# MAHARASHTRA SEAMLESS LIMITED

**WORKS (MILL) TEST CERTIFICATE**

**EN 10204 : 3.1B**

**QCF 20A**

Customer :
P.O.No : 12682 Dated: 28-FEB-22
OC/Loading slip no. : 66210079 ( Item No. 01 )
Specification : ASTM A106 Gr.B; API 5L Gr.B/X42 PSL-1
Process/Type of Pipe : Hot Finished seamless carbon steel pipes

OD X WT : 114.30 mm X 8.56 mm
Length Range : 20 - 20 Feet
Total Length : 4620 Feet ( 231 Pcs )
Material Code : [redacted]

Test Certificate No.: MSL-6/QC/0001E/2022
Date: 07 June 2022



**A) CHEMICAL COMPOSITION (%) - Reference standard ASTM A-751 & ASTM E-415**

| Sl No | Heat No | Test Unit | Analysis | C | Mn | Si | P | S | Cr | Mo | Ni | Cu | V | Nb | Ti | Nb+V | Nb+V+Ti | B | Ca | Al | N | Mn/C | Cu+Ni | CE Pcm | CE IIW | B) Special / supplementary Reqts. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Req. | Min. | % | | | 0.290 | 0.100 | | | | | | | | | | | | | | | | | | | | |
| | Max. | % | | 0.260 | 1.060 | 0.500 | 0.030 | 0.010 | 0.400 | 0.150 | 0.400 | 0.400 | 0.080 | 0.110 | 0.110 | | | | | | | | | | | |
| 1 | AB662 | | H | 0.170 | 1.000 | 0.250 | 0.012 | 0.004 | 0.031 | 0.0026 | 0.008 | 0.006 | 0.0011 | 0.0003 | 0.0025 | 0.0014 | 0.0039 | 0.0003 | - | 0.029 | - | 5.882 | 0.014 | - | 0.345 | |
| | | | P1 | 0.170 | 1.000 | 0.240 | 0.012 | 0.003 | 0.032 | 0.0016 | 0.007 | 0.007 | 0.0010 | 0.0002 | 0.0026 | 0.0012 | 0.0038 | 0.0003 | - | 0.030 | - | 5.882 | 0.014 | - | 0.345 | |
| | | | P2 | 0.180 | 0.990 | 0.260 | 0.013 | 0.005 | 0.031 | 0.0036 | 0.009 | 0.005 | 0.0012 | 0.0003 | 0.0027 | 0.0015 | 0.0042 | 0.0004 | - | 0.028 | - | 5.500 | 0.014 | - | 0.353 | |
| 2 | AB696 | | H | 0.170 | 1.030 | 0.260 | 0.014 | 0.004 | 0.018 | 0.0032 | 0.012 | 0.006 | 0.0012 | 0.0002 | 0.0022 | 0.0014 | 0.0036 | 0.0003 | - | 0.034 | - | 6.059 | 0.018 | - | 0.347 | |
| | | | P1 | 0.170 | 1.030 | 0.250 | 0.014 | 0.003 | 0.019 | 0.0022 | 0.011 | 0.007 | 0.0011 | 0.0003 | 0.0023 | 0.0014 | 0.0037 | 0.0003 | - | 0.035 | - | 6.059 | 0.018 | - | 0.347 | |
| | | | P2 | 0.180 | 1.020 | 0.270 | 0.015 | 0.005 | 0.018 | 0.0042 | 0.013 | 0.005 | 0.0013 | 0.0004 | 0.0024 | 0.0017 | 0.0041 | 0.0004 | - | 0.033 | - | 5.667 | 0.018 | - | 0.356 | |
| 3 | AB700 | | H | 0.170 | 1.040 | 0.200 | 0.012 | 0.004 | 0.015 | 0.0029 | 0.006 | 0.006 | 0.0011 | 0.0004 | 0.0017 | 0.0015 | 0.0032 | 0.0003 | - | 0.026 | - | 6.118 | 0.012 | - | 0.348 | |
| | | | P1 | 0.180 | 1.030 | 0.200 | 0.011 | 0.005 | 0.016 | 0.0039 | 0.007 | 0.007 | 0.0009 | 0.0003 | 0.0018 | 0.0012 | 0.0030 | 0.0002 | - | 0.027 | - | 5.722 | 0.014 | - | 0.357 | |
| | | | P2 | 0.170 | 1.050 | 0.190 | 0.012 | 0.003 | 0.015 | 0.0029 | 0.005 | 0.005 | 0.0012 | 0.0004 | 0.0019 | 0.0016 | 0.0035 | 0.0003 | - | 0.025 | - | 6.176 | 0.010 | - | 0.349 | |

**C) MECHANICAL PROPERTIES**

Reference standard ASTM 370 & E-8 — Tensile Testing ( Loc: Pipe Body) — G.L.=50 mm Nom. Width= 25.40 mm

Reference standard ASTM E-23 — CVN Impact Test ( Pipe Body) — Size & Orientation:

Reference standard ASTM E-18 — Through Wall Hardness (Pipe Body) — Hardness (HRB) — Transverse Direction

| Sl No. | Heat No. | Test Unit | Quantity Pcs | Quantity Feet | Name of the Steel Maker and Address/Supplier Heat No. | Orientn. | YST (Mpa) | UTS (Mpa) | YST/UTS Ratio | El (%) | Absorbed Energy (J) Temperature°C: 1 | 2 | 3 | Avg | % Shear Area 1 | 2 | 3 | Avg | OD 1 | 2 | 3 | 4 | Avg | Mid 1 | 2 | 3 | 4 | Avg | ID 1 | 2 | 3 | 4 | Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Req. | Min. | | | | | | 290 | 414 | | 30 | | | | | | | | | | | | | | | | | | | | | | |
| | Max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | AB662 | | 43 | 860 | JSPL, Chhattisgarh/ 3215345 | L | 357.86 | 478.44 | 0.75 | 37.80 | - | - | - | - | - | - | - | - | 74 | 75 | 75 | 74 | 74 | - | - | - | - | - | - | - | - | - | - |
| 2 | AB696 | | 138 | 2760 | JSPL, Chhattisgarh/ 2215424 | L | 348.52 | 496.29 | 0.70 | 36.62 | - | - | - | - | - | - | - | - | 77 | 78 | 78 | 78 | 78 | - | - | - | - | - | - | - | - | - | - |
| 3 | AB700 | | 50 | 1000 | JSPL, Chhattisgarh/ 2215410 | L | 345.78 | 494.39 | 0.70 | 37.34 | - | - | - | - | - | - | - | - | 79 | 78 | 79 | 79 | 79 | - | - | - | - | - | - | - | - | - | - |

| | | | |
|---|---|---|---|
| Raw Material | Fully killed & Fine Grain Practice | Dimension | Good |
| Steel Route | EAF-LRF-VD-CCM | Weight | Good |
| Hot Rolling Temp.°C | 880-940 | End Finish | Bevel |
| Heat Treatment | NA | Straightness | OK |
| Delivery Condition | R | Visual | OK |
| Norm./Temp. Temp(°C) | NA | Bend Test | NA |
| HIC | NA | SSC | NA |
| Inclusion Rating | NA | Hot Straight. Temp.°C | NA |

| | | | |
|---|---|---|---|
| NDE Method | Ultrasonic Testing - Good | End Area Inspection | OK |
| Location & Orientation | Longitudinal & Transverse Notch at OD & ID | Hydro Test Pressure | 2970 Psi |
| Type & Size of ReIndicator | 10% Notch X 50mm Length X 1.0mm Width | Holding Time | 5 Sec. |
| Residual Magnetism | 10 Gauss Max | End Protection | Plastic end cap |
| Field Weldability | NA | External Coating | Black Varnished |
| Flattening Test | OK | Flaring Test | NA |
| Micro Structure/Grain Size | Reveals fine Ferrite and pearlite /ASTM No. 7-8 | CTOD | NA |
| Colour Coding | NA | | |

D) Marking/Stenciling : MAHA ((M) MSL API 5L X-42 PSL-1 / ASTM A106 GR.B / NACE MR0175/MR0103(% S HARDNESS CONTROLLED) BE SMLS SRL OD 4.500 INCH X WT 0.337 INCH HFS HEAT NO.... + 2970 PSI + LENGTH...IN FEET + MADE IN INDIA + WEIGHT - 15.00 LB/FT + PO/SHIPPING MARK : "PO # 25436" + SLNO....

E) Remarks : 1) Matl Confirms to API 5L GR.B PSL-1 / X42 (EDN. 2018)/ ASTM/ASME A106 B (EDN. 2019a)/ SA106 B (EDN. 2021). 2) "Country of melt and pour : INDIA". 3) Revised TC Rev.01 Dtd. 01-08-2022.

Legends : T-Transverse, L-Longitudinal, YST-Yield Strength, UTS-Ultimate Tensile Strength, EL-Elongation, GL-Gauge Length, H-Heat , P1-Product 1, P2-Product 2, R-As Rolled, Q-Quenched & Tempered, N-Normalised, N&T-Normalised & Tempered, PE-Plain-end, BC-Buttress Thread Casing, LC-Long Round Thread Casing, SC-Short Round Thread Casing, NU-Non-upset tubing, EU-External Upset tubing, NA- Not Applicable

The material has been manufatured, sampled,tested and inspected and has been found conforming to the specification and PO

SEAL

FOR MAHARASHTRA SEAMLESS LTD
DEBTANU PAL - Asst. Engineer

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Warning : Modification or unauthorized use of this certification is strictly prohibited. Violation calls for criminal prosecution. For authenticity verification, you can contact us at: mslqc@mahaseam.com.