



SERIAL NUMBER: 11-054
11-055 COOK DATE:

MOLD SIZE BY

ORDER DATE 20 FEB 18 SHIP DATE: 05 MAR 18 PO

FOR 5LB SIZE 5.875 TYPE SK

THREAD 2 3/8 DAC OTHER

MATRIX (H) WEIGHT

MATRIX (S) WEIGHT

BINDER WEIGHT

BLANK TJ

BILLET D17 103910 TUBE

WELD BY MPI BY MPI PIC

THREAD GAGE STAND OFF .625

NOTES

FINAL DIAMOND GRIND SIZE

LENGTH TO WELD /

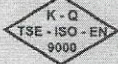
FINISHED PIC TAKEN BY SHIPPED BY DATE:

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

5.50 in 4140 D1713396



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KALİTE BELGESİ

QUALITY CERTIFICATE / MILL TEST CERTIFICATE



Customer	COMMERCIAL METALS COMPANY	Date	18.08.2017
Heat no	D1713396	Quality	SAE 4140 P110
Dimension	RD 5,50 inch	Weight	120.075 LB
Your Order No	71798_17-303/10	Number of bars	72
Our Order No	1200003361 / 000010	Doc. Norm / Number	EN 10204/3.1 - 1708513
Casting type	Ingot Cast.	Reduction Ratio	15.4 /1

Product

HOT ROLLED, QUENCHED & TEMPERED AND STRESS RELIEVED STEEL BARS
ACC. TO CMC DALLAS TRADING TD-PUR-411 (01/09/17), YPX-17/055,
LATEST EDITIONS OF ASTM A29, A434 BD, A370, A388, A322, AMS 2301, E112, E350, E381, API 6A PSL3, API 16A & PED
WE CERTIFY THAT THE MATERIAL IS AN ALLOY STEEL

Steelmaking Process:

Electric Arc Furnace/EAF, Ladle Furnace/LF, Vacuum Degassing/VD

Ladle Chemical Composition (%)

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	Cu	Sn	V	Nb	H	Ca
Min	0,40	0,15	0,75		0,005	0,90	0,18		0,010						
Max	0,43	0,35	1,00	0,025	0,025	1,10	0,25	0,25	0,040	0,35	0,035	0,050	0,035	0,00025	
Sample	0,42	0,31	0,94	0,009	0,012	1,07	0,24	0,20	0,025	0,17	0,009	0,036	0,030	0,00008	0,0019

Hardness

Customer Req.		Asil Çelik Result		Unit	Test Loc.
Min	Max	Hardness			
285	341	331		HB	SURFACE
285	341	331		HB	1"
285		302		HB	MIDRADIUS

Mechanical Properties (Required)

Test	Min	Max	Unit	Test Loc.	Temp.	Direction	Notch Type	Result-1
Yield strength (%0,2)	110000	140000	Psi	MIDRADIUS				130113
Yield strength (EUL %0,6)			Psi	MIDRADIUS				130113
Tensile Strength	140000		Psi	MIDRADIUS				147375
Elongation	15		%	MIDRADIUS				16,80
Reduction	45		%	MIDRADIUS				45,80
Shear (%)			%	MIDRADIUS	70 °F	Longitudinal		60
Shear (%)			%	MIDRADIUS	-20 °F	Longitudinal		40
Shear (%)			%	MIDRADIUS	14 °F	Longitudinal		40
Lateral Expansion (mm)			mm	MIDRADIUS	70 °F	Longitudinal		0,83
Lateral Expansion (mm)			mm	MIDRADIUS	-20 °F	Longitudinal		0,58
Lateral Expansion (mm)			mm	MIDRADIUS	14 °F	Longitudinal		0,57
Impact Strength-1	30		ft-lbs	MIDRADIUS	70 °F	Longitudinal	ISO-V	60,48
Impact Strength-2	30		ft-lbs	MIDRADIUS	70 °F	Longitudinal	ISO-V	63,43
Impact Strength-3	30		ft-lbs	MIDRADIUS	70 °F	Longitudinal	ISO-V	61,96
Impact Strength-Average	40		ft-lbs	MIDRADIUS	70 °F	Longitudinal	ISO-V	61,96
Impact Strength-1	15		ft-lbs	MIDRADIUS	-20 °F	Longitudinal	ISO-V	41,30
Impact Strength-2	15		ft-lbs	MIDRADIUS	-20 °F	Longitudinal	ISO-V	38,35
Impact Strength-3	15		ft-lbs	MIDRADIUS	-20 °F	Longitudinal	ISO-V	39,83
Impact Strength-Average	20		ft-lbs	MIDRADIUS	-20 °F	Longitudinal	ISO-V	39,83
Impact Strength-1	15		ft-lbs	MIDRADIUS	14 °F	Longitudinal	ISO-V	39,68
Impact Strength-2	15		ft-lbs	MIDRADIUS	14 °F	Longitudinal	ISO-V	37,74
Impact Strength-3	15		ft-lbs	MIDRADIUS	14 °F	Longitudinal	ISO-V	40,47
Impact Strength-Average	22		ft-lbs	MIDRADIUS	14 °F	Longitudinal	ISO-V	39,30

Metallography Tests (Required)

Test	Min	Max	Unit	Standard	Result-1
A Thin		2,5		ASTM E45A	1,41
A Heavy		2		ASTM E45A	1,08
B Thin		2,5		ASTM E45A	0,33
B Heavy		1,5		ASTM E45A	0,00
C Thin		2		ASTM E45A	0,00
C Heavy		1,5		ASTM E45A	0,00
D Thin		2		ASTM E45A	1,00
D Heavy		1,5		ASTM E45A	0,50
Austenite Grain Size		5		ASTM E112	8

Microstructure Tests (Required)

Test	Min	Max	Unit	Result-1
Macroetching-S		2		1
Macroetching-R		2		1
Macroetching-C		3		1

Heat Treatment Parameters

QUENCH TEMPERATURES AT START & FINISH: 100 & 120 °F

COOLING MEDIA: AIR / QUENCH MEDIA: POLYMER

AUSTENITIZING TEMP. / TIME:	1580 °F	4,13	HOURS
TEMPERING TEMP. / TIME:	1166 °F	5,50	HOURS
STRESS RELIEVE TEMP. / TIME:	932 °F	4,13	HOURS

Special Chemical Analysis Requests

Formula	Min	Max	Unit	Value
DI (ASTM A255-10)	5	0		7,56
P+S	0	0,04		0,021

MECHANICAL PROPERTIES TAKEN FROM PROLONGATION

LENGTH OF PROLONGATION : 20 cm / TENSILE SPECIMEN : RND, 12,5 mm

GAGE LENGTH (%) : 2 inch / FBH SIZE MAX. 3,2 mm & RESULTS WERE OK.

IMPACT TEST SPECIMEN : 10x10x55mm / COUNTRY OF ORIGIN : TURKEY

METHOD OF MONITORING TEMPERATURE : FURNACE TYPE THERMOCOUPLE / FURNACE CALIBRATION : AMS 2750

ULTRASONIC TESTING 100 %-ASTM A-388/SA 388-07, AFTER Q&T+SR ACCEPTANCE CRITERIA

API 6A/ISO 10423 PSL 3 & 100 % MIX-UP CONTROLLED & SURFACE CRACK TESTED & RESULTS WERE OK.

"FREE FROM RADIOACTIVITY & FREE FROM MERCURY. NO WELD REPAIR PERFORMED"

"WE HEREBY CERTIFY, MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF ORDER CONTRACT"

Approved by

Mert ÜLKER

33.23.168.A4 (1)

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gözetilmiştir