SERIAL NUMBER: U-389 U-390 COOK DATE:

MOLD SIZE BY PO

ORDER DATE 21OCT24 SHIP DATE: 22OCT22

FOR: Yellowjacket

SIZE 4.5 X 3.625 TYPE XDS

THREAD OTHER Thin Pipe

MATRIX (H) 36881 WEIGHT

MATRIX (S) 36701 WEIGHT

BINDER 335231 WEIGHT

BLANK MM174036 44 TJ

BILLET TUBE

WELD RO/SM MPI RO MPI PIC RO BRAZE

THREAD GAGE STAND OFF

FINAL DIAMOND GRIND SIZE 4.5 X 3.625

LENGTH TO WELD 6 3/4 /

FINISHED PIC TAKEN BY RO CRATED BY DATE:

International domestic

SHORT BIT & TOOL CO
225 GOLD STREET
GARLAND TX 75042
972-205-1011
shortbits@gmail.com

Certificate of Conformance

Serial Number	Size	Type	Steel or Matrix	Shank Diameter	Bore
U-389, U-390	4.50 X 3.625	XDS	Matrix		

Component	Material	Vender	Lot or Heat Number
Blank	8620	RHW	MM17103644
Hard Powder	WC	SURFACE	36881
Soft Capping Powder	W2	SURFACE	36701
Tool Joint			
MIG Weld			
Tubing			

Inspection			
Diamond Grinding To Size			
Weld MPI			
Thread Gaging			

Signed By: PBeggs date: 10/23/2024

SURFACE ENGINEERING
Wear Resistance Specialists

Surface Engineering Powders
Certified Material Test Report

Company Short Bits — P.O.#: Vickie

Alloy Type: PWMP010 — Size: 80/325 — Mesh: 80/325 — Micron: 180/45um

Description MATRIX POWDER H — Quantity: 50lbs

Specification N/A — Type/Class: N/A

Heat Number SE-36881

Chemical Analysis Actual: — Nominal: X

The data contained herein were obtained from samples considered to be representative of the products in the subject shipment and are believed to be reliable. All operations performed comply with the material specification and the purchase order.

Element Concentrations (Weight Percent)

Al:	**B:**	**Be:**	**C:** 5.63	**Co:**	**Cr:**	**Cu:**	**Fe:** 0.16	
Mn:	**Mo:**	**N2:**	**Nb:**	**Ni:** 2.03	**O2:**	**P:**	**S:**	
Si:	**Ta:**	**Ti:**	**V:**	**W:**	**Wc:**	**TAO:**		

Oth: Fc;0.03 — Analytical Process(es):

Sampling Procedure / Spec: ASTM B215-10
Hall Flow / Spec: ASTM B213-13

Powder Mesh / Spec: ASTM B214-07-2011
Apparent Density / Spec: ASTM B212-13

Physical Properties

Material Hardness Scale: ☑Rc: N/A ☐HB: ☐Hv: ☐Hk:

Hall Flow N/A **Sec./50g Apparent Density:** 7.5 **g/cm3**

Particle Size Distribution: **Size Microns(um)/U.S. Sieve (mesh)**

180/80:	4.45	**150/100:**		**125/120:**	14.25	**106/140:**	
90/170:	13.50	**75/200:**		**63/230:**	Bal	**53/270:**	
45/325:	16.45	**38/400:**	34.45	**32/450:**		**25/500:**	
20/635:		**15/800:**		**+10:**		**+5:**	
Other:							

Surface Engineering Alloy Company hereby certifies the above listed material meets all requirements of the above listed specifications in addition to the confirmation that during the manufacturing process, testing, and inspection, the product was completely void of contact with the element Mercury or any of its compounds. In addition, this certification validates that all test results and operations performed by Surface Engineering Alloy Company, or its subcontractors are in compliance with the material specification and the specific applicable material requirements of ASME SFA 5.21, of ASME Section II. The requirements of Federal Law, Title 18, Chapter 47apply to this order and to subtier suppliers.

SM-1000-CERT-P Rev A 4/18/2023

Reporting Officer
Michael Russell

8/5/2024
Date

2895 46th Ave North
St. Petersburg, FL
Main Office: 727.528.7998
www.surfaceengineering.com

SURFACE ENGINEERING
Wear Resistance Specialists

Surface Engineering Powders
Certified Material Test Report

Company _____ P.O.#: _____

Alloy Type: CTPM001 Size: 80/325 Mesh: 80/325 Micron:-180/+45um

Description Crystalline Tungsten Powder Quantity: _____

Specification N/A Type/Class: N/A

Heat Number SE-36701

Chemical Analysis Actual: X Nominal: _____

The data contained herein were obtained from samples considered to be representative of the products in the subject shipment and are believed to be reliable. All operations performed comply with the material specification and the purchase order.

Element Concentrations (Weight Percent)

Al:	**B:**	**Be:**	**C:** 0.006	**Co:**	**Cr:**	**Cu:**	**Fe:** 0.0011	
Mn:	**Mo:** 0.007	**N2:**	**Nb:**	**Ni:**	**O2:** 0.015	**P:**	**S:**	
Si:	**Ta:**	**Ti:**	**V:**	**W:** 99.9	**Wc:**	**TAO:** 0.03		

Oth: _____ Analytical Process(es): _____

Sampling Procedure / Spec: ASTM B215-10
Hall Flow / Spec: ASTM B213-13

Powder Mesh / Spec: ASTM B214-07-2011
Apparent Density / Spec: ASTM B212-13

Physical Properties

Material Hardness Scale: ☑Rc: NA ☐HB: ☐Hv: ☐Hk:

Hall Flow 10 **Sec./50g Apparent Density:** 8.16 **g/cm3**

Particle Size Distribution: **Size Microns(um)/U.S. Sieve (mesh)**

180/80:	0.1	**150/100:**		**125/120:**		**106/140:**	
90/170:		**75/200:**	49.9	**63/230:**	0.00	**53/270:**	
45/325:	41.2	**38/400:**	8.7	**32/450:**		**25/500:**	
20/635:		**15/800:**		**+10:**		**+5:**	

Other: _____

Surface Engineering Alloy Company hereby certifies the above listed material meets all requirements of the above listed specifications in addition to the confirmation that during the manufacturing process, testing, and inspection, the product was completely void of contact with the element Mercury or any of its compounds. In addition, this certification validates that all test results and operations performed by Surface Engineering Alloy Company, or its subcontractors are in compliance with the material specification and the specific applicable material requirements of ASME SFA 5.21, of ASME Section II. The requirements of Federal Law, Title 18, Chapter 47apply to this order and to subtier suppliers.

SM-1000-CERT-P Rev A 4/18/2023

Reporting Officer
Dylan Marhafer

9/16/2024
Date

2895 46th Ave North
St. Petersburg, FL
Main Office: 727.528.7998
www.surfaceengineering.com

Belmont METALS INC
THE NON FERROUS SPECIALISTS SINCE 1896
330 Belmont Avenue, Brooklyn, NY 11207-4000 U.S.A
tel:+1.718.342.4900 fax:+1.718.342.0175

Certificate of Analysis

June 26, 2024

Customer Order No: VERBAL-VICKIE

Customer ID: SHORTC

Customer Name: Short Bits & Tool

Sales Order No: 48182

Item No: 4483D

Virgin Grade Binder Alloy

Shape: 1/2" x 1/2" x 3/4" Tumbled Sheared Pcs.

	335231
CU	47.29
MN	24.43
NI	20.20
ZN	7.75
B	.11
SI	.14
FE	.03
PB	<.05
SN	<.02

BELMONT METALS, INC.

Nasir Naseer

QC Administrator

BELMONT METALS

NUCOR

NUCOR STEEL MEMPHIS, INC.

Mill Certification

9/13/2017

MTR #: G1-173526
3601 Paul R Lowry Rd
MEMPHIS, TN 38109
(901) 786-5900
Fax: (901) 786-5901

Sold To: CMC DALLAS TRADING
PO BOX 139094
DALLAS, TX 75313-9094
(214) 689-4300
Fax: (214) 689-5886

Ship To: CMC TRADING WAREHOUSE
GREENSPORT TERMINAL
13609 INDUSTRIAL ROAD - GATE 5
UP - PTRA SWITCH ROAD
HOUSTON, TX 77015
(214) 496-5584

Customer P.O.	71913	Sales Order	155983.13
Product Group	Special Bar Quality	Part Number	30005000R20NTE1
Grade	AISI 8620/8622H (S .015-.025%, DI 1.9-2.3) MAC, MECH, MIC,GS	Lot #	MM1710364402(3)
Size	5" (5.0000) Round	Heat #	MM17103644
Product	5" (5.0000) Round 20' R/L 8620-C2Q3 10K	B.L. Number	G1-318494
Description	8620-C2Q3	Load Number	G1-173526
Customer Spec		Customer Part #	

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed above and that it satisfies those requirements.

Roll Date: 5/23/2017 Melt Date: 5/11/2017 Qty Shipped LBS: 14,650 Qty Shipped Pcs: 10

SP	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Al
0.03%	0.21%	0.79%	0.008%	0.024%	0.23%	0.26%	0.46%	0.52%	0.21%	0.000%	0.028%
B	Sn	Ti	Cb	Co	Ca	Pb	As	N	H		
0.0001%	0.007%	0.0013%	0.005%	0.0207%	0.0007%	0.0000%	0.004%	0.0063%	1.2 ppm		

SP: sp formula

DI value: 2.16

Simulated Hardenability Band

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32
45	45	42	36	30	26	25	24	23	22	21	20	19	19	19	18	18	17	16	16	15	15	15	14

E381 Surface (Back) 2

Oxide Cleanliness; SAE J422 0.0

Brinell: 179.000bhn

Grain Size per ASTM E112 = 7

E381 Mid Radius (Back) 2

Silicate Cleanliness; SAE J422 0.0

Brinell Converted Mid-Radius: 192.0bhn

Reduction Ratio 7.3 :1

E381 Center (Back) 2

Total Oxygen per ASTM E1019 = 19.7000ppm

Brinell Converted Surface: 170.0bhn

ASTM E381
Surface: 2 Mid Radius: 2 Center: 2

1. All manufacturing processes, including melting have been performed in the U.S.A.
2. No mercury, mercury compounds or mercury containing devices came into contact with this product.
3. Welding or weld repair was not performed on this material.
4. This material conforms to the specifications described on this document and may not be reproduced except in full, without written approval of Nucor Corporation.
5. This product is NAFTA certified under Paragraph "B" of the NAFTA rule of origin.
6. Material is Free of Radioactive Contamination.
7. This document is in compliance with EN 10204 "type 3.1"
8. Test procedures followed with asterisk(*) are outside of NSMEM - ISO17025 Accreditation scope.
9. Results reported for ASTM E45 (Inclusion content) and ASTM E112 (Grain size) are provided as interpretation of ASTM procedures.
10. Test procedures performed in compliance with the following ASTM standards: Chemical Analysis: E415, Total Oxygen: E1019, Grain Size: E112, Macroetch: E381, Tensile and Hardness Testing: A370, Charpy Impact: E23, Decarburization Depth: E1077, Microcleanliness: E45.
11. ASTM E23 tests conducted with 8mm striker radius upon 10mm x 10mm V notch specimen.
12. Export Country: USA email Memphis.Sales@nsmem.nucor.com

Steven Gage
Division Metallurgist

NUCOR

NUCOR STEEL MEMPHIS, INC.

Mill Certification

9/13/2017

MTR #: G1-173526
3601 Paul R Lowry Rd
MEMPHIS, TN 38109
(901) 786-5900
Fax: (901) 786-5901

Sold To: CMC DALLAS TRADING
PO BOX 139094
DALLAS, TX 75313-9094
(214) 689-4300
Fax: (214) 689-5886

Ship To: CMC TRADING WAREHOUSE
GREENSPORT TERMINAL
13609 INDUSTRIAL ROAD - GATE 5
UP - PTRA SWITCH ROAD
HOUSTON, TX 77015
(214) 496-5584

Customer P.O.	71913	Sales Order	155983.13
Product Group	Special Bar Quality	Part Number	30005000R20NTE1
Grade	AISI 8620/8622H (S .015-.025%, DI 1.9-2.3) MAC, MECH, MIC,GS	Lot #	MM1710364402 (3)
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Product	5" (5.0000) Round 20' R/L 8620-C2Q3 10K	B.L. Number	G1-318494
Description	8620-C2Q3	Load Number	G1-173526
Customer Spec		Customer Part #	

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed above and that it satisfies those requirements.

ASTM E45 Method A (Worst)
Sulfides: T: 1.5 H: 1.5 Alumina: T: 0.0 H: 0.0 Silicates: T: 0.0 H: 0.0 Globular: T: 0.5 H: 0.5

Specification Comments: EAF, LMF, VACUUM DEGASSED, CONTINUOUSLY CAST HOT ROLLED AS ROLLED TD-PUR-407 11/25/08, JDM A0 QL2 ASTM A322, ASTM A304

1. All manufacturing processes, including melting have been performed in the U.S.A.
2. No mercury, mercury compounds or mercury containing devices came into contact with this product.
3. Welding or weld repair was not perfomed on this material.
4. This material conforms to the specifications described on this document and may not be reproduced except in full, without written approval of Nucor Corporation.
5. This product is NAFTA certified under Paragraph "B" of the NAFTA rule of origin.
6. Material is Free of Radioactive Contamination.
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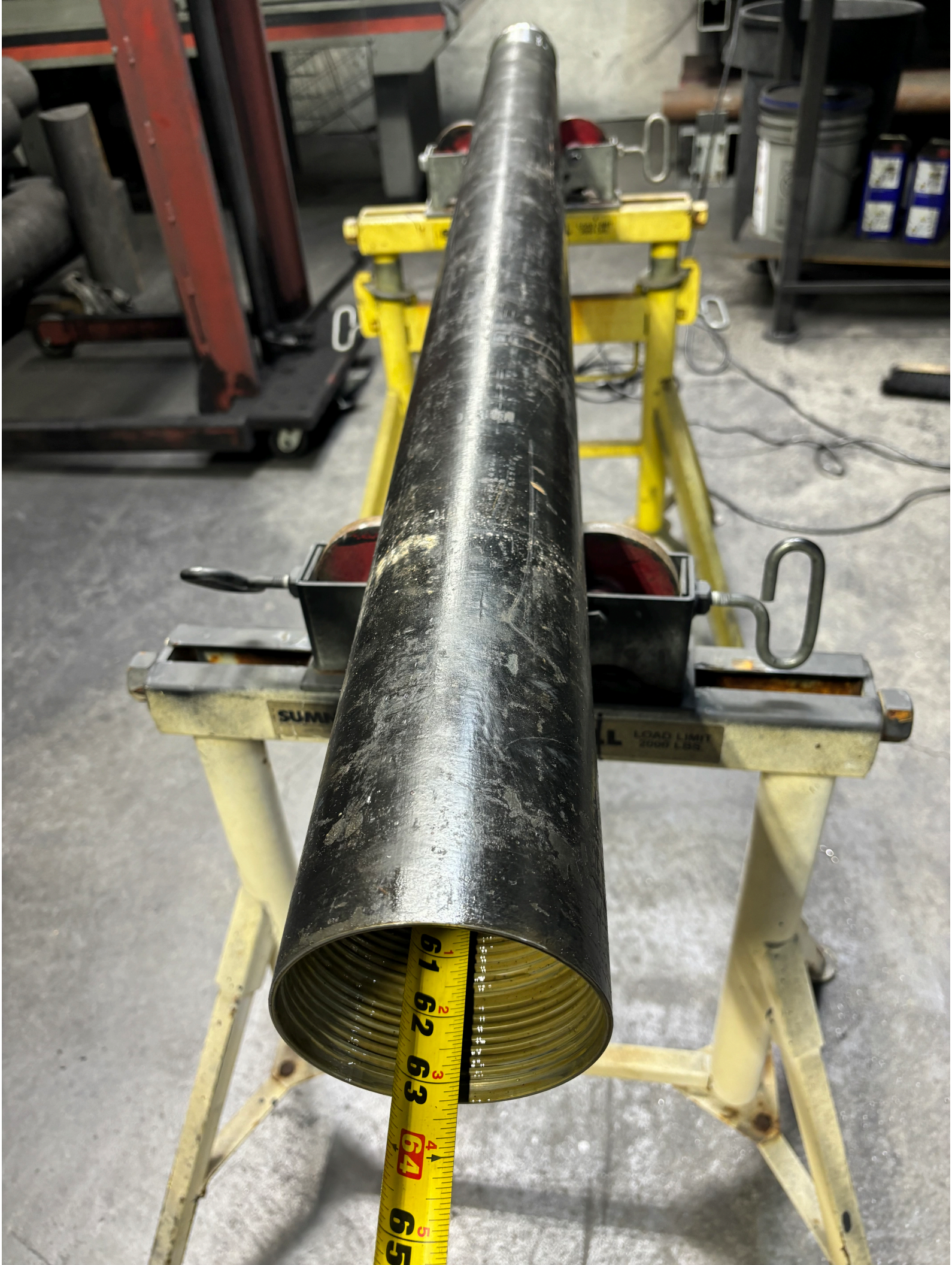
11. ASTM E23 tests conducted with 8mm striker radius upon 10mm x 10mm V notch specimen.
12. Export Country: USA email Memphis.Sales@nsmem.nucor.com

Steven Gage
Division Metallurgist


61
62
63
64
65


4.500 X 3.625 XDS
U389