

3" 9Cr1Mo



By John at 11:20 am, Jul 06, 2017



Grade		Batch No.		Heat No.		Size		Pieces		Bundles		Weight (MT)		Total Length(FT)		Manufacture Process		Delivery Condition quenched and tempered												
9Cr-1Mo		H617068550		7050285M		3"		31		4		6.38		S89.924		EAF+LF+VD+IC														
Chemical Composition (Wt %)																														
C	Mn	Si	P	S	Cr	Ni	Mo	Cu	W	Al	V	Nb	Ti	Ca	B	As	Sn	Pb	Sb	Zn	Zr	Co	Cd	[N]	[O]	[H]	DI	Hard factor	CEV / CEI	
Min	0.09	0.30	0.25	0	0	8.00	0	0.90	0																					
Max	0.15	0.50	0.60	0.020	0.010	10.00	0.50	1.10	0.25																					
Ladle	0.12	0.44	0.36	0.009	0.004	8.74	0.22	0.95	0.04																					
Product																														
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Macrostructure Examination(Level)					Non-metallic inclusion (Level)								K4 Method Oxides	Ds	Microstructure		Jominy Test (ASTM A255 HRC-1/16 inch)						Hydrostatic Pressure Test			Drift result	Dimensional inspection	Visual examination		
S		R		C		A		B		C		D				Grain Size ASTM E112 9-8	Decarburizing Layer								time	pressure	conclusion		good	good
																	pcs mm													
Mechanical Properties(ASTM E8)					Quadrant hardness				Hardness(ASTM E10)				Charpy Impact Test(ASTM E23)																	
Yield Strength		Tensile Strength		Elongation	Reduction Area		Mid WALL	ID	OD	max. deviation	1/2 R from surface	1/2 R from surface	Surface	Longitudinal 10*10(mm)								Charpy								
(KSI)	(KSI)	YS/TS	A(%)	Z(%)	(HRC)	(HRC)	(HRC)		HBW	HRC	(HBW)	14.00(F)	Shear	Lateral Expansion	(F)	Shear	Lateral Expansion	(F)	Shear	Lateral Expansion	(F)	Shear	Lateral Expansion	(F)	Shear	Lateral Expansion				
87.290	Rp0.2	105.850	24.5	71					235	21.0																				
												(ft-lbs)	(%)	(mm)	(ft-lbs)	(%)	(mm)	(ft-lbs)	(%)	(mm)	(ft-lbs)	(%)	(mm)	(ft-lbs)	(%)	(mm)				
89.610	Rp0.5											116	100	1.675																
												119	100	1.725																
												122	100	1.725																
Mechanical Properties Inspection				Depth of specimens		Gauge Length	Tensile	Diameter	Reduction Ratio	customer's specification		QTC Size	Radio-activity	Residual magnetic field	NDT(Non-destructive Test)															
Standard	Location	Direction													Ultrasonic Test					Eddy Current Test		Magnetic Particle Test								
															standard	testing level	external imperfection	internal imperfection	conclusion	standar d	testing level	conclusion	stand-ard	testing level	conclusion					
ASTM A370	1/2 R from surface	Longitudinal				4D	0.5"	56.6							ASTMA3 88	API6A PSL 3			good											
Normalizing			Quenching			Temperature of Quench Media			Tempering			Furnace hearth survey & calibration			Stress Relieve			Quality System												
Temperature(C)	Time(min)	Cooling Method	Temperature(C)	Time(min)	Cooling Method	Startling(C)		Finishing(C)	Temperature(C)	Time(min)	Cooling Method	Time	Standard	AMS-2750	Temp(C)	Time(min)	Process alternate	ISO 9001:2008, ISO/TS 16949												
			920	100	water cooling	10		14	735	200	air cooling	2017-02-09			705	200														

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 mark 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 ISO9001:2008, ISO/TS 16949.
(4) Straightening: cold rotary straightening

Signature of quality assurance manager: ZhangZhiCheng
Date: 2017-05-27

Certificate of Conformance



Houston Plating & Coatings, LLC.
Houston Plating & Coatings, LLC.
Electroless Nickel Plating / Spray Coatings

1301 Georgia St.
South Houston, TX 77587
Phone: (713) 946-8920
Fax: (713) 946-8487
www.houstonplating.com

Customer:	P. O. Number:	Order No:
B & T OILFIELD PRODUCTS	603489	563343
BFBF-02500-09		7
BFBF-03000-06		6
BIHB-02250-09		13
BIHB-02310-09		7
BIHB-02750-09		13
BIHB-03680-09		4
BIHB-01865-09		7
BIHO-01865-09		13
FBPM-02310-09		4
FBPN-02750-09		4
GBBO-01870-09		6
GBBO-02250-09		8
GBBO-02560-09		4
GBBO-02750-09		7
GBBO-03688-09		5
RBPM-02250-09		4
RBPM-02750-09		4
XLEM-01875-09		100
XLEM-01875-09		100

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Customer:	P. O. Number:	Order No:
B & T OILFIELD PRODUCTS	603489	563343

Process Date: 10/27/2017

Expiration Date: NA

Process Required: QPQ- Liquid Nitriding

To Spec: HPC Proc 11.0 Rev 10

Manufacture DELAMIN

Batch No: 102717

Cure Time/Temp: 1075°F FOR 2HRS

DFT: NA

ENPMils: NA

Notes:

KQ500: 750°F FOR 30 MIN.
VISUAL INSPECTION: PASS

Quality, Assurance Manual Rev: 15 Date: 07/2017

DATE: 10/27/2017 SIGNATURE:

Country of Origin: U.S.A.

Alberto Landois