Bill of Lading	609810
Customer No.	1377
Customer P.O.	4500560739

NUCOR - YAMATO STEEL COMPANY

P.O. Box 1228; Blytheville AR 72316

CERTIFIED MILL TEST REPORT

100% Melted and Manufactured in the U.S.A.
All Shapes produced by Nucor-Yamato Steel are cast and rolled to a fully killed and fine grain practice

Date	2023-10-09 01:20 PM

SOLD TO
205 OSAGE AT 3RD ST-BNSF-CAVE CITY
BOX 1688
MANHATTAN KS 66502
USA

SHIP TO
401 NEW CENTURY PARKWAY
NEW CENTURY KS 66031
USA

ASTM A992/A992M-22 A572/A572M GR50-21
ASTM A709/A709M-21 GR50 (345)
ASTM A709/A709M-21 GR50S (345S)
CSA G40.21-13 50WM (345WM)
ASTM A6/A6M-22

Item	Item Description	QTY	Heat	Mechanical Properties							Chemical Properties														
				Yield to Tensile Ratio	Yield Strength KSI MPA	Tensile Strength KSI MPA	ELONG % %	Charpy Impact Temp °F °C	Impact Energy Ft-Lbf J	Loc	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl
1	S12X040.8 40 ft 0 in S310X60.7 (12 m)	5	582224	0.80 0.81	61 61 422 424	76 76 525 525	25 24				.07	1.14	.015	.029	.19	.33	.14	.16	.04	.00	.019	.33	.01	.16	

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

Pcm= C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+5B(B=Approx .0005)

Corrosion Index 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

ISO 9001-2015 certified (Registration # 0985-07).

Meets mechanical lab independence requirements of EN10204 type 3.1.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315")striker (KV) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3

CARBON EQUIVALENT CE =C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

Mercury has not been used in the direct manufacturing of this material

Boron has not been intentionally added and will not exceed 0.0008%

This material was produced in accordance with the Nucor-Yamato Steel Quality Manual

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
Chief Metallurgist

State of Arkansas
County of Mississippi
Sworn to and subscribed before me

On 2023-10-09
My commission expires on 03 / 25 / 2024