

## BAKER WASHER 9-CHROME



DAYE SPECIAL STEEL CO., LTD.  
NO. 316 HUANGSHI AVENUE, HUANGSHI, HUBEI, CHINA PC:435000  
**QUALITY CERTIFICATE**  
ACC TO EN10204 3.1



INVOICE NO: GBUSA14056FEAC

DESCRIPTION OF GOODS: HOT ROLLED AND QT STEEL ROUND BARS

FORTIS ALLIANCE PO NO.: 141-4757, EA PO#: 1043926 OP, EA SPEC: EAGL-600 REV.5, HTS CODE: 72283090

Grade	Batch No.	Heat No.	Size	Pieces	Bundles	Weight (MT)	Total Length(FT)	Manufacture Process	Delivery Condition
9Cr-1Mo 80KSI	H614115240	40509640	3"	23	3	4.314	528.241	EAF+LF+VD+IC	quenched and tempered

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
Min	0.09	0.30	0.25	0	0	8.00	0	0.90	0													
Max	0.15	0.60	1.00	0.020	0.010	10.00	0.50	1.10	0.30													
Ladle	0.10	0.44	0.32	0.013	0.003	8.71	0.23	0.93	0.03													
Product1																						
Product2																						

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	Dimen- sional inspection	Visual examina- tion	
			A		B		C		D				Grain Size	Decarburizing Layer						time	pressure				conclusion
S	R	C	T	H	T	H	T	H	T	H															
												ASTM E112	pcs	mm											
												8-7													
																									</

Mechanical Properties					Quadrant hardness				Hardness(ASTM A370)				Charpy Impact Test(ASTM E23)												
Yield Strength		Tensile Strength	YS/TS	Elongation	Reduction Area	Mid WALL	ID	OD	max. deviation		1/2 R from surface		Surface	Longitudinal 10*10(mm)						Charpy Impact Test(ASTM E23)					
(KSI)		(KSI)		A(%)	Z(%)	(HRC)	(HRC)	(HRC)			HRC		(HBW)	14.00(°F)	Shear	Lateral Expansion	73.40(°F)	Shear	Lateral Expansion	(°F)	Shear	Lateral Expansion	(°F)	Shear	Lateral Expansion
85.115	Rp0.2	103.530		23.0	73						18.5		228	(ft-lbs)	(%)	(mm)	(ft-lbs)	(%)	(mm)	(ft-lbs)	(%)	(mm)	(ft-lbs)	(%)	(mm)
														55	100	0.86	105	100	1.52						
87.870	Rp0.5													47	100	0.8	116	100	1.68						
														53	100	0.84	121	100	1.73						

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)								
											Ultrasonic Test				Eddy Current Test			Magnetic Particle Test	
Standard	Location	Direction									standard	testing level	external imperfection	internal imperfection	conclusion	standard	testing level	conclusion	stand-ard
ASTM A370	1/2 R from surface	Longitudinal									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	Starting(°C)	Finishing(°C)	Temperature(°C)	Time(min)	Cooling Method	Time	Standard	Temp(°C)	Time(min)	Process	
			930	90	water cooling	25	29	665	180	air cooling						
																ISO9001:2008, ISO/TS 16949

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.  
Non-straightening

Signature of quality assurance manager: Liu Guanghui  
Date: 2014-07-28