



BUILD SHEET: N-184 DATE 8/23/17

MOLD SIZE
ORDER DATE 7/16/18 SHIP BY DATE: 7/19/18 CHECKED BY

FOR SLB-France PO NO 592386

SIZE ~~2.600~~ 2.600 TYPE MDX

THREAD 1 1/2" MT OTHER

MATRIX (H) 1614 WEIGHT

MATRIX (S) 1500 WEIGHT

BINDER 19584 WEIGHT

BLANK M40933 TJ

CUTTER

BILLET TUBE

WELD BY Allan MPI BY UR

THREAD GAGE 46986 STAND OFF .370

FINAL DIAMOND GRIND SIZE 2.600

Length to weld

SHIPPED BY JA DATE 7-16-18

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

111701



Certificate of Conformance

Serial Number	Size	Type	Steel or Matrix	Shank Diameter	Bore
N-184	2.60	MDX	Matrix		
Component					
	Material	Vender	Lot or Heat Number		
Blank	8620 Steel	RHW	M40933		
Hard Powder	WC	HMP	1614		
Soft Capping Powder	W2	HMP	1500		
Tool Joint					
MIG Weld					
WP Tube					
Inspection					
Diamond Grinding To Size					
Weld MPI					
Thread Gaging			1 1/2MT		

Signed By: *P. Begg* date: *7/18/2018*

Document Number:	F-Q-018
Revision:	Orig.
Date of Origin:	8/12/2012
Manual:	P-Q-001
Page:	PAGE 1 OF 1
Title:	MATERIAL PROPERTIES CERTIFICATION



CUSTOMER:	Short Bits
CUSTOMER PO#:	VICKIE E MAIL 07-17-17
ITEM ID:	PWMP010
ITEM DESCRIPTION	MP MATRIX POWDER H
ITEM LOT #	MPW1614
DATE	7/17/2017
WEIGHT	100 lb.

CHEMICAL COMPOSITION (Weight Percent)			
Element	Minimum	Maximum	RESULT
Total Carbon (Tc)	5.4	5.90	5.68
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	5.9
-80 + 120	13.0	17.0	15.6
-120+ 170	13.0	17.0	14.4
-170 + 230	13.0	17.0	14.9
-230 + 325	13.0	17.0	15.5
-325	29.00	37.00	33.4

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	10.3
Hall Flow Rate ASTM B213 (sec/50g)		Must Flow	12.5

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Title: MATERIAL PROPERTIES CERTIFICATION

CUSTOMER:	Short Bits
CUSTOMER PO#:	VICKIE E MAIL 05-02-17
ITEM ID:	PWCTPM002
ITEM DESCRIPTION	CTPM CRYSTALLINE W 80 X 325 MESH
ITEM LOT #	MPW1500
DATE	5/3/2017
WEIGHT	100 lb.

CHEMICAL COMPOSITION (Weight Percent)			
Element	Minimum	Maximum	RESULT
Tungsten (W)	99.5	-	99.99
-	-	-	-

PRODUCT SIZING (Weight Percent)			
Sieve	Minimum	Maximum	RESULT
(U.S. Standard Mesh per ASTM B214)			
+80	-	5.0	3.2
-80 + 325	-	-	96.4
-325	-	10.00	0.4
-	-	-	-

PHYSICAL PROPERTIES			
Testing Procedure	Minimum	Maximum	RESULT
Apparent Density ASTM B212 (g/cc)	7.2	9.2	7.7
Tap Density ASTM B527 (g/cc)	9.0	10.5	10.1
Hall Flow Rate ASTM B213 (sec/50g)		Must Flow	12.0
-	-	-	-

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

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*

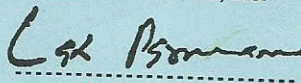
Shape: 1/2" x 1/2" x 3/4" Tumbled Sheared Pcs.

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

BELMONT



METALS



5581 MORRILL ROAD
JACKSON, MICHIGAN 49201

4/18/11
507008
M40933
K418867

CERTIFIED MATERIAL TEST REPORT

CUSTOMER ORDER NUMBER	CUSTOMER PART NUMBER	HEAT NUMBER	WORK ORDER NUMBER	DATE
P348192-453	507008	M40933	250376 101	4/11/11

REPORT TO
MET DEPT

SHIP TO

ORDERED

GRADE	SIZE	LENGTH
8620H	2 1/2" RND	24'

CUSTOMER SPECIFICATIONS
ASTM A322-07; ASTM A304-05

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Sn	Al
0.22	0.84	0.016	0.021	0.26	0.50	0.50	0.20	0.21	0.009	0.030
V	Nb									
0.006	0.002									

GRAIN SIZE SPECIFICATION ASTM E112 FINE GRAIN 5-8

HARDENABILITY SPECIFICATION ASTM A255/A304

THEORETICAL

J1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34
46	46	43	38	33	29	27	26	25	24		22		21		20									

REDUCTION RATIO

RATIO= 7.3 TO 1.0

** MATERIAL 100% MELTED AND MANUFACTURED IN THE U.S.A. BY THE ELECTRIC ARC FURNACE AND CONTINUOUS CASTING METHOD. THE PRODUCT HAS NOT

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We certify that these data are correct and in compliance with specified requirements.

Gerdau MacSteel Monroe
3000 East Front Street
Monroe, MI 48161

Wendy J. Craig
Wendy J. Craig
Quality Assurance Representative

CONTINUED ON PAGE 2



5591 MORRILL ROAD
JACKSON, MICHIGAN 49201

CERTIFIED MATERIAL TEST REPORT

CUSTOMER ORDER NUMBER P348192-453	CUSTOMER PART NUMBER 507008	HEAT NUMBER M40933	WORK ORDER NUMBER 250376 101	DATE 4/11/11
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REPORT TO
MET DEPT

SHIP TO

ORDERED

GRADE 8620H	SIZE 2 1/2" RND	LENGTH 24'
CUSTOMER SPECIFICATIONS ASTM A322-07; ASTM A304-05		

BEEN REPAIRED BY WELDING AND THIS MATERIAL HAS NOT BEEN EXPOSED TO MERCURY OR TO ANY OTHER METAL ALLOY THAT IS LIQUID AT AMBIENT TEMPERATURES DURING PROCESSING OR WHILE IN OUR POSSESSION. GERDAU MACSTEEL MONITORS ALL INCOMING SCRAP AND ALL HEATS OF STEEL TO ENSURE THAT PRODUCTS SHIPPED ARE FREE OF RADIOACTIVE MATERIAL.

PAGE 2 OF 2

We certify that these data are correct and in compliance with specified requirements.

Gerdau MacSteel Monroe
3000 East Front Street
Monroe, MI 48161

Wendy J. Craig
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