

Invoice No.	834246
Bill of Lading	293379
Customer No.	1784
Customer P.O.	071-223357

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	2017-07-29
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item	Item Description	QTY	Heat#	Yield to Tensile Ratio	Mechanical Properties								Chemical Properties (wt %)													
					Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl
								Temp	Impact Energy	Loc																
								° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	469675	0.78 0.77	58 57 400 393	74 74 510 510	25 25					28 28	.07	.90	.018	.029	.22	.32	.12	.15	.04	.00	.016	.29	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	469677	0.76 0.77	55 56 379 386	72 73 496 503	26 25					27 30	.08	.92	.016	.028	.22	.30	.12	.15	.04	.00	.014	.30	.01	.16
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	14	473595	0.76 0.76	54 54 372 372	71 71 490 490	26 24					22 25	.07	.91	.015	.029	.18	.28	.11	.10	.03	.00	.014	.28	.01	.15

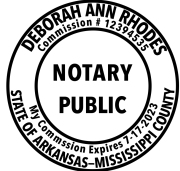
ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+5B(B=Approx .0005)$
Corrosion Index= $26.01(\%Cu)+3.88(\%Ni)+1.2(\%Cr)+1.49(\%Si)+17.28(\%P)-7.29(\%Cu)(\%Ni)-9.10(\%Ni)(\%P)-33.39(\%Cu)^2$
 ISO 9001:2015 certified (Registration # 0985-07).
 Meets mechanical 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_g) 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.
 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 Lennell
Chief Metallurgist

State of Arkansas
County of Mississippi
Sworn to and subscribed before me
Deborah Ann Rhodes
on 2017-07-29
My commission expires on 07/17/2023



Invoice No.	834532
Bill of Lading	293474
Customer No.	1784
Customer P.O.	071-223357

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

CERTIFIED MILL TEST REPORT
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Date	2017-07-31
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ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties (wt %)													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI	%	Temp	Impact Energy	Loc																	
					MPa	MPa	%	° F	ft• lbf																		
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469670	0.79 0.79	59 59 407 407	75 75 517 517	22 24					28 28		.07	.92	.016	.029	.24	.28	.11	.13	.04	.00	.016	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469671	0.80 0.78	56 57 386 393	70 73 483 503	24 23					28 30		.07	.90	.018	.030	.22	.30	.11	.14	.03	.00	.016	.29	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	3	469673	0.77 0.78	57 58 393 400	74 74 510 510	24 25					25 28		.07	.91	.017	.030	.23	.30	.11	.13	.03	.00	.016	.28	.01	.15
4	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	8	469675	0.78 0.77	58 57 400 393	74 74 510 510	25 25					28 28		.07	.90	.018	.029	.22	.32	.12	.15	.04	.00	.016	.29	.01	.15

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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_g) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

CARBON EQUIVALENT CE= $C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$
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Doug Lennell
Chief Metallurgist

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

on 2017-07-31
My commission expires on 07/17/2023



Invoice No.	834532
Bill of Lading	293474
Customer No.	1784
Customer P.O.	071-223357

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

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Date	2017-07-31

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3550 CORPORATE WAY
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DULUTH GA 30096
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ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties (wt %)													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI	%	Temp	Impact Energy	Loc																	
					MPa	MPa	%	° F	ft• lbf																		
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469677	0.76 0.77	55 56 379 386	72 73 496 503	26 25					27 30		.08	.92	.016	.028	.22	.30	.12	.15	.04	.00	.014	.30	.01	.16
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	3	473593	0.76 0.79	54 56 372 386	71 71 490 490	26 26					22 24		.07	.90	.013	.027	.22	.30	.12	.12	.04	.00	.015	.28	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473594	0.77 0.76	55 54 379 372	71 71 490 490	25 24					25 27		.07	.91	.014	.029	.19	.32	.12	.13	.03	.00	.013	.28	.01	.15

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_g) 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
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Doug Lennell
Chief Metallurgist

State of Arkansas
 County of Mississippi
 Sworn to and subscribed before me
Deborah Ann Rhodes
 on 2017-07-31
 My commission expires on 07/17/2023



Invoice No.	834533
Bill of Lading	293483
Customer No.	1784
Customer P.O.	071-223357

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

CERTIFIED MILL TEST REPORT
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Date	2017-07-31
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item	Item Description	QTY	Heat#	Yield to Tensile Ratio	Mechanical Properties							Chemical Properties (wt %)															
					Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
								Temp	Impact Energy	Loc																	Kips per inch
								° F	ft• lbf																		
					KSI	KSI	%	° F	ft• lbf																		
					MPa	MPa	%	° C	J																		
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	12	473593	0.76 0.79	54 56 372 386	71 71 490 490	26 26					22 24	.07	.90	.013	.027	.22	.30	.12	.12	.04	.00	.015	.28	.01	.15	
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	5	473595	0.76 0.76	54 56 372 372	71 71 490 490	26 24					22 25	.07	.91	.015	.029	.18	.28	.11	.10	.03	.00	.014	.28	.01	.15	
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473596	0.77 0.77	56 56 386 386	73 73 503 503	23 24					26 25	.07	.91	.015	.028	.18	.32	.10	.10	.03	.00	.015	.27	.01	.14	

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_g) 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.
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Doug Lennell
Chief Metallurgist

State of Arkansas
County of Mississippi
Sworn to and subscribed before me
Deborah Ann Rhodes
on 2017-07-31
My commission expires on 07/17/2023



Invoice No.	834536
Bill of Lading	293578
Customer No.	1784
Customer P.O.	071-223357

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	2017-07-31
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	473590	0.77 0.77	54 54 372 372	70 70 483 483	25 25					24 26		.07	.92	.016	.030	.21	.28	.11	.12	.04	.00	.013	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	10	473593	0.76 0.79	54 56 372 386	71 71 490 490	26 26					22 24		.07	.90	.013	.027	.22	.30	.12	.12	.04	.00	.015	.28	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	5	473594	0.77 0.76	55 54 379 372	71 71 490 490	25 24					25 27		.07	.91	.014	.029	.19	.32	.12	.13	.03	.00	.013	.28	.01	.15
4	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473596	0.77 0.77	56 56 386 386	73 73 503 503	23 24					26 25		.07	.91	.015	.028	.18	.32	.10	.10	.03	.00	.015	.27	.01	.14

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

$P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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_g) 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

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

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Doug Lennell

Chief Metallurgist

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

on 2017-07-31
My commission expires on 07/17/2023



Invoice No.	834537
Bill of Lading	293608
Customer No.	1784
Customer P.O	071-223357

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	2017-07-31
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

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3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469673	0.77 0.78	57 58 393 400	74 74 510 510	24 25					25 28		.07	.91	.017	.030	.23	.30	.11	.13	.03	.00	.016	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	7	469675	0.78 0.77	58 57 400 393	74 74 510 510	25					28 28		.07	.90	.018	.029	.22	.32	.12	.15	.04	.00	.016	.29	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469677	0.76 0.77	55 56 379 386	72 73 496 503	26 25					27 30		.08	.92	.016	.028	.22	.30	.12	.15	.04	.00	.014	.30	.01	.16
4	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	3	473590	0.77 0.77	54 54 372 372	70 70 483 483	25 25					24 26		.07	.92	.016	.030	.21	.28	.11	.12	.04	.00	.013	.28	.01	.15

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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
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on 2017-07-31
My commission expires on 07/17/2023



Invoice No.	834537
Bill of Lading	293608
Customer No.	1784
Customer P.O.	071-223357

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

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ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties														
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl		
					KSI	KSI		%	Temp	Impact Energy																	Loc	
					MPa	MPa		%	° F	ft• lbf																		
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473594	0.77 0.76	55 54 379 372	71 71 490 490	25 24						25 27		.07	.91	.014	.029	.19	.32	.12	.13	.03	.00	.013	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	5	473595	0.76 0.76	54 54 372 372	71 71 490 490	26 24						22 25		.07	.91	.015	.029	.18	.28	.11	.10	.03	.00	.014	.28	.01	.15

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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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Dary Kennell
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My commission expires on 07/17/2023



Invoice No.	834757
Bill of Lading	293695
Customer No.	1784
Customer P.O	071-223357

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

CERTIFIED MILL TEST REPORT
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All Shapes produced by Nucor-Yamato Steel are cast and rolled to a fully killed and fine grain practice

Date	2017-08-01
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3550 CORPORATE WAY
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
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USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473590	0.77 0.77	54 372 372	70 483 483	25 25					24 26		.07	.92	.016	.030	.21	.28	.11	.12	.04	.00	.013	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	15	473593	0.76 0.79	54 372 386	71 490 490	26 26					22 24		.07	.90	.013	.027	.22	.30	.12	.12	.04	.00	.015	.28	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	473594	0.77 0.76	55 54 379 372	71 71 490 490	25 24					25 27		.07	.91	.014	.029	.19	.32	.12	.13	.03	.00	.013	.28	.01	.15

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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_g) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

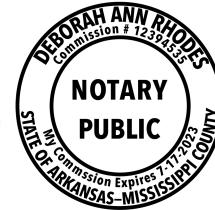
CARBON EQUIVALENT CE= $C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$
 Mercury has not been used in the direct manufacturing of this material
 This material was produced in accordance with the Nucor-Yamato Steel Quality Manual.

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.

Dary Lennell
Chief Metallurgist

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

on 2017-08-01 *Deborah Ann Rhodes*
My commission expires on 07/17/2023



Invoice No.	834758
Bill of Lading	293717
Customer No.	1784
Customer P.O	071-223357

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	2017-08-01
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473515	0.76 0.76	58 57 400 393	76 75 524 517	24 25					27 26		.08	.90	.013	.026	.25	.25	.11	.12	.03	.00	.014	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	473596	0.77 0.77	56 56 386 386	73 73 503 503	23 24					26 25		.07	.91	.015	.028	.18	.32	.10	.10	.03	.00	.015	.27	.01	.14
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	473597	0.77 0.75	56 55 386 379	73 73 503 503	24 23					25 25		.07	.92	.016	.030	.22	.31	.12	.14	.04	.00	.016	.29	.01	.15
4	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	5	473598	0.78 0.77	58 57 400 393	74 74 510 510	25 23					23 27		.07	.93	.020	.022	.19	.28	.12	.20	.04	.00	.016	.30	.01	.15

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

$P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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_g) 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

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

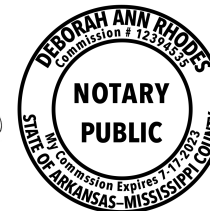
I hereby certify that the contents of this report are accurate and correct. All test results and operations performed by this material manufacturer are in compliance with the requirements of the material specifications, and when designated by the purchaser, meet the applicable specifications.

Doug Lennell

Chief Metallurgist

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

on 2017-08-01
My commission expires on 07/17/2023



Invoice No.	834759
Bill of Lading	293731
Customer No.	1784
Customer P.O	071-223357

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	2017-08-01

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	7	473590	0.77 0.77	54 54 372 372	70 70 483 483	25 25					24 26		.07	.92	.016	.030	.21	.28	.11	.12	.04	.00	.013	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	9	473593	0.76 0.79	54 56 372 386	71 71 490 490	26 26					22 24		.07	.90	.013	.027	.22	.30	.12	.12	.04	.00	.015	.28	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	473594	0.77 0.76	55 54 379 372	71 71 490 490	25 24					25 27		.07	.91	.014	.029	.19	.32	.12	.13	.03	.00	.013	.28	.01	.15

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

Dary Lennell
Chief Metallurgist

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

on 2017-08-01 *Deborah Ann Rhodes*
My commission expires on 07/17/2023



Invoice No.	834760
Bill of Lading	293732
Customer No.	1784
Customer P.O	071-223357

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	2017-08-01

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI	%	Temp	Impact Energy	Loc																	
					MPa	MPa	%	° F	ft• lbf																		
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	5	473590	0.77 0.77	54 54 372 372	70 70 483 483	25 25					24 26		.07	.92	.016	.030	.21	.28	.11	.12	.04	.00	.013	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	12	473593	0.76 0.79	54 56 372 386	71 71 490 490	26 26					22 24		.07	.90	.013	.027	.22	.30	.12	.12	.04	.00	.015	.28	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473594	0.77 0.76	55 54 379 372	71 71 490 490	25 24					25 27		.07	.91	.014	.029	.19	.32	.12	.13	.03	.00	.013	.28	.01	.15

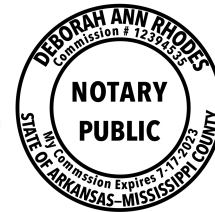
ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (B=Approx .0005)
Corrosion Index= 26.01(%Cu)+3.88(%Ni)+1.2(%Cr)+1.49(%Si)+17.28(%P)-7.29(%Cu)
 (%Ni)-9.10(%Ni)(%P)-33.39(%Cu)^2
 ISO 9001:2015 certified (Registration # 0985-07).
 Meets 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_g) 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
 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.

Dary Lennell
Chief Metallurgist

State of Arkansas
County of Mississippi
Sworn to and subscribed before me
on 2017-08-01
My commission expires on 07/17/2023



Invoice No.	834761
Bill of Lading	293748
Customer No.	1784
Customer P.O	071-223357

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	2017-08-01
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469670	0.79 0.79	59 59 407 407	75 75 517 517	22 24					28 28		.07	.92	.016	.029	.24	.28	.11	.13	.04	.00	.016	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469673	0.77 0.78	57 58 393 400	74 74 510 510	24 25					25 28		.07	.91	.017	.030	.23	.30	.11	.13	.03	.00	.016	.28	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	469675	0.78 0.77	58 57 400 393	74 74 510 510	25 25					28 28		.07	.90	.018	.029	.22	.32	.12	.15	.04	.00	.016	.29	.01	.15
4	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473515	0.76 0.76	58 57 400 393	76 75 524 517	24 25					27 26		.08	.90	.013	.026	.25	.25	.11	.12	.03	.00	.014	.28	.01	.15

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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_g) 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
 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 Lennell
Chief Metallurgist

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

on 2017-08-01 *Deborah Ann Rhodes*
My commission expires on 07/17/2023



Invoice No.	834761
Bill of Lading	293748
Customer No.	1784
Customer P.O.	071-223357

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	2017-08-01

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473594	0.77 0.76	55 54 379 372	71 71 490 490	25 24					25 27		.07	.91	.014	.029	.19	.32	.12	.13	.03	.00	.013	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	7	473595	0.76 0.76	54 54 372 372	71 71 490 490	26 24					22 25		.07	.91	.015	.029	.18	.28	.11	.10	.03	.00	.014	.28	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	5	473598	0.78 0.77	58 57 400 393	74 74 510 510	25 23					23 27		.07	.93	.020	.022	.19	.28	.12	.20	.04	.00	.016	.30	.01	.15

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

Dary Lennell
Chief Metallurgist

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

on 2017-08-01 *Deborah Ann Rhodes*
My commission expires on 07/17/2023



Invoice No.	834983
Bill of Lading	293849
Customer No.	1784
Customer P.O.	071-223357

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	2017-08-02
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SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock Kips per inch	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI	%	Temp	Impact Energy	Loc																	
					MPa	MPa	%	° F	ft• lbf																		
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	11	473595	0.76 0.76	54 54 372 372	71 71 490 490	26 24					22 25		.07	.91	.015	.029	.18	.28	.11	.10	.03	.00	.014	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	7	473596	0.77 0.77	56 56 386 386	73 73 503 503	23 24					26 25		.07	.91	.015	.028	.18	.32	.10	.10	.03	.00	.015	.27	.01	.14

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_g) 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

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.

Dary Kennell
Chief Metallurgist

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

on 2017-08-02 *Deborah Ann Rhodes*
My commission expires on 07/17/2023



Invoice No.	835232
Bill of Lading	294034
Customer No.	1784
Customer P.O	071-223357

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	2017-08-03

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	469673	0.77 0.78	57 58 393 400	74 74 510 510	24 25					25 28	Kips per inch	.07	.91	.017	.030	.23	.30	.11	.13	.03	.00	.016	.28	.01	.15
2	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	3	469675	0.78 0.77	58 57 400 393	74 74 510 510	25					28 28	Kips per inch	.07	.90	.018	.029	.22	.32	.12	.15	.04	.00	.016	.29	.01	.15
3	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	2	469677	0.76 0.77	55 56 379 386	72 73 496 503	26 25					27 30	Kips per inch	.08	.92	.016	.028	.22	.30	.12	.15	.04	.00	.014	.30	.01	.16
4	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	1	473596	0.77 0.77	56 56 386 386	73 73 503 503	23 24					26 25	Kips per inch	.07	.91	.015	.028	.18	.32	.10	.10	.03	.00	.015	.27	.01	.14

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH
 $P_{cm} = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$ (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_g) 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
 This material was produced in accordance with the Nucor-Yamato Steel Quality Manual.

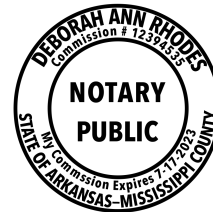
I hereby certify that the contents of this report are accurate and correct. All test results and operations performed by this material manufacturer are in compliance with the requirements of the material specifications, and when designated by the purchaser, meet the applicable specifications.

Doug Lennell

Chief Metallurgist

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

on 2017-08-03
My commission expires on 07/17/2023



Invoice No.	835232
Bill of Lading	294034
Customer No.	1784
Customer P.O.	071-223357

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	2017-08-03

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

SKYLINE STEEL GEORGIA OFFICE
3550 CORPORATE WAY
DULUTH GA 30096
USA

ASTM A572/A572M GR50-15
ASTM A709/A709M-15 GR50 (345)
ASTM A6/A6M-14

Item#	Item Description	QTY	Heat#	Mechanical Properties										Chemical Properties													
				Yield to Tensile Ratio	Yield Strength	Tensile Strength	ELONG	Charpy Impact			Interlock	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	Cl	
					KSI	KSI		%	Temp	Impact Energy																	Loc
					MPa	MPa		%	° F	ft• lbf																	
1	PS31X050.9 50 ft 0 in PS310509 (15.24 m)	11	473597	0.77 0.75	56 55 386 379	73 73 503 503	24 23					25 25		.07	.92	.016	.030	.22	.31	.12	.14	.04	.00	.016	.29	.01	.15

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

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Dary Lennell
Chief Metallurgist

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

on 2017-08-03
 My commission expires on 07/17/2023

