

# CERTIFICATE OF MATERIAL

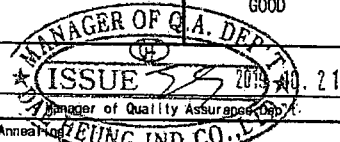
( EN10204 ; 2004 3.1 )

Customer : Spec. For Material : A/SA182 F316/316L+FACE (2017ED)	Project : #2	P.O No.: 6000163-00	Heat Treatment #1																																																						
Heat No. & Lot No. OUTOKUMPU (E180900-95068)	Chemical Composition (%)		DH180608-42 S.T:1055°C X 8 HRS-W.C																																																						
Raw Certificate No. : M030C805NU00018	<table border="1"> <tr> <th>Spec.</th> <th>C</th> <th>Si</th> <th>Mn</th> <th>P</th> <th>S</th> <th>Ni</th> <th>Cr</th> <th>Mo</th> <th>V</th> <th>Cu</th> <th>Nb</th> <th>Al</th> <th>W</th> <th>Ti</th> <th>N</th> <th>Ceq</th> <th>Co</th> </tr> <tr> <td>Min.</td> <td>0.030</td> <td>1.00</td> <td>2.00</td> <td>0.045</td> <td>0.030</td> <td>14.0</td> <td>18.0</td> <td>3.00</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.10</td> <td></td> <td></td> </tr> <tr> <td>Max.</td> <td>0.014</td> <td>0.35</td> <td>1.50</td> <td>0.031</td> <td>0.001</td> <td>16.0</td> <td>16.40</td> <td>2.03</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.085</td> <td></td> <td>0.355</td> </tr> </table>		Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	V	Cu	Nb	Al	W	Ti	N	Ceq	Co	Min.	0.030	1.00	2.00	0.045	0.030	14.0	18.0	3.00							0.10			Max.	0.014	0.35	1.50	0.031	0.001	16.0	16.40	2.03							0.085		0.355	
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Direction	Specimen		Spec	Tension Test				Hardness (HBW)	Charpy Impact Test (10*10*55mm)			Bending Test	Dimensional Inspection
	Dia. mm	Gage Length mm		Yield Strength MPa	Tensile Strength MPa	Elongation %	Red. of Area %		Individual MIN.	Average MIN.	Notch Type		
#3	12.5	50.0	Min.	205	515	30	50	237	Test Result				GOOD
L	12.5	50.0	Max.	267	539	43	71	162,163	2	3	Ave.	Temp.	Visual Inspection

No.	Dimension	Description	Q. Ty.	Item No. / POR No.	Remark	Inspection
13	B16.5 150# BL RF 1/2"		25 EA		NACE MR0175/ISO 15156/MR0103/ISO 17945 (2016ED)	Magnetic Particle Examination
14	B16.5 150# BL RF 1 1/4"		10 EA		No repair welding	Ultrasonic Examination
15	B16.5 150# BL RF 1 1/2"		25 EA		PED 2014/68/EU (Cert No.:CE-PED-MW-DHI-001-17-KOR)	N/A
16	B16.5 150# BL RF 12"		5 EA		ISO 9001:2015 (Cert No.:10BK00980)	Liquid Penetrant Examination
17	B16.5 150# BL RF 1"		50 EA		Melting process : EAF+VD	N/A
39	B16.5 150# LJ 1/2"		50 EA			P.M.I
41	B16.5 150# LJ 1 1/4"		10 EA			GOOD
42	B16.5 150# LJ 1 1/2"		50 EA			
43	B16.5 150# LJ 1"		100 EA			
61	B16.5 150# SO RF 1/2"		25 EA			
63	B16.5 150# SO RF 1 1/2"		50 EA			
64	B16.5 150# SO RF 12"		15 EA			

We here by certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.



Notes : #1 Heat Treatment : N = Normalizing A = Annealing Q = Quenching T = Tempering R : Stress Relieving S : Solution Treatment SA = Solution Annealing  
 STA = Stabilized Annealed O = Other QT = Quenching Tempering Z = Stabilization NT = Normalizing Tempering  
 A.C = Air Cooled W.C = Water Cooled F.C = Furnace Cooled D.C = Oil Cooled .R.C = Rapid Air Cooling S.A = Solution Annealing W.Q = Water Quenched  
 #2 TR : Trace  
 #3 Direction : C-Crosswise L=Longitudinal Tr=Transverse T=Tangential R=Radial U=UW-13(Direction Parallel to the Axis of the Vessel)

Stock 4725113 05/19/2020  
 SSFLANGE 1-1/2IN 150# 316 SS BLIND  
 FLANGE IMPORT