



3.235

U-060

SERIAL NUMBER: U-061 COOK DATE: _____

MOLD SIZE _____ BY _____ PO Harris

ORDER DATE 01 FEB 24 SHIP DATE: 02 FEB 24

FOR: WFR

SIZE 3.5 x 2.140 TYPE XDS

THREAD _____ OTHER SW Arr to NOL 3:50pm flight

MATRIX (H) 36188 WEIGHT _____

MATRIX (S) 36098 WEIGHT _____

BINDER M0000311271 WEIGHT _____
KMT18107939

BLANK 5077077 TJ _____

BILLET _____ TUBE _____

WELD R0 MPI RM MPI PIC RM BRAZE _____

THREAD GAGE _____ STAND OFF _____

FINAL DIAMOND GRIND SIZE 3.5 x 2.140

LENGTH TO WELD _____

FINISHED PIC TAKEN BY RM CRATED BY RM DATE: 2-2-24

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-060, U-061	3.50 X 2.140	XDS	Matrix		

Component	Material	Vender	Lot or Heat Number
Blank	8620	RHW	MM18107939, 5077077
Hard Powder	WC	SURFACE	36188
Soft Capping Powder	W2	SURFACE	36095
Tool Joint			
MIG Weld			
Tubing			
Inspection			
Diamond Grinding To Size			
Weld MPI			
Thread Gaging			

Signed By:  date: 2/5/2024



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: 100lbs
 Specification N/A Type/Class: N/A
 Heat Number SE-36188

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: 5.63 Co: Cr: Cu: Fe: 0.17
 Mn: Mo: N2: Nb: Ni: 2.02 O2: P: S:
 Si: Ta: Ti: V: W: Bal Wc: TAO:
 Depth: 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 12.4 Sec./50g Apparent Density: 6.9 g/cm3

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

180/80: 4.65	150/100:	125/120: 14.8	106/140:
90/170: 15.65	75/200:	63/230: Bal	53/270:
45/325: 16.75	38/400: 33.45	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 47 apply to this order and to sub-tier suppliers.

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

Reporting Officer
 Michael Russell

1/4/2024
 Date

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



Surface Engineering Powders Certified Material Test Report

Company Short Bits P.O.#: Vickie
 Alloy Type: PWCTPM002 Size: 80/325 Mesh: 80/325 Micron: 180/45um
 Description CTPM CRYSTALLINE W 80 X 325 MESH Quantity: 100lbs
 Specification N/A Type/Class: N/A
 Heat Number SE-36095

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: <u>0.008</u>	Co: _____	Cr: _____	Cu: _____	Fe: <u>0.0012</u>
Mn: _____	Mo: <u>0.007</u>	N2: _____	Nb: _____	Ni: _____	O2: <u>0.0013</u>	P: _____	S: _____
Si: _____	Ta: _____	Ti: _____	V: _____	W: <u>BAL</u>	Wc: _____	TAO: <u>0.03</u>	

Other: _____ 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 9.8 Sec./50g Apparent Density: 8.2 g/cm³

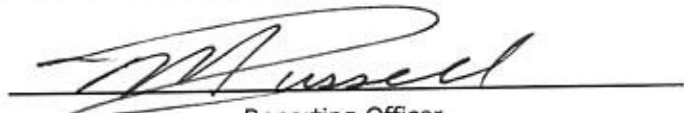
Particle Size Distribution: Size Microns(um)/U.S. Sieve (mesh)

180/80: <u>0.1</u>	150/100: <u>0.8</u>	125/120: <u>5.85</u>	106/140: <u>8.25</u>
90/170: <u>13.65</u>	75/200: <u>25.80</u>	63/230: <u>18.50</u>	53/270: <u>BAL</u>
45/325: <u>7.15</u>	38/400: <u>6.95</u>	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 47 apply to this order and to sub-tier suppliers.

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


Reporting Officer
Michael Russell

1/25/2024
Date

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



330 Belmont Avenue, Brooklyn, NY 11207-4000 U.S.A
tel:+1.718.342.4900 fax:+1.718.342.0175

Certificate of Analysis

January 09, 2024

Customer Order No:

VERBAL-VICKIE

Customer ID:

SHORTC

Customer Name:

Short Bits & Tool

Sales Order No:

46989

Item No: 4483D

Virgin Grade Binder Alloy

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

311271

CU	47.11
MN	24.38
NI	20.02
ZN	8.14
B	.11
SI	.16
FE	.02
PB	<.05
SN	.01

BELMONT METALS, INC.

Nasir Naseer

QC Administrator



Sold To

Ship To

Customer P O	1139	Sales Order	169266 1
Product Group	Special Bar Quality	Part Number	30004000R20NTE0
Grade	AISI 8620H/8622H (S 015- 025%.DI 1 9-2 3) MAC, MECH, MIC,GS	Lot #	MM1810793901
Size	4" (4 0000) Round	Heat #	MM18107939
Product	4" (4 0000) Round 20' R/L 8620-C2Q3	B L Number	G1-347540
Description	8620-C2Q3	Load Number	G1-190407
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: 11/9/2018 Melt Date: 10/19/2018 Qty Shipped LBS: 29,755 Qty Shipped Bundles: 36

C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Al	B
0.22%	0.80%	0.013%	0.023%	0.24%	0.22%	0.50%	0.47%	0.21%	0.005%	0.026%	0.0003%
Sn	Ti	Cb	Co	Ca	Pb	As	N	H	SP		
0.007%	0.0017%	0.004%	0.0098%	0.0011%	0.0000%	0.004%	0.0086%	1.7 ppm	0.04%		

Fe: Balance
 SP: sp formula

DI value 2.19

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
46	46	43	37	31	27	26	25	24	23	22	20	20	20	19	19	18	18	17	16	16	15	15	15

E381 Surface (Back) 1
 Oxide Cleanliness, SAE J422 0 0
 Brinell 183 000bhn
 Grain Size per ASTM E112 = 7

E381 Mid Radius (Back) 1
 Silicate Cleanliness, SAE J422 0 0
 Brinell Converted Mid-Radius, 187 0bhn
 Reduction Ratio 11.4 .1

E381 Center (Back) 1
 Total Oxygen per ASTM E1019 = 13 7000ppm
 Brinell Converted Surface 183 0bhn



Steven Gage
 Division Metallurgist

Sold To

Ship To

Customer P O	1139	Sales Order	169266 1
Product Group	Special Bar Quality	Part Number	30004000R20NTE0
Grade	AISI 8620H/8622H (S 015-025%, DI 1 9-2 3) MAC, MECH. MIC.GS	Lot #	MM1810793901
Size	4" (4 0000) Round	Heat #	MM18107939
Product	4" (4 0000) Round 20' R/L 8620-C2Q3	B L Number	G1-347540
Description	8620-C2Q3	Load Number	G1-190407
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 E381

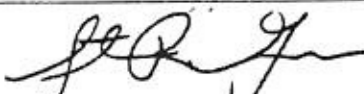
Surface 1 Mid Radius 1 Center 1

ASTM E45 Method A (Worst)

Sulfides T 15 H 15 Alumina T 00 H 00 Silicates T 00 H 00 Globular T 10 H 05

Specification Comments: EAF, LMF, VACUUM DEGASSED, CONTINUOUSLY CAST HOT ROLLED AS ROLLED TO-PUR-407 11/25/08, JDM A0 QL2 ASTM A322 ASTM A304, ASTM A29

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 the 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. The following tests are outside the ISO 17025 Laboratory Scope for Nucor Steel Memphis: Hydrogen, Brinell, and Non Destructive Testing.
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



Republic

1807 EAST 28TH ST.
PHONE: 330-438-5694

LORAIN, OH 44051
FAX: 330-438-5694

CERTIFICATE OF TESTS

REPUBLIC ENGINEERED PRODUCTS

April 21, 2011

PAGE 1

OF 2

PURCHASE ORD: P341281-432
PART NUMBER: 507019
ORDER NUMBER: 1462602 - 01
HEAT: 5077077
----- CHARGE ADDRESS -----

PURCHASE ORDER DATE: 9/24/2010
ACCOUNT NUMBER: 5482-1516-01
SCHEDULE: 7994-47
REVISION: 1
----- SHIP TO -----



----- MATERIAL DESCRIPTION -----

HOT ROLLED STEEL BARS ALLOY ASTM A322-07 FG ASTM A304-05 AISI-8620/8620-H FINE GRAIN VACUUM
DEGASSED RESTRICTED CHEMISTRY

SIZE: RDS 4.0000 DIAM X 20FT 0.0000IN MIN/24FT 0.0000IN MAX
RDS 101.6000MM DIAM X 6096.0000MM MIN/7315.2000MM MAX

----- LADLE CHEMISTRY % -----

C	MN	P	S	SI	CU	NI	CR
0.19	0.80	0.008	0.034	0.16	0.20	0.42	0.48
V	MO	SN	AL	CB	N		
0.003	0.16	0.010	0.024	0.001	0.0104		

----- CALCULATED TESTS -----

REDUCTION RATIO 5.8 TO 1

AUSTENITIC GRAIN SIZE 5 OR FINER BASED ON A TOTAL ALUMINUM CONTENT EQUAL TO OR GREATER THAN .020% PER
ASTM A29.

----- SEMI - FINISHED RESULTS -----

JOMINY HARDNESS TEST SAE J406/ASTM A255

1 2 3 4 5 6 7 8 9
45 42 34 28 25 23 22 21 20

----- FINISHED SIZE RESULTS -----

----- NOTES -----

CHEMICAL ANALYSIS CONFORMS TO APPLICABLE SPECS: ASTM E415, LBL10129, LBL10130, ASTM E1019,
LBL10158, LBL10114, AND ASTM E1085, LBL10104, LBL10100.

REPUBLIC ENGINEERED PRODUCTS HEREBY CERTIFY THAT THE MATERIAL LISTED HEREIN HAS BEEN INSPECTED AND
TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE GOVERNING SPECIFICATIONS AND BASED UPON THE
RESULTS OF SUCH INSPECTION AND TESTING HAS BEEN APPROVED FOR CONFORMANCE TO THE SPECIFICATIONS.

CERTIFICATE OF TESTS SHALL NOT BE REPRODUCED EXCEPT IN FULL.

ALL TESTING HAS BEEN PERFORMED USING THE CURRENT REVISION OF THE TESTING SPECIFICATIONS.

RECORDING OF FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHED
AS A FELONY UNDER FED STATUES TITLE 18 CHAPTER 47.

THE MATERIAL WAS NOT EXPOSED TO MERCURY OR ANY METAL ALLOY THAT IS LIQUID AT AMBIENT TEMPERATURE
DURING PROCESSING OR WHILE IN OUR POSSESSION.

NO WELD OR WELD REPAIR WAS PERFORMED ON THIS MATERIAL.

G. KRUTH
DIRECTOR QUALITY ASSURANCE

BY HILDA BEGUE



3,5x2,140 XDS
UQ80Z

ME 484



3142 11008
1000