and address)

4. Type: Model NO. 28-2HF-W6 (Description of vessel part (shell, two-piece head, tube bundle)) | 17993-A001 (Mfg's serial No.) | None (CRN)

None (Nat'l. Bd. No.) | 17993-1.1 REV. 1 (Drawing No.) | Badger Industries (Drawing prepared by) | 2000 (Year built)

5. ASME Code, Section VIII, Div. 1 1998/A99 (Edition and Addenda (date)) | None (Code Case No.) | None (Special Service per UG-120(d))

6. Shell (a) No. of course(s): 3 (b) Overall length (ft & in.): 1'-4"

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	28 ID	4 3/4"	SB443-625	.090	---	1	Full	100%	***	---	---	---	---
2	27 ID	5 5/8"	SA240-316/316L	.500	---	1	Full	100%	***	---	---	---	---

7. Heads: (a) ----- (Mat'l Spec. No., Grade or Type) H.T.-Time & Temp (b) ----- (Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

	Location (Top, Bottom, Ends)	Thickness Min.	Thickness Corr.	Radius Crown	Radius Knuckle	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure Convex	Side to Pressure Concave	Category A Type	Category A Full, Spot, None	Category A Eff.
(a)														
(b)														

~~If~~ removable, bolts used (describe other fastening) (Mat'l Spec. No., Grade, Size, No.)

8. MAWP FV/488 (internal) --- (external) psi at max. temp. 608 (internal) --- (external) °F Min. design metal temp. -20 °F at FV/488 psi.

9. Impact test No per UNF65 & UHA51(d) (Indicate yes or no and the component(s) impact tested)

10. Hydro., ~~pneu., or comb.~~ test press. 730 Proof test none

11. ~~Nozzles~~, Inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	Diameter No.	Diameter or Size	Flange Type	Material Nozzle	Material Flange	Nozzle Thickness Nom.	Nozzle Thickness Corr.	Reinforcement Material	How Attached Nozzle	How Attached Flange	Location (Insp. Open)

12. ~~Supports~~: Skirt ____ (Yes or No) Lugs ____ (No.) Legs ____ (No.) Others ____ (Describe) Attached ____ (Where and How)

13. Remarks SEE U4 FORM FOR REMARKS

CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of material, construction, and workmanship of this pressure vessel part conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 14,146 Expires January 2, 2001

Date 6/2/00 Name Badger Industries (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of PA and employed by Hartford Steam Boiler Inspection & Insurance Co. of Hartford, CT have inspected the pressure vessel described in this Manufacturer's Data Report on 6-2-, 2000, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel part described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 6-2-00 Signed Dean S. Nyma (Authorized Inspector) Commissions PA2384 (Nat'l Board Incl. endorsement, State, Province and No.)

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FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1 4635

1. Manufactured and certified by Badger Industries 100 Badger Drive, Zelienople, PA 16063
(name and address of manufacturer)

2. Manufactured for Atlas Industrial Mfg. Co.; 81 Somerset Place; Clifton, NJ 07012
(name and address of purchaser)

3. Location of installation Atlas Industrial Mfg. Co.; 81 Somerset Place; Clifton, NJ 07012
(name and address)

4. Type: MODEL NO. 28-2HF-W6 (horiz., vert., or sphere) | Expansion joint (tank, separator, heat exh., etc.) | 17993-A001 (mfg's serial no.)

None	17993-1.1 REV. 1	None	2000
(CRN)	(drawing no.)	(Nat'l. Bd. no.)	(year built)

Data Report Item Number	Remarks
17993-A001	EXPANSION JOINT TO BE USED IN A HEAT EXCHANGER.
	DESIGN FUNCTIONS FOR BELLOWS WAS PERFORMED BY BADGER INDUSTRIES.
	SECT. VIII, DIV. I APPENDIX 26 APPLIES.
	***WELDS COMPLY WITH APPENDIX 26-4 (c).
	SRa-25652#/IN. AXIAL COMP.-.090" AXIAL EXTN.-.1875" DESIGN LIFE-78161 EJMA /1565 ASME CYCLES.

Certificate of Authorization: Type "U" No. 14,146 Expires January 2, 2001

Date 6/2/00 Name Badger Industries (manufacturer) Signed (representative)

Date 6-2-00 Name Dean L. Smith (Authorized Inspector) Commission A2394 (Nat'l. Board incl. endorsement, state, province and no.)

RR 1067.4