Invoice No. 200985 Bill of Lading 556736 Customer No. 7212	NUCOR-YAMATO STEEL CO. P.O. BOX 1228: BLYTHEVILLE, AR 72316	All Shapes p	CERTIFIED MILL TE d and Manufactured roduced by Nucor-Yama and fine grain practice	d in	
Customer P.O 4500281025		Date	09/18/2022 0:53 AM		
S O L L L L L L L L L L L L L L L L L L	5 i H . I P I				ASTM A588/A588M-19 GRADE B ASTM A709/A709M-18 GR50WT Type B(345W ASTM A6/A6M-19

							Mecha	nical Pro	perties											Chemi	cal Pro	perties						
						Viold Streeth	Tensile	ELONG	Charpy	Impa	ct																	
It	em#Item Descript	ion	QTY	Heat#		Yield Strength	Strength	ELONG	Temp	Impa	ct En	ergy	Loc	_		_	-	Si	C.,	Ni	C-	Mo	v	СЬ	CE	Sn	Pcm	cı
-					Tensile Ratio	KSI	KSI	%	° F		ft• lb	f		C	Mn	P	3	31	Cu	141	Cr	IVIO	V	CB	CE	211	PCIII	C
	-				1.00	MPa	MPa	%	°C		J																	
Г	W44X290.0					58	73	30	40	108	114	127	Fla															
1	40 ft 0 in		1	564705	0.79	59	73	30	4	146	155	172		.07	1.25	.020	.020	.28	.28	.31	.49	.04	.04	.001	.43	.01	.20	6.5
1	W1100X433		-	304703	0.80	398	504							.07	1.25	.020	.020	.20	,20	.51	.43	.04	.04	100,	.45	.01	.20	0.5
	(12.19 m)					406	505																					

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 (KVg) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

Chief Metallurgist

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.

~ / ~

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2022-09-18

My commission expires on 07/17/2023

NOTARY PUBLIC

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

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%

Invoice No. 230591 Bill of Lading 578669 Customer No. 7212 Customer P.O 4500290762

D

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

03/11/2023 4:34 AM

TO	- A District Control of the Control				ī		***************************************																				
						Mecha	nical Pro	perties											Chemi	cal Prop	perties						
						Tensile	FLONG	Charpy	Impac	t																	
Iter	# Item Description	QTY	Heat#	Yield to	Yield Strength	Strength	ELONG	Temp	Impa	ct Ene	rgy	Loc	_		_		ć:	c.,	ME	C -	140	v	СЬ	CE	c.,	Dem	CI
				Tensile Ratio	KSI	KSI	%	* F		ft• lbf			С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	CB	CE	Sn	Pcm	u
				Matio	MPa	MPa	%	°C		J																	
	W21X062.0	-	-		59	77	24	40	113	143	183	Fla															
1	40 ft 0 in	6	571596	0.77	57	74	24	4	153	194			.06	1.09	.013	.018	.31	.28	.32	.45	.04	.06	.002	.40	.01	.18	6.5
	W530X.92	-		0.76	407 390	531 512		40	101			Fla															
H	(12.19 m)						22	4	137			Cl-								_							
	W44X290.0 40 ft 0 in		. XX T	0.79	58 57	74 74	28	40	114	1		ria															
2	W1100X433	3	564702	0.78	403	508	-	1	133	-/-	200		.06	1.25	.015	.025	.26	.29	.32	.41	.04	.04	.001	.41	.01	.18	6.4
	(12.19 m)				393	507																					
		П			58	73	. 30	40	108	114	127	Fla															
	W44X290.0				59	73	30	4	146	1																	
3	40 ft 0 in	4	564705	0.79	398	504		40	96		1	Fla	.07	1.25	.020	.020	.28	.28	.31	.49	.04	.04	.001	.43	.01	.20	6.5
	W1100X433 (12.19 m)			0.80	405	505		40	130	1	- 1	Fla															
	1 12.13 1111							4	1	142		, ,,,															
	W44X290.0				60	74	30	40	102	-	-	Fla															
1	40 ft 0 in	4	564709	0.81	60	75	27	4	138				.08	1.25	016	020	30	.30	30	45	.03	.04	.001	.43	.01	.20	6.5

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

W1100X433

(12.19 m)

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

564709

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

0.80

414

414

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.

512

520

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.

Chief Metallurgist

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

.30

ASTM A588/A588M-19 GRADE B

ASTM A6/A6M-19

ASTM A709/A709M-18 GR50WT TypeB(345WT)

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

.30

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.

.30 .45

County of Mississippi

.08 1.25 .016 .020

Sworn to and subscribed before me

State of Arkansas

My commission expires on 07/17/2023



.03

.04 .001

.43 .01 .20 6.5

Invoice No.	229497
Bill of Lading	577950
Customer No.	7212
Customer PO	4500290762

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 03/05/2023 9:23 AM

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ASTM A588/A588M-19 GRADE B ASTM A709/A709M-18 GR50WT TypeB(345WT) ASTM A6/A6M-19

		·		,																							
						Mecha	nical Pro	perties											Chemi	cal Prop	perties						
					VI-12 Fa ab	Tensile	ELONG	Charpy	Impac	t																	
Ite	# Item Description	QTY	Heat#		Yield Strength	Strength	ELUNG	Temp	Impa	ct Ene	rgy	Loc	_		р		c:			<u></u>		v	CL.	-	c-		
1				Tensile Ratio	KSI	KSI	%	• F		ft• lbf			С	Mn	Р	5	Si	Cu	Ni	Cr	Мо	\ \	СЬ	CE	Sn	Pcm	CI
				Mario	MPa	MPa	%	°C		J																	
Γ,	₩08X058.0				55	77	24	40	48	61	79	Fla															
1,	40 ft 0 in	9	574165	0.72	56	78	24	4	65	83	107		.07	1.11	.012	.018	.32	.32	.33	.46	.07	.06	.002	.42	.01	.19	6.6
1	W200X 86		314103	0.72	380	531							.07	1.11	.012	.020	,52	.52	.55	.40	.07	.00	.002	.72	.01		0.0
	[12.19 m]				389	538																					
					58	73	30	40	96		104	Fla															
	W44X290.0				59	73	30	4	130																		
2	40 ft 0 in	4	564705	0.79	398	504		40	108			Fla	.07	1.25	.020	.020	.28	.28	.31	.49	.04	.04	.001	.43	.01	.20	6.5
	W1100X433			0.80	406	505		4	146			-1-															
	(12.19 m)							40	111	105 142	125	Fla															
-	W/4AV2GD G						70	4	_																		
	W44X290.0			0.01	60	74	30	40	102		101	Fla															
3	40 ft 0 in W1100X433	1	564709	0.81	60 414	75 512	27	4	138	138	13/		.08	1.25	.016	.020	.30	.30	.30	.45	.03	.04	.001	.43	.01	.20	6.5
	(12.19 m)			0.60	414	520																					
-	W44X290.0				58	75	25	40	59	F0	56	Fla															-
	40 ft 0 in			0.78	58 58	75 76	25 25	40	80	58 79	56 76	ria															
4	W1100X433	2	573680	0.76	401	514	23	*	00	19	70		.07	1.26	.020	.023	.27	.32	.30	.56	.04	.04	.001	.45	.01	.20	6.7
	(12.19 m)			5.70	398	521																					

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

Pcm= C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+SB(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 (KVg) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

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.

Chief Metallurgist

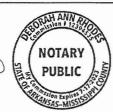
State of Arkansas

County of Mississippi

Sworn to and subscribed before me

on 2023-03-05

My commission expires on 07/17/2023



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

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

Boron has not been intentionally added and will not exceed 0,0008%

Invoice No.	228510
Bill of Lading	577330
Customer No.	7212
Customer P.O	4500290762

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 4:44 AM

s	s	· [ASTM A588/A588M-19 GRADE B	7
0	l	1	,	ASTM A709/A709M-18 GR50WT TypeB(345WT)	j
L	l'	3		ASTM A6/A6M-19	
_		1			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
7					against an

						Mecha	nical Pro	perties											Chemi	cal Prop	perties	-	_				
								Charny	Impad	t																	
Ite	m# Item Description	QTY	Heat#		Yield Strength	Strength	ELONG	Temp	Impa	ct Ene	rgy	Loc	_	Mn	р	s	Si	Cu	Ni	Cr	Мо	v	СЬ	CE	Sn	Pcm	cı
				Tensile Ratio	KSI	KSI	%	° F		ft• lbf				iviii	Р	3	31	Cu	101	C.	IVIO	,	CD	CL	311	rem	C1
				,,,,,,,	MPa	MPa	%	° C		J																	
	W44X290.0				58	73	24	40	89	83	69	Fla															
1	40 ft O in	2	572432	0.78	60	73	27	4	121	113	94		.07	1.26	.017	.025	.24	.29	.32	.46	.05	.04	.001	.43	.01	.19	6.5
	W1100X433 (12.19 m)			0.82	396 415	506 506																					
\vdash	W44X290.0				60	74	25	40	65	61	60	Fla															
	40 ft O in			0.81	58	75	26	40	88	83	81	ria															
2	W1100X433	2	572433	0.77	415	513							.08	1.28	.013	.023	.28	.31	.30	.46	.05	.04	.001	.44	.01	.20	6.5
	(12.19 m)				399	519																					
	W44X290.0				60	76	23	40	69	66	79	Fla															
3	40 ft O in	3	572437	0.79	60	76	27	4	94	89	107		.08	1.27	.012	.021	.26	.31	.30	.45	.06	.04	.001	.44	.01	.20	6.4
	W1100X433			0.79	416	527																					
-	(12.19 m)				413	522	25	100	CE	54	75	Fla															-
-	W44X290.0 40 ft 0 in			0.77	56 56	73 72	25 26	40	65 88	54 73	75 102	ria															
4	W1100X433	2	573679	0.78	389	506	20	"	00	,,,	102		.07	1.26	.016	.025	.26	.26	.31	.53	.05	.04	.001	.44	.01	.19	6.4
-	(12.19 m)				386	496																					

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 (KVg) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

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.

Chief Metallurgist

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2023-03-01 Helwich ifn My commission expires on 07/17/2023 **NOTARY**

NAA HAG

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

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

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

Invoice No.	228510
Bill of Lading	577330
Customer No.	7212
Customer PO	4500290762

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

03/01/2023 4:44 AM

S ASTM A588/A588M-19 GRADE ASTM A709/A709M-18 GRSOW ASTM A6/A6M-19	
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Γ							Mecha	nical Prop	perties											Chemi	ical Pro	perties						
-						Vield Steenmah	Tensile	ELONG	Charpy	Impac	t																	
1	tem	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELUNG	Temp	Impad	t Ene	rgy	Loc	_	Mn	D	c	Sì	Cu	Ni	Cr	Мо	W	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf				10111	r	3	31	Cu	141	Ci	IVIO	v	Co	CL	311	rem	
					,,	MPa	MPa	%	° C		J																	
Γ	1	W44X290.0				58	75	25	40	67	59	64	Fla															
	. 1	40 ft O in	2	573680	0.78	58	76	25	4	91	80	87		.07	1.26	.020	.023	.27	.32	.30	.56	.04	.04	.001	.45	.01	.20	6.7
1	-	W1100X433	3	373080	0.76	401	514		40	59	58	56	Fla	.07	1.20	.020	.023	.27	.52	.50	.50	.54	.54	.501	,5	.51	.20	0.7
		(12.19 m)				398	521		4	80	79	76																

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

Pcm= C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+58(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.

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.

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.

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.

Chief Metallurgist

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2023-03-01 Heliarek Am

My commission expires on 07/17/2023

Invoice No. 197748 Bill of Lading 554289 Customer No. 7212 Customer P.O 4500281025

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 09/03/2022 2:38 AM

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S H I P T O

ASTM A588/A588M-19 GRADE B ASTM A709/A709M-18 GR50WT TypeB(345WT) ASTM A6/A6M-19

Г	T						Mecha	nical Pro	perties							***************************************				Chemi	cal Pror	nerties			Chemical Properties													
								Theat the	Charpy	Imnar	-t									Circini	carrio	Jer des																
10		# Item Description	QTY	Heat#	Yield to	Yield Strength	Strength	ELONG	_	1		Lan																										
110	2111	# itelli bescription	QI I	неатя	Tensile		-		_				Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	СЬ	CE	Sn	Pcm	CI										
	1				Ratio	KSI	KSI	%	° F	ft• lbf																												
	_					MPa	MPa	%	° C		J																											
	- 1	W44X290.0				57	73	27	40	81	68	77	Fla																									
		40 ft 0 in	1	567033	0.78	59	74	28	4	110	92	104		.06	1.25	.021	.024	.26	.29	.32	.49	.05	.04	.002	.43	.01	.19	6.6										
1	£	W1100X433	-	50,055	0.80	392	502							1.00	2.20	.022	.021	,		.52	. 15	.03	,0 ,	.502	.,,	.01		0.0										
_	-+	(12.19 m)				409	509																															
	- 8	W44X290.0				56	73	28	40	73	71	51	Fla																									
1 2		40 ft 0 in	2	567035	0.77	57	73	30	4	99	96	83		.06	1.27	.017	.026	.30	.27	.28	.46	.03	.04	.001	.41	.01	.18	6.4										
		W1100X433			0.77	389	504		40	77	85	80	Fla																									
\vdash	-11	12.19 m)				390	504		4	104	_	108																										
	1.					59	75	27	40	97	92	95	Fla																									
	- 1	W44X290.0				60	75	26	4	132		129																										
1 3		10 ft 0 in	7	567036	0.78	407	519		40	92	93	92	Fla	.08	1.25	.016	.016	.29	.28	.30	.44	.04	.04	.002	.44	.01	.20	6.4										
-	- 8	W1100X433			0.79	411	519		4	125		125	Fla																									
	1	12.19 m)							40	80 108	66 89	76 103	FIB																									
-	+	W44X290.0				57	72	25	40	76	86	78	Fla																									
***************************************	3	10 ft 0 in		A. J. S. S. S. S.	0.78	58	73 7 3	25	40	103		106	ria																									
4		W1100X433	141	567038	10000	392	504	26	40	70	74	74	Fla '	.07	1.26	.019	.017	.26	.26	6 .31	.53	.05	.04	.002	.44	.01	.19	6.4										
		12.19 m)			0.79	392 402	506		4	1	100															.51												

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 (KVg) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

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.

Chief Metallurgist

Day Lennell

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%

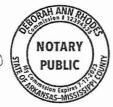
This material was produced in accordance with the Nucor-Yamato Steel Quality Manual.

State of Arkansas

County of Mississippi Sworn to and subscribed before me

on 2022-09-03 Helisiah Hu Ch

My commission expires on 07/17/2023



Invoice No.	197749
Bill of Lading	554290
Customer No.	7212
Customer P.O	450028102

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 09/03/2022 3:35 AM

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S ;	AST	M A58
н ,	AST	M A70
P	AST	M A6/A
.		
Т		
0		

ASTM AS88/A588M-19 GRADE B ASTM A709/A709M-18 GR50WT Type8(345WT) ASTM A6/A6M-19

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%

						Mecha	nical Prog	perties											Chemi	cal Prop	perties						
					Viold Strongth	Tensile	ELONG	Charpy Impac		narpy Impact																	
Ite	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELUNG	Temp	Temp Impact Energy Loc		С	Mn	D	S	Si	Cu	Ni	Cr	Мо	v	СЬ	CE	Sn	Pcm	CI		
				Ratio	KSI	KSI	%	° F	F ft-lbf				IVID	P	3	31	Cu	141	Cr	IVIO		CD	CE	211	PCIII	Ci	
				11000	MPa	MPa	%	° C		J																	
	W44X290.0				60	74	28	40	102	105	71	Fla															
1	40 ft 0 in	2	567030	0.82	58	74	29	4	139	142	96		.06	1.25	.015	.015	.25	.31	.33	.47	.05	.04	.002	.42	.01	.18	6.5
_	W1100X433	_	30,030	0.79	414	508		40	74	99	91	Fla									1,52	,,,,			.01	.10	
	(12.19 m)				399	507		4	100	134	123																
	W44X290.0				57	1	28	40	95	88	98	Fla	la													.18	
2	40 ft 0 in 3	3	567031	0.79	57	72	29	4	129		133		.06	1.25	.014	.019	.25	.28	.29	.42	.04	.04	.002	.41	.01		6.3
	W1100X433			0.79	394	498		40	80	87	86	Fla															
	(12.19 m)				393	500		4	108	-	_																
	W44X290.0				57	73	27	40	81	58	77	Fla															
3	40 ft 0 in	3	567033	0.78	59	74	28	4	110	92	104		.06	1.25	.021	.024	.26	.29	.32	.49	.05	.04	.002	.43	.01	.19	6.6
	W1100X433		7.57.755.1	0.80	392	502		40	84	91	88	Fla															
	(12.19 m)				409	509		4	114	123	119																
	W44X290.0				56	73	28	40	73	71	61	Fla															
4	40 ft 0 in	5	567035	0.77	57		30	4	99	96	83		.06	1.27	.017	.026	.30	.27	.28	.46	.03	.04	.001	.41	.01	.18	6.4
	W1100X433			0.77	389	504		40		77 85 80 Fla			.01/	.520		.21	.20	,40									
	(12.19 m)	(12.19 m)			390	504		4	104	115	108																1

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

Pcm= C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+58(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 (KVg) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

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.

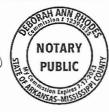
Chief Metallurgist

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2022-09-03

My commission expires on 07/17/2023



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

Invoice No.	197749
Bill of Lading	554290
Customer No.	7212
Customer P.O	4500281025

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

CERTIFIED MILL TEST REPORT 100% Melted and Manufactured in U.S.A

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Date 09/03/2022 3:35 AM

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ASTM A588/A588M-19 GRADE B ASTM A709/A709M-18 GR50WT TypeB(345WT) ASTM A6/A6M-19

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

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

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

Γ						Mechanical Properties									Chemical Properties													
		# Item Description				Viald Strangth	Tensile	ELONG	Charpy	Charpy Impact																		
It	emi		QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ct Ene	rgy	Loc		Mn	0	c	Si	Cu	Cu Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	
					Ratio	KSI	KSI % MPa %	° F	ft• lbf			٠	1001	F]] 31	Cu	140	Ci	IVIO	٧	CO	CL	311	1 (11)			
L					1,44.0	MPa		%	° C		J																	
Г	V	W44X290.0				59	75	27	40	80	66	76	Fla															
	, 4	40 ft 0 in	1	567036	0.78	60	75	26	4	108	89	103		.08	1.25	.016	.016	.29	.28	.30	.44	.04	.04	.002	.44	.01	.20	6.4
	- \	W1100X433	1	307030	0.79	407	519							.00	1.23	010	.010	.23	.20	.50	.47	.04	.04	.002	.77	.01	.20	0.4
	(12.19 m)				411	519																					

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.

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Chief Metallurgist

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Codiffy of iv

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2022-09-03

My commission expires on 07/17/2023

