

**NUCOR-YAMATO STEEL CO.**

P O BOX 1228  
BLYTHEVILLE AR 72316

DATE  
6/17/06

**CERTIFIED MILL TEST REPORT**  
100% MELTED AND MANUFACTURED IN U.S.A

All shapes produced by Nucor-Yamato Steel are cast and rolled to a fully killed and fine grain practice.

**SOLD TO**

FERRE BARNIEDO, S.A. DE C.V.  
AV REVOLUCION NO 81  
SAN CRISTOBAL ECATEPEC  
EDO DE MEXICO 55000

**SHIP TO**

FERRE BARNIEDO C/O TAF FORWARDING  
1207 UNIROYAL DRIVE  
FINAL: SAN LUIS POTOSI, SLP MX  
LAREDO, TX

INVOICE  
52241  
BILL OF LADING  
790427

CUSTOMER NO.  
5446  
CUSTOMER P.O.  
FERRE 24 2ND

2 SPECIFICATIONS GRADE:  
ASTM A709/A709M-03a GR50S (345S)      ASTM A992/A992M-04a A572/A572M GR50-04      ASTM A709/A709M-03a GR50 (345)  
ASTM A6/A6M-05a

31441

ITEM	ITEM DESCRIPTION	QTY	HEAT #	MECHANICAL PROPERTIES								CHEMICAL PROPERTIES											
				YIELD TO TENSILE RATIO	YIELD STRENGTH F <sub>y</sub> MPa	TENSILE STRENGTH F <sub>t</sub> MPa	ELONG %	CHARPY IMPACT		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE		
								TEMP F	IMPACT ENERGY FT-LBS														
1	W14 - 90.0	6	276431	.75	55000	73000	26				.071	.38	.020	.031	.19	.34	.12	.14	.03	.00	.022	.36	
	40' P14151341			.77	57000	74000	25																
	W360 x134.0				379	503	26																
	12.192 M				393	510	25																
2	W14 - 90.0	6	276433	.75	55000	73000	27				.071	.35	.018	.023	.23	.30	.13	.13	.04	.00	.020	.36	
	40' =			.75	55000	73000	26																
	W360 x134.0				379	503	27																
	12.192 M				379	503	26																
3	W14 - 90.0	3	276435	.76	56000	74000	26				.081	.30	.018	.018	.24	.28	.11	.12	.03	.00	.017	.36	
	40' =			.72	54000	75000	26																
	W360 x134.0				386	510	26																
	12.192 M				372	517	26																

FERRE BARNIEDO, S.A. DE C.V.

ESTE CERTIFICADO ES COPIA FIEL DEL ORIGINAL DE NUESTROS ARCHIVOS, APTARA LA REMISION No. \_\_\_\_\_

TEL 58-36-10-00      ventas@ferrebarniedo.com.mx

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH  
 $P_{cm} = C + Si / 30 + Mn / 20 + Cu / 20 + Ni / 60 + Cr / 20 + Mo / 15 + V / 10 + 5B \approx .0085$   
 Corrosion Index:  $CI = 26.01(\%Cu) + 3.88(\%Ni) + 1.2(\%Cr) + 1.49(\%Si) + 17.28(\%P) - 7.29(\%Cu)(\%Ni) - 9.10(\%Ni)(\%P) - 33.39(\%Cu)^2$   
 CARBON EQUIVALENT CE =  $C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$

I hereby certify that the contents of this report are accurate and correct. All test results and operations performed by this material manufacturer are in compliance with the requirements of the material specifications, and when designated by the purchaser, meet the applicable specifications.

GARY PENNELL  
QUALITY ASSURANCE

STATE OF ARKANSAS  
COUNTY OF MISSISSIPPI  
SWORN TO AND SUBSCRIBED BEFORE ME THIS \_\_\_\_\_ Day of \_\_\_\_\_  
NOTARY PUBLIC

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 EDO DE MEXICO 55000

**SHIP TO**

FERRE BARNIEDO C/O TAF FORWARDING  
 1207 UNIROYAL DRIVE  
 FINAL: SAN LUIS POTOSI, SLP MX  
 LAREDO, TX

INVOICE  
 52245  
 BILL OF LADING  
 790430

CUSTOMER NO.  
 5446  
 CUSTOMER P.O.  
 FERRE 24 2ND

2 SPECIFICATIONS GRADE: ASTM A992/A992M-04a A572/A572M GR50-04 ASTM A709/A709M-03a GR50 (345)  
 ASTM A709/A709M-03a GR50S (345S) ASTM A6/A6M-05a

31435

ITEM	ITEM DESCRIPTION	QTY	HEAT #	MECHANICAL PROPERTIES								CHEMICAL PROPERTIES										
				YIELD TO TENSILE RATIO	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONG %	CHARPY IMPACT		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	
								TEMP F	IMPACT ENERGY FT-LBS													Sn
4	W14 - 90.0 40' / 1415134 I W360 x134.0 12.192 M	3	276440	.77	55000	71000	25				.061	.22	.022	.022	.23	.32	.09	.11	.02	.00	.015	.32
				.76	54000	71000	25												.01	.16		
					379	490	25															
					372	490	25															

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 ESTE CERTIFICADO ES COPIA FIEL  
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 AMPARA LA REMISION No. \_\_\_\_\_  
 TEL. 58-36-10-00 [ventas@ferrebarniedo.com.mx](mailto:ventas@ferrebarniedo.com.mx)

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH  
 $P_{cm} = C + Si / 30 + Mn / 20 + Cu / 20 + Ni / 60 + Cr / 20 + Mo / 15 + V / 10 + 5B \approx .0005$   
 CARBON EQUIVALENT CE =  $C + Mn/6 + (Cr+Mo+V) / 5 + (Ni+Cu) / 15$   
 Corrosion Index:  $CI = 26.01(\%Cu) + 3.88(\%Ni) + 1.2(\%Cr) + 1.49(\%Si) + 17.28(\%P) - 7.29(\%Cu)(\%Ni) - 9.10(\%Ni)(\%P) - 33.39(\%Cu)^2$

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 FINAL: SAN LUIS POTOSI, SLP MX  
 LAREDO, TX

**INVOICE**

52251

**CUSTOMER NO.**

5446

**BILL OF LADING**

790451

**CUSTOMER P.O.**

FERRE 24 2ND

2 **SPECIFICATIONS GRADE:** ASTM A992/A992M-04a A572/A572M GR50-04 ASTM A709/A709M-03a GR50 (345)  
 ASTM A709/A709M-03a GR50S (345S) ASTM A6/A6M-05a

31410

ITEM	ITEM DESCRIPTION	QTY	HEAT #	MECHANICAL PROPERTIES								CHEMICAL PROPERTIES											
				YIELD TO TENSILE MPa	YIELD STRENGTH MPa	TENSILE STRENGTH MPa	ELONG %	CHARPY IMPACT		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE		
								TEMP F	IMPACT ENERGY FT-LBS JOULES														
1	W14 - 90.0 40' W360 x134.0 12.192 M	1	276405	.75	54000	72000	27					.081	.33	.021	.020	.26	.28	.13	.14	.03	.00	.020	.36
				.73	54000	74000	27													.01	.18		
2	W14 - 90.0 40' W360 x134.0 12.192 M	6	276409	.76	56000	74000	26					.071	.34	.017	.025	.25	.32	.13	.12	.04	.00	.019	.35
				.75	56000	75000	26													.01	.18		
3	W14 - 90.0 40' W360 x134.0 12.192 M	5	276415	.75	56000	75000	26					.071	.36	.018	.018	.22	.33	.13	.13	.04	.00	.019	.36
				.76	57000	75000	26													.01	.18		
4	W14 - 90.0 40' W360 x134.0 12.192 M	8	276416	.74	56000	76000	25					.081	.37	.023	.025	.25	.34	.10	.13	.03	.00	.019	.37
				.75	57000	76000	24													.01	.19		
5	W14 - 90.0 40' W360 x134.0 12.192 M	4	276419	.79	57000	72000	26					.061	.30	.019	.025	.25	.31	.13	.11	.04	.00	.017	.34
				.79	58000	73000	27													.01	.17		
6	W14 - 90.0 40' W360 x134.0 12.192 M	3	276422	.75	55000	73000	26					.081	.33	.018	.019	.22	.31	.12	.11	.04	.00	.019	.36
				.74	55000	74000	25													.01	.19		
7	W14 - 90.0 40' W360 x134.0 12.192 M	3	276424	.77	56000	73000	26					.071	.30	.018	.019	.22	.31	.12	.12	.04	.00	.019	.35
				.76	55000	72000	26													.01	.18		
8	W14 - 90.0 40' W360 x134.0 12.192 M	6	276426	.74	54000	73000	25					.081	.35	.018	.019	.23	.29	.12	.12	.04	.00	.018	.37
				.77	56000	73000	27													.01	.18		
					372	510	27																
					386	510	26																
					379	496	26																
					400	503	27																
					379	503	26																
					372	503	25																
					386	503	27																

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH  
 $P_{cm} = C + Si / 30 + Mn / 20 + Cu / 20 + Ni / 60 + Cr / 20 + Mo / 15 + V / 10 + 5B$  Approx .005  
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