



DAE HEUNG IND. CO., LTD.
 #135, Gimhae-daero 974Seon-gil, Hallim-myeon,
 Gimhae-si, Gyeongsangnam-do, 621-873, Korea
 Tel: +82-(0)55-310-6700, Fax: +82-(0)55-310-6740

CERTIFICATE OF MATERIAL

(EN10204 ; 2004 3.1)

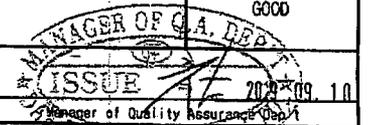
Certificate No. : DH-201909-241
 Date : 2019/09/10
 Page : 1 of 1

| | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------|-------------------|-------|-------|-------|------|------|------|---|----|---|----|----|---|----|------|----|----|
| Customs | Project: | PO No.: 6000180-00 | Heat Treatment #1 | | | | | | | | | | | | | | | | |
| Spec. For Material : A/SA182 F316/316L+NACE (2017ED) | Chemical Composition (%) | | | | | | | | | | | Heat Treatment #1 DH190616-32 S.T:1055°C X 9.75 HRS-W.C | | | | | | | |
| | Spec. | C | Si | Mn | P | S | Ni | Cr | Mo | V | Cu | | Nb | Al | W | Ti | N | Ca | Co |
| | Min. | 0.030 | 1.00 | 2.00 | 0.045 | 0.030 | 10.0 | 18.0 | 2.00 | | | | | | | | 0.10 | | |
| Heat No. & Lot No. OUTOKUMPU ET80463-95168 | Max. | 0.018 | 0.045 | 0.030 | 0.002 | 0.014 | 0.05 | 0.03 | | | | | | | | | | | |
| Raw Certificate No. : M88TB1802NU00057 | H | 0.018 | 0.045 | 0.030 | 0.002 | 0.014 | 0.05 | 0.03 | | | | | | | | | | | |

| 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 % | | Ind. Actual | Average MIN. | Notch Type | | |
| #3 | 12.5 | 50.0 | Min. Max. | 205 | 515 | 30 | 50 | 237 | Test Result | | | | GOOD |
| L | 12.5 | 50.0 | | 265 | 547 | 42 | 73 | 160,163 | 2 | 3 | Ave. | Temp. | Visual Inspection |
| | | | | | | | | | | | | | GOOD |

| No. | Description | Qty | Item No./POB No. | Remark | Examination |
|-----|-----------------------------|-------|------------------|--|------------------------------|
| 10 | B16.5 150# BL RF 3/4" | 15 EA | | | N/A |
| 16 | B16.5 150# BL RF 3" | 50 EA | | NACE MR0175/ISO 15848/MR0103/ISO 17945 (2015ED) | Ultrasonic Examination |
| 26 | B16.5 150# LJ 3" | 25 EA | | No repair welding | |
| 28 | B16.5 300# LJ 3" | 15 EA | | | N/A |
| 42 | B16.5 150# SO RF 3/4" | 25 EA | | PED 2014/68/EU (Cert No.:CE-PED-MW-DHI-001-17-KOR) | Liquid Penetrant Examination |
| 49 | B16.5 150# SO RF 3" | 30 EA | | ISO 9001:2015 (Cert No.:108K00980) | |
| 61 | B16.5 300# SO RF 3" | 25 EA | | | N/A |
| 77 | B16.5 150# THREAD RF 3" | 25 EA | | Welding process : EAF+VD | P.M.I |
| 86 | B16.5 150# WN RF 3/4" S/80S | 25 EA | | | |
| 93 | B16.5 150# WN RF 3" S/10S | 25 EA | | | |
| 94 | B16.5 150# WN RF 3" S/40S | 50 EA | | | |
| 101 | B16.5 300# WN RF 3/4" S/80S | 50 EA | | | GOOD |

We hereby 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
 #2 TR : Trace A.C = Air Cooled W.C = Water Cooled F.C = Furnace Cooled O.C = Oil Cooled R.C = Rapid Air Cooling S.A = Solution Annealing W.Q = Water Quenched
 #3 Direction : C=Crosswise L=Longitudinal T=Transverse T=Tangential R=Radial U=U-18(Direction Parallel to the Axis of the Vessel)

Stock 4725111 07/23/2020
 SSFLANGE 3/4IN 150# 316 SS BLIND
 FLANGE IMPORT