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**CHANDAN STEEL LIMITED**  
 (GOVT. OF INDIA RECOGNISED EXPORT HOUSE)

ISO 9001 : 2015 CERTIFICATE No. 04 100 011022

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**INSPECTION CERTIFICATE 3.1**  
 ACCORDING TO EN 10204

VAN LEEUWEN STAINLESS	Test Certificate No.	: EXP/ 00188-01 / 2018-19
Industrieweg 26,	Date of Issue	: 31.05.2018
PO Box 19,	P.O. No.	: 3472923
NL - 4153 ZG BRESD NETHERLAND	Invoice No. & Date	: EXP/ 00188/2018-19 Dtd.31.05.2018

**ITEM DESCRIPTION**  
**STAINLESS STEEL FORGED & FULLY MACHINED FLANGES**

SR NO.	Article No.	Heat No.	Pcs	Box No.	Wt.Kgs	Grade	Size Description	Process Route
46	158953	CH-7865	205	1	96.35	1.4401/1.4404/F316/316L	1/2" THDRF 150 LBS	Electric Induction Melting, A.O.D. Refining Continuous Casting & Hot Forging.
93	158935	CH-7865	53	1	38.16	1.4401/1.4404/F316/316L	1/2" SWRF 300 LBS S40S	
181	158717	CH-7831	41	1	22.96	1.4401/1.4404/F316/316L	1/2" WNRF 150 LBS S10S	
182	158740	CH-8175	7	1	53.06	1.4401/1.4404/F316/316L	4" WNRF 150 LBS S10S	
78	158457	CH-8205	98	2	542.92	1.4401/1.4404/F316/316L	4" SCRF 150 LBS	

**CHEMICAL COMPOSITION (Weight %)**

SR NO.	Article No.	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Ti	N	OTHERS
46	158953	0.021	0.43	1.68	0.040	0.010	16.70	2.03	10.07	-	-	0.072	-
93	158935	0.021	0.43	1.68	0.040	0.010	16.70	2.03	10.07	-	-	0.072	-
181	158717	0.025	0.42	1.86	0.040	0.010	16.97	2.04	10.03	-	-	0.073	-
182	158740	0.027	0.44	1.82	0.039	0.010	16.61	2.06	10.09	-	-	0.060	-
78	158457	0.028	0.46	1.70	0.040	0.015	16.70	2.04	10.12	-	-	0.070	-

**MECHANICAL PROPERTIES**

SR NO.	Article No.	HEAT TREATMENT BATCH NO.	Yield Strength (N/mm <sup>2</sup> )		Tensile Strength N/mm <sup>2</sup> (R <sub>m</sub> )	% EL	% RA	Hardness (B.H.N.)	Charpy (V) Impact Test (2mm) at 20° C (Joules) Sample Size - 10 x 10 x 55mm			
			0.2% (R <sub>0.2</sub> )	1% (R <sub>0.1</sub> )					I	II	III	Avg.
46	158953	F1/017/1038	280	325	590	51	74	171-175	172	174	178	175
93	158935	F2/017/1269	282	317	595	52	73	172-176	160	162	161	161
181	158717	F1/017/0975	285	322	580	54	73	174-179	156	159	173	163
182	158740	F2/018/1438	283	321	596	50	71	173-177	170	172	168	170
78	158457	F2/018/1617	275	304	550	55	72	171-175	176	171	175	174

**Remarks:**

- Each heat treatment batch is having about 6000 Kgs of Weight.
- The material is solution annealed at minimum 1050 °C and water quenched.
- Material is free from mercury and radio-active contamination and is found within the limits of the background radiation.
- PMI test 100% found satisfactory.
- Micro Structure Reveals Austenitic grains with annealing twins and is free from carbide precipitation ( At 500 X ).
- Inter-Granular Corrosion Test (ASTM A262 - 15 (Pr.E)):- Satisfactory.
- The material conforms to EN 10222 - 5 - 2017, ASTM A 182 - 17, Section II, Part A-SA 182 - 15 & Dimension conforms to ASME B16.5-13 Specification.
- The material hardness conforms to NACR MR0175/ISO 15156-3:2015 & NACR MR0103-2015.
- Approved acc. To AD 2000-Merkblatt W0 by Certification Body for Pressure Equipment of TÜV NORD Systems (notified body, reg. no.:0045).
- Material Conforms to PED 2014/68/EU Clause 4.3 of Annex 1.
- Materials complies as per AD 2000 - Merkblatt W 2, W 9, W 10.
- Dimension checked & found satisfactory.
- Location of sample - Direction of test piece - Tangential, Test Temp - Room Temp., Shape of Test Piece (Size) - Round (200mm Length).

We hereby certify that, the material described herein,  
and supplied are in compliance with the requirements of the order.


 V. Y. NARAYAN,  
WORKS INSPECT

APPROVED

date 03-01-2019

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