

Invoice No.	228624
Bill of Lading	577207
Customer No.	0883
Customer P.O	SSW133967

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	
Date	03/01/2023 11:14 AM

ASTM A992/A992M-20 A572/A572M GR50-18
 ASTM A709/A709M-18 GR50 (345)
 ASTM A709/A709M-18 GR50S (345S)
 CSA G40.21-13 50WM (345WM)
 ASTM A6/A6M-19

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	Sn	Pcm	Cl
					KSI	KSI		%	Temp	Impact Energy															
					MPa	MPa	%	° F	ft-lbf																
							%	° C	J																
1	S20X086.0 60 ft 0 in S510X128 (18.29 m)	2	573282	0.77 0.78	62 425 430	81 80 555 551	22 23																		
2	S20X086.0 60 ft 0 in S510X128 (18.29 m)	1	573548	0.77 0.75	57 57 396 393	75 76 517 523	25 24																		

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 (KV₈) 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.

Doug Lemell
 Chief Metallurgist

State of Arkansas
 County of Mississippi
 Sworn to and subscribed before me
Deborah Ann Rhodes
 on 2023-03-01
 My commission expires on 07/17/2023

