



6600 South Harlem Avenue  
Argo, IL 60501-1930

# Material Test Report

WELDBEND CORPORATION  
PO Box 2388  
Sulphur, LA  
PO: P0229257-01

Quantity	Product	Heat Code	Heat Treatment Info													Steel Mill				
96	1½" Std LR 90° Elbow	A186577	Hot Formed													MICHIGAN SEAMLESS A 234 WPB-13 Dimensional Specification: B16.9				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	
0.18	0.71	0.008	0.020	0.22	0.16	0.06	0.15	0.020	0.00	0.022	0.000	0.0000	0.000	72,600	39,900	22.90	-	159	159	
CE (IIW): 0.347																				
CE (PCM): 0.241																				
36	4" Std LR 90° Elbow	LK0045	Hot Formed													V & M STAR A 234-18 WPB Dimensional Specification: B16.9				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	 
0.21	1.03	0.009	0.001	0.24	0.08	0.04	0.12	0.010	0.06	0.031	0.002	0.0001	0.000	79,700	39,900	27.10	-	170	169	
CE (IIW): 0.427																				
CE (PCM): 0.287																				
16	1" XS LR 90° Elbow	J3L2334	Hot Formed													NIPPON A234-11 Dimensional Specification: B16.9				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	
0.18	0.64	0.013	0.006	0.18	0.01	0.02	0.04	0.020	0.00	0.005	-	-	0.000	68,023	39,900	50.00	-	134	-	
CE (IIW): 0.301																				
28	1¼" XS LR 90° Elbow	J7L1142	Hot Formed													NIPPON A 234 WPB-13 Dimensional Specification: B16.9				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	
0.11	1.32	0.015	0.001	0.24	0.02	0.02	0.12	0.010	0.01	-	0.010	0.0001	< 0.001	76,900	39,900	30.40	-	162	162	
CE (IIW): 0.361																				
CE (PCM): 0.193																				

- We hereby certify that the material meets the following
- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
  - All fittings and flanges meet NACE MRO-103 - Latest Revision.
  - All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
  - All fittings are seamless except as noted;
  - All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
  - Starting Material Seamless Pipe for elbows, tees and reducers;
  - Plate for caps and welded fittings.
  - Bars, Billets or Blooms for flanges and certain caps and tees.
  - Ladle chemistry reported.
- Copyright © 2021 Weldbend Corp.

*Richard Purpura*

**Richard Purpura**  
Quality Assurance Department  
12/1/2021



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- We hereby certify that the material meets the following:
- ISO 9001:2015 CERTIFIED MANUFACTURER
  - Test Results herein are correct as contained in test records retained by the company in accordance with EN 10 204 Para 3.1 in accordance with PED Annex 1, Paragraph 4.3 of 2014/68/EU
  - No Weld Repair Performed. No Lead Content. No Mercury Content.
  - Knowingly making false, fictitious, or fraudulent statements on a MTR may result in legal liability.
  - Material has been manufactured/supplied and tested in accordance with the most current version of the Weldbend Quality System Program



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PO Box 2388  
Sulphur, LA  
PO: P0229257-01

Quantity		Product										Heat Code					Heat Treatment Info					Steel Mill		
96		2" XS LR 90° Elbow										108726					Hot Formed					PLYMOUTH TUBE CO. A 234 WPB-13 Dimensional Specification: B16.9		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>					
0.19	0.75	0.008	0.021	0.24	0.16	0.08	0.10	0.023	0.00	0.018	-	-	0.003	75,400	39,900	32.80	72.40	136	135					
CE (IIW): 0.357																								
48		3" XS LR 90° Elbow										A191492					Hot Formed					PLYMOUTH TUBE CO. A 234 WPB-15 Dimensional Specification: B16.9		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>					
0.21	1.02	0.007	0.004	0.30	0.16	0.05	0.07	0.020	0.05	0.020	0.000	-	0.001	86,000	39,900	36.00	-	154	154					
CE (IIW): 0.422																								
12		5" XS LR 90° Elbow										342725					Hot Formed					VALLOUREC/MANNESMANN A234-10 WPB Dimensional Specification: B16.9		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>					
0.15	1.03	0.016	0.001	0.25	0.06	0.07	0.12	0.020	0.01	-	0.010	-	-	78,000	39,900	26.20	-	159						
CE (IIW): 0.360																								
16		6" XS LR 90° Elbow										JC0187					Hot Formed					V & M STAR A 234-18 WPB Dimensional Specification: B16.9		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>					
0.20	1.03	0.013	0.007	0.27	0.19	0.08	0.13	0.020	0.06	0.042	0.003	0.0003	0.000	79,900	39,900	37.60	64.20	158	156					
CE (IIW): 0.431 CE (PCM): 0.286																								

We hereby certify that the material meets the following

- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
- All fittings and flanges meet NACE MRO-103 - Latest Revision.
- All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
- All fittings are seamless except as noted;
- All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
- Starting Material Seamless Pipe for elbows, tees and reducers;
- Plate for caps and welded fittings.
- Bars, Billets or Blooms for flanges and certain caps and tees.
- Ladle chemistry reported.

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Sulphur, LA  
PO: P0229257-01

<u>Quantity</u>		<u>Product</u>										<u>Heat Code</u>					<u>Heat Treatment Info</u>					<u>Steel Mill</u>		
3		3" XS SR 90° Elbow										217058					Hot Formed					JFE STEEL CORP.		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-13 Dimensional Specification: B16.9				
0.20	0.53	0.021	0.010	0.23	0.01	0.01	0.04	0.000	0.00	-	-	-	-	67,297	39,900	37.40	-	134	127					
CE (IIV): 0.298																								

<u>Quantity</u>		<u>Product</u>										<u>Heat Code</u>					<u>Heat Treatment Info</u>					<u>Steel Mill</u>		
16		1 1/4" Std LR 45° Elbow										A180982					Hot Formed					PLYMOUTH TUBE CO.		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-13 Dimensional Specification: B16.9				
0.17	0.64	0.006	0.009	0.26	0.17	0.06	0.10	0.020	0.00	0.021	0.001	-	0.001	73,000	39,900	31.40	-	159	161					
CE (IIV): 0.316																								

<u>Quantity</u>		<u>Product</u>										<u>Heat Code</u>					<u>Heat Treatment Info</u>					<u>Steel Mill</u>		
9		2" Std LR 45° Elbow										A204132					Hot Formed					PLYMOUTH TUBE CO.		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234-18 WPB Dimensional Specification: B16.9				
0.18	0.78	0.007	0.015	0.21	0.15	0.09	0.12	0.040	0.00	0.020	0.000	-	0.000	69,600	39,900	25.20	-	159	162					
CE (IIV): 0.358																								

<u>Quantity</u>		<u>Product</u>										<u>Heat Code</u>					<u>Heat Treatment Info</u>					<u>Steel Mill</u>		
39		2" XS LR 45° Elbow										A180981					Hot Formed					PLYMOUTH TUBE CO.		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-13 Dimensional Specification: B16.9				
0.17	0.64	0.006	0.009	0.24	0.14	0.06	0.09	0.020	0.00	0.021	0.001	-	0.000	69,700	39,900	26.90	-	153	153					
CE (IIV): 0.312																								

We hereby certify that the material meets the following

- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
- All fittings and flanges meet NACE MRO-103 - Latest Revision.
- All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
- All fittings are seamless except as noted;
- All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
- Starting Material Seamless Pipe for elbows, tees and reducers;
- Plate for caps and welded fittings.
- Bars, Billets or Blooms for flanges and certain caps and tees.
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Quantity		Product										Heat Code					Heat Treatment Info					Steel Mill		
14		3" XS LR 45° Elbow										A191492					Hot Formed					PLYMOUTH TUBE CO.		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-15 Dimensional Specification: B16.9				
0.21	1.02	0.007	0.004	0.30	0.16	0.05	0.07	0.020	0.05	0.020	0.000	-	0.001	86,000	39,900	36.00	-	154	154					
CE (IIW): 0.422																								
7		6" XS LR 45° Elbow										JC0186					Hot Formed					V & M STAR		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234-18 WPB Dimensional Specification: B16.9				
0.20	1.05	0.014	0.005	0.27	0.18	0.06	0.13	0.020	0.06	0.037	0.004	0.0003	0.000	83,300	39,900	37.80	55.70	158	157					
CE (IIW): 0.432																								
CE (PCM): 0.286																								
10		8" XS LR 45° Elbow										I90042					Hot Formed					V & M STAR		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-13 Dimensional Specification: B16.9				
0.20	1.04	0.008	0.004	0.30	0.14	0.05	0.12	0.010	0.06	0.037	0.003	0.0003	0.000	83,000	39,900	30.70	-	181	179					
CE (IIW): 0.424																								
CE (PCM): 0.284																								
12		2" XS Straight Tee										19N454					Heat Treat: Normalized					NIPPON		
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-15 Dimensional Specification: B16.9				
0.11	1.27	0.015	0.003	0.24	0.03	0.02	0.11	0.010	0.01	-	0.010	0.0002	< 0.001	70,400	39,900	31.80	-	125	127					
CE (IIW): 0.351																								
CE (PCM): 0.191																								

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- All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
- All fittings are seamless except as noted;
- All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
- Starting Material Seamless Pipe for elbows, tees and reducers;
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Quantity		Product										Heat Code					Heat Treatment Info					Steel Mill	
12		4" XS Straight Tee										18N704					Heat Treat: Normalized					TMK /IPSCO/KOPPEL	
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-13 Dimensional Specification: B16.9			
0.20	0.80	0.007	0.004	0.23	0.18	0.10	0.10	0.030	0.04	0.017	-	-	0.001	71,900	39,900	35.70	-	145	144	WPB			
CE (IIW): 0.387																							

Quantity		Product										Heat Code					Heat Treatment Info					Steel Mill	
4		6" XS Straight Tee										19N368					Heat Treat: Normalized					NIPPON	
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-13 Dimensional Specification: B16.9			
0.11	1.25	0.014	0.001	0.28	0.02	0.02	0.12	0.010	0.01	-	0.010	0.0001	< 0.001	67,300	39,900	37.00	81.10	131	131	WPB			
CE (IIW): 0.349 CE (PCM): 0.191																							

Quantity		Product										Heat Code					Heat Treatment Info					Steel Mill	
5		8" XS Straight Tee										J2KC573					Heat Treat: Normalized					NIPPON	
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A234-11 Dimensional Specification: B16.9			
0.19	0.58	0.022	0.008	0.17	0.02	0.03	0.04	0.010	0.00	-	-	-	0.000	65,847	39,900	45.50	-	131		WPB			
CE (IIW): 0.300																							

Quantity		Product										Heat Code					Heat Treatment Info					Steel Mill	
18		1 1/4" Std Cap										536Bo					Heat Treat: Normalized					JADE-STERLING STEEL CO	
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234-18 WPB Dimensional Specification: B16.9			
0.17	0.83	0.015	0.022	0.21	0.19	0.07	0.16	0.030	0.04	0.001	0.001	0.0003	0.002	74,700	39,900	18.90	-	155	158	WPB			
CE (IIW): 0.372 CE (PCM): 0.245																							

We hereby certify that the material meets the following

- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
- All fittings and flanges meet NACE MRO-103 - Latest Revision.
- All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
- All fittings are seamless except as noted;
- All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
- Starting Material Seamless Pipe for elbows, tees and reducers;
- Plate for caps and welded fittings.
- Bars, Billets or Blooms for flanges and certain caps and tees.
- Ladle chemistry reported.

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*Richard Purpura*

**Richard Purpura**  
Quality Assurance Department  
12/1/2021



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We hereby certify that the material meets the following:

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- Test Results herein are correct as contained in test records retained by the company in accordance with EN 10 204 Para 3.1 in accordance with PED Annex 1, Paragraph 4.3 of 2014/68/EU
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- Knowingly making false, fictitious, or fraudulent statements on a MTR may result in legal liability.
- Material has been manufactured/supplied and tested in accordance with the most current version of the Weldbend Quality System Program



6600 South Harlem Avenue  
Argo, IL 60501-1930

# Material Test Report

WELDBEND CORPORATION  
PO Box 2388  
Sulphur, LA  
PO: P0229257-01

Quantity		Product	Heat Code		Heat Treatment Info										Steel Mill					
12		2" Std Cap	21N242		Heat Treat: Normalized										NORTH STAR BLUESCOPE					
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234 WPB-13 Dimensional Specification: B16.9
0.21	0.94	0.013	0.002	0.23	0.13	0.07	0.06	0.020	0.00	0.020	0.001	0.0000	0.001	77,200	39,900	18.80	-	133	131	<b>WPB</b>
CE (IIW): 0.396																				
CE (PCM): 0.277																				

Quantity		Product	Heat Code		Heat Treatment Info										Steel Mill					
12		4" Std Cap	21N316		Heat Treat: Normalized										NORTH STAR BLUESCOPE					
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234-18 WPB Dimensional Specification: B16.9
0.22	0.92	0.015	0.002	0.24	0.12	0.04	0.08	0.010	0.00	0.030	0.002	0.0001	0.000	78,900	39,900	28.40	-	160	161	<b>WPB</b>
CE (IIW): 0.402																				
CE (PCM): 0.286																				

Quantity		Product	Heat Code		Heat Treatment Info										Steel Mill					
12		2" x 1 1/2" XS Concentric Reducer	608BN		Heat Treat: Normalized										BENTELER					
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234-18 WPB Dimensional Specification: B16.9
0.16	0.98	0.017	0.004	0.27	0.18	0.11	0.21	0.040	0.00	-	0.001	0.0001	0.001	75,000	39,900	38.00	-	160	156	<b>WPB</b>
CE (IIW): 0.393																				
CE (PCM): 0.243																				

Quantity		Product	Heat Code		Heat Treatment Info										Steel Mill					
24		3" x 2" XS Concentric Reducer	11647		Heat Treat: Normalized										BENTELER					
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 234-18 WPB Dimensional Specification: B16.9
0.18	1.03	0.010	0.002	0.25	0.18	0.09	0.15	0.030	0.01	-	0.002	0.0002	0.003	76,100	39,900	28.40	-	167	163	<b>WPB</b>
CE (IIW): 0.407																				
CE (PCM): 0.261																				

- We hereby certify that the material meets the following
- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
  - All fittings and flanges meet NACE MRO-103 - Latest Revision.
  - All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
  - All fittings are seamless except as noted;
  - All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
  - Starting Material Seamless Pipe for elbows, tees and reducers;
  - Plate for caps and welded fittings.
  - Bars, Billets or Blooms for flanges and certain caps and tees.
  - Ladle chemistry reported.

*Richard Purpura*

Richard Purpura  
Quality Assurance Department  
12/1/2021



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6600 South Harlem Avenue  
Argo, IL 60501-1930

# Material Test Report

**WELDBEND CORPORATION**  
PO Box 2388  
Sulphur, LA  
PO: P0229257-01

Quantity		Product	Heat Code		Heat Treatment Info		Steel Mill												
12		4" x 2" XS Concentric Reducer	645Bn		Heat Treat: Normalized		V & M STAR												
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>
0.18	0.82	0.010	0.005	0.26	0.21	0.07	0.10	0.020	0.00	0.036	0.003	0.0002	0.000	71,900	39,900	29.80	-	154	158
CE (IIW): 0.360																			
CE (PCM): 0.249																			
																			WPB

A 234-18 WPB  
Dimensional Specification: B16.9

Quantity		Product	Heat Code		Heat Treatment Info		Steel Mill												
36		2" Class 150 Welding Neck StdB RF	AX6		Hot Formed		CMC STEEL												
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>
0.18	1.00	0.007	0.022	0.21	0.27	0.08	0.07	0.020	0.00	0.001	0.001	0.0001	0.000	81,600	39,900	27.60	45.60	154	153
CE (IIW): 0.388																			
CE (PCM): 0.257																			
																			A 105

A 105-18  
Dimensional Specification: B16.5

Quantity		Product	Heat Code		Heat Treatment Info		Steel Mill												
16		4" Class 150 Welding Neck StdB RF	AS4		Hot Formed		CMC STEEL												
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>
0.19	1.03	0.009	0.015	0.24	0.31	0.10	0.07	0.030	0.00	0.000	0.001	0.0003	0.001	84,000	39,900	28.40	60.30	164	164
CE (IIW): 0.409																			
CE (PCM): 0.274																			
																			A 105

A 105-14  
Dimensional Specification: B16.5

Quantity		Product	Heat Code		Heat Treatment Info		Steel Mill												
6		10" Class 150 Welding Neck StdB RF	Y765		Hot Formed		CMC STEEL												
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elon</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>
0.19	1.01	0.009	0.016	0.21	0.24	0.09	0.07	0.026	0.00	0.002	0.001	0.0001	0.001	81,200	39,900	32.00	61.40	160	157
CE (IIW): 0.400																			
CE (PCM): 0.267																			
																			A 105

A 105-18  
Dimensional Specification: B16.5

- We hereby certify that the material meets the following
- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
  - All fittings and flanges meet NACE MRO-103 - Latest Revision.
  - All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
  - All fittings are seamless except as noted;
  - All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
  - Starting Material Seamless Pipe for elbows, tees and reducers;
  - Plate for caps and welded fittings.
  - Bars, Billets or Blooms for flanges and certain caps and tees.
  - Ladle chemistry reported.
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*Richard Purpura*

**Richard Purpura**  
Quality Assurance Department  
12/1/2021



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6600 South Harlem Avenue  
Argo, IL 60501-1930

# Material Test Report

WELDBEND CORPORATION  
PO Box 2388  
Sulphur, LA  
PO: P0229257-01

Quantity		Product								Heat Code				Heat Treatment Info				Steel Mill				
80		2" Class 150 Slip-on RF								3DD16				Hot Formed				RIVA				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5		
0.18	1.00	0.013	0.007	0.22	0.17	0.06	0.13	0.010	0.00	0.025	0.020	0.0000	0.002	73,600	39,900	35.00	66.90	141	143	<b>A</b> <b>105</b>		
CE (IIW): 0.390																						
CE (PCM): 0.254																						

Quantity		Product								Heat Code				Heat Treatment Info				Steel Mill				
17		3" Class 150 Slip-on RF								C987				Hot Formed				CMC STEEL				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5		
0.21	0.98	0.010	0.013	0.22	0.23	0.08	0.07	0.026	0.00	0.002	0.001	0.0001	0.000	81,500	39,900	28.00	59.00	164	166	<b>A</b> <b>105</b>		
CE (IIW): 0.413																						
CE (PCM): 0.285																						

Quantity		Product								Heat Code				Heat Treatment Info				Steel Mill				
105		4" Class 150 Slip-on RF								AH7				Hot Formed				CMC STEEL				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5		
0.19	0.97	0.011	0.017	0.22	0.33	0.15	0.08	0.040	0.00	0.002	0.001	0.0002	0.000	79,700	39,900	30.80	60.30	156	156	<b>A</b> <b>105</b>		
CE (IIW): 0.408																						
CE (PCM): 0.272																						

Quantity		Product								Heat Code				Heat Treatment Info				Steel Mill				
12		8" Class 150 Slip-on RF								3D807				Hot Formed				RIVA				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-14 Dimensional Specification: B16.5		
0.18	1.11	0.011	0.010	0.24	0.18	0.06	0.11	0.010	0.00	0.028	0.020	0.0001	0.001	77,800	39,900	33.40	66.90	148	147	<b>A</b> <b>105</b>		
CE (IIW): 0.405																						
CE (PCM): 0.260																						

We hereby certify that the material meets the following

- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
- All fittings and flanges meet NACE MRO-103 - Latest Revision.
- All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
- All fittings are seamless except as noted;
- All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
- Starting Material Seamless Pipe for elbows, tees and reducers;
- Plate for caps and welded fittings.
- Bars, Billets or Blooms for flanges and certain caps and tees.
- Ladle chemistry reported.

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*Richard Purpura*

**Richard Purpura**  
Quality Assurance Department  
12/1/2021



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6600 South Harlem Avenue  
Argo, IL 60501-1930

# Material Test Report

WELDBEND CORPORATION  
PO Box 2388  
Sulphur, LA  
PO: P0229257-01

Quantity	Product	Heat Code	Heat Treatment Info	Steel Mill																
11	10" Class 150 Slip-on RF	Y714	Hot Formed	CMC STEEL																
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5
0.18	1.00	0.009	0.017	0.23	0.23	0.07	0.05	0.024	0.00	0.001	0.001	0.0000	0.000	80,500	39,900	29.00	61.00	154	154	<b>A 105</b>
CE (IIW): 0.381																				
CE (PCM): 0.254																				

Quantity	Product	Heat Code	Heat Treatment Info	Steel Mill																
17	3" Class 150 Threaded RF	3DD24	Hot Formed	RIVA																
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5
0.19	1.04	0.015	0.010	0.25	0.16	0.06	0.17	0.010	0.00	0.028	0.020	0.0000	0.001	77,400	39,900	30.70	67.60	142	145	<b>A 105</b>
CE (IIW): 0.410																				
CE (PCM): 0.264																				

Quantity	Product	Heat Code	Heat Treatment Info	Steel Mill																
10	1½" Class 150 Blind RF	S703	Hot Formed	CMC STEEL																
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-17 Dimensional Specification: B16.5
0.20	1.02	0.013	0.016	0.21	0.27	0.08	0.09	0.024	0.00	0.001	0.001	0.0002	0.001	79,300	39,900	32.00	61.12	144	148	<b>A 105</b>
CE (IIW): 0.416																				
CE (PCM): 0.280																				

Quantity	Product	Heat Code	Heat Treatment Info	Steel Mill																
18	2" Class 150 Blind RF	3DA63	Hot Formed	RIVA																
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-14 Dimensional Specification: B16.5
0.18	1.05	0.013	0.010	0.22	0.15	0.06	0.14	0.010	0.00	0.031	0.022	0.0000	0.001	73,200	39,900	31.10	62.10	144	141	<b>A 105</b>
CE (IIW): 0.399																				
CE (PCM): 0.256																				

We hereby certify that the material meets the following

- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
- All fittings and flanges meet NACE MRO-103 - Latest Revision.
- All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
- All fittings are seamless except as noted;
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# Material Test Report

WELDBEND CORPORATION  
PO Box 2388  
Sulphur, LA  
PO: P0229257-01

<u>Quantity</u>		<u>Product</u>								<u>Heat Code</u>				<u>Heat Treatment Info</u>				<u>Steel Mill</u>				
6		4" Class 150 Blind RF								AU5				Hot Formed				CMC STEEL				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5		
0.18	1.00	0.009	0.022	0.23	0.25	0.10	0.07	0.030	0.00	0.002	0.001	0.0001	0.000	79,500	39,900	27.80	55.40	152	152	A 105		
CE (IIW): 0.390																						
CE (PCM): 0.258																						

<u>Quantity</u>		<u>Product</u>								<u>Heat Code</u>				<u>Heat Treatment Info</u>				<u>Steel Mill</u>				
10		6" Class 150 Blind RF								AM5				Hot Formed				CMC STEEL				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5		
0.19	1.03	0.007	0.022	0.22	0.29	0.10	0.06	0.020	0.00	0.001	0.001	0.0001	0.000	78,500	39,900	31.60	60.10	154	154	A 105		
CE (IIW): 0.404																						
CE (PCM): 0.270																						

<u>Quantity</u>		<u>Product</u>								<u>Heat Code</u>				<u>Heat Treatment Info</u>				<u>Steel Mill</u>				
6		8" Class 150 Blind RF								AA4				Hot Formed				CMC STEEL				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5		
0.20	1.00	0.009	0.015	0.22	0.32	0.09	0.07	0.030	0.00	0.002	0.001	0.0001	0.001	79,000	39,900	28.00	62.00	148	152	A 105		
CE (IIW): 0.414																						
CE (PCM): 0.281																						

<u>Quantity</u>		<u>Product</u>								<u>Heat Code</u>				<u>Heat Treatment Info</u>				<u>Steel Mill</u>				
3		10" Class 150 Blind RF								AA4				Hot Formed				CMC STEEL				
<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Cu</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>	<u>Al</u>	<u>Ti</u>	<u>B</u>	<u>Cb</u>	<u>Tens.</u>	<u>Yield</u>	<u>Elong</u>	<u>ROA</u>	<u>BHN</u>	<u>BHN2</u>	A 105-18 Dimensional Specification: B16.5		
0.20	1.00	0.009	0.015	0.22	0.32	0.09	0.07	0.030	0.00	0.002	0.001	0.0001	0.001	81,400	39,900	30.50	60.70	154	154	A 105		
CE (IIW): 0.414																						
CE (PCM): 0.281																						

We hereby certify that the material meets the following

- All fittings and flanges meet NACE MRO-175/ISO 15156-Latest Revision.
- All fittings and flanges meet NACE MRO-103 - Latest Revision.
- All non high-yield fittings meet the requirements of ASTM A-234 WPB (AND SA-234).
- All fittings are seamless except as noted;
- All non-high yield flanges meet the requirements of ASTM A-105 (AND SA-105)
- Starting Material Seamless Pipe for elbows, tees and reducers;
- Plate for caps and welded fittings.
- Bars, Billets or Blooms for flanges and certain caps and tees.
- Ladle chemistry reported.

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*Richard Purpura*

Richard Purpura  
Quality Assurance Department  
12/1/2021



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We hereby certify that the material meets the following:

- ISO 9001:2015 CERTIFIED MANUFACTURER
- Test Results herein are correct as contained in test records retained by the company in accordance with EN 10 204 Para 3.1 in accordance with PED Annex 1, Paragraph 4.3 of 2014/68/EU
- No Weld Repair Performed. No Lead Content. No Mercury Content.
- Knowingly making false, fictitious, or fraudulent statements on a MTR may result in legal liability.
- Material has been manufactured/supplied and tested in accordance with the most current version of the Weldbend Quality System Program