

DATE	4/17/14
INVOICE NO.	626153
BILL OF LADING	150555
CUSTOMER NO.	5446
CUSTOMER P.O.	600892

**NUCOR-YAMATO STEEL CO.**  
P.O. BOX 1228 • BLYTHEVILLE, AR 72316

**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.

SHIP TO: FB C/O JORGE MIGUEL MEDRANO SANCHEZ  
HIDALGO 3530 PAT 100  
FINAL: SAN LUIS POTOSI, SLP MX  
NOVATO LAREDO, TM 55024

SPECIFICATIONS: ASTM A992/A992M-11 A572/A572M GR50-13a  
ASTM A709/A709M-13a GR50 (345)  
ASTM A709/A709M-13a GR50S (345S)  
CSA G40.21-13 50WM (345WM)  
ASTM A6/A6M-13a

SOLD TO: FERRE BARNIEDO, SA DE CV  
AV REVOLUCION #81 200 SAN CRISTOBAL  
ECATEPEC DE MORELOS  
EDO, MEXICO 55074

ITEM #	ITEM DESCRIPTION	QTY	HEAT #	MECHANICAL PROPERTIES				CHEMICAL PROPERTIES														
				YIELD TO TENSILE RATIO	YIELD STRENGTH	TENSILE STRENGTH	ELONG	CHARPY IMPACT		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	
					PSI	PSI	%	TEMP	IMPACT ENERGY													
1	W21 -101.0 40' W530 x150.0 12.192 M	4	421013	.77	56000	73000	27				.07	1.10	.015	.025	25	.27	.11	.13	.03	.01	.023	.31
				.78	57000	73000	28												.01	.16		
2	W21 -101.0 40' W530 x150.0 12.192 M	9	421015	.77	55000	71000	28				.07	1.10	.017	.026	21	.26	.09	.13	.03	.01	.021	.31
				.76	55000	72000	27												.01	.16		
3	W21 -101.0 40' W530 x150.0 12.192 M	16	421016	.79	55000	70000	28				.07	1.10	.014	.021	25	.27	.11	.11	.03	.01	.020	.31
				.77	55000	71000	28												.01	.16		
4	W21 -101.0 40' W530 x150.0 12.192 M	8	421018	.78	56000	72000	27				.07	1.10	.019	.021	26	.27	.10	.11	.03	.01	.020	.31
				.77	55000	71000	28												.01	.16		
5	W21 -101.0 40' W530 x150.0 12.192 M	4	421021	.81	59000	73000	26				.08	1.10	.019	.023	24	.26	.10	.16	.03	.01	.019	.33
				.78	56000	72000	27												.01	.17		
					407	503	26															
					386	496	27															

Formula:  $Pcm = C + \frac{Si}{30} + \frac{Mn}{20} + \frac{Cu}{20} + \frac{Ni}{20} + \frac{Cr}{20} + \frac{Mo}{20} + \frac{V}{15} + \frac{S}{5} + \frac{B}{5}$  - Approx. 0005  
CARBON EQUIVALENT:  $CE = CE(ITW) = C + \frac{Mn}{6} + \frac{(Cr+Mo+V)}{5} + \frac{(Ni+Cu)}{15}$   
Corrosion Index:  $CI = 26.0(\%Cu) + 3.68(\%Ni) + 1.20(\%Cr) + 1.49(\%S) + 17.28(\%P) - 7.28(\%Cu)(\%Ni) - 8.10(\%Ni)(\%P) - 33.30(\%Cu)^2$   
Mercury has not been used in the direct manufacturing of this material.

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

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 listed in the Specifications Block above.

*Day Linnell*

QUALITY ASSURANCE

CUSTOMER COPY

STATE OF ARKANSAS COUNTY OF MISSISSIPPI  
SWORN TO AND SUBSCRIBED BEFORE ME THIS

17 Day of 04/14

*Deborah Ann Rhodes*

NOTARY PUBLIC

MY COMMISSION EXPIRES 07/17/2023

