



BUILD SHEET T-273 DATE 5/5/17
 MOD SIZE _____ CHECKED BY _____
 ORDER DATE 13 June 23 SHIP BY DATE: 14 June 23
 FOR WFR PO NO 4005150
 SIZE 1.860 x 1.110 TYPE X25
 THREAD _____ OTHER head only
 MATRIX (H) 1341 WEIGHT _____
 MATRIX (S) 1344 WEIGHT _____
 BINDER 19584 WEIGHT _____
 BLANK GES8026S42 TJ _____
 CUTTER _____
 BILLET _____ TUBE _____
 WELD BY _____ MPI BY _____
 THREAD GAGE _____ STAND OFF _____
 FINAL DIAMOND GRIND SIZE _____
 length to weld _____
 SHIPPED BY MM DATE 6/14/23

192 (192)

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



Certificate of Conformance

Serial Number	Size	Type	Steel or Matrix	Shank Diameter	Bore
T-273	1.860 x 1.110	XDS	Matrix		

Component	Material	Vender	Lot or Heat Number
Blank	8620	RHW	GE58026542
Hard Powder	WC	MATRIX	1341
Soft Capping Powder	W2	MATRIX	1344
Tool Joint			
MIG Weld			
Tubing			

Inspection

Diamond Grinding To Size
 Weld MPI
 Thread Gaging

Head Only

Signed By:

date: 6/14/2023



Document Number:	F-Q-018
Revision:	Orig.
Date of Origin:	8/12/2012
Manual:	P-Q-001
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Title:	MATERIAL PROPERTIES CERTIFICATION

CUSTOMER:	Short Bits
CUSTOMER PO#:	VICKIE E MAIL 12-06-16
ITEM ID:	PWCTPM002
ITEM DESCRIPTION	CTPM CRYSTALLINE W 80 X 325 MESH
ITEM LOT #	MPW1344
DATE	12/20/2016
WEIGHT	100 lb.

CHEMICAL COMPOSITION (Weight Percent)			
Element	Minimum	Maximum	RESULT
Tungsten (W)	99.5	-	99.90
-	-	-	-

PRODUCT SIZING (Weight Percent)			
Sieve	Minimum	Maximum	RESULT
(U.S. Standard Mesh per ASTM B214)			
+80	-	5.0	0.3
-80 + 325	-	-	94.6
-325	-	10.00	5.0
-	-	-	-

PHYSICAL PROPERTIES			
Testing Procedure	Minimum	Maximum	RESULT
Apparent Density ASTM B212 (g/cc)	7.2	9.2	8.2
Tap Density ASTM B527 (g/cc)	9.0	10.5	10.2
Hall Flow Rate ASTM B213 (sec/50g)	-	Must Flow	9.8
-	-	-	-

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CUSTOMER:	Short Bits
CUSTOMER PO#:	VICKIE E MAIL 12-06-16
ITEM ID:	PWMP010
ITEM DESCRIPTION	MP MATRIX POWDER H
ITEM LOT #	MPW1341
DATE	12/20/2016
WEIGHT	100 lb.

CHEMICAL COMPOSITION (Weight Percent)			
Element	Minimum	Maximum	RESULT
Total Carbon (Tc)	5.4	5.90	5.55
Free Carbon (Fc)	-	0.04	0.03
Iron (Fe)	-	1.00	0.02
Nickel (Ni)	1.5	2.50	2.04
Tungsten (T)	-	-	Balance

PRODUCT SIZING (Weight Percent)			
Sieve	Minimum	Maximum	RESULT
(U.S. Standard Mesh per ASTM B214)			
+80	4.0	8.0	4.9
-80 + 120	13.0	17.0	15.1
-120+ 170	13.0	17.0	14.5
-170 + 230	13.0	17.0	15.1
-230 + 325	13.0	17.0	15.5
-325	29.00	37.00	34.8

PHYSICAL PROPERTIES			
Testing Procedure	Minimum	Maximum	RESULT
Apparent Density ASTM B212 (g/cc)	7.2	8.1	7.3
Tap Density ASTM B527 (g/cc)	9.2	10.4	9.8
Hall Flow Rate ASTM B213 (sec/50g)	-	Must Flow	12.1
	-	-	-

Certificate of Analysis

December 12, 2016

To: Short Bits & Tool
225 Gold Street
Garland, TX 750426648 USA

Customer Order No: Verbal-Vicki

Customer ID: SHORTC

Sales Order No: 26688

Material: 4483D

BELMONT *Virgin Grade Binder Alloy*

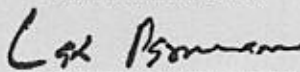
Shape: 1/2" x 1/2" x 3/4" Tumbled Sheared Pcs.

Packaging: 250 Lb. Drums

Lot: 19584

Copper (Cu)	47.8411
Manganese (Mn)	24.1417
Nickel (Ni)	19.6365
Zinc (Zn)	7.9674
Boron (B)	0.11
Iron (Fe)	0.0566
Silicon (Si)	0.18
Lead (Pb)	< 0.05
Tin (Sn)	< 0.05

BELMONT METALS, INC.



Laboratory Director

NUCOR

NUCOR-LMP INC

Sold To: R H W METALS
PO BOX 3507
LONGVIEW, TX 75606
(903) 758-5450
Fax: (903) 758-5677

Mill Certification
8/24/2016

Ship To: R H W METALS
1551 LAREDO DR
ODESSA, TX 79761

MTR #: L1-132503
2000 East First Street
MARYVILLE, MO 64468
(660) 582-3127
Fax: (660) 582-7730

Customer P.O.	17160	Sales Order	549400.2
Product Group	Cold Finish Bar	Part Number	333285
Grade	1018 ASTM A108	Lot #	L1186908
Size	Round 2.5000 (.0030)	Heat #	GE58026542
Product	RD 2.5000" 1018 20-0 CD	B.L. Number	L1-432430
Description	CF Grade 1018	Load Number	L1-132503
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.

Qty Shipped LBS: 2,002 Qty Shipped Pcs: 8

Part Detail: RD 2.5000" 1018 20-0 Cold Drawn
Process: Cold Drawn

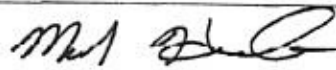
C	Mn	P	S	Si	Cu	Cr	Ni	Mo	Sn	V	Al
0.15%	0.70%	0.011%	0.030%	0.26%	0.25%	0.11%	0.10%	0.023%	0.006%	0.0020%	0.004%

Melting Mill: GERDAU Country of Melting: USA

Reduction Ratio 8 : 1 Country of Rolling: USA

Specification Comments:

1. This material is free of mercury contamination.
2. No welding or weld repair was performed on this material.



Mark Herndon
QA SUPERVISOR



