9

Short Bit & Tool Co.

SERIAL NUMBER: T374 COOK DATE: _____

MOLD SIZE _____ BY _____ PO _____

ORDER DATE _____ SHIP DATE: _____

FOR: Yellow Jacket

SIZE 4.552-4.652 TYPE SXR

THREAD 2 3/8 PAC OTHER _____

MATRIX (H) _____ WEIGHT _____

MATRIX (S) _____ WEIGHT _____

BINDER _____ WEIGHT _____

BLANK HT: 38246 TJ 60265 93E

BILLET _____ TUBE _____

WELD Jul MPI Ro MPI PIC Ro BRAZE RB

THREAD GAGE 48466 STAND OFF .620

FINAL DIAMOND GRIND SIZE 4.552-4.652

LENGTH TO WELD _____

FINISHED PIC TAKEN BY Ro CRATED BY Ro DATE: 10/2

International _____ domestic X

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
T-374	4.552	SRX	Steel		

Component	Material	Vender	Lot or Heat Number
Blank	8620	RHW	38246
Hard Powder			
Soft Capping Powder			
Tool Joint	4130	RHW	8026593E
MIG Weld			
Tubing			

Inspection	
Diamond Grinding To Size	
Weld MPI	
Thread Gaging	2 3/8" PAC

Signed By: P Boggs date: 10/9/2023

ISSUED BY

TŘINECKÉ ŽELEZÁRNY
MORAVIA STEEL

Number:2020/03/012210-PER

BENEFICIARY: MORAVIA STEEL,a.s.,
PRŮMYSLOVÁ 1000
739 70 TŘINEC CZECH REPUBLIC

TŘINECKÉ ŽELEZÁRNY, a.s. , Průmyslová 1000 , Staré Město ,739 61 Třinec , Czech Republic
VZ - Sochorová válcovna, 272 01 Kladno - Dříň, Czech Republic

Magellan Corporation

Lake Cook Road 1650
60015 Deerfield, IL
USA

Ihr Auftrag - Your order: 213289

Werks Nr. - Our order: 7000461297 / 000010
0041561320 / 38

Aviso - Advise note:

Waggon No:

oder/or

EU-Lieferschein Nr.- Delivery note: 20/03/006429/01 27.03.2020

3154-5949254-4

Abnahmeprüfzeugnis 3.1- Inspection certificate 3.1, EN 10204:2004

CERTIFICATE OF CHEMICAL AND PHYSICAL ANALYSIS

Lieferung - Delivery	Gewicht - Weight	Güte -Grade	Norm - Standard
HOT ROLLED STEEL ROUND BARS PRODUCED IN ACCORDANCE TO MAGELLAN INTERNATIONAL CORPORATION'S PURCHASE ORDER NO'S. 213289 4,75 inch 16 ft 1 inch - 20 ft 0 inch	21225 kg	AISI 8620 AISI 8620H natural	ASTM A322:2013 ASTM A29:2016 ASTM A304:2016 ASTM E709:2015

CHEMISCHE ZUSAMMENSETZUNG - CHEMICAL ANALYSIS (%)

Schmelze Heat No	Gewicht Mass [kg]								
38246 /2020	21225	C	Mn	Si	P	S	Cr	Ni	Cu
BO- cc blooms		0.20	0.80	0.23	0.016	0.011	0.55	0.57	0.03
		Mo	Al	Sn	V	Ti	N	Al_sol	H
		0.198	0.027	0.003	0.005	0.0012	0.0096	0.026	1.20 ppm
		Ca	DI						
		0.0018	2.00						

MECHANISCHE WERTE - MECHANICAL VALUES ASTM 370-19e1

Schmelze Heat No	Streckgrenze Yield point Rp0,2 [KSI]	Zugfestigkeit Tensile strength Rm [KSI]	Bruchdehnung Elongation A2 "	Brucheinschn. Contraction Z [%]	Schlagarbeit Energy of impact Lbs.ft(inf.)	Notch bar test shear (%)	transver expanti value A	Brinell Hardness ASTM E10:2018 HB
38246 1/4 D	53	87	22,8	42,9				Mid radius1/4:190 Surface: 151 ,165

Jominy curve ASTM A 255/2018:

in/16	1	2	3	4	5	6	7	8	9	10	12	14	16	20	24	28	32
HRc	44	43	38	33	29	27	25	23	21	21	19	18	17	16	15	14	13

Microcleanliness Rating ASTM E - 45/2018-a:

TYPE A		TYPE B		TYPE C		TYPE D	
1,0	1,4	0,0	0,1	0,0	0,0	1,0	0,0

Ladle rafinement.
Grain size ASTM E 112/2013 - 8
Macrostructure Rating ASTM E 381/2017: S - 1 R - 1 C - 1
Vacuum degassed practice.
Spectrotest 100%.
Ultrasonic inspection results ASTM A 388/A 388M - passed
Rolling reduction ratio = 11,5
Calcium Aluminium treated.
Steel is free of Mercury.
No repair welding.
Fully killed. Steel is free any harmful radioactive contamination.

RADIO - ISOTOPIC ACTIVITY WAS CONTROLLED IN LADLE SAMPLE, IT WAS NO HIGHER THAN 100 BQ/KG.

Electronical version of this document is protected by the electronical signature according to Regulation (EU) No. 910/2014.

TŘINECKÉ ŽELEZÁRNY ATTESTATION

ORIGIN CZECH REPUBLIC

Die obengenannten Erzeugnisse entsprechen den Bestellungsvorschriften - Products conform with the prescription of order.

Der Werksachverständige - Expert: Eva Perglerová,

Der Sachbearbeiter der Qualitätskontrolle fur Freigabe und Atteste, unabhängiger berechtiger Vertreter
Officer of Quality Inspection of Releasing and Attesting, independent authorized agent

Kladno:01.04.2020

CERTIFICATE NO.:B118214420

DAYE SPECIAL STEEL CO., LTD.

NO. 316 HUANGSHI AVENUE, HUANGSHI, HUBEI CHINA PC:435000

QUALITY CERTIFICATE

ACC TO EN10204 3.1

8026593E

CONTRACT NO: GBUSA18337HQA
DESCRIPTION OF GOODS: HOT ROLLED HIGH QUALITY ALLOY STEEL ROUND BARS
PO1:HQA091718-2 PO2:732818 PRODUCING MILL:DAYE SPECIAL STEEL CO., LTD. COUNTRY OF ORIGIN:CHINA.
Mill Specification:NYGW1043.3-2017
PO1:HQA091718-2;PO2:732818;

Grade	Batch No.	Heat No.	Size(mm)	Size(in)	Pieces	Bundles	Weight(MT)	Total Length(FT)	Delivery Condition	Manufacture Process	Re
8615H130 NOT 8615H	B118214420	8026593E	76.2	3"	177	18	45.664	4128.646	normalized + Q&T	BOF+LF+RH+CC	

Chemical Composition (Wt %)

	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Al	W	V	Nb	Ti	B	As	Sn	Sb	Pb	Ca	Co	Bi	[N]	[O]	[H]	P+S	Hard factor	DI inch	C
Min	0.28	0.15	0.40	0	0	0.90	0.10	0.15	0			0	0	0											0				
Max	0.33	0.35	0.60	0.035	0.040	1.10	0.25	0.25	0.25			0.020	0.050	0.000											0.00020				
Ladle	0.32	0.29	0.54	0.009	0.006	1.04	0.23	0.22	0.10			0.015	0.012	0.0030														3.614	
Product1	0.33	0.29	0.55	0.008	0.004	1.04	0.23	0.23	0.09			0.016	0.012	0.0027											0.00002	0.014			
Product2	0.33	0.29	0.55	0.011	0.005	1.06	0.23	0.23	0.10			0.016	0.014	0.0031											0.00002	0.016			

Macrostructure Examination(Level)			Non-metallic inclusion (Level)								Ds	K4 Method Oxides	Microstructure				Jominy Test	Steel cleanliness Test				Dimen-si inspecti
S	R	C	A		B		C		D				Austenitic grain size	Decarburizing Layer	Actual grain size	AI	HRC-1/4 inch	single sample frequency	average frequency	single sample severity	average severity	
			T	H	T	H	T	H	T	H				mm								
1.0	1.0	1.0	1.0	0.5	1.0	0.0	0.0	0.0	0.5	0.5			N									
1.0	1.0	1.0	1.0	0.5	1.0	0.0	0.0	0.0	0.5	0.5												good

Tensile Test

Location	Direction	Yield Strength Rp0.2			Tensile Strength	YS/TS	Elongation	Reduction Area
		KSI			KSI		A(%)	Z(%)
Mid-Radius	longitudinal	86.294			104.714		25.5	69

Hardness

OD	Mid-radius	Core	max. deviation	Mid-Radius
			HRC	

Hardness

Mid-Radius		OD	Mid-radius	Surface hadness
HBW		HBW	HBW	HBW
232				223-235
231				
230				

Charpy V Notch Test

Location	Direction	Temp	Energy 1	Energy 2	Energy 3	Energy AVG	Shear 1	Shear 2	Shear 3	Late 1	
			ft-lbs	ft-lbs	ft-lbs	ft-lbs	(%)	(%)	(%)	(mm)	
Mid-Radius	longitudinal	-4°F	121	117	115	118	83	85	87	1.725	1
Mid-Radius	transverse	-4°F	56	61	54	57	82	84	88	0.850	0
Mid-Radius	longitudinal	-76°F	84	100	77	87	70	75	73	1.225	1
Mid-Radius	transverse	-76°F	34	23	27	28	42	47	51	0.550	0

Inspection information				customer's specification	QTC Size	anti-corrosion test	Residual magnetic field (GS)
Tensile Diameter	Gauge Length	Charpy Impact Size	According to:				
0.5"	4D	10X10(mm)	ASTM E381,ASTM E8,ASTM E23,ASTM E45,ASTM E112,	HQA-001 Rev 10			

NDT(Non-destructive Test)

Ultrasonic Test standard	testing level	external imperfection	internal imperfection	conclusion	Eddy Current Test standard	testing level	conclusion	Magn stand-ard	te
ASTM A388	API 6A PSL3 & 4			good					

Normalizing Temperature(℃)	Time(min)	Cooling Method	Austenitizing Temperature (℃)	Time(min)	Cooling Method	Temperature of Quench Media Starting(℃)	Finishing(℃)	Tempering Temperature(℃)	Time(min)	Cooling Method	Furnace hearth survey & calibration type	Check Time	Check Standard	Stress Relieve Temp(℃)	Time(min)	Proces
870	91	air cooling	860	119	water cooling	30	33	655	146	air cooling	continuous	2018.12.09	AMS-2750			

Note: (1) No impermissible macro-structural defects, such as flakes, subsurface bubbles and pipes are available.This material is free from mercury and radioactivity. No welding repair.
(2) When there is any complaint, you are kindly requested to match the Steel Grade, Heat No., Size, Delivery Date, Causes and reserve the material in the condition of delivery
(3) Our company's quality management system has been certified by TÜV SÜD for fulfilling all requirements of ISO9001:2015&IATF16949:2016&AS9100D.
The sample for mechanical property were taken from the 20" long prolongation part of the bar under delivery status.Furnace monitoring method:furnace atmosphere thermocouples; Free from radioactivity and mercury.Delivered stress free.No welding repair.Acc.to the latest version of ASTM A29,A370,A322,A751, A255,A380; E381,E112,E45,E8,E23,E10;UT test acc. to ASTM A388,API6A PSL 3&4. The NDT personnel meet ISO 11484 certification qualifications.

Signature of quality assurance manager: Liu Guan

Date: 2019-01-0

TEXAS HEAT TREATING, INC.
REGIONAL HEAT TREATING CENTER
155 Texas Ave
Round Rock, TX 78664
(512) 255-5884
5003 North Freeway
Ft. Worth, TX 76106
(972) 263-9755

Heat Treating and Testing performed at Ft. Worth location

AS9100D / ISO 9001:2015 certified quality system

ISO 17025:2017 accredited laboratory

ACCREDITED

CERTIFICATION

Work Order: 425680
Certification ID: 425680-1
Date: 7/7/2023
Page: 1 of 1

o: Short Bit & Tool Co.
225 Gold Street
Garland, TX 75042 USA

Purchase Order No:	8026593E
Material:	4130

Spec(s):

Container Type	/	Qty
Plastic Crate w/Ammo Cans	/	1

Quantity	Part Number / Part Name / Part Description	Pounds
50	2375 PAC 2-3/8" PAC PINS **Heat Code #:** 8026593E	700

Heat Treating Details:

Austenitizing Furnace: 2146
Temper: 2135

Certification Statement:

Process: 4130-Atmos Harden-32:35 HRC-%-0:2.5 in-%-FW
In Accordance with Spec(s): Customer PO

Inspection Type	Units / Scale	Minimum Req.	Maximum Req.	Results	Qty Tested	Date / Comments
Surface Hardness - HRC (Method: E18)	HRC	32.0	35.0	33.4 , 34.1	3	Date Tested 07/03/2023
Tensile Strength (Method: E8/E8M)	KSI	0.000	156.000	140.500 , 140.500	1	Date Tested: 7-06-2023
Yield Strength, 0.2% Offset (Method: E8/E8M)	KSI	0.000		123.200 , 123.200	1	
Elongation (Method: E8/E8M)	%	0.000		17.600 , 17.600	1	1" Initial Gauge
Reduction of Area, % (Method E8/E8M)	%	0.000		63.900 , 63.900	1	0.248"

IMPORTANT STATEMENT:

All test specimens and testing conform to applicable ASTM Standards, unless otherwise specified per written customer requirement. Results apply to the sample(s) tested and/or inspected and are not necessarily indicative of the quality of apparently identical or similar products and do not extend to the lot or batch from which tested components were drawn. The information in this Certification is intended for the use of Texas Heat Treating's client and may not be published or reproduced, except in full, without Texas Heat Treating's expressed consent. Texas Heat Treating accepts no responsibility or liability for results due to non-representative test items, improper sampling, insufficient testing, or misinformation. Material submitted to Metallurgical Lab will be discarded after 30 days, excepts by prior written agreement. Inspection Types designated with an "*" are not included in the THT scope of accreditation for ISO 17025:2017.

William Weed
Quality Manager
Texas Heat Treating, Inc.

4,552-4,652
SXR
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