

S.H.E. Order #  
98-250

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

Item no.  
0242-32-298

1. Manufactured and certified by Southern Heat Exchanger Corporation 6100 Old Montgomery Highway Tuscaloosa, AL  
(Name and address of Manufacturer)
2. Manufactured for Bayer Corporation, Bushy Park, SC  
(Name and address of Purchaser)
3. Location of installation Bayer Corporation, Bushy Park, SC  
(Name & address)
4. Type Vertical Heat Exchanger 98-250 None SB- 3563-2 9905 1998  
(Horiz,vert,sphere) (Tank,separator,jacket,vessel,heat exh,etc.) (mfg. ser. no.) (CRN) (Dwg. No.) (Natl. Bd. No.) (Yr. built)
5. ASME Code, Section VIII, Div. 1 1995, A97 None None  
Edition and Addenda(date) Code Case No. 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 multi-chamber vessels
6. Shell (a) No. of course(s): 2 (b) Overall length (ft & in): 10'-0"

(OD) Course(s)			Material	Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A,B,&C)			Heat Treat.	
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	8 5/8"	1'-1 1/16"	SA-106 GR. B	.322"	1/8"	S	None	85%	1	Spot	-	-	
1	8 5/8"	8'-0 3/16"	SA-106 GR. B	.322"	1/8"	S	None	85%	1	Spot	-	-	

7. Heads: (a) SA-516 GR. 70 (b) SA-403 WP 316L (Tube Side)  
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

Location Top, Bottom, Ends	Thickness		Radius		Elliptical	Conical	Hemisph.	Flat	Side to Pressure		Category A			
	Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full,Spot, None	Eff.	
(a) Center	3/8"	1/8"	(18" O.D. Flanged & Flued heads w/ 1 1/8" Kn. Rad.)								X	N/A	None	-
(b) End	.322"	1/8"	(4" x 8" Std. Wt. Concentric Reducer)								X	N/A	None	-

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

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

If bar, give dimensions None If bolted, describe or sketch.

9. MAWP 188 N/A psi at max. temp. 400 N/A ° F. Min. design metal temp. 20 ° F. at 188 psi  
(internal) (external) (internal) (external)

10. Impact test No per UG-20(f) & UHA-51  
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press 285 psig hydro Proof test \_\_\_\_\_

Items 12 and 13 to be completed for tube sections

12. Tubesheet: SA-240 316L 13 1/2" 1 1/4" 3/16" Welded  
Stationary (Mat'l. Spec. No.) Dia., in. (subject to pressure) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)

- SA-249 316L 3/4" 14 BWG. 46 Straight  
Floating (Mat'l. Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment Type (Straight or U)

13. Tubes SA-249 316L 3/4" 14 BWG. 46 Straight  
Mat'l. Spec. No., Grade or Type O.D., in. Nom. thk., in. or gauge 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): 3 (b) Overall length (ft & in): 7'-9 9/16"

(CD) Course(s)			Material	Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A,B,&C)			Heat Treat.	
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	8 5/8"	0'-4 7/16"	SA-312 316L	.322"	1/16"	E	None	85%	1	Spot	-	-	
1	8 5/8"	0'-9 5/16"	SA-312 316L	.322"	1/16"	E	None	85%	1	Spot	-	-	
1	18"	4'-6"	SA-312 316L	.375	1/16"	E	None	85%	1	Spot	-	-	

- 15 Heads (a) SA-403 WP 316L (b) SA-403 WP 316L  
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

Location Top, Bottom, Ends	Thickness		Radius		Elliptical	Conical	Hemisph.	Flat	Side to Pressure		Category A			
	Min	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full,Spot, None	Eff.	
(a) End	3/8"	1/16"			2:1						X	N/A	None	-
(b) End	3/8"	1/16"				60°					X	1	Spot	-

If removable, bolts used (describe other fastening) SA-193-B7 (8) ea 3/4"-10  
(Mat'l. Spec. No., Grade, size, no.)

16. MAWP 188 N/A psi at max. temp. 400 N/A °F. Min. design metal temp. 20 °F. at 188 psi  
 (internal) (external) (internal) (external)

17. Impact test No per UHA-51

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

18. Hydro., pneu., or comb. test press. 230 psig hydro Proof test \_\_\_\_\_

19. Nozzles, inspection, and safety valve openings:

(UW-16.1)

Purpose (inlet, Outlet, Drain, etc.)	No.	Diameter or size	Flange Type	Material		Nozzle Thk.		Reinforcement Material	How Attached		Location (Insp. Opn.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
See attached form U-4 for nozzle descriptions											

20. Supports: Skirt No Lugs N/A Legs N/A Others (3) Legs Attached Shell, Welded  
 (Yes or No) (No.) (No.) (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, mfg's. name and identifying number)

22. Remarks: UG-46(a)

**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. 7037 Expires 11/29, 19 99

Date 11-12-98 Name Southern Heat Exchanger Corporation Signed Daniel S. Nolan  
 (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 the State or Province of GA and employed by Commercial Union Insurance Company of Boston, Ma have inspected the pressure vessel described in this Manufacturer's Data Report on 11-12 19 98, 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 11-12-98 Signed [Signature] Commissions NB11599A GA419  
 (Authorized Inspector) (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 \_\_\_\_\_, 19 \_\_\_\_\_

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 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 \_\_\_\_\_ Commissions \_\_\_\_\_  
 (Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)

2/2

Sheco Job No.  
98-250

**FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET**  
**As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1**

Item No.  
0242-32-298

1. Manufactured and certified by Southern Heat Exchanger Corporation 6100 Old Montgomery Highway Tuscaloosa, Al 35405  
(Name and Address of Manufacturer)

2. Manufactured for Bayer Corporation, Bushy Park, SC  
(Name and Address of Purchaser)

3. Location of installation Bayer Corporation, Bushy Park, SC  
(Name and Address)

4. Type: Vertical Heat Exchanger 98-250  
(Horz., Vert., or Sphere) (Tank, Separator, Heat Exch., etc.) (Mfg's. Serial No.)

None SB 3563-2 9905 1998  
(CRN) (Drawing No.) (National Board No.) (Year Built)

Purpose (inlet, Outlet, Drain, etc.)	No.	Diameter or size	Flange Type	Material		Nozzle Thk.		Reinforcement Material	How Attached		Location (Insp. Opn.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet	1	4"	150#	SA-312 316L	SA-182 F 316L	.337"	1/16"	Inherent	e	RF SO	
Outlet	1	2"	150#	N/A	SA-182 F 316L	N/A	1/16"	Inherent	e	Studd. Out	
Outlet	1	4"	150#	SA-312 316L	SA-182 F 316L	.337"	1/16"	Inherent	e	RF SO	
Misc.	2	3"	150#	SA-312 316L	SA-182 F 316L	.300"	1/16"	Inherent	e	RF SO	
Misc.	1	2"	150#	SA-312 316L	SA-182 F 316L	.218"	1/16"	Inherent	e	RFWN	
Misc.	1	1 1/2"	150#	SA-312 316L	SA-182 F 316L	.200"	1/16"	Inherent	e	RF SO	
Spare	1	3"	150#	SA-312 316L	SA-182 F 316L	.300"	1/16"	Inherent	e	RF SO	
Hand Hole	1	6"	150#	SA-312 316L	SA-182 F 316L	.280"	1/16"	Inherent	e	RF SO	
Inlet/Outlet	2	2"	150#	SA-106 GR. B	SA-105	.343"	1/8"	Inherent	e	RFWN	
Vent	1	2"	150#	SA-106 GR. B	SA-105	.343"	1/8"	Inherent	e	RFWN	
Vent/Drain	2	3/4"	6000	N/A	SA-105	N/A	1/8"	Inherent	b	Thd. Cplt.	

Certificate of Authorization: Type U No. 7037 Expires 11/29 19 99

Date 11-12-98 Name Southern Heat Exchanger Corporation Signed Daniel H. Notard  
(representative)

Date 11-17-98 Name [Signature] Commission NB11599A GA419  
(Nat'l. Board incl. endorsement, state, province and no.)