

MATERIAL TEST CERTIFICATE

(EN 10204 - 3.1)



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Certificate No. : FT202009-004-001
Date : 2020/09/01
P.O No. : 253131
MPS. No. :

Felix MR No. : O202002-007 Rev.1
Mat'l Specification : ASTM A182 F304/304L-19/ASME SA182 F304/304L-2019ED
Customer : TEXAS PIPE & SUPPLY COMPANY, LTD.
Project Name :

Description	Total Q'ty : 865 EA Q'ty (EA)	Lot No	Spec Max Min	Tensile Test * 1				Hardness (HB)	Impact Test			Bend Test	Material Code		
				Specimen		Y.S	T.S		E.L	R.A	Temp.			Notch	Unit
				D	G.L	MPa			%		-196℃			2V	J
											Size : 10x10x55(mm)				
4 B16.5 #150 WN RF 1 1/4" SCH40S	320	CS13A4(T2)	T	6.25	25.0	343.3	584.7	58.8	82.6	147 / 151	147.2	169.3	153.6	156.7	
11 B16.5 #150 SO RF 1 1/2"	500														
15 B16.5 #150 BL RF 1 1/2"	45														
*****											BLANK		*****		

Heat No	Spec	Chemical Composition(%) * 3													REMARK
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Al	
		Min	-	-	-	-	8.0	18.0					0.10		
S26321	Max	0.030	1.00	2.00	0.045	0.030	11.0	20.0					0.0825		
	H	0.028	0.374	1.853	0.0284	0.0198	9.011	18.327							
	P														

REMARK
No repair welding was performed on the products.
Mercury Free, Radioactive Free
NACE MR0103/ISO 17945-2015 & MR0175/ISO 15156-2015
-22HRC Max. (=237HB)
Country of Melling : Republic of Korea / E.A.F+A.O.D
Country of Forging : Republic of Korea
ISO 9001:2015 - Cert' No. 153040-2014-AQ-KOR-RvA (By DNV GL)
ISO 9001:2015 - Cert' No. 5591-2014-CE-KOR Rev.1 (By DNV GL)
PED:2014/68/EU - Cert' No.5591-2014-CE-KOR Rev.1 (By DNV GL)

Heat Treatment *4 S : 1050℃ X 2Hrs W.C	Dimension & Visual	NDE		
		UT	MT	PT
		ACCEPT	N/A (N/A)	N/A (N/A)

We hereby certify that the material herein has been manufactured, tested and inspected in accordance with the above specification.

Surveyor

 Manager / Q.C Team

Notes :

- ※1 -- Tensile Test : Y.S=Yield Strength, T.S=Tensile Strength, E.L=Elongation, R.A=Reduction of Area, G.L=Gauge Length(mm), D=Diameter(φ)
- ※2 -- Location : L=Longitudinal, Tr=Transverse, T=Tangential, R=Radial, U=Hubbed Tension Test 6.25×25.0mm (ASME SEC VIII Div.1 PARA UW-13.3)
- ※3 -- Chemical Composition : H=Heat Analysis, P=Product Analysis
- ※4 -- Heat Treatment : N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S=Solution Treated, S.R=Stress Relieved, S.T=Stabilization Heat Treatment, A.C=Air Cooled, W.C=Water Cooled, F.C=Furnace Cooled, O.C=Oil Cooled, AC.C=Accelerated Cooled By Water

CE : C + (Mn/6) + (Cr+Mo+V)/5 + (Ni+Cu)/15