Invoice No.	880879
Bill of Lading	324321
Customer No.	5988
Customer P.O	3575-0017

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 2018-04-23

SCHUFF STEEL BOX 19048

420 S 19 AVE

USA

PHOENIX AZ 85005

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

HARDY UT 84042

° USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

						Mecha	nical Prop	perties											Chemi	cal Pro _l	perties						
					Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em# Item Description	QT	Y Heat#	Yield to Tensile	ricia strengtii	Strength	LLONG	Temp	Impa	ct Ene	rgy	Loc	_	Mn	D	c	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf			C	IVIII	г	3	31	Cu	INI	Ci	IVIO	v	CD	CL	311	FUII	Ci
				110110	MPa	MPa	%	° C		J																	
	W30X261.0				56	72	27	70	94	94	91	Cor															
1	46 ft 0 in	2	485784	0.78	55	72	28	21	127	128	124		.07	1.32	.010	.024	.27	.27	.10	.11	.03	.04	.002	.35	.01	17	
1	W760X389		403704	0.77	385	496							.07	1.52	.010	.024	.27	.27	.10	.11	.03	.04	.002	.55	.01	.17	
	(14.02 m)				381	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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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.

... p

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

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

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 2018-04-23

Invoice No. 883368
Bill of Lading 325966
Customer No. 5988
Customer P.O 3575-0043

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 2018-05-04

SCHUFF STEEL

BOX 19048

D 420 S 19 AVE

T PHOENIX AZ 85005

USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

LISA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S)

CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	_						-																_					
							Mechai	nical Pro _l	perties											Chemi	cal Pro _l	perties						
					V: 11.	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile		Strength	LLONG	Temp	Impa	ct Ene	ergy L	.oc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	v	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lb1	f		C	IVIII	r	3	Ji	Cu	INI	Ci	IVIO	٧	CD	CL	311	FCIII	Ci
						MPa	MPa	%	° C		J																	
1	1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	485240	0.78 0.79	55 56 378 388	71 71 488 489	32 31						.05	1.51	.015	.023	.33	.28	.12	.11	.04	.07	.004	.37	.01	.17	
2	2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
3	3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	1 ,	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

on 2018-05-04



 Invoice No.
 883774

 Bill of Lading
 326316

 Customer No.
 5988

 Customer P.O
 3575-0043

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 2018-05-07

SCHUFF STEEL

ВОХ 19048

D 420 S 19 AVE

T PHOENIX AZ 85005

USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

_							,																					
							Mecha	nical Pro	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELUNG	Temp	Impa	ct Ene	ergy	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lb	f		C	IVIII	P	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Ci
						MPa	MPa	%	° C		J																	
1	ı,	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	485233	0.78 0.81	56 57 383 392	71 70 490 482	34 32						.05	1.44	.014	.018	.27	.25	.11	.12	.03	.07	.003	.35	.01	.16	
2	2	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	486556	0.77 0.78	55 55 379 377	71 70 490 482	30 32						.06	1.46	.016	.022	.31	.29	.12	.11	.04	.06	.003	.37	.01	.17	
3	3	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	486558	0.79 0.77	55 54 381 370	70 69 480 478	31 33						.05	1.48	.019	.025	.25	.26	.13	.17	.04	.06	.003	.38	.01	.17	
4	ı,	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	486560	0.80 0.77	57 55 391 378	71 71 491 489	32 30						.05	1.45	.016	.021	.30	.31	.13	.14	.04	.06	.002	.37	.01	.17	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

on 2018-05-07 Selevak Fine Procession 2018-05-07 My commission expires on 07/17/2023



 Invoice No.
 883142

 Bill of Lading
 325786

 Customer No.
 5988

 Customer P.O
 3575-0043

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 2018-05-03

SCHUFF STEEL

BOX 19048

D 420 S 19 AVE

T PHOENIX AZ 85005

USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	0571					00,1																					
						Mecha	nical Prop	perties	•	•	•		,	•		•			Chemi	cal Pro _l	perties	•			•		
				Viald to	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
Ite	n# Item Description	QTY	Heat#	Tensile	neid strength	Strength	LLONG	Temp	Impa	ct Ene	rgy Lo	С	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf				14111		3	31	Cu	141	Ci	1410	•	CD	CL	311	1 (111	Ci
					MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30						.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486577	0.77 0.77	56 56 384 384	72 72 496 497	30 30						.06	1.50	.013	.011	.32	.29	.11	.12	.04	.06	.003	.38	.01	.18	
4	W14X426.0 47 ft 4 in W360X634 (14.43 m)	4	486560	0.80 0.77	57 55 391 378	71 71 491 489	32 30						.05	1.45	.016	.021	.30	.31	.13	.14	.04	.06	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

- --

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



 Invoice No.
 883774

 Bill of Lading
 326316

 Customer No.
 5988

 Customer P.O
 3575-0043

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 2018-05-07

SCHUFF STEEL

ВОХ 19048

D 420 S 19 AVE

T PHOENIX AZ 85005

USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

_							,																					
							Mecha	nical Pro	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELUNG	Temp	Impa	ct Ene	ergy	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lb	f		C	IVIII	P	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Ci
						MPa	MPa	%	° C		J																	
1	ı,	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	485233	0.78 0.81	56 57 383 392	71 70 490 482	34 32						.05	1.44	.014	.018	.27	.25	.11	.12	.03	.07	.003	.35	.01	.16	
2	2	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	486556	0.77 0.78	55 55 379 377	71 70 490 482	30 32						.06	1.46	.016	.022	.31	.29	.12	.11	.04	.06	.003	.37	.01	.17	
3	3	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	486558	0.79 0.77	55 54 381 370	70 69 480 478	31 33						.05	1.48	.019	.025	.25	.26	.13	.17	.04	.06	.003	.38	.01	.17	
4	ı,	W14X426.0 47 ft 4 in W360X634 (14.43 m)	2	486560	0.80 0.77	57 55 391 378	71 71 491 489	32 30						.05	1.45	.016	.021	.30	.31	.13	.14	.04	.06	.002	.37	.01	.17	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

on 2018-05-07 Selevak Fine Procession 2018-05-07 My commission expires on 07/17/2023



Invoice No. 883143 Bill of Lading 325787 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	U:	JA					USA									┙┝												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	l.
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	.oc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		Č	10111		3	31	Cu	141	Ci	1410	•	Cb	CL	311	1 (111	Ci
						MPa	MPa	%	° C		J																	<u> </u>
1	1 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	1	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	2 4	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4	<i>N</i> 14X398.0 47 ft 4 in <i>N</i> 360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 890076
Bill of Lading 330689
Customer No. 5988
Customer P.O 3575-0043

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 2018-06-06

SCHUFF STEEL

BOX 19048

^D 420 S 19 AVE

T PHOENIX AZ 85005

^O USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

0 115

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	00/1					00/1																					
						Mecha	nical Prop	perties											Chemi	cal Prop	perties						
					Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	en#Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ict Ene	ergy	Loc	_	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf	f		C	IVIII	r	3	31	Cu	INI	Ci	IVIO	v	CD	CL	311	FUII	Ci
				natio	MPa	MPa	%	° C		J																	
1	W14X342.0 47 ft 8 in W360X509 (14.53 m)	2	486599	0.78 0.76	56 55 389 376	73 72 500 493	30 30						.06	1.46	.014	.024	.31	.30	.12	.16	.05	.07	.002	.38	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
4	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

Jary Lennell

State of Arkansas County of Mississippi

Sworn to and subscribed before me

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.

on 2018-06-06



Invoice No. 883368
Bill of Lading 325966
Customer No. 5988
Customer P.O 3575-0043

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 2018-05-04

SCHUFF STEEL

BOX 19048

D 420 S 19 AVE

T PHOENIX AZ 85005

USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

LISA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S)

CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	_						-																_					
							Mechai	nical Pro _l	perties											Chemi	cal Pro _l	perties						
					V: 11.	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile		Strength	LLONG	Temp	Impa	ct Ene	ergy L	.oc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	v	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lb1	f		C	IVIII	r	3	Ji	Cu	INI	Ci	IVIO	٧	CD	CL	311	FCIII	Ci
						MPa	MPa	%	° C		J																	
1	1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	485240	0.78 0.79	55 56 378 388	71 71 488 489	32 31						.05	1.51	.015	.023	.33	.28	.12	.11	.04	.07	.004	.37	.01	.17	
2	2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
3	3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	1 ,	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

on 2018-05-04



Invoice No. 883146 Bill of Lading 325790 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD **HARDY UT 84042**

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	US	SA .					USA									J												
							Mechai	nical Prop	perties											Chemi	cal Pro _l	perties						
						V:-1-1 C+	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em#	ltem Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ict Ene	ergy L	-oc	_	Mn	Р	S	Si	C	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf			C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Ci
						MPa	MPa	%	° C		J																	
1	1 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	V 2 V	W14X398.0 I7 ft 4 in W360X592 14.43 m)	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	1	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883143 Bill of Lading 325787 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	U:	JA					USA									┙┝												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	l.
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	.oc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		Č	10111		3	31	Cu	141	Ci	1410	•	Cb	CL	311	1 (111	Ci
						MPa	MPa	%	° C		J																	<u> </u>
1	1 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	1	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	2 4	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4	<i>N</i> 14X398.0 47 ft 4 in <i>N</i> 360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 890076
Bill of Lading 330689
Customer No. 5988
Customer P.O 3575-0043

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 2018-06-06

SCHUFF STEEL

BOX 19048

^D 420 S 19 AVE

T PHOENIX AZ 85005

^O USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

0 115

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	00/1					00/1																					
						Mecha	nical Prop	perties											Chemi	cal Prop	perties						
					Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	en#Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ict Ene	ergy	Loc	_	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf	f		C	IVIII	r	3	31	Cu	INI	Ci	IVIO	v	CD	CL	311	FUII	Ci
				natio	MPa	MPa	%	° C		J																	
1	W14X342.0 47 ft 8 in W360X509 (14.53 m)	2	486599	0.78 0.76	56 55 389 376	73 72 500 493	30 30						.06	1.46	.014	.024	.31	.30	.12	.16	.05	.07	.002	.38	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
4	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

Jary Lennell

State of Arkansas County of Mississippi

Sworn to and subscribed before me

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.

on 2018-06-06



Invoice No. 883146 Bill of Lading 325790 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD **HARDY UT 84042**

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	US	SA .					USA									J												
							Mechai	nical Prop	perties											Chemi	cal Pro _l	perties						
						V:-1-1 C+	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em#	ltem Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ict Ene	ergy L	-oc	_	Mn	Р	S	Si	C	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf			C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Ci
						MPa	MPa	%	° C		J																	
1	1 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	V 2 V	W14X398.0 I7 ft 4 in W360X592 14.43 m)	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	1	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883145
Bill of Lading 325789
Customer No. 5988
Customer P.O 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048 SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

° USA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									┙┝												
							Mecha	nical Prop	erties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	en # Item Descripti	ion	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ict Ene	ergy L	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	Г	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	FCIII	Ci
						MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)		2	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
4	W14X398.0 47 ft 4 in W360X592 (14.43 m)		1	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30						.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

- --

State of Arkansas County of Mississippi

County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883144 Bill of Lading 325788 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									_ _												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em# Item	n Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	_oc	_	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	r	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	rciii	Ci
						MPa	MPa	%	° C		J																	
1	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X 47 ft 4 W360 (14.43	4 in 0X592	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
3	W14X 47 ft 4 W360 (14.43	4 in 0X592	5	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	
4	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883143 Bill of Lading 325787 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	U:	JA					USA									┙┝												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	l.
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	.oc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		Č	10111		3	31	Cu	141	Ci	1410	•	Cb	CL	311	1 (111	Ci
						MPa	MPa	%	° C		J																	<u> </u>
1	1 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	1	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	2 4	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4	<i>N</i> 14X398.0 47 ft 4 in <i>N</i> 360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

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Chief Metallurgist

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883368
Bill of Lading 325966
Customer No. 5988
Customer P.O 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-04

SCHUFF STEEL BOX 19048 SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD
HARDY UT 84042

° IJSA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	US	Α					USA									┙┕												
							Mechai	nical Prop	erties											Chemi	cal Pro _l	perties						
					V: 11.	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em#	Item Description	QTY	Heat#	Tensile	ricia strengtii	Strength	LLONG	Temp	Impa	ict Ene	ergy L	.OC	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		Č		•	J	31	Cu		Ç.	1110	•	CD	CL	311	1 0111	C.
						MPa	MPa	%	° C		J																	
1	L 47	/14X398.0 7 ft 4 in /360X592 14.43 m)	1	485240	0.78 0.79	55 56 378 388	71 71 488 489	32 31						.05	1.51	.015	.023	.33	.28	.12	.11	.04	.07	.004	.37	.01	.17	
2	2 47 W	/14X398.0 7 ft 4 in /360X592 14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
3	3 47 W	/14X398.0 7 ft 4 in /360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	1 47 W	/14X398.0 7 ft 4 in /360X592 14.43 m)	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

on 2018-05-04



Invoice No. 883146 Bill of Lading 325790 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD **HARDY UT 84042**

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	US	SA .					USA									J												
							Mechai	nical Prop	perties											Chemi	cal Pro _l	perties						
						V:-1-1 C+	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em#	ltem Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ict Ene	ergy L	-oc	_	Mn	Р	S	Si	C	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf			C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Ci
						MPa	MPa	%	° C		J																	
1	1 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	V 2 V	W14X398.0 I7 ft 4 in W360X592 14.43 m)	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	1	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

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Chief Metallurgist

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883144 Bill of Lading 325788 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									_ _												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em# Item	n Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	_oc	_	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	r	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	rciii	Ci
						MPa	MPa	%	° C		J																	
1	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X 47 ft 4 W360 (14.43	4 in 0X592	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
3	W14X 47 ft 4 W360 (14.43	4 in 0X592	5	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	
4	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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)

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9.10(%Ni)(%P)-33.39(%Cu)^2

ISO 9001:2008 certified (Registration # 0985-07).

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Chief Metallurgist

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State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883143 Bill of Lading 325787 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	U:	JA					USA									┙┝												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	l.
Ite	em	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	.oc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		Č	10111		3	31	Cu	141	Ci	1410	•	Cb	CL	311	1 (111	Ci
						MPa	MPa	%	° C		J																	<u> </u>
1	1 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	1	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	2 4	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4	<i>N</i> 14X398.0 47 ft 4 in <i>N</i> 360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 1	W14X398.0 47 ft 4 in W360X592 14.43 m)	3	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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

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Chief Metallurgist

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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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 890076
Bill of Lading 330689
Customer No. 5988
Customer P.O 3575-0043

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 2018-06-06

SCHUFF STEEL

BOX 19048

^D 420 S 19 AVE

T PHOENIX AZ 85005

^O USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

0 115

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	00/1					00/1																					
						Mecha	nical Prop	perties											Chemi	cal Prop	perties						
					Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	en#Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ict Ene	ergy	Loc	_	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf	f		C	IVIII	r	3	31	Cu	INI	Ci	IVIO	v	CD	CL	311	FUII	Ci
				natio	MPa	MPa	%	° C		J																	
1	W14X342.0 47 ft 8 in W360X509 (14.53 m)	2	486599	0.78 0.76	56 55 389 376	73 72 500 493	30 30						.06	1.46	.014	.024	.31	.30	.12	.16	.05	.07	.002	.38	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
4	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

Jary Lennell

State of Arkansas County of Mississippi

Sworn to and subscribed before me

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.

on 2018-06-06



Invoice No. 883146 Bill of Lading 325790 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD **HARDY UT 84042**

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	US	SA .					USA									J												
							Mechai	nical Prop	perties											Chemi	cal Pro _l	perties						
						V:-1-1 C+	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em#	ltem Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELONG	Temp	Impa	ict Ene	ergy L	-oc	_	Mn	Р	S	Si	C	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf			C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Ci
						MPa	MPa	%	° C		J																	
1	1 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
2	V 2 V	W14X398.0 I7 ft 4 in W360X592 14.43 m)	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
3	3 4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	4 V	V14X398.0 I7 ft 4 in V360X592 14.43 m)	1	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883144 Bill of Lading 325788 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									_ _												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em# Item	n Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	_oc	_	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	r	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	rciii	Ci
						MPa	MPa	%	° C		J																	
1	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X 47 ft 4 W360 (14.43	4 in 0X592	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
3	W14X 47 ft 4 W360 (14.43	4 in 0X592	5	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	
4	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No.	882860
Bill of Lading	325608
Customer No.	5988
Customer P.O	3575-0043

° lusa

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 2018-05-02

BOX 19048
420 S 19 AVE
PHOENIX AZ 85005

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

Chief Metallurgist

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

						Mecha	nical Prop	perties									Chemi	ical Pro	perties						
Ite	n# Item Description	QTY	Heat#	Yield to	Yield Strength	Tensile Strength	LFLONG	Charpy Temp		rgy Loc	_														
110	in tem bescription	Q.	ricat#	Tensile Ratio	KSI	KSI	%	° F	 ft• lbf		C	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Natio	MPa	MPa	%	° C	J																
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	3	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30				.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	4	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30				.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31				.06	1.47	.011	.015	.30	.30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

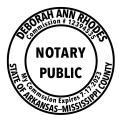
CARBON EQUIVALENT CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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.

Sworn to and subscribed before me

on 2018-05-02



Invoice No. 883368
Bill of Lading 325966
Customer No. 5988
Customer P.O 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-04

SCHUFF STEEL BOX 19048 SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD
HARDY UT 84042

° IJSA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	US	Α					USA									┙┕												
							Mechai	nical Prop	erties											Chemi	cal Pro _l	perties						
					V: 11.	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em#	Item Description	QTY	Heat#	Tensile	ricia strengtii	Strength	LLONG	Temp	Impa	ict Ene	ergy L	.OC	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		Č		•	J	31	Cu		Ç.	1110	•	CD	CL	311	1 0111	C.
						MPa	MPa	%	° C		J																	
1	L 47	/14X398.0 7 ft 4 in /360X592 14.43 m)	1	485240	0.78 0.79	55 56 378 388	71 71 488 489	32 31						.05	1.51	.015	.023	.33	.28	.12	.11	.04	.07	.004	.37	.01	.17	
2	2 47 W	/14X398.0 7 ft 4 in /360X592 14.43 m)	3	486564	0.76 0.76	53 54 367 376	70 71 482 493	32 30						.05	1.50	.017	.022	.29	.32	.12	.13	.04	.06	.004	.38	.01	.17	
3	3 47 W	/14X398.0 7 ft 4 in /360X592 14.43 m)	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
4	1 47 W	/14X398.0 7 ft 4 in /360X592 14.43 m)	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

on 2018-05-04



Invoice No.	883146
Bill of Lading	325790
Customer No.	5988
Customer P.O	3575-0043

PHOENIX AZ 85005

USA

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 2018-05-03

SCHUFF STEEL BOX 19048 420 S 19 AVE SCHUFF STEEL - SALT LAKE CITY
C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042 USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM) ASTM A6/A6M-14

г					1																						$\overline{}$
							Mecha	nical Prop	perties										Chemi	cal Pro _l	perties		-	_			_
						Yield Strength	Tensile	ELONG	Charpy	Impact																	
1	em	# Item Description	QTY	Heat#	Yield to Tensile	rielu strengtii	Strength	LLONG	Temp	Impact	Energy	Loc	_	Mn	D	c	Si	Cu	Ni	Cr	Mo	V	Ch	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F	f	t• lbf		C	IVIII	Г	3	Ji	Cu	INI	Ci	IVIO	v	CD	CL	311	rciii	Ci
						MPa	MPa	%	° C		J																
	١	W14X398.0				54	72	32																			1
		47 ft 4 in	2	486572	0.76	57	73	30					.06	1.46	013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	l
		W360X592	-	700372	0.78	375	494						.50	1.40	.013	.011	.23	.51	.12	.12	.04	.00	.003	.50	.01	.10	i
	((14.43 m)				393	501																				

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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.

inenes.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

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.

on 2018-05-03

Invoice No. 883145
Bill of Lading 325789
Customer No. 5988
Customer P.O 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048 SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

° USA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									┙┝												
							Mecha	nical Prop	erties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	en # Item Descripti	ion	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	Г	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	FCIII	Ci
						MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)		2	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
4	W14X398.0 47 ft 4 in W360X592 (14.43 m)		1	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30						.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

- --

State of Arkansas County of Mississippi

County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883144 Bill of Lading 325788 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345)

ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									_ _												
							Mecha	nical Prop	perties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em# Item	n Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	_oc	_	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	r	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	rciii	Ci
						MPa	MPa	%	° C		J																	
1	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X 47 ft 4 W360 (14.43	4 in 0X592	2	486568	0.76 0.76	54 53 372 367	71 70 487 485	32 31						.06	1.46	.016	.023	.29	.33	.12	.14	.04	.07	.003	.38	.01	.17	
3	W14X 47 ft 4 W360 (14.43	4 in 0X592	5	486570	0.77 0.77	55 56 377 389	71 73 492 506	31 31						.06	1.48	.014	.012	.31	.31	.14	.15	.05	.06	.002	.39	.01	.18	
4	W14X 47 ft 4 W360 (14.43	4 in 0X592	1	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No.	882861
Bill of Lading	325609
Customer No.	5988
Customer P.O	3575-0043

USA

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

> 2018-05-02 Date

S O	SCHUFF STEEL
L	BOX 19048
D	420 S 19 AVE
Т	PHOENIX AZ 85005

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

						Mecha	nical Pro _l	perties											Chemi	cal Pro _l	perties						
					VC-1161	Tensile	FLONG	Charpy	Impa	ct																	
Ite	# Item Description	QTY	Heat#		Yield Strength	Strength	ELONG	Temp	Impa	ct Ene	ergy I	Loc	_		_			_		_			-			_	
				Tensile Ratio	KSI	KSI	%	° F		ft• lbf	:		C	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Natio	MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	3	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	4	486577	0.77 0.77	56 56 384 384	72 72 496 497	30 30						.06	1.50	.013	.011	.32	.29	.11	.12	.04	.06	.003	.38	.01	.18	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31						.06	1.47	.011	.015	.30	.30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me



Invoice No.	883368
Bill of Lading	325966
Customer No.	5988
Customer P.O	3575-0043

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 2018-05-04

SCHUFF STEEL

BOX 19048

420 S 19 AVE

PHOENIX AZ 85005

USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

USA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

							Mecha	nical Pro	perties										Chemi	cal Pro	perties						
					ve III	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																
It	em#	ltem Description	QTY	Heat#	Tensile	ricia strengtii	Strength	LLONG	Temp	Impa	ct Ener	gy Loc	ر	Mn	D	ς	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf			14111		,	31	Cu	141	Ci	1010	٧	CD	CL	311	1 CIII	ı ^{č.}
						MPa	MPa	%	° C		J																í
	١	W14X398.0				55	73	31																			i l
		17 ft 4 in	1	486574	0.76	57	74	31					.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	i l
		W360X592	-	100371	0.77	381	504						.00	1.45	.013	.010	.51	.23		.13	.03	.07	.002	.55	.01	.10	ı
	(14.43 m)				393	513																				
		V14X398.0				57	73	32																			i l
	, ,	17 ft 4 in	1	486728	0.78	58	72	31					.05	1.46	.011	.021	.31	.25	.12	.11	.05	.06	.002	.37	.01	.17	i l
		V360X592	-	.55720	0.81	392	504						.03	2.40	.011	.021	.51	3			.55	.50		,	.51	,	ı l
	(14.43 m)				402	498																				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+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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315") striker (KV_e) 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.

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.

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

on 2018-05-04



Invoice No. 883145
Bill of Lading 325789
Customer No. 5988
Customer P.O 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048 SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

° USA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									┙┝												
							Mecha	nical Prop	erties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	en # Item Descripti	ion	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy L	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	Г	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	FCIII	Ci
						MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)		2	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
4	W14X398.0 47 ft 4 in W360X592 (14.43 m)		1	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30						.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

- --

State of Arkansas County of Mississippi

County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883142 Bill of Lading 325786 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

_	USA				0	USA									TIVI AU,	/Adivi-1	.4									
						Mecha	nical Prop	perties										Chemi	cal Pro _l	perties						
				Viold to	Yield Strength	Tensile	ELONG	Charpy																		
Itei	# Item Description	QTY	Heat#	Tensile				Temp	Impa	ict Ene	 ос	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf		-		-	-	-			-		-					
					MPa	MPa	%	° C		J																<u> </u>
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31					06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30					06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486577	0.77 0.77	56 56 384 384	72 72 496 497	30 30					06	1.50	.013	.011	.32	.29	.11	.12	.04	.06	.003	.38	.01	.18	
4	W14X426.0 47 ft 4 in W360X634 (14.43 m)	4	486560	0.80 0.77	57 55 391 378	71 71 491 489	32 30					05	1.45	.016	.021	.30	.31	.13	.14	.04	.06	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No.	882860
Bill of Lading	325608
Customer No.	5988
Customer P.O	3575-0043

° lusa

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 2018-05-02

BOX 19048
420 S 19 AVE
PHOENIX AZ 85005

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

Chief Metallurgist

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

						Mecha	nical Prop	perties										Chemi	ical Pro	perties						
Ite	n# Item Description	QTY	Heat#	Yield to	Yield Strength	Tensile Strength	LFLONG	Charpy Temp			rgy Loc	_														
100	in tem bescription	Q.	ricat#	Tensile Ratio	KSI	KSI	%	° F	_	ft• lbf		C	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Natio	MPa	MPa	%	° C		J																
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	3	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30					.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	4	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30					.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31					.06	1.47	.011	.015	.30	.30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

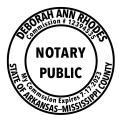
CARBON EQUIVALENT CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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.

Sworn to and subscribed before me

on 2018-05-02



Invoice No. 883145
Bill of Lading 325789
Customer No. 5988
Customer P.O 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048 SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

° USA

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA						USA									┙┝												
							Mecha	nical Prop	erties											Chemi	cal Pro	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	en # Item Descript	ion	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	ergy l	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf	:		C	IVIII	Г	3	31	Cu	INI	Ci	IVIO	v	Cb	CL	311	FCIII	Ci
						MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)		2	486566	0.76 0.79	55 57 378 392	72 72 498 495	31 32						.05	1.47	.019	.016	.29	.30	.12	.18	.05	.07	.003	.39	.01	.17	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)		3	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
4	W14X398.0 47 ft 4 in W360X592 (14.43 m)		1	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30						.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

- --

State of Arkansas County of Mississippi

County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No. 883142 Bill of Lading 325786 Customer No. 5988 Customer P.O | 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

_	USA				0	USA									TIVI AU,	/ADIVI-1	.4									
						Mecha	nical Prop	perties										Chemi	cal Pro _l	perties						
				Viold to	Yield Strength	Tensile	ELONG	Charpy																		
Itei	# Item Description	QTY	Heat#	Tensile				Temp	Impa	ict Ene	 ос	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf		-		-	-	-			-		-					
					MPa	MPa	%	° C		J																<u> </u>
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31					06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30					06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486577	0.77 0.77	56 56 384 384	72 72 496 497	30 30					06	1.50	.013	.011	.32	.29	.11	.12	.04	.06	.003	.38	.01	.18	
4	W14X426.0 47 ft 4 in W360X634 (14.43 m)	4	486560	0.80 0.77	57 55 391 378	71 71 491 489	32 30					05	1.45	.016	.021	.30	.31	.13	.14	.04	.06	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No.	882861
Bill of Lading	325609
Customer No.	5988
Customer P.O	3575-0043

USA

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

> 2018-05-02 Date

S O	SCHUFF STEEL
L	BOX 19048
D	420 S 19 AVE
Т	PHOENIX AZ 85005

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

						Mecha	nical Pro _l	perties											Chemi	cal Pro _l	perties						
					VC-1161	Tensile	FLONG	Charpy	Impa	ct																	
Ite	# Item Description	QTY	Heat#		Yield Strength	Strength	ELONG	Temp	Impa	ct Ene	ergy I	Loc	_		_			_		_			-			_	'
				Tensile Ratio	KSI	KSI	%	° F		ft• lbf	:		C	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Natio	MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	3	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	4	486577	0.77 0.77	56 56 384 384	72 72 496 497	30 30						.06	1.50	.013	.011	.32	.29	.11	.12	.04	.06	.003	.38	.01	.18	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31						.06	1.47	.011	.015	.30	.30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me



 Invoice No.
 883142

 Bill of Lading
 325786

 Customer No.
 5988

 Customer P.O
 3575-0043

420 S 19 AVE

PHOENIX AZ 85005

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 2018-05-03

SCHUFF STEEL BOX 19048 SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

	USA					USA									┙┕												
						Mecha	nical Prop	perties											Chemi	cal Pro	perties						
					Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	em#Item Description	QT	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ene	rgy Lo	С	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf			C	IVIII	Г	3	31	Cu	INI	Ci	IVIO	٧	Cb	CL	311	FCIII	Ci
					MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30						.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486577	0.77 0.77	56 56 384 384	72 72 496 497	30 30						.06	1.50	.013	.011	.32	.29	.11	.12	.04	.06	.003	.38	.01	.18	
4	W14X426.0 47 ft 4 in W360X634 (14.43 m)	4	486560	0.80 0.77	57 55 391 378	71 71 491 489	32 30						.05	1.45	.016	.021	.30	.31	.13	.14	.04	.06	.002	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

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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

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.

ments.

State of Arkansas

County of Mississippi

Sworn to and subscribed before me

on 2018-05-03



Invoice No.	882860
Bill of Lading	325608
Customer No.	5988
Customer P.O	3575-0043

PHOENIX AZ 85005

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 2018-05-02

SCHUFF STEEL

BOX 19048

420 S 19 AVE

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S)

CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

0	USA				0	USA		_								STIVI AO,	/AOIVI-J										
						Mecha	nical Pro	perties											Chemi	ical Pro	perties						
					Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	m# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	ELUNG	Temp	Impa	ct Ene	ergy L	_oc	С	Mn	р	S	Si	Cu	Ni	Cr	Мо	v	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf			C	IVIII	r	3	31	Cu	INI	Ci	IVIO	\ \	CD	CL	311	FCIII	Ci
					MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	3	486572	0.76 0.78	54 57 375 393	72 73 494 501	32 30						.06	1.46	.013	.011	.29	.31	.12	.12	.04	.06	.003	.38	.01	.18	
2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	4	486575	0.77 0.75	55 54 377 369	71 71 486 492	33 30						.06	1.49	.011	.017	.26	.29	.11	.10	.04	.07	.002	.37	.01	.17	
3	W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31						.06	1.47	.011	.015	.30	.30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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.

0

Chief Metallurgist

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-02



Invoice No.	882861
Bill of Lading	325609
Customer No.	5988
Customer P.O	3575-0043

° lusa

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 2018-05-02

SCHUFF STEEL
BOX 19048
420 S 19 AVE
PHOENIX AZ 85005

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR 325 S GENEVA RDD

T HARDY UT 84042

Chief Metallurgist

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

				ă.																							
						Mecha	nical Pro	perties											Chemi	cal Pro _l	perties						
					Viald Characth	Tensile	ELONG	Charpy	Impa	ct																	
Ite	n# Item Description	QTY	Heat#		Yield Strength	Strength	ELUNG	Temp	Impa	ct Ene	ergy Lo	ос	_	N.4 m	D		Si	C	NI:	C	140	.,	Ch	CF	C	Dama	CI
				Tensile Ratio	KSI	KSI	%	° F		ft• lbf			C	Mn	Р	5	31	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
				110110	MPa	MPa	%	° C		J																	
1	W14X398.0 47 ft 4 in	3	486574	0.76	55 57	73 74	31 31						.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
	W360X592 (14.43 m)			0.77	381 393	504 513																					
2	W14X398.0 47 ft 4 in W360X592	4	486577	0.77 0.77	56 56 384	72 72 496	30 30						.06	1.50	.013	.011	.32	.29	.11	.12	.04	.06	.003	.38	.01	.18	
3	(14.43 m) W14X398.0 47 ft 4 in W360X592 (14.43 m)	2	486579	0.78 0.76	384 55 54 378 374	71 71 486 490	31 31						.06	1.47	.011	.015	.30	.30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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.

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

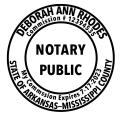
Mercury has not been used in the direct manufacturing of this material

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

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-02



Invoice No.	883368
Bill of Lading	325966
Customer No.	5988
Customer P.O	3575-0043

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 2018-05-04

SCHUFF STEEL

BOX 19048

^D 420 S 19 AVE

T PHOENIX AZ 85005

^o USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

T HARDY UT 84042

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ASTM A992/A992M-11 A572/A572M GR50-15

ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

							Mecha	nical Pro	perties						_	_	_	_	Chemi	cal Pro	perties						_
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct	-															
lt	em	# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Ener	gy Loc	_	Mn	D	c	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lbf			IVIII	P	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Ci
					. i.u.i.o	MPa	MPa	%	° C		J																
	1	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486574	0.76 0.77	55 57 381 393	73 74 504 513	31 31					.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
	2	W14X398.0 47 ft 4 in W360X592 (14.43 m)	1	486728	0.78 0.81	57 58 392 402	73 72 504 498	32 31					.05	1.46	.011	.021	.31	.25	.12	.11	.05	.06	.002	.37	.01	.17	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315") striker (KV_e) 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

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.

County of Mississippi

Sworn to and subscribed before me

on 2018-05-04

State of Arkansas



Invoice No.	882861
Bill of Lading	325609
Customer No.	5988
Customer P.O	3575-0043

NUCOR-YAMATO STEEL CO.

P.O. BOX 1228: BLYTHEVILLE, AR 72316

CERTIFIED MILL TEST REPORT

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

Date 2018-05-02

SCHUFF STEEL

BOX 19048

^D 420 S 19 AVE

PHOENIX AZ 85005

O USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

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ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

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							Mecha	nical Pro	perties										Chemi	cal Pro	pertles						
						Visid Strangth	Tensile	ELONG	Charpy	Impact	t									l							
ſŧ.	enti	# Item Description	QTY	Heat#	Yield to Tensile	Yleid Strength	Strength	ELONG	Temp	Impac	t Energ	y Loc] _	١.,	D.		~ 1			_	١ ا						
					Ratio	KSI	KSf	%	° F	f	t• lbf		1 '	Mn	P	S	Si	Cu	NI	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
L						MPa	MPa	%	°C		1		1										Ì				
	1 (W14X398.0 47 ft 4 in W360X592 14.43 m) W14X398.0 97 ft 4 in	3	486574	0.76 0.77 0.77	55 57 381 393 56	73 74 504 513 72 72	31 31 30 30					.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
	V	W360X592 14.43 m)	4	486577	0.77	384 384	496 497	30					.06	1,50	.013	.011	.32	.29	,11	.12	.04	.06	.003	.38	.01	.18	
	3 4	W14X398.0 47 ft 4 in W360X592 14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31					.06	1.47	.011	.015	.30	30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

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

on 2018-05-02



Invoice No.	882861
Bill of Lading	325609
Customer No.	5988
Customer P.O	3575-0043

NUCOR-YAMATO STEEL CO.

P.O. BOX 1228: BLYTHEVILLE, AR 72316

CERTIFIED MILL TEST REPORT

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

Date 2018-05-02

SCHUFF STEEL

BOX 19048

^D 420 S 19 AVE

PHOENIX AZ 85005

O USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

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ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

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							Mecha	nical Pro	perties										Chemi	cal Pro	pertles						
						Visid Strangth	Tensile	ELONG	Charpy	Impact	t									l							
ſŧ.	enti	# Item Description	QTY	Heat#	Yield to Tensile	Yleid Strength	Strength	ELONG	Temp	Impac	t Energ	y Loc] _	١.,	D.		~ 1			_	١ ا						
					Ratio	KSI	KSf	%	° F	f	t• lbf		1 '	Mn	P	S	Si	Cu	NI	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
L						MPa	MPa	%	°C		1		1										Ì				
	1 (W14X398.0 47 ft 4 in W360X592 14.43 m) W14X398.0 97 ft 4 in	3	486574	0.76 0.77 0.77	55 57 381 393 56	73 74 504 513 72 72	31 31 30 30					.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
	V	W360X592 14.43 m)	4	486577	0.77	384 384	496 497	30					.06	1,50	.013	.011	.32	.29	,11	.12	.04	.06	.003	.38	.01	.18	
	3 4	W14X398.0 47 ft 4 in W360X592 14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31					.06	1.47	.011	.015	.30	30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

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

on 2018-05-02



Invoice No.	882861
Bill of Lading	325609
Customer No.	5988
Customer P.O	3575-0043

NUCOR-YAMATO STEEL CO.

P.O. BOX 1228: BLYTHEVILLE, AR 72316

CERTIFIED MILL TEST REPORT

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

Date 2018-05-02

SCHUFF STEEL

BOX 19048

^D 420 S 19 AVE

PHOENIX AZ 85005

O USA

SCHUFF STEEL - SALT LAKE CITY

C/O UP RR HARDY SPUR

325 S GENEVA RDD

HARDY UT 84042

° lus

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50 (345) ASTM A709/A709M-15 GR50S (345S) CSA G40.21-13 50WM (345WM)

ASTM A6/A6M-14

_	<u> </u>		_	·····				~~							—ا لـــــ			****	~~****								
							Mecha	nical Pro	perties										Chemi	cal Pro	pertles						
						Visid Strangth	Tensile	ELONG	Charpy	Impact	t									l							
ſŧ.	enti	# Item Description	QTY	Heat#	Yield to Tensile	Yleid Strength	Strength	ELONG	Temp	Impac	t Energ	y Loc] _	١.,	D.		~ 1			_	١ ا						
					Ratio	KSI	KSf	%	° F	f	t• lbf		1 '	Mn	P	S	Si	Cu	NI	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
L						MPa	MPa	%	°C		1		1										Ì				
	1 (W14X398.0 47 ft 4 in W360X592 14.43 m) W14X398.0 97 ft 4 in	3	486574	0.76 0.77 0.77	55 57 381 393 56	73 74 504 513 72 72	31 31 30 30					.06	1.49	.013	.016	.31	.29	.12	.15	.05	.07	.002	.39	.01	.18	
	V	W360X592 14.43 m)	4	486577	0.77	384 384	496 497	30					.06	1,50	.013	.011	.32	.29	,11	.12	.04	.06	.003	.38	.01	.18	
	3 4	W14X398.0 47 ft 4 in W360X592 14.43 m)	2	486579	0.78 0.76	55 54 378 374	71 71 486 490	31 31					.06	1.47	.011	.015	.30	30	.13	.11	.04	.07	.003	.37	.01	.17	

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 9001:2008 certified (Registration # 0985-07).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

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

on 2018-05-02



Invoice No.	898220
Bill of Lading	336522
Customer No.	9859
Customer P.O	3575-0051

T PHOENIX AZ 85005

USA

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 2018-07-13

	SCHUFF STEEL
	BOX 19048
)	120 S 10 AVE

SCHUFF STEEL (FLAGSTAFF)
BNSF TRACT 9365

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

							Mecha	nical Pro	perties											Chemi	cal Pro	perties						
						Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
lt	tem	# Item Description	QTY	Heat#	Yield to Tensile		Strength	LLONG	Temp	Impa	ct En	ergy	Loc	_	Mn	D	c	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lb	f		C	IVIII	Г	3	اد ا	Cu	INI	Ci	IVIO	v	CD	CL	311	r CIII	(
						MPa	MPa	%	° C		J																	i
	١	W40X297.0				59	74	28	70	103	256	192	Cor															1
	1	49 ft 0 in	1	478448	0.79	59	72	28	21	140	347	260		.07	1.35	.016	.019	.25	.33	.12	.17	.04	.05	.001	.38	.01	.18	1
		W1000X443	-	170110	0.82	405	511							.07	1.55	.010	.013	.23	.55	.12	,	.04	.03	.001	.50	.01	.10	1
	((14.94 m)				408	499																					
		W40X297.0				57	71	29	70			227																1
	/	49 ft 0 in	1	488203	0.79	52	70	28	21	312	293	308		.07	1.20	.013	.028	.23	.28	.11	.11	.03	.02	.020	.33	.01	.16	1
	٦ ١	W1000X443	-	100203	0.75	391	493							.07	1.20	.013	.020	.23	.20			.03	.02	.020	.55	.01	.10	1
	((14.94 m)				362	481																					1 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+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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315") striker (KV_e) 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

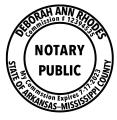
CARBON EQUIVALENT CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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.

Sworn to and subscribed before me

on 2018-07-13



Invoice No.	886413
Bill of Lading	327940
Customer No.	9859
Customer P.O	3575-0051

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 2018-05-18

CCL	IICC	STEEL	
JUIT	ОГГ	JILL	-

BOX 19048

420 S 19 AVE

T PHOENIX AZ 85005

USA

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

					1		Mocha	nical Pro	nortios											Chomi	cal Dro	perties						$\overline{}$
					V. 11.	Yield Strength			Charny	Impa	ct									CHEIII	carrio	Jerties						
lt	em#	# Item Description	QTY	Heat#	Tensile				Temp	<u> </u>		<u> </u>	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	Г		ft• lbi																	i l
	_					MPa	MPa	%	° C		J																	⊢
		W40X431.0 49 ft 0 in	1	483718	0.76	56 57	74 74	28 28	70 21		155 210	145 197	Cor	.08	1.35	.015	.017	.21	.30	.12	.11	.04	.05	.001	.37	.01	.18	
		W1000X642 [14.94 m]	1	403710	0.77	385 391	508 511							.00	1.55	.013	.017	.21	.50	.12	.11	.04	.03	.001	.57	.01	.10	
:	2 4	W40X431.0 49 ft 0 in W1000X642 14.94 m)	1	483722	0.77 0.76	57 56 390 383	74 73 509 507	27 28	70 21	91 123		118 160	Cor	.07	1.39	.016	.025	.24	.29	.11	.10	.04	.05	.002	.37	.01	.18	
3	3 5	W44X230.0 55 ft 0 in W1100X343 (16.76 m)	2	487754	0.79 0.82	56 58 389 398	72 70 495 484	29 28	70 21	120 163	133 180	134 182	Fla	.07	1.20	.014	.021	.19	.29	.11	.13	.03	.02	.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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315")striker (KV_R) 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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-18



Invoice No. 888099 Bill of Lading 329434 Customer No. 9859 Customer P.O | 3575-0051

PHOENIX AZ 85005

USA

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 2018-05-28

SCHUFF STEEL BOX 19048 420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365 BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

г																				GI :	1.0							
							Mecha	nical Pro _l	<u>' </u>											Chemi	cal Pro	perties				1		
					ve 11.	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	1
lt	em	# Item Description	QTY	Heat#	Tensile	ricia strengtii	Strength	LLONG	Temp	Impa	ct Er	ergy	Loc	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lk	of		C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	V	Cb	CE	311	PCIII	Li
					1141.0	MPa	MPa	%	° C		J																	l '
	,	W40X431.0				56	74	28	70	100	110	127	Cor															
.	1 4	49 ft 0 in	2	483718	0.76	57	74	28	21	136	149	172		.08	1.35	.015	.017	.21	.30	.12	.11	.04	.05	.001	.37	.01	.18	1
		W1000X642	_	1037 10	0.77	385	508							.00	1.00	.015	.01,		.50				.05	.001	.57	.01	.10	i '
	- ((14.94 m)				391	511																					
		W40X431.0				53	71	29	70			139																i '
1:	/	49 ft 0 in	1	487597	0.75	55	71	28	21	191	290	188		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	ĺ
		W1000X642			0.76	365 376	489																					ĺ
_	-+	(14.94 m)					493						L															—
		W40X431.0			0.77	58	75 72	28 28	70	191 259		121 164	Cor															l
3	≺ !	49 ft 0 in W1000X642	2	487598	0.77	55 399	73 519	28	21 70	164			Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	ĺ
		(14.94 m)			0.75	378	506		21	222		258																ĺ
H	-	W40X431.0				55	74	27	70	-		108	-															
		49 ft 0 in			0.74	55	75	26	21	190		146																İ
4	4 1	W1000X642	2	488223	0.73	378	513							.07	1.35	.014	.020	.26	.25	.10	.12	.04	.06	.001	.36	.01	.18	İ
	((14.94 m)				376	514																					ĺ

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

buy 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

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



Invoice No.	886413
Bill of Lading	327940
Customer No.	9859
Customer P.O	3575-0051

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 2018-05-18

CCL	IICC	STEEL	
JUIT	ОГГ	JILL	-

BOX 19048

420 S 19 AVE

T PHOENIX AZ 85005

USA

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

					1		Mocha	nical Pro	nortios											Chomi	cal Dro	perties						$\overline{}$
					V. 11.	Yield Strength			Charny	Impa	ct									CHEIII	carrio	Jerties						
lt	em#	# Item Description	QTY	Heat#	Tensile				Temp	<u> </u>		<u> </u>	Loc	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	Г		ft• lbi																	i l
	_					MPa	MPa	%	° C		J																	⊢
		W40X431.0 49 ft 0 in	1	483718	0.76	56 57	74 74	28 28	70 21		155 210	145 197	Cor	.08	1.35	.015	.017	.21	.30	.12	.11	.04	.05	.001	.37	.01	.18	
		W1000X642 [14.94 m]	1	403710	0.77	385 391	508 511							.00	1.55	.013	.017	.21	.50	.12	.11	.04	.03	.001	.57	.01	.10	
:	2 4	W40X431.0 49 ft 0 in W1000X642 14.94 m)	1	483722	0.77 0.76	57 56 390 383	74 73 509 507	27 28	70 21	91 123		118 160	Cor	.07	1.39	.016	.025	.24	.29	.11	.10	.04	.05	.002	.37	.01	.18	
3	3 5	W44X230.0 55 ft 0 in W1100X343 (16.76 m)	2	487754	0.79 0.82	56 58 389 398	72 70 495 484	29 28	70 21	120 163	133 180	134 182	Fla	.07	1.20	.014	.021	.19	.29	.11	.13	.03	.02	.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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315")striker (KV_R) 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

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.

State of Arkansas County of Mississippi

Sworn to and subscribed before me

on 2018-05-18



Invoice No. 887044 Bill of Lading 328423 Customer No. 9859 **Customer P.O** | 3575-0051

PHOENIX AZ 85005

USA

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

> 2018-05-22 Date

SCHUFF STEEL BOX 19048 420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365 BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

					<u></u>	Mecha	nical Pro	perties											Chemi	cal Prop	perties						
				ve III	Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
Ite	n# Item Description	QTY	Heat#	Tensile		Strength	LLONG	Temp	Impa	ct Ene		Loc	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbi	f		·		•	3	31	Cu		Ci	1110		CD	CL	3	1 0111	<u> </u>
					MPa	MPa	%	° C		J																	
1	W40X431.0 49 ft 0 in W1000X642	1	483722	0.77 0.76	57 56 390	74 73 509	27 28	70 21	91 123		118 160	Cor	.07	1.39	.016	.025	.24	.29	.11	.10	.04	.05	.002	.37	.01	.18	
	(14.94 m)				383	507																					
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	4	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	194 263 182 247 106 144	203 112 152 66	132 179 222 301 116 157	Cor	.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	2	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21	190 258 145 197	315 147	227 308 211 286		.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487602	0.76 0.78	56 57 385 393	74 73 508 503	28 27	70 21	43 59		228 309	Cor	.07	1.35	.013	.025	.24	.30	.10	.09	.03	.05	.002	.35	.01	.17	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315") striker (KV_o) 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

Jary 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

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 2018-05-22



Invoice No. 887266 Bill of Lading 328596 Customer No. 9859 **Customer P.O** 3575-0051

PHOENIX AZ 85005

USA

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 2018-05-23

SCHUFF STEEL BOX 19048 420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF) **BNSF TRACT 9365**

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

					<u> </u>	Macha	nical Pro	nortios											Chemi	cal Droi	nortios						
lte	m#Item Description	QTY	Heat#	Yield to	Yield Strength		ELONG	Charny		ct ct Ene	røv	Loc							Chemi	carrio	Jei ties						
itte	ill# item bescription	ζīī	псин	Tensile Ratio	KSI	KSI	%	° F	ттра	ft• lbf		LOC	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					MPa	MPa	%	° C		J																	<u> </u>
1	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487593	0.74 0.74	55 55 376 378	73 74 505 508	27 28	70 21	55 75	77 105	62 84	Cor	.08	1.39	.013	.023	.21	.32	.13	.10	.04	.05	.002	.38	.01	.19	
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	182 247 106 144 141 191	152 66 90	301 116 157 139		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21 70 21	197 191 259 190	199 200 271	121 164 227	Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	488226	0.75 0.75	57 57 390 393	76 76 523 524	27 25	70 21	81 110	_	88 120	Cor	.08	1.36	.012	.021	.24	.29	.12	.13	.04	.05	.001	.38	.01	.19	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

Jary Lennell

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

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

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

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 2018-05-23 My commission expires on 07/17/2023



Invoice No. 887044
Bill of Lading 328423
Customer No. 9859
Customer P.O 3575-0051

PHOENIX AZ 85005

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 2018-05-22

SCHUFF STEEL

BOX 19048

420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365
BELLEMONT AZ 86015

⊺ USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT)

ASTM A6/A6M-14

0	USA				0	-										o i ivi Au,	/ AUIVI-1	.4									
						Mecha	nical Pro	perties											Chemi	cal Pro _l	perties						
Ite	որ# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Tensile Strength	ELONG	Charpy Temp		ct ct Ene	ergy	Loc	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	>	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf	f		C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	v	Cb	CE	311	PCIII	Ci
					MPa	MPa	%	° C		J																	
1	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	483722	0.77 0.76	57 56 390 383	74 73 509 507	27 28	70 21	91 123	109 148		Cor	.07	1.39	.016	.025	.24	.29	.11	.10	.04	.05	.002	.37	.01	.18	
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	4	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	263 182 247 106	203 112 152	222 301 116	Cor	.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	2	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21	258 145	315	211		.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487602	0.76 0.78	56 57 385 393	74 73 508 503	28 27	70 21	43 59		228 309	Cor	.07	1.35	.013	.025	.24	.30	.10	.09	.03	.05	.002	.35	.01	.17	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

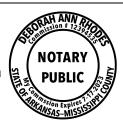
CARBON EQUIVALENT CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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.

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

on 2018-05-22 Heliareh Min Y



Invoice No. 888099
Bill of Lading 329434
Customer No. 9859
Customer P.O 3575-0051

420 S 19 AVE

USA

PHOENIX AZ 85005

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 2018-05-28

SCHUFF STEEL SCHUFF STEEL (FLAGSTAFF)
BOX 19048 SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365
BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

				i															_									
							Mecha	nical Prop	perties											Chemi	cal Pro _l	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
It	em#	Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Er	ergy	Loc	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• II	of		C	IVIII	г	3	31	Cu	INI	Ci	IVIO	v	CD	CL	311	FUII	Ci
						MPa	MPa	%	° C		J																	
1	4 V	V40X431.0 9 ft 0 in V1000X642	2	483718	0.76 0.77	56 57 385	74 74 508	28 28	70 21	100 136	l	127 172		.08	1.35	.015	.017	.21	.30	.12	.11	.04	.05	.001	.37	.01	.18	
		14.94 m)				391	511					400																<u> </u>
2	4 V	V40X431.0 9 ft 0 in V1000X642 14.94 m)	1	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21	141 191	l	139 188		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
17	4 V	V40X431.0 9 ft 0 in V1000X642 14.94 m)	2	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21	191 259 164 222	271 92	121 164 190 258	Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
2	4 V	V40X431.0 9 ft 0 in V1000X642 14.94 m)	2	488223	0.74 0.73	55 55 378 376	74 75 513 514	27 26	70 21	140 190		108 146		.07	1.35	.014	.020	.26	.25	.10	.12	.04	.06	.001	.36	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

County of Mississippi

Sworn to and subscribed before me

on 2018-05-28 Juliarah Hm & house



Invoice No. 887266 Bill of Lading 328596 Customer No. 9859 **Customer P.O** 3575-0051

PHOENIX AZ 85005

USA

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 2018-05-23

SCHUFF STEEL BOX 19048 420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF) **BNSF TRACT 9365**

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

					<u> </u>	Mechanical Properties													Chemi	cal Droi	nortios						
lte	m#Item Description	QTY	Heat#	Yield to	Yield Strength		ELONG	Charny		ct ct Ene	røv	Loc							Chemi	carrio	Jei ties						
itte	ill# item bescription	ζīī	псин	Tensile Ratio	KSI	KSI	%	° F	ттра	ft• lbf		LOC	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					MPa	MPa	%	° C		J																	<u> </u>
1	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487593	0.74 0.74	55 55 376 378	73 74 505 508	27 28	70 21	55 75	77 105	62 84	Cor	.08	1.39	.013	.023	.21	.32	.13	.10	.04	.05	.002	.38	.01	.19	
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	182 247 106 144 141 191	152 66 90	301 116 157 139		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21 70 21	197 191 259 190	199 200 271	121 164 227	Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	488226	0.75 0.75	57 57 390 393	76 76 523 524	27 25	70 21	81 110	_	88 120	Cor	.08	1.36	.012	.021	.24	.29	.12	.13	.04	.05	.001	.38	.01	.19	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

Jary Lennell

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Chief Metallurgist

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

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

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 2018-05-23 My commission expires on 07/17/2023



Invoice No. 887044
Bill of Lading 328423
Customer No. 9859
Customer P.O 3575-0051

PHOENIX AZ 85005

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 2018-05-22

SCHUFF STEEL

BOX 19048

420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365
BELLEMONT AZ 86015

⊺ USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT)

ASTM A6/A6M-14

0	USA				0	-										o i ivi Au,	/ AUIVI-1	.4									
						Mecha	nical Pro	perties											Chemi	cal Pro _l	perties						
Ite	որ# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Tensile Strength	ELONG	Charpy Temp		ct ct Ene	ergy	Loc	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	>	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf	f		C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	v	Cb	CE	311	PCIII	Ci
					MPa	MPa	%	° C		J																	
1	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	483722	0.77 0.76	57 56 390 383	74 73 509 507	27 28	70 21	91 123	109 148		Cor	.07	1.39	.016	.025	.24	.29	.11	.10	.04	.05	.002	.37	.01	.18	
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	4	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	263 182 247 106	203 112 152	222 301 116	Cor	.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	2	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21	258 145	315	211		.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487602	0.76 0.78	56 57 385 393	74 73 508 503	28 27	70 21	43 59		228 309	Cor	.07	1.35	.013	.025	.24	.30	.10	.09	.03	.05	.002	.35	.01	.17	

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

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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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Chief Metallurgist

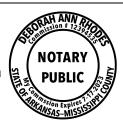
CARBON EQUIVALENT CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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.

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

on 2018-05-22 Heliareh Min Y



Invoice No. 888099
Bill of Lading 329434
Customer No. 9859
Customer P.O 3575-0051

420 S 19 AVE

USA

PHOENIX AZ 85005

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 2018-05-28

SCHUFF STEEL SCHUFF STEEL (FLAGSTAFF)
BOX 19048 SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365
BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

				i															_									
							Mecha	nical Prop	perties											Chemi	cal Pro _l	perties						
						Viold Strongth	Tensile	ELONG	Charpy	Impa	ct																	
It	em#	Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength	LLONG	Temp	Impa	ct Er	ergy	Loc	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• II	of		C	IVIII	г	3	31	Cu	INI	Ci	IVIO	v	CD	CL	311	FUII	Ci
						MPa	MPa	%	° C		J																	
1	4 V	V40X431.0 9 ft 0 in V1000X642	2	483718	0.76 0.77	56 57 385	74 74 508	28 28	70 21	100 136	l	127 172		.08	1.35	.015	.017	.21	.30	.12	.11	.04	.05	.001	.37	.01	.18	
		14.94 m)				391	511					400																<u> </u>
2	4 V	V40X431.0 9 ft 0 in V1000X642 14.94 m)	1	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21	141 191	l	139 188		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
17	4 V	V40X431.0 9 ft 0 in V1000X642 14.94 m)	2	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21	191 259 164 222	271 92	121 164 190 258	Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
2	4 V	V40X431.0 9 ft 0 in V1000X642 14.94 m)	2	488223	0.74 0.73	55 55 378 376	74 75 513 514	27 26	70 21	140 190		108 146		.07	1.35	.014	.020	.26	.25	.10	.12	.04	.06	.001	.36	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

County of Mississippi

Sworn to and subscribed before me

on 2018-05-28 Juliarah Hm & house



Invoice No. 887266 Bill of Lading 328596 Customer No. 9859 **Customer P.O** 3575-0051

PHOENIX AZ 85005

USA

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 2018-05-23

SCHUFF STEEL BOX 19048 420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF) **BNSF TRACT 9365**

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

					<u> </u>	Mechanical Properties													Chemi	cal Droi	nortios						
lte	m#Item Description	QTY	Heat#	Yield to	Yield Strength		ELONG	Charny		ct ct Ene	røv	Loc							Chemi	carrio	Jei ties						
itte	ill# item bescription	ζīī	псин	Tensile Ratio	KSI	KSI	%	° F	ттра	ft• lbf		LOC	С	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI
					MPa	MPa	%	° C		J																	<u> </u>
1	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487593	0.74 0.74	55 55 376 378	73 74 505 508	27 28	70 21	55 75	77 105	62 84	Cor	.08	1.39	.013	.023	.21	.32	.13	.10	.04	.05	.002	.38	.01	.19	
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	182 247 106 144 141 191	152 66 90	301 116 157 139		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21 70 21	197 191 259 190	199 200 271	121 164 227	Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	488226	0.75 0.75	57 57 390 393	76 76 523 524	27 25	70 21	81 110	_	88 120	Cor	.08	1.36	.012	.021	.24	.29	.12	.13	.04	.05	.001	.38	.01	.19	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

Jary Lennell

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

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

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

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 2018-05-23 My commission expires on 07/17/2023



Invoice No. 887044
Bill of Lading 328423
Customer No. 9859
Customer P.O 3575-0051

PHOENIX AZ 85005

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 2018-05-22

SCHUFF STEEL

BOX 19048

420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365
BELLEMONT AZ 86015

⊺ USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT)

ASTM A6/A6M-14

0	USA				0	-										o i ivi Au,	/ AUIVI-1	.4									
						Mecha	nical Pro	perties											Chemi	cal Pro _l	perties						
Ite	որ# Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Tensile Strength	ELONG	Charpy Temp		ct ct Ene	ergy	Loc	C	Mn	Р	S	Si	Cu	Ni	Cr	Mo	>	Cb	CE	Sn	Pcm	CI
				Ratio	KSI	KSI	%	° F		ft• lbf	f		C	IVIII	Р	3	31	Cu	INI	Ci	IVIO	v	Cb	CE	311	PCIII	Ci
					MPa	MPa	%	° C		J																	
1	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	483722	0.77 0.76	57 56 390 383	74 73 509 507	27 28	70 21	91 123	109 148		Cor	.07	1.39	.016	.025	.24	.29	.11	.10	.04	.05	.002	.37	.01	.18	
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	4	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	263 182 247 106	203 112 152	222 301 116	Cor	.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	2	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21	258 145	315	211		.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487602	0.76 0.78	56 57 385 393	74 73 508 503	28 27	70 21	43 59		228 309	Cor	.07	1.35	.013	.025	.24	.30	.10	.09	.03	.05	.002	.35	.01	.17	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

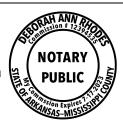
CARBON EQUIVALENT CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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.

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

on 2018-05-22 Heliareh Min Y



Invoice No.	885515
Bill of Lading	327317
Customer No.	9859
Customer P.O	3575-0051

T PHOENIX AZ 85005

° USA

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 2018-05-15

SCHUFF STEEL BOX 19048 420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365 BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

							Mecha	nical Prop	erties										Chemi	cal Pro	perties						
					V: - - + -	Yield Strength	Tensile	ELONG	Charpy	Impact																	
11	tem	# Item Description	QTY	Heat#	Tensile		Strength		Temp	Impact	Energy	Loc	C	Mn	D	c	Si	Cu	Ni	Cr	Мо	V	Ch	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F	ft	• lbf		C	IVIII	Г	,	Ji	Cu	141	Ci	IVIO	٧	CD	CL	311	r CIII	Ci
						MPa	MPa	%	° C		J																
	١	W40X297.0				57	71	29	70	230 2	216 227	Cor															
	1	49 ft 0 in	2	488203	0.79	52	70	28	21	312 2	293 308		.07	1.20	.013	.028	.23	.28	11	.11	.03	.02	.020	.33	.01	.16	
	١ ١	W1000X443	_	400203	0.75	391	493		70	220 1	193	Cor	.07	1.20	.013	.028	.23	.20	.11	.11	.03	.02	.020	.55	.01	.10	
	((14.94 m)				362	481		21	298 1	L45 262																

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315") striker (KV_o) 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

sug 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

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



Invoice No.	898220
Bill of Lading	336522
Customer No.	9859
Customer P.O	3575-0051

T PHOENIX AZ 85005

USA

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 2018-07-13

	SCHUFF STEEL
	BOX 19048
)	120 S 10 AVE

SCHUFF STEEL (FLAGSTAFF)
BNSF TRACT 9365

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

							Mecha	nical Pro	perties											Chemi	cal Pro	perties						
						Yield Strength	Tensile	ELONG	Charpy	Impa	ct																	
lt	tem	# Item Description	QTY	Heat#	Yield to Tensile		Strength	LLONG	Temp	Impa	ct En	ergy	Loc	_	Mn	D	c	Si	Cu	Ni	Cr	Mo	V	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F		ft• lb	f		C	IVIII	Г	3	اد ا	Cu	INI	Ci	IVIO	v	CD	CL	311	r CIII	(
						MPa	MPa	%	° C		J																	i
	١	W40X297.0				59	74	28	70	103	256	192	Cor															1
	1	49 ft 0 in	1	478448	0.79	59	72	28	21	140	347	260		.07	1.35	.016	.019	.25	.33	.12	.17	.04	.05	.001	.38	.01	.18	1
		W1000X443	-	170110	0.82	405	511							.07	1.55	.010	.013	.23	.55	.12	,	.04	.03	.001	.50	.01	.10	1
	((14.94 m)				408	499																					
		W40X297.0				57	71	29	70			227																1
	/	49 ft 0 in	1	488203	0.79	52	70	28	21	312	293	308		.07	1.20	.013	.028	.23	.28	.11	.11	.03	.02	.020	.33	.01	.16	1
	٦ ١	W1000X443	-	100203	0.75	391	493							.07	1.20	.013	.020	.23	.20			.03	.02	.020	.55	.01	.10	1
	((14.94 m)				362	481																					1 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+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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315") striker (KV_e) 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

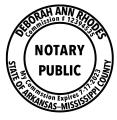
CARBON EQUIVALENT CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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.

Sworn to and subscribed before me

on 2018-07-13



Invoice No. 888099
Bill of Lading 329434
Customer No. 9859
Customer P.O 3575-0051

420 S 19 AVE

USA

PHOENIX AZ 85005

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 2018-05-28

SCHUFF STEEL SCHUFF STEEL (FLAGSTAFF)
BOX 19048 SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365
BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

							Mecha	nical Prop	perties											Chemi	cal Pro _l	perties						
						Viold Strongth	Tensile	ELONG	Charpy Impact																			
It	em#	Item Description	QTY	Heat#	Yield to Tensile	Yield Strength	Strength		Temp	Impact Energy Loc		Loc	_	Mn	P	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Çn.	Dem	CI	
					Ratio	KSI	KSI	%	° F		ft• It	of		٠	IVIII	P	3	31	Cu	INI	Cr	IVIO	v	CD	CE	Sn	Pcm	Li
						MPa	MPa	%	° C		J																	
-	49 W	V40X431.0 9 ft 0 in V1000X642	2	483718	0.76 0.77	56 57 385	74 74 508	28 28	70 21	100 136		127 172		.08	1.35	.015	.017	.21	.30	.12	.11	.04	.05	.001	.37	.01	.18	
_	<u> </u>	14.94 m)				391	511																					
1	49 W	V40X431.0 9 ft 0 in V1000X642 14.94 m)	1	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21	141 191		139 188		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
	49 W	V40X431.0 9 ft 0 in V1000X642 14.94 m)	2	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21	191 259 164 222	271 92	121 164 190 258	Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	49 W	V40X431.0 9 ft 0 in V1000X642 14.94 m)	2	488223	0.74 0.73	55 55 378 376	74 75 513 514	27 26	70 21	140 190		108 146		.07	1.35	.014	.020	.26	.25	.10	.12	.04	.06	.001	.36	.01	.18	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

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.

County of Mississippi

Sworn to and subscribed before me

on 2018-05-28 Juliarah Hm & house



Invoice No. 887266 Bill of Lading 328596 Customer No. 9859 **Customer P.O** 3575-0051

PHOENIX AZ 85005

USA

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 2018-05-23

SCHUFF STEEL BOX 19048 420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF) **BNSF TRACT 9365**

BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

	Mechanical Properties												Chemical Properties														
ltο	#Item Description	QTY	Heat#	Yield to	Yield Strength	Tensile Strength	ELONG	Charny			rgy	Loc							Chemi	carrio	Jei ties						
itte	ill# item bescription	ζīī		Tensile Ratio	KSI	KSI	%	° F	° F ft•lbf		LOC	c	Mn	Р	S	Si	Cu	Ni	Cr	Мо	V	Cb	CE	Sn	Pcm	CI	
					MPa	MPa	%	° C																		<u> </u>	
1	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	487593	0.74 0.74	55 55 376 378	73 74 505 508	27 28	70 21	55 75		62 84	Cor	.08	1.39	.013	.023	.21	.32	.13	.10	.04	.05	.002	.38	.01	.19	
2	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487597	0.75 0.76	53 55 365 376	71 71 489 493	29 28	70 21 70 21 70 21	182 247 106 144 141 191	152 66	301 116 157 139		.07	1.35	.017	.023	.21	.27	.10	.14	.03	.06	.003	.36	.01	.17	
3	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	3	487598	0.77 0.75	58 55 399 378	75 73 519 506	28 28	70 21 70 21 70 21	197 191 259 190	199 200 271	121 164 227	Cor	.07	1.35	.014	.022	.24	.32	.11	.11	.03	.05	.002	.36	.01	.18	
4	W40X431.0 49 ft 0 in W1000X642 (14.94 m)	1	488226	0.75 0.75	57 57 390 393	76 76 523 524	27 25	70 21	81 110	_		Cor	.08	1.36	.012	.021	.24	.29	.12	.13	.04	.05	.001	.38	.01	.19	

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).

All mechanical testing is performed by the Quality Testing Lab, which is independent of the production departments.

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

Jary Lennell

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

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

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

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 2018-05-23 My commission expires on 07/17/2023



Invoice No.	888099
Bill of Lading	329434
Customer No.	9859
Customer P.O	3575-0051

T PHOENIX AZ 85005

USA

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 2018-05-28

5	SCHUFF STEEL
	BOX 19048
)	420 S 19 AVE

SCHUFF STEEL (FLAGSTAFF)

BNSF TRACT 9365
BELLEMONT AZ 86015

USA

ASTM A992/A992M-11 A572/A572M GR50-15 ASTM A709/A709M-15 GR50T (345T) ASTM A709/A709M-15 GR50ST (345ST) CSA G40.21-13 50WMT (345WMT) ASTM A6/A6M-14

			QTY		Mechanical Properties								Chemical Properties															
						Vield Strength	Tensile Strength	ELONG	Charpy Impact																			
ľ	em	# Item Description		Heat#	Yield to Tensile	Yield Strength		LLONG	Temp	Impa	ct Ene	ergy	Loc	C	Mn	D	c	Si	Cu	Ni	Cr	Мо	\/	Cb	CE	Sn	Pcm	CI
					Ratio	KSI	KSI	%	° F	ft• lbf			C	IVIII	r	3	51	Cu	'''	Ci	1410	i '	l	CL	۱۱ر	FUII		
						MPa	MPa	%	° C		J															ļ		
	١	W40X431.0				57	76	27	70	81	81 119 88 Co	Cor															i I	
		49 ft 0 in	1	488226	0.75	57	76	25	21	110	161	161 120		.08	1.36	.012	.021	.24	.29	.12	.13	.04	.05	.001	.38	.01	.19	1
		W1000X642	1	400220	0.75	390	523							.00	1.50	.012	.021	.24	.23	.12	.13			.001	.36		.13	1
		14.94 m)				393	524																	<u> </u>				i l

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).

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Chief Metallurgist

State of Arkansas

County of Mississippi

Sworn to and subscribed before me

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on 2018-05-28

