



A04

Tata Steel UK Limited

20" H.F.I Mill  
Brenda Road

Hartlepool Cleveland UK TS25 2EG

A01

Telephone: + 44 (0) 1429 266811  
Email: tubesalesUK@tatasteelurope.comINSPECTION CERTIFICATE  
EN10204 Type 3.1

A02

Date	27/07/23	Z02
Cert No.	280/2330/0427	A03
Del. Note		

Page No. 01 of 04

Customer	A06
TATA INTERNATIONAL METALS (AMERICAS) LIMITED	
475 NORTH MARTINGALE ROAD SUITE 400 SCHAUMBURG ILLINOIS 60173, USA	

Tata Steel Ref.No.	Sales	GXM433545	Works	9934	A08
Customer Order No.	P/O: PUR3002130. OF 30/MAR/23				
Product Description	HIGH FREQUENCY INDUCTION WELDED STEEL TUBES TO API 5L PSL2 46TH EDITION GRADE X65M. MEETS THE REQUIREMENTS OF EN ISO 15156-2 / NACE MR0175 ANNEX A.2 AND EN ISO 17945 / NACE MR0103 13.1.1.				B01-B04

Quality Management System  
Approved to ISO 9001

MADE IN UK

L=Longitudinal		T=Transverse		B=Body		W=Weld		KV=Charpy V-Notch		HV=Hardness Vickers(10Kg Load)		DT=Drop Weight Tear Test		Steel Making Process			
Item No.	Number of Pieces	Product Dimensions (in)		Cast/Heat No.	Pipe No.	Tensile Test					Impact/Hardness Tests					Other Tests	
		B06				B07		C01	C11	C12	C13	D02	C01	C40	C41		C03
						C02	Yield	Tensile	Elong	Hydro	C02	Test	Width	Temp	Values	Ave	C05-C09
						C10	Stress	Strength	A%	Pressure		Type	(mm)	(C)	FtLb	FtLb	D02-D09
							Re	Rm	2IN	(psi)							
BASIC OXYGEN STEEL																	
STEELMAKE/COIL ROLL: TATA STEEL UK COUNTRY OF MELT AND POUR = UK FLATTENING TEST SATISFACTORY ULTRASONIC TESTS SATISFACTORY TENSILE TEST PIECE: RECTANGULAR 330MM X 38.1MM X ACTUAL WALL THICK BODY CVN:20FT-LB AVE / 15FT-LB IND (MIN) OR REDUCED IN PROPORTION IF SUBSIZE. UT REF INDICATOR:OD/ID LONGITUDINAL NOTCHES N10. WELD SEAM NORMALISED 900C MIN. CE (PCM): 0.25% MAX IF C<= 0.12% CE (IIW): 0.43% MAX IF C> 0.12%																	

C71-C99	Analysis %	C	SI	MN	P	S	CR	MO	NI	AL	B	CU	N	CA	NB	SN	TI	V	CEV	PCM
Cast No.																				
7T23109	LADLE	.11	.26	1.48	.013	.003	.029	.001	.018	.041	.0003	.017	.0057	.001	.050	.016	.002	.055	.38	.21
7T23109	PROD	.12	.30	1.60	.011	.002	.026	.001	.017	.054	.0004	.013	.0071	.001	.048	.013	.002	.054	.40	.22
7T23109	PROD	.11	.29	1.59	.012	.002	.028	.001	.018	.045	.0003	.016	.0059	.001	.050	.015	.002	.054	.40	.21

Code Numbers in accordance with EN 10168 (see overleaf).  
Alterations to this document or its use for other products shall be regarded  
as falsification of documents and be subject to criminal jurisdiction.CE & UKCA marking under the CPR 305/2011/EU and S.I. 2019 No. 456 respectively shown on Hartlepool 20"  
mill inspection documents are affixed according to harmonized standards EN 10210-1 & EN 10219-1 only.  
Hartlepool 20" mill Quality System complies with Annex 1 para 4.3 of 2014/68/EU (PED) and S.I. 2016 No. 1105.  
Note - only tubes in accordance with EN 10217 (TR1 grades excluded) have a presumption of conformity with the PED.DAVID EVANS  
Section Manager Technical  
This document has been prepared by a  
computer system and is valid without signature.  
18 Grosvenor Place London SW1X 7HS Company Reg.No.02280060.

Z01 The products covered by this inspection document are certified by Tata Steel UK Limited and comply with the requirements of the Order Acknowledgement.

Z02  
A05



A04

Tata Steel UK Limited

20" H.F.I Mill  
Brenda Road  
Hartlepool Cleveland UK TS25 2EG

A01

Telephone: + 44 (0) 1429 266811  
Email: tubesalesUK@tatasteelurope.com

# INSPECTION CERTIFICATE EN10204 Type 3.1

A02

Date	27/07/23	Z02
Cert No.	280/2330/0427	A03
Del. Note		

Page No. 02 of 04

Customer	A06
<b>TATA INTERNATIONAL METALS (AMERICAS) LIMITED</b>  475 NORTH MARTINGALE ROAD SUITE 400 SCHAUMBURG ILLINOIS 60173, USA	

Tata Steel Ref.No.	GXM433545	Works	9934	A08
Customer Order No.	P/O: PUR3002130. OF 30/MAR/23			
Product Description	HIGH FREQUENCY INDUCTION WELDED STEEL TUBES TO API 5L PSL2 46TH EDITION GRADE X65M. MEETS THE REQUIREMENTS OF EN ISO 15156-2 / NACE MR0175 ANNEX A.2 AND EN ISO 17945 / NACE MR0103 1.3.1.1.			

Quality Management System  
Approved to ISO 9001

MADE IN UK

Item No.	Number of Pieces	Product Dimensions (in)	Cast/Heat No.	Pipe No.	Tensile Test					Impact/Hardness Tests					Steel Making Process	
					Yield Strength Rm (psi)	Tensile Strength Rm (psi)	Elong A% IN	Hydro Pressure (psi)	C40 Test Type	Width (mm)	Temp (C)	Values Ft Lb	Ave			
14	47	20.000IN OD X 0.500IN 42' 0"-43' 0" 2015' 1"	7T23109	2613610	W T B T	105878	2940	28	10.0	SECS	KV	10	00	74	66	% SHEAR = 080:075:085 = 080
					B T	69908	97030				KV	10	-46	32	38	% SHEAR = 015:020:020 = 018
					T	RATIO	.72							39	41	
14	27	20.000IN OD X 0.500IN 42' 0"-43' 0" 1159' 2"	7T23110	2612906	W T B T	109358	2940	25	10.0	SECS	KV	10	00	60	68	% SHEAR = 080:090:095 = 088
					B T	80351	99496				KV	10	-46	64	29	% SHEAR = 015:020:015 = 017
					T	RATIO	.81							79	38	
														21		

C71-C99	Analysis %	C	SI	MN	P	S	CR	MO	NI	AL	B	CU	N	CA	NB	SN	TI	V	CEV	PCM
Cast No.																				
7T23110	LADLE	.12	.3131	.50	.015	.003	.025	.002	.017	.053	.0003	.013	.0053	.002	.052	.015	.003	.054	.39	.22
7T23110	PROD	.12	.3031	.56	.013	.001	.022	.002	.018	.056	.0003	.012	.0047	.001	.048	.014	.002	.052	.39	.21
7T23110	PROD	.12	.3031	.56	.013	.002	.022	.002	.018	.057	.0004	.012	.0048	.001	.049	.014	.002	.052	.39	.21
7T23111	LADLE	.11	.2911	.45	.012	.004	.035	.001	.018	.032	.0002	.017	.0053	.002	.050	.015	.001	.050	.37	.20
7T23111	PROD	.10	.2661	.55	.012	.002	.017	.002	.018	.048	.0003	.014	.0054	.001	.044	.014	.002	.046	.38	.20
7T23111	PROD	.10	.2711	.56	.012	.002	.018	.002	.018	.047	.0003	.014	.0050	.001	.045	.014	.002	.046	.38	.20

Code Numbers in accordance with EN 10168 (see overleaf).  
Alterations to this document or its use for other products shall be regarded as falsification of documents and be subject to criminal jurisdiction.

CE & UKCA marking under the CPR 305/2011/EU and S.I. 2019 No. 456 respectively shown on Hartlepool 20" mill inspection documents are affixed according to harmonized standards EN 10210-1 & EN 10219-1 only. Hartlepool 20" mill Quality System complies with Annex 1 para 4.3 of 2014/68/EU (PED) and S.I. 2016 No. 1105. Note - only tubes in accordance with EN 10217 (TR1 grades excluded) have a presumption of conformity with the PED.

DAVID EVANS  
Section Manager Technical  
This document has been prepared by a computer system and is valid without signature.  
18 Grosvenor Place London SW1X 7HS Company Reg.No.02280000.

Z01 The products covered by this inspection document are certified by Tata Steel UK Limited and comply with the requirements of the Order Acknowledgement.

Z02 Section Manager Technical  
A05



A04

Tata Steel UK Limited
20" H.F.1 Mill
Brenda Road
Hartlepool Cleveland UK TS25 2EG

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Telephone: + 44 (0) 1429 266611
Email: tubesalesUK@tatasteeleuropea.com

INSPECTION CERTIFICATE
EN10204 Type 3.1

A02

Table with 2 columns: Field (Date, Cert No., Del. Note) and Value (27/07/23, 280/2330/0427, )

Page No. 03 of 04

Customer information table: TATA INTERNATIONAL METALS (AMERICAS) LIMITED, 475 NORTH MARTINGALE ROAD, SUITE 400, SCHAUMBURG, ILLINOIS 60173, USA

Quality Management System
Approved to ISO 9001

Tata Steel Ref. No. GXM433545, Sales 9934, Works 9934, Customer Order No. P/O: PUR3002130. OF 30/MAR/23, Product Description: HIGH FREQUENCY INDUCTION WELDED STEEL TUBES TO API 5L PSL2 46TH EDITION GRADE X65M.

MADE IN UK

Main inspection table with columns: Item No., Number of Pieces, Product Dimensions, Cast/Heat No., Pipe No., Tensile Test (Yield, Tensile, Elong, Hydro), Impact/Hardness Tests (KV, C, F, Ave), Steel Making Process (BASIC OXYGEN STEEL), Other Tests (% SHEAR)

Chemical analysis table (C71-C99) with columns: Analysis %, C, SI, MN, P, S, CR, MO, NI, AL, B, CU, N, CA, NB, SN, TI, V, CEV, PCM

Code Numbers in accordance with EN 10168 (see overleaf). Alterations to this document or its use for other products shall be regarded as falsification of documents and be subject to criminal jurisdiction.

CE & UKCA marking under the CPR 308/2011/EU and S.I. 2019 No. 488 respectively shown on Hartlepool 20" mill inspection documents are affixed according to harmonized standards EN 10210-1 & EN 10219-1 only. Hartlepool 20" mill Quality System complies with Annex 1 para 4.3 of 2014/68/EU (PED) and S.I. 2016 No. 1105. Note - only tubes in accordance with EN 10217 (TR1 grades excluded) have a presumption of conformity with the PED.

DAVID EVANS
Section Manager Technical
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Email: tubesalesUK@tatasteeleurope.com

# INSPECTION CERTIFICATE EN10204 Type 3.1

A02

Date	27/07/23	Z02
Cert No.	280/2330/0427	A03
Del. Note		

Page No. 04 of 04

Customer	A06
<p>TATA INTERNATIONAL METALS (AMERICAS) LIMITED</p> <p>475 NORTH MARTINGALE ROAD SUITE 400 SCHAUMBURG ILLINOIS 60173, USA</p>	

Tata Steel Ref.No.	GXM433545	Works	9934	A08
Customer Order No.	P/O: PUR3002130. OF 30/MAR/23			
Product Description	<p>HIGH FREQUENCY INDUCTION WELDED STEEL TUBES TO API 5L PSL2 46TH EDITION GRADE X65M. MEETS THE REQUIREMENTS OF EN ISO 15156-2 / NACE MR0175 ANNEX A.2 AND EN ISO 17945 / NACE MR0103 13.1.1.</p>			

Quality Management System  
Approved to ISO 9001

MADE IN UK

Item No.	Number of Pieces	Product Dimensions (in)	Cast/Heat No.	Pipe No.	Tensile Test		Impact/Hardness Tests					Steel Making Process			
					Yield Stress Re (psi)	Tensile Strength Rm (psi)	Elong A% 2IN	Hydro Pressure (psi)	C01 C02 Test Type	C41 Width (mm)	C03 Temp (C)	C42 C43 Values Ft Lb	C44 C45 Ave Ft Lb	Other Tests	
14	23	20.000IN OD X 0.500IN 42' 0"-43' 0" 988' 0"	7T23900	2915705	W T B T	102252 73969 RATIO .78	32	2940 10.0 SECS	T B T B	KV KV	10 10	00 -46	196 114 113 32 46 32	141 36	% SHEAR = 100:100:100 = 100 % SHEAR = 030:040:030 = 033
*** END OF TEST CERTIFICATE ***															

C71-C99	Analysis %	C	SI	MN	P	S	CR	MO	NI	AL	B	CU	N	CA	NB	SN	TI	V	CEV
Cast No.																			

Code Numbers in accordance with EN 10168 (see overleaf).  
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DAVID EVANS  
Section Manager Technical  
Z02  
A05

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This document has been prepared by a computer system and is valid without signature.  
18 Grosvenor Place London SW1X 7HS Company Reg.No.02280090.

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증명서번호  
CERTIFICATE NO.: PF202206-0038-000877(5022325)

제품명  
COMMODITY : SAWL STEEL PIPE

제품규격  
SPECIFICATION : API 5L X65M PSL2(46t)

## MILL TEST & INSPECTION CERTIFICATE

### SeAH SeAH Steel Corp.

(주)세아제강

HEAD OFFICE: SEAH TOWER, 45 YANGHWA-RO, MAPO-GU, SEOUL, KOREA  
POHANG PLANT : 136, GOEDONG-RO, NAM-GU, POHANG, KOREA

발급일자  
DATE OF ISSUE : 2022.05.29

계약서번호  
L/C No. (P/O No.) : 213-L585(11857)

수요자  
CUSTOMER : PREMIUM PIPE

주문자  
SHIPPER : SEAH STEEL AMERICA, INC.

NO.	HEAT NO. (BATCH NO.)	관단 TYPE	주문치수 ORDER SIZE			수량 QUANTITY			비고 REMARK
			관경	관두께	관길이	본수 PCS	총길이 TOTAL LENGTH	중량(PT/T) WEIGHT	
8	USK74212 (SPW3042160)	BBE	24"	X 0.750"	X 38.700 FT	1	38.700 FT	3.272	* CONFIRM TO NACE MR 0175 & MR 0103 (CHEMICAL COMPOSITION AND HARDNESS VALUE ONLY) * HARDNESS TEST RESULT : Max. Value * TENSILE SPECIMEN : RECTANGULAR TYPE(1T180 & 1W-WIDTH 1½") * UT CALIBRATION REFERENCE : N5 NOTCH * RT IQI ; ISO WIRE-TYPE * IMPACT TEST SPECIMEN(3T90,3W,3HAZ/2V) : Full Size * MACROGRAPHIC TEST : GOOD  Steel Making : POSCO (INDONESIA) Plate Rolling : DONGKUK STEEL(KOREA)
9	USK74217 (SPW3042170)	BBE	24"	X 0.750"	X 38.700 FT	1	38.700 FT	3.272	
10	USK74214 (SPW3042200)	BBE	24"	X 0.750"	X 38.700 FT	1	38.700 FT	3.272	

NO.	HEAT NO. (BATCH NO.)	HYDRO STATIC TEST	COLLAPSE	N-D-T	VITIMENSATION	FLATTENING	R-M-T (Gs)	BENDING	DRIFT	CHEMICAL COMPOSITION(%)															TENSILE TEST				IMPACT TEST(-46 °C)																											
										10 Sec psi	U+R	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	CEQ	D	E	L	O	C	ENERGY (Joule)	SHEAR AREA(%)	Drop Weight Tear Test ( )	HARDNESS TEST	HEAT TREATMENT																					
																																				*3	*4	*5	*6	*7	*8	TENSILE STRENGTH	YIELD STRENGTH	Y.R	E.L	1	2	3	AVE	1	2	3	AVE	1	2	AVE
																																										psi	psi	%	%											
기준 SPEC							30			MAX	12	45	160	25	15	50	50	50	50																					250																
8	USK74212 (SPW3042160)	2970	G		G	G	G	G	G	H	7	25	148	11	3	1	1	2	0																							201														
9	USK74217 (SPW3042170)	2970	G		G	G	G	G	G	H	7	24	148	11	3	1	1	2	0																							202														
10	USK74214 (SPW3042200)	2970	G		G	G	G	G	G	H	7	25	148	10	2	1	1	2	0																							200														


NOTES

\*1-BBE:BLACK BEVELED END(30° - 35°) \*G-GOOD \*R-M:Residual Magnetism(Gauss) \*DIR:Direction \*LOC:Location  
 \*2-U+R:Weld Seam Ultrasonic Test + Radiographic Test of Each Pipe End \*3-G:Guided Bend Test \*4-(Analysis)-H:Heat, P:Product  
 \*6-0(ZERO):Values below Significant Figure. 2:X100, 3:X1000, 4:X10000 \*7-C1(X100):C-Si/30Mn/20Cu/20Ni/60Cr/20Mo/15V/10+Sb \*9-E.L:Elongation(GI-2°)  
 \*R-T:Base Transverse, W:Weld Transverse \*10-B:Base, H:H.A,Z,W:Weld

\* THIS CERTIFICATE IS ISSUED  
 ACCORDING TO EN 10204 3.1 : 2004  
 ISO 10474 3.1 : 2013(3.1.B:1991)

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH ABOVE SPECIFICATION AND THE RESULTS OF ALL TEST ARE ACCEPTABLE.  
 THE USE OF THE MATERIAL OUTSIDE THE SPECIFICATIONS INDICATED ON THIS CERTIFICATE MAY CAUSE SAFETY AND/OR MONETARY PROBLEMS. FURTHERMORE, ANY ORGANIZATION OR PERSON(S) WHO DELIBERATELY MODIFIES THE CERTIFICATE WILL BE PROSECUTED FOR FORGING AN OFFICIAL DOCUMENT (ACCORDING TO THE PROVISIONS OF THE CRIMINAL CODE 231)  
 THIS MILL TEST REPORT IS NOT RELATED THE ACCREDITATION STANDARD (KS Q ISO/IEC 17025, OPERATION INSTRUCTIONS AND ETC.) AND KOLAS ACCREDITATION.

S.R. Ahn  
 Manager of Q.M Dept.



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**MILL TEST & INSPECTION CERTIFICATE**  
**SeAH Steel Corp.**  
 (주)세아제강

발급일자  
 DATE OF ISSUE : 2022.05.29

증명서번호  
 CERTIFICATE NO. : PE202206-0038-000877(5022325)

계약서번호  
 L/C No. (P/O No.) : 213-L585(11857)

계품명  
 COMMODITY : SAWL STEEL PIPE

수요가 :  
 CUSTOMER : PREMIUM PIPE

계품규격  
 SPECIFICATION : API 5L X65M PSL2(46th)

HEAD OFFICE: SEAH TOWER, 45 YANGHWA-RO, MAPO-GU, SEOUL, KOREA  
 POHANG PLANT : 136, GODEONG-RO, NAM-GU, POHANG, KOREA

SHIPPER : SEAH STEEL AMERICA, INC.

NO.	HEAT NO. (BATCH NO.)	관 단 TYPE *1	주 문 치 수 ORDER SIZE			수 량 QUANTITY			비 고 REMARK
			24"	X 0.750"	X 40.000 FT	본 수 PCS	총 길이 TOTAL LENGTH	중량(FT/T) WEIGHT	
11	USK74212 (SPW3042180)	BBE	24"	X 0.750"	X 40.000 FT	7	280.000 FT	23.674	* CONFIRM TO NACE MR 0175 & MR 0103 (CHEMICAL COMPOSITION AND HARDNESS VALUE ONLY) * HARDNESS TEST RESULT : Max. Value * TENSILE SPECIMEN : RECTANGULAR TYPE(1T180 & 1W-WIDTH 1½") * UT CALIBRATION REFERENCE : N5 NOTCH * RT IQI : ISO WIRE-TYPE * IMPACT TEST SPECIMEN(3T90,3W,3HAZ/2V) : Full Size * MACROGRAPHIC TEST : GOOD  Steel Making : POSCO (INDONESIA) Plate Rolling : DONGKUK STEEL(KOREA)
12	USK74217 (SPW3042190)	BBE	24"	X 0.750"	X 40.000 FT	2	80.000 FT	6.764	
13	USK74214 (SPW3042210)	BBE	24"	X 0.750"	X 40.000 FT	3	120.000 FT	10.146	
14	USK74213 (SPW3042220)	BBE	24"	X 1.000"	X 38.700 FT	1	38.700 FT	4.316	

NO.	HEAT NO. (BATCH NO.)	10 Sec RES ULT *1	COLLAPSE *2	N-D-T UHR *3	VIMS & ON *4	FLAT TENING *5	R.M. T(Gs) *6	BEN DING G *7	DRIF T *8	CHEMICAL COMPOSITION(%)													TENSILE TEST				IMPACT TEST(-46°C)					Drop Weight Tear Test ( )	HARD NESS TEST HV	HEAT TREAT MENT *11																
										C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	CEQ	TENSILE STRENGTH	YIELD STRENGTH	Y.R	E.L	L O C	ENERGY (Joule)						SHEAR AREA(%)															
										2	3	2	2	2	2	3	3	3	4	C1	psi	psi	%	%	1	2	3		AVE	1	2				3	AVE	1	2	AVE											
										*6													*8	*9	*10	1	2	3	AVE	1	2				AVE															
기준 SPEC							30			MAX MIN	12	45	160	25	15	50	50	50	50							10	25	110200	87000	93	24															250				
11	USK74212 (SPW3042180)	2970	G	G	G	G	G	G	H		7	25	148	11	3	1	1	2	0								2	16																						
12	USK74217 (SPW3042190)	2970	G	G	G	G	G	G	H		7	24	148	11	3	1	1	2	0								2	16																						
13	USK74214 (SPW3042210)	2970	G	G	G	G	G	G	H		7	25	148	10	2	1	1	2	0								2	16																						
14	USK74213 (SPW3042220)	2970	G	G	G	G	G	G	H P P		7 7 6	25 25 25	148 148 148	10 9 10	2 2 2	1 1 1	1 1 1	0 0 0	56 33 56	33 11 32	11 2 15	2 16 15	T W	87020 86730	73670	85	49	B W H	275 164 270	287 152 276	286 165 200	283 160 249	100 100 100	100 100 100													196 218 199			


OTHERS \*1 - \*11: Refer to Others

\*1-BBE:BLACK REVELED ENO(30° - 35°) \*2-GOOD \*R.M:Residual Magnetism(Gauss) \*DIR:Directio \*LOC:location  
 \*2-UHR:Weld Seam Ultrasonic Test + Radiographic Test of Each Pipe End \*3-G:Guided Bend Test \*4-(Analysis)-H:Heat, P:Product  
 \*6-0(ZERO):Values below Significant Figure, 2:X100, 3:X1000, 4:X10000 \*7-C1(X100):C:Si/39Mn/20Cu/20Ni/60Cr/20Mo/15V/10Nb  
 \*8-T:Base Transverse, W:Weld Transverse \*10-B:Base, H:H.A.Z, W:Weld

\* THIS CERTIFICATE IS ISSUED  
 ACCORDING TO EN 10204 3.1 : 2004  
 ISO 10474 3.1 : 2013(3.1.B:1991)

• WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH ABOVE SPECIFICATION AND THE RESULTS OF ALL TEST ARE ACCEPTABLE.  
 • THE USE OF THE MATERIAL OUTSIDE THE SPECIFICATIONS INDICATED ON THIS CERTIFICATE MAY CAUSE SAFETY AND/OR MONETARY PROBLEMS. FURTHERMORE, ANY ORGANIZATION OR PERSON(S) WHO DELIBERATELY MODIFIES THE CERTIFICATE WILL BE PROSECUTED FOR FORGING AN OFFICIAL DOCUMENT (ACCORDING TO THE PROVISIONS OF THE CRIMINAL CODE 231)  
 • THIS MILL TEST REPORT IS NOT RELATED THE ACCREDITATION STANDARD (KS Q ISO/IEC 17025, OPERATION INSTRUCTIONS AND ETC.)AND KOLAS ACCREDITATION.

**S.R. Ahn**  
 Manager of Q.M Dept.



PAGE : 2 / 3  
 증명서번호 CERTIFICATE NO. : PE202305-0021-000306(5023502)  
 제품명 COMMODITY : SAWL STEEL PIPE  
 제품규격 SPECIFICATION : API 5L X65M PSL2(46th)

## MILL TEST & INSPECTION CERTIFICATE



HEAD OFFICE: SEAH TOWER, 45 YANGHWA-RO, MAPO-GU, SEOUL, KOREA  
 POHANG PLANT : 136, GOEDONG-RO, NAM-GU, POHANG, KOREA

발급일자 DATE OF ISSUE : 2023-04-30  
 계약서번호 L/C No. (P/O No.) : P022400142(12930)  
 수요자 CUSTOMER : PREMIUM PIPE  
 주문자 SHIPPER : SEAH STEEL AMERICA, INC.

NO.	HEAT NO. (BATCH NO.)	관 단 TYPE	주 문 치 수 ORDER SIZE			수 량 QUANTITY			비 고 REMARK
						본 수 PCS	총 길이 TOTAL LENGTH	중량(FT/T) WEIGHT	
5	S23603 (SPX3251030)	BBE	24 "	X 1.250 "	X 40.000 FT	3	120.000 FT	16.547	* CONFIRM TO NACE MR 0175 & MR 0103 (CHEMICAL COMPOSITION AND HARDNESS VALUE ONLY) * HARDNESS TEST RESULT : Max. Value * TENSILE SPECIMEN : RECTANGULAR TYPE(1T180 & 1W-WIDTH 1½") * UT CALIBRATION REFERENCE : N5 NOTCH * RT IQ1 : ISO WIPE-TYPE * IMPACT TEST SPECIMEN(3T90,3W,3HAZ/2V) : Full Size * MACROGRAPHIC TEST : GOOD  Steel Making : HYUNDAI STEEL (KOREA) Plate Rolling : HYUNDAI STEEL (KOREA)
6	S47339 (SPX4251040)	BBE	24 "	X 0.750 "	X 38.500 FT	1	38.500 FT	3.255	
7	S56691 (SPX4251060)	BBE	24 "	X 0.750 "	X 38.500 FT	1	38.500 FT	3.255	
8	S47339 (SPX4251050)	BBE	24 "	X 0.750 "	X 40.000 FT	2	80.000 FT	6.764	

NO.	HEAT NO. (BATCH NO.)	HYDRO STATIC TEST	COLLAPSE	N.D.T	VISUAL & DIMENSION	FLATTENING	R.M.T (Gs)	BENDING	DRIFT	DESIGN	CHEMICAL COMPOSITION(%)																TENSILE TEST					IMPACT TEST(-46 `C)						Drop Weight Test	HARDNESS TEST	HEAT TREATMENT							
																											TENSILE STRENGTH	YIELD STRENGTH	Y.R	E.L	ENERGY (Joule)			SHEAR AREA (%)													
											C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Pcm	CEQ	D					I	R	T	A	V	C	1				2	3	AVE	1	2	3	AVE

기준 SPEC								30		MAX	12	45	160	25	15	50	50	50	50							10	25				110200	87000	93										250					
5	S23603 (SPX3251030)	2970	G	G	G	G	G	G	H	5	24	128	10	1	22	16	16	4																														
6	S47339 (SPX4251040)	2970	G	G	G	G	G	G	H	7	23	158	10	2	9	13	14	0									1	17	T	88180	72950	53	42	B	458	461	459	462	100	100	100	100					210	
									P	6	22	156	10	2	9	12	14	0	35	46	15	1	16					W	90790																	231		
									P	6	21	156	10	2	9	12	13	0	36	45	13	0	16																								201	
7	S56691 (SPX4251060)	2970	G	G	G	G	G	G	H	7	25	158	12	2	11	14	13	2								4	18	T	96000	72170	84	46	B	473	476	473	474	100	100	100	100					195		
									P	6	25	158	11	3	10	12	12	0	36	39	14	2	17					W	84700																		225	
									P	6	24	157	10	3	10	13	12	1	37	40	15	2	17																									208
8	S47339 (SPX4251050)	2970	G	G	G	G	G	G	H	7	23	158	10	2	9	13	14	0																														

NOTE: \*1-RBE:BLACK BEVELED END(30° ± 35°) \*6-800D-R.M:Residual Magnetism(Gauss) \*DIR:Direction \*LOC:Location  
 \*2-U+R:Weld Seam Ultrasonic Test + Radiographic Test of Each Pipe End \*3-G:Guided Bend Test \*5-A:Analysis \*H:Heat, P:Product  
 \*6-(ZERO):Values below Significant Figure. 2:X100, 3:X1000, 4:X10000 \*9-E.L:Elongation(GL-2")  
 \*6-T:Base Transverse \*W:Weld Transverse \*10-B:Base \*H:A,Z,W:Weld  
 \*12-(1(X100)):C:Si/30;Mn/20;Cu/20;Ni/50;Cr/20;Mo/15;V/10;Sb

\* THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10264 3.1 : 2004 ISO 10474 3.1 : 2013(3.1.B;1991)

We hereby certify that the material herein has been made and tested in accordance with above specification and the results of all test are acceptable.  
 In case of improper use other than the indicated on this certificate may cause safety hazard and/or monetary problems.  
 All copyrights belong to SeAH, and there will be legal liability or disadvantages if someone else forges this MTR.  
 This mill test report is not related the accreditation standard (KS Q ISO/IEC 17025, operation instructions and etc.)and KOLAS accreditation.

**J. M. Kim**  
 Manager of Q.M Dept.

PAGE : 3 / 3	MILL TEST & INSPECTION CERTIFICATE	발급일자 : 2023-04-30
증명서번호 : PE202305-0021-000305(5023502)	<b>SēAH Steel</b>	DATE OF ISSUE : 2023-04-30
제품명 : SAHL STEEL PIPE		계약서번호 : P022400142(12930)
COMMODITY : SAHL STEEL PIPE	HEAD OFFICE : SEAH TOWER, 45 YANGHWA-RO, MAPO-GU, SEOUL, KOREA	L/C No. (P/O No.) : P022400142(12930)
제품규격 : API 5L X65M PSL2(481h)	POHANG PLANT : 136, GOEDONG-RO, NAM-GU, POHANG, KOREA	수요기 : PREMIUM PIPE
SPECIFICATION : API 5L X65M PSL2(481h)		CUSTOMER : PREMIUM PIPE
		주문자 : SEAH STEEL AMERICA, INC.
		SHIPPER : SEAH STEEL AMERICA, INC.

NO.	HEAT NO. (BATCH NO.)	관 타입 TYPE	주문 치수 ORDER SIZE	수량 QUANTITY			비고 REMARK
				본수 PCS	총 길이 TOTAL LENGTH	중량(FT/T) WEIGHT	
9	S56891 (SPX4251070)	BBE	24" X 0.750" X 40.000 FT	2	80.000 FT	6.784	<ul style="list-style-type: none"> <li>* CONFIRM TO NACE MR 0175 &amp; MR 0103 (CHEMICAL COMPOSITION AND HARDNESS VALUE ONLY)</li> <li>* HARDNESS TEST RESULT : Max. Value</li> <li>* TENSILE SPECIMEN : RECTANGULAR TYPE(1T180 &amp; 1W-WIDTH 1½")</li> <li>* UT CALIBRATION REFERENCE : N5 NOTCH</li> <li>* RT IQI : ISO WIRE-TYPE</li> <li>* IMPACT TEST SPECIMEN(3T90, 3W, 3HAZ/2V) : Full Size</li> <li>* MACROGRAPHIC TEST : GOOD</li> <li>Steel Making : HYUNDAI STEEL (KOREA)</li> <li>Plate Rolling : HYUNDAI STEEL (KOREA)</li> </ul>

NO.	HEAT NO. (BATCH NO.)	HYDRO STATIC TEST	COLLAPSE	N.D.T	VISUAL INSPECTION	FLATTENING	R.M.T (Gs)	BENDING	DRIFT	CHEMICAL COMPOSITION(%)													TENSILE TEST				IMPACT TEST(-46 °C)					Drop Weight Tear Test	HARDNESS TEST	HEAT TREATMENT									
										C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Pcm	CEQ	DIR	TENSILE STRENGTH	YIELD STRENGTH	Y.R %	E.L %	LOC	ENERGY (Joule)				SHEAR AREA (%)								
										2	3	2	2	2	2	2	2	2	3	3	3	4	C1	8	psi	psi	%	%	10	1	2				3	AVE	1	2	3	AVE	1	2	AVE
기준 SPEC							30		MAX								110200	87000	93																								
9	S56891 (SPX4251070)	2970	G	G	G	G	G	G	H								77600	65300	24			21																					

NOTE: Refer To Others

OTHERS: 1-BBE:BLACK BEVELED END(30° - 35°) \*0:GOOD \*R.N:Residual Magnetism(Gauss) \*DIR:Direction \*LOC:Location \*2-UHR:Weld Seam Ultrasonic Test + Radiographic Test of Each Pipe End \*3-G:Guided Bend Test \*5-(Analysis)-H:Heat, P:Product \*6-0(ZERO):Values below Significant Figure. 2:X100. 3:X1000. 4:X10000 \*9-E.L:Elongation(EL-2") \*12-C1(X100):C:Si/50+Mn/20+Cu/20+Ni/60+Cr/20+Nb/15+V/10+5B

- THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 : 2004 ISO 10474 3.1 : 2013(3.1.8:1991)

We hereby certify that the material herein has been made and tested in accordance with above specification and the results of all test are acceptable.

In case of improper use other than the indicated on this certificate may cause safety hazard and/or monetary problems.

All copyrights belong to SeAH, and there will be legal liability or disadvantages if someone else forges this MTR.

This mill test report is not related the accreditation standard (KS Q ISO/IEC 17025, operation instructions and etc.)and KOLAS accreditation.

**J. M. Kim** Manager of Q.M Dept.





MPOC / End Customer PO No: 3315 / 10734

### Mill Test Certificate / 검사증명서

HYUNDAI RB CO., LTD.

P/R No./생신의뢰번호: A20159

EN10264 TYPE 3.1

192, CHEONGNEUNGANBUL-RO, CHEONGNEUNG, ULSAN, KOREA  
TEL: +82-52-236-7011 FAX: +82-52-236-7011 HOME PAGE: www.hyundai-rb.com

Commodity/품명: SAWL STEEL PIPE

End Customer/고객사:

Certificate No./증명서번호: A20159-02-01

Spec. & Type/규격: API 5L X55M PSL2/API 5L 46th Edition

Customer/주요사: MASTER PIPE DISTRIBUTION COMPANY, LLC

Date of issue/발행일자: 2020.12.24

Dimension / 치수 OD x Thk x Length 외경 x 두께 x 길이	Quantity / 수량 PCS	Weight / 중량 kg	Hydrostatic Test 수입시험 psi MPa	Heat No. 재질번호	Tensile Test / 인장시험 #3				Chemical Composition / 화학성분(%) Unit: 2=x1/100, 3=x1/1 000, 4=x1/10 000, T=Trace														Hardness 경도 Hv10	CVN Impact Test #7 충격시험 (-50°F) Absorbed energy 흡수 에너지			Shear Inclure area 면적 치면 영역 (32°F) %									
					Yield Strength 항복강도 psi	Tensile Strength 인장강도 psi		Elongation 연신율 %	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Nb	Ti	V	B	CE <sub>eq</sub>		a	b	c										
						Base Metal	Weld Metal																					Base	HAZ	Weld	Base					
					Acceptance Criteria / 합격기준																															
Avg. 20 ft-lbf ↑ Ind. 15 ft-lbf ↑																																				
24"x0.750"x40R	3	10,155	2970	10	R20302	89417	85300-87000	77800-110200	77800	93.1	18.7	G	H	7	26	150	12	1	13	13	0	9			56		1	185	B:188	1:278	1:78	1:99	1:100			
24"x0.750"x40R	3	10,155	2970	10	R55069	89231	85300-87000	77800-110200	77800	93.1	18.7	G	H	6	23	151	12	2	13	13	0	10			57		1	162	B:181	1:278	1:78	1:100	1:100			
24"x0.750"x40R	4	13,540	2970	10	R59458	70788	85300-87000	77800-110200	77800	81	28	G	H	7	25	157	11	2	13	13	0	8			82		4	175	B:190	1:272	1:71	1:107	1:100			
TOTAL --	10	33,850																																		



<b>Inspection certificate 3.1</b> <b>EN 10204:2004</b> (A02)		No. (A03) <b>202099</b>
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		Date 15.11.2022
No. (A07) 58910 13.06.2022	No. (A07) Customer (A06)	
Purchaser (A06) Salzgitter Mannesmann International (USA) Inc. 1770 St. James Place, Suite 600 77056-3499 HOUSTON USA		
Product (B01) steel line pipe, HFW-HFI-longitudinally welded	Works order No. (A06) 0603004362	
Steel grade and terms of delivery (B02-B03) API SPEC 5L 46TH PSL 2 X65M Impact Requirements according to API 5L 46th: Base material at 0°C (32°F), -29°C (M20°F) and at -46°C (M50°F) / shear area determination for information only. Hardness acc. to NACE MR0175 / ISO 15156 / NACE MR0103, tested 100% SMYS	Dispatch note No. 0080005973 13.11.2022	Inspection (A06) Manufacturer acc.
Heat treatment: Weld zone inductive annealed (Temperature minimum 1600°F / 871°C)		

**Material data (B01-B09)**

Item	Heat No. (B07)	Quantity (B08)	Cond. of delivery (B04)	D x T x Length (B09-B11)	in x in x ft	Length (B09-B11)	ft	Weight (B12)	lbs
030	020226	7	U	24,000 x	0,750 x 44,984	308,399		57.486	
030	045451	23	U	24,000 x	0,750 x 44,984	1.028,744		191.754	
030	045827	12	U	24,000 x	0,750 x 44,984	500,983		93.385	
Σ		42	U: as rolled			1.838,126		342.625	

The mentioned length and weight refers to the product in delivery condition

**Product description (B06)**

Inside conditions (B06) Surface: black
Outside conditions (B06) Surface: black temporary anti-corrosive protection laquer approx. 35 my thickness
ends (B06) End 1: bevelled 30 +5/-0°, root face 1,6 +/-0,8 mm End 2: bevelled 30 +5/-0°, root face 1,6 +/-0,8 mm End protection: with hook-hold caps



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**Product description (B06)**

Marking of the product (B06)  
Internal marking at both ends:  
Barcode Pipe-no.  
Manufactures sign HAMM API SPEC 5L 0256 API monogram MM-YY 24,000 0,750  
X65M PSL 2 HFW Sign of works inspector HEAT NO. Heat-no. Single pipe length  
(ft) Pipe-no.  
TESTED 3.840 PSI MADE IN GERMANY Mammoth  
P.O. No. 58910 mill order no. Product No.

Label on both sides of the plastic cap:  
Dimension: 24,000 x 0,750  
Mill order no.: Mill order no.  
Works order no./Item: 0603004362 / 30  
Specification: API SPEC 5L  
Length: Single pipe length (ft)  
Weight: Rohreinzelgewicht in Pfund  
Grade: X65M  
Inspection: Sign of works inspector  
Heat no.: Heat-no.  
Purchase order no.: Mammoth P.O. 58910

MW Mannesmann Line Pipe - A Member of the Salzgitter Group

**Ladle analysis (C70-C30)**

Manufacturer standard

Heat No. (B07)	C %	Si %	Mn %	P %	S %	Cu %	Cr %	Ni %	Mo %	V %
	≤0,10	≤0,45	≤1,70	≤0,025	≤0,015	≤0,50	≤0,50	≤0,50	≤0,50	
020226	0,06	0,18	1,15	0,014	0,003	0,03	0,08	0,03	0,17	0,003
045451	0,06	0,17	1,15	0,012	0,001	0,02	0,03	0,03	0,16	0,002
045827	0,06	0,17	1,13	0,013	0,002	0,01	0,03	0,03	0,17	0,002
Heat No. (B07)	Ti %	Nb %	B %	EV1 1) %						
			≤0,001	≤0,15						
020226	0,03	0,06	0,0004	0,09						
045451	0,02	0,05	0,0001	0,07						
045827	0,02	0,06	0,000	0,08						

1) EV1: Nb+V+Ti

Steelmaking process: Basic oxygen process  
(C70)

Coil Manufacturer (A01):  
Salzgitter Flachstahl GmbH, Postfach 10 03 50, 38223 SALZGITTER, GERMANY

Steel Manufacturer incl. country of melt and pour (A01):  
Salzgitter Flachstahl GmbH, Postfach 10 03 50, 38223 SALZGITTER, GERMANY



<b>Inspection certificate 3.1</b>	<b>№. (A03)</b>	<b>202099</b>
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(A02)	<b>Date</b>	<b>15.11.2022</b>

**Product analysis (C70-C99)**  
ISO/TR 9769

Test type: Lot testing

Specimen No. (C00)	Heat No. (B07)	C % ≤ 0,10	Si % ≤ 0,45	Mn % ≤ 1,70	P % ≤ 0,025	S % ≤ 0,015	Cu % ≤ 0,50	Cr % ≤ 0,50	Ni % ≤ 0,50
2001416549	020226	0,06	0,18	1,12	0,010	0,003	0,02	0,03	0,03
2001416550	020226	0,06	0,18	1,12	0,010	0,002	0,02	0,03	0,03
2001416531	045451	0,05	0,17	1,14	0,01	0,002	0,02	0,04	0,03
2001416532	045451	0,05	0,17	1,13	0,01	0,002	0,02	0,04	0,03
2001416567	045827	0,05	0,17	1,13	0,011	0,003	0,02	0,03	0,03
2001416568 *)	045827	0,05	0,17	1,13	0,011	0,003	0,02	0,03	0,03

Specimen No. (C00)	Heat No. (B07)	Mo % ≤ 0,50	V % %	Ti % %	Nb % %	B % ≤ 0,001	IIW % ≤ 0,43	EV1 1) % ≤ 0,15
2001416549	020226	0,16	0,003	0,03	0,05	0,0004	0,29	0,08
2001416550	020226	0,16	0,003	0,03	0,05	0,0004	0,28	0,08
2001416531	045451	0,15	0,003	0,03	0,05	0,0001	0,28	0,07
2001416532	045451	0,15	0,003	0,03	0,05	0,0002	0,28	0,07
2001416567	045827	0,16	0,003	0,02	0,05	0,0001	0,28	0,07
2001416568 *)	045827	0,16	0,003	0,02	0,05	0,0001	0,28	0,07

1) EV1: Nb+V+Ti

\*) The sample pipe is not part of the delivery

**Tensile test (C10-C29)**  
ISO 6892-1

Condition specimen: Specimen as delivery condition/Pipe as rolled

Test type: Lot testing

Specimen shape: Flat tensile test

Specimen No. (C00)	Heat No. (B07)	Location (C01) 1)	Orient. (C02) 2)	Height of specimen in	Width of specimen in	Yield strength (C11) Rt: 0,5 psi 65300-87000	Tensile strength (C12) Rm psi ≥ 77600	Tensile strength (C12) Rm psi 77600-110200
2001416531	045451	BM	T180	0,75	1,58	76580	84847	90794
2001416531	045451	WL	T000	0,78	1,59			
2001416549	020226	BM	T180	0,75	1,58	78175	90649	93839
2001416549	020226	WL	T000	0,78	1,58			
2001416567	045827	BM	T180	0,75	1,58	75855	88183	92824
2001416567	045827	WL	T000	0,78	1,58			

Specimen No. (C00)	Heat No. (B07)	Location (C01) 1)	Orient. (C02) 2)	Rt0,5/Rm %	Elongation (C13) 2.in % ≥ 25
2001416531	045451	BM	T180	0,84	40
2001416531	045451	WL	T000		
2001416549	020226	BM	T180	0,83	39
2001416549	020226	WL	T000		
2001416567	045827	BM	T180	0,82	42
2001416567	045827	WL	T000		

1) BM: Base material  
WL: Weld seam

2) T000: Transversal 0°  
T180: Transversal 180°



**Inspection certificate 3.1**  
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(A02)

No. (A03) **202099**  
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**Charpy impact test (C40-C49)**

ASTM A 370

Condition specimen: Specimen as delivery condition/Pipe as rolled

Test type: Lot testing

Type of notch: V-notch

Specimen size: 1/1 specimen

Specimen No. (C00)	Heat No. (B07)	Location (C01)	Orient. (C02)	Temp. (C03)	Impact energy (C42-C43)			
					1	2	3	MW 3)
		1)	2)	°F	ft.lbf			ft.lbf
2001416531	045451	BM	T090	+032	210	213	199	207
2001416531	045451	BM	T090	-020				
2001416531	045451	BM	T090	-051				
2001416549	020226	BM	T090	+032	194	172	184	183
2001416549	020226	BM	T090	-020				
2001416549	020226	BM	T090	-051				
2001416567	045827	BM	T090	+032	181	182	175	179
2001416567	045827	BM	T090	-020				
2001416567	045827	BM	T090	-051				

Specimen No. (C00)	Heat No. (B07)	Location (C01)	Orient. (C02)	Temp. (C03)	Impact energy (C42-C43)			
					1	2	3	MW 3)
		1)	2)	°F	ft.lbf			ft.lbf
2001416531	045451	BM	T090	+032	156	165	168	163
2001416531	045451	BM	T090	-020				
2001416531	045451	BM	T090	-051	164	134	156	151
2001416549	020226	BM	T090	+032				
2001416549	020226	BM	T090	-020	24	25	125	58
2001416549	020226	BM	T090	-051	17	21	24	21
2001416567	045827	BM	T090	+032				
2001416567	045827	BM	T090	-020	134	170	180	161
2001416567	045827	BM	T090	-051	25	21	16	21

Specimen No. (C00)	Heat No. (B07)	Location (C01)	Orient. (C02)	Temp. (C03)	Shear fracture (C42-C43)			
					1	2	3	MW 3)
		1)	2)	°F	%			%
2001416531	045451	BM	T090	+032	100	100	100	100
2001416531	045451	BM	T090	-020	100	100	100	100
2001416531	045451	BM	T090	-051	100	95	100	98
2001416549	020226	BM	T090	+032	100	100	100	100
2001416549	020226	BM	T090	-020	15	15	90	40
2001416549	020226	BM	T090	-051	15	15	20	17
2001416567	045827	BM	T090	+032	100	100	100	100
2001416567	045827	BM	T090	-020	100	100	100	100
2001416567	045827	BM	T090	-051	20	15	10	15

1) BM: Base material

2) T090: Transversal 90°

3) MW: Average

**Destructive tests (D51-D99)**

Flattening test according to ISO 8492:

Satisfactory

Metallographic determination of micro and macro structure:

Satisfactory



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**Destructive tests (D01-D09)**

Determination of indentation hardness by Vickers  
max. 250 HV10 according to ISO 6507-1: Satisfactory

**Non-destructive tests (D02-D50)**

Visual and dimensional inspection: Satisfactory

Ultrasonic testing of weld seam for the detection of longitudinal  
imperfections according to ISO 10893-11, classification U3: Satisfactory

Hydrostatic test 3.626 PSI, holding time 10 s: Satisfactory

Check for residual magnetism at the pipe ends max. 30 Gauss: Satisfactory

**Pipe list (B01-B99)**

Item	Pipe-no. (B07)	Product No. (B07)	Heat No. (B07)	Inspection no. (B07)	Cond. of delivery (B04)	Length (B09-B11)	ft	Weight (B12)	lbs
030	2001416520	AVT957002	045451	0	U	44,980		8.384	
030	2001416521	AVT957003	045451	0	U	44,948		8.378	
030	2001416522	AVT957004	045451	0	U	44,948		8.378	
030	2001416523	AVT957005	045451	0	U	44,948		8.378	
030	2001416524	AVT957006	045451	0	U	44,948		8.378	
030	2001416525	AVT957007	045451	0	U	44,980		8.384	
030	2001416526	AVT957008	045451	0	U	44,980		8.384	
030	2001416528	AVT958001	045451	0	U	44,948		8.378	
030	2001416529	AVT958002	045451	0	U	44,948		8.378	
030	2001416530	AVT958003	045451	0	U	44,948		8.378	
030	2001416531	AVT958004	045451	0	U	44,849		8.360	
030	2001416532	AVT958005	045451	0	U	44,948		8.378	
030	2001416533	AVT958006	045451	0	U	44,948		8.378	
030	2001416534	AVT958007	045451	0	U	44,980		8.384	
030	2001416535	AVT958008	045451	0	U	44,980		8.384	
030	2001416537	AVT959001	045451	0	U	44,948		8.378	
030	2001416538	AVT959002	045451	0	U	44,980		8.384	
030	2001416539	AVT959003	045451	0	U	44,980		8.384	
030	2001416540	AVT959004	045451	0	U	44,783		8.349	
030	2001416541	AVT959005	045451	0	U	44,948		8.378	
030	2001416542	AVT959006	045451	0	U	44,948		8.378	
030	2001416543	AVT959008	045451	0	U	39,928		7.443	
030	2001416546	AVT959007	045451	0	U	44,948		8.378	
030	2001416547	AVT960002	020226	0	U	44,948		8.378	
030	2001416548	AVT960003	020226	0	U	44,980		8.384	
030	2001416549	AVT960004	020226	0	U	44,882		8.367	
030	2001416550	AVT960005	020226	0	U	44,980		8.384	
030	2001416551	AVT960006	020226	0	U	44,948		8.378	
030	2001416552	AVT960007	020226	0	U	44,980		8.384	
030	2001416553	AVT960008	020226	0	U	38,681		7.211	
030	2001416555	AVT961002	045827	0	U	44,980		8.384	
030	2001416556	AVT961003	045827	0	U	44,980		8.384	
030	2001416557	AVT961004	045827	0	U	44,948		8.378	
030	2001416558	AVT961005	045827	0	U	44,948		8.378	
030	2001416559	AVT961006	045827	0	U	30,479		5.681	
030	2001416562	AVT961009	045827	0	U	35,039		6.532	
030	2001416565	AVT962002	045827	0	U	44,783		8.349	
030	2001416566	AVT962003	045827	0	U	44,915		8.373	
030	2001416567	AVT962004	045827	0	U	44,849		8.360	
		U: as rolled							



**MANNESMANN  
LINE PIPE**

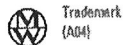
Ein Unternehmen der Salzgitter Gruppe

<b>Inspection certificate 3.1</b> <b>EN 10204:2004</b> (A02)	No. (A03) <b>202099</b> Page <b>6/6</b> Date <b>15.11.2022</b>
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Pipe list (B01-B09)										
Item	Pipe-no. (B07)	Product No. (B07)	Heat No. (B07)	Inspection no. (B07)	Cond. of delivery (B04)	Length (B09-B11)	ft	Weight (B12)	lbs	
030	2001416569	AVT962006	045827	0	U	44,980		8.384		
030	2001416570	AVT962007	045827	0	U	44,980		8.384		
030	2001416571	AVT962008	045827	0	U	31,102		5.798		
Quantity (B08)	42	U: as rolled				1.838,126		342.625		

**Statement of compliance:**  
The products have been tested in accordance with the purchase specification and are found to be satisfactory. Alteration of this testimonial and certification or use for other products is not allowed and are regarded as falsification of documents and will be subjected to criminal jurisdiction.

We hereby certify that the delivered material complies with the terms of the order.  
(Z01)



Trademark  
(A04)

**Mannesmann Line Pipe GmbH**  
Kissinger Weg  
53067 HAMM  
GERMANY  
(A01)

**A**

Inspection Stamp  
(Z03)

Inspection Representative  
(Z02)

Pinto

Mannesmann Line Pipe GmbH · In der Steinwiese 31, 57074 Siegen, Germany · Briefanschrift: Postfach 12 01 52, 57022 Siegen, Germany ·  
Telefon: 0271 691-0 · Telefax: 0271 691-299 · E-Mail: info.mlp@mannesmann.com · Internet: www.mannesmann-linepipe.com ·  
Geschäftsführung: Andreas Betzler · Dr. Carsten Holste · Sitz der Gesellschaft: Siegen · Registergericht: Amtsgericht Siegen ·  
Registernummer: HRB1435 · Bankverbindung: Commerzbank AG, Siegen, BLZ 46040033, Konto 836084400, IBAN DE 68 46040033 0836084400,  
S.W.I.F.T.: COBA DE FF 460 · Ust-IdNr.: DE 811 151 335 · Steuer-Nr.: 51/200/00033 · EORI-Nr.: DE6411185



PO No./주문번호 : M20010470

PR No./생산의뢰번호 : A20019

Commodity/품명 : SAWL STEEL PIPE

Spec. & Type/규격 : API 5L X46X52W PSL2(API 5L 48th Edition)

### Mill Test Certificate / 검사증명서

ENHANCED TYPE 3.1

End Customer/고객사

Customer/주문자

HYUNDAI RB CO., LTD.

100, DAEJEON-RO, CHEONGJU-SI, CHUNGCHUNG-DO, KOREA  
TEL : +82-43-226-7911 FAX : +82-43-226-7911 HOME PAGE : www.hyundai-rb.com

Certificate No./증명서번호 : A20019-01-01

Date of Issue/발행일자 : 2020.05.15

Dimension / 치수 OD x Thk x Length 외경 x 두께 x 길이	Quantity / 수	Weight / 중량	Hydrostatic Test 수압시험	Heat No. 제강번호	Tensile Test / 인장시험 ※1				Chemical Composition / 화학성분(%) Unit : 2x1/100, 3x1/100, 6x1/100, 8x1/100, T=Trace																Hardness 경도	CVN Impact Test #7 충격시험 (30°F)				
					Yield Strength 항복강도	Tensile Strength 인장강도		Elongation 연신율	Reduction of Area 면적감소율	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Nb	Ti	V	B	#1 CE <sub>req</sub>	Absorbed energy 흡수 에너지		Shear fracture area 연성파괴면 영역				
						Base Metal	Weld Metal																	a			a	a	a	
					PCS	Kg	Ft <sup>2</sup>	MPa	MPa	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%		%	Base	HAZ	Weld	Base
Acceptance Criteria / 합격기준					2820	10	82200-70000	670-9500	68700	33	26	22	40	130	25	15	30	20	15	50	50	50	10	200	#9					
28"X0.750"XDR	3	11,892	2520	10	R42591	65082	87006	86308	75	26	G	H	8	25	135	11	3	3	1	D	2	35	13	47	2	182	1122	1132	109	1108
											P	8	25	137	12	3	3	1	1	2	32	15	47	6	170	2180	2179	272	2108	
											P	8	25	138	12	3	3	1	Tr	2	34	15	48	8	170	A108	A180	A71	A180	
28"X0.750"XDR	7	27,748	2520	10	R42594	64807	85781	87154	75	26	G	H	8	26	139	12	4	3	1	D	2	34	13	48	5	164	1148	1178	108	1100
											P	8	24	136	11	4	3	1	Tr	2	33	13	47	5	166	2186	2173	108	2100	
											P	8	26	138	12	4	3	1	Tr	2	34	12	48	5	168	A181	A177	A86	A180	
TOTAL →	10	39,640																												





PO No./주문번호 : M2001D470

PR No./생산의뢰번호 : A20019

Commodity/품명 : SAW STEEL PIPE

Spec. & Type/규격 : API 5L X46S52M PSL2(API 5L 48th Edition)

Mill Test Certificate / 검사증명서

ISM1024 TYPE 3.1

End Customer/고객사

Customer/주요처

HYUNDAI RB CO., LTD.

800, DAEJEON-RO, CHUN-UP, ULSAN, ULSAN, KOREA  
TEL: 40-58-238-7000 FAX: 40-52-238-7011 HOME PAGE: www.hyundai-rb.com

Certificate No./증명서번호 : A20019-01-01

Date of issue/발행일자 : 2020.05.15

Dimension / 치수 OD x THK x Length 외경 x 두께 x 길이	Quantity / 수량 PCS	Weight / 중량 Kg	Hydrostatic Test 수압시험 P <sub>h</sub> / s <sub>h</sub>	Heat No. 재광번호	Tensile Test / 인장시험 (K)				Chemical Composition / 화학성분(%) Unit : 2=×1/100, 3=×1/1 000, 4=×1/10 000, T=Trace													Hardness 경도 Hv 10	CVN Impact Test #7 충격시험 (32°F) Absorbed energy 흡수 에너지				Shear fracture area 연성파괴면 영역 %			
					Yield Strength 항복강도	Tensile Strength 연장강도		VR / 연신율 %/ CE <sub>max</sub>	E <sub>h</sub> / 연신비	S <sub>h</sub> / 인장시험비	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Nb	Ti		V	B	#7 CE <sub>max</sub>	Base		Weld		
						Base Metal	Weld Metal																			a		a	a	a
						Base	Weld																			Base		Weld		
Acceptance Criteria / 합격기준	2520	1	10	R42591	52200-78100	56700-69800	65700	90	26	22	45	130	25	15	30	30	15	30	50	40	50	10	20	1202	1227	1198	1300			
25X0.75X4000				R42594																										
25X0.75X4000																														



# MILL TEST & INSPECTION CERTIFICATE

## SeAH SeAH Steel Corp.

### (주)세아제강

발급일자 : 2022.12.31  
 DATE OF ISSUE : 2022.12.31  
 계약서번호 : 223-(345(12544))  
 L/C No. (P/O No.) : 223-(345(12544))  
 수요가 : PREMIUM PIPE  
 CUSTOMER : PREMIUM PIPE  
 주문자 : SEAH STEEL AMERICA, INC.  
 SHIPPER : SEAH STEEL AMERICA, INC.

증명서번호 : PE202301-0021-000021(5023067)  
 CERTIFICATE NO. : PE202301-0021-000021(5023067)  
 제품명 : SAW STEEL PIPE  
 COMMODITY : SAW STEEL PIPE  
 제품규격 : API 5L X65M PSL2(46th)  
 SPECIFICATION : API 5L X65M PSL2(46th)

HEAD OFFICE: SEAH TOWER, 45 YANGHWA-RO, MAPO-GU, SEOUL, KOREA  
 POHANG PLANT : 136, GOEDONG-RO, NAM-GU, POHANG, KOREA

NO.	HEAT NO. (BATCH NO.)	관 단 TYPE	주 문 치 수 ORDER SIZE			수 량 QUANTITY			비 고 REMARK
			관 직	관 두	관 길이	본 수 PCS	총 길이 TOTAL LENGTH	중량(FT/T) WEIGHT	
12	VK446619 (SPWX271110)	RRE	28"	X 0.750"	X 38.500 FT	1	38.500 FT	3.815	* CONFIRM TO NACE MR 0175 & MR 0103 (CHEMICAL COMPOSITION AND HARDNESS VALUE ONLY) * HARDNESS TEST RESULT ; Max. Value * TENSILE SPECIMEN : RECTANGULAR TYPE(1T180 & 1W-WIDTH 1 1/2") * UT CALIBRATION REFERENCE : K5 NOTCH * RT IQI ; ISO WIRE-TYPE * IMPACT TEST SPECIMEN(3T90,3W,3HAZ/2V) : Full Size * MACROGRAPHIC TEST : GOOD  Steel Making : JFE (JAPAN) Plate Rolling : DONGKUK STEEL.(KOREA)
13	VK446619 (SPWZ052060)	RRE	26"	X 0.750"	X 38.500 FT	1	38.500 FT	3.535	
14	VK550551 (SPWZ052090)	RRE	26"	X 0.750"	X 38.500 FT	1	38.500 FT	3.535	

NO.	HEAT NO. (BATCH NO.)	HYDRO STATIC TEST	COIL APPROX RESULTS	N D T	V I S U A L	F L A T T E N I N G	R M T (Gs)	B E N D I N G	D I R E C T I O N	CHEMICAL COMPOSITION(%)														TENSILE TEST				IMPACT TEST(-46 °C)				Drop Weight Tear Test ( )	HARD NESS TEST HV	HEAT TREAT MENT							
										C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	CEQ	D I R E C T I O N	TENSILE STRENGTH	YIELD STRENGTH	Y.R	E.L.	L O C	ENERGY (Joule)					SHEAR AREA(%)						
										2	3	2	2	2	2	3	3	3	4	C1	psi	psi	%	%	0	10	1	2	3	AVE	1	2	3	AVE	1	2	AVE	HV	11		
기준 SPEC							30		MAX MIN	12	45	160	25	15	50	50	50	50			10	25	110200	87000	93													250			
12	VK446619 (SPWX271110)	2970	G		G	G	G	G	H P P P	7 7 7 7	24 23 24 24	151 154 153 153	12 15 14 13	2 3 3 2	2 1 1 1	1 1 1 1	0 0 0 0					1 16 T W	86290 88320	69030	80	43	B W H	209 171 201	220 172 185	237 179 188	222 174 191	100 100 100	100 100 100	100 100 100						210 215 205	
13	VK446619 (SPWZ052060)	2970	G		G	G	G	G	H P P P	7 6 6 6	24 23 23 23	151 150 149 149	12 13 13 13	2 1 1 1	1 1 1 1	0 0 0 0					1 15 T W	83680 90350	67290	80	44	B W H	211 158 164	284 177 153	252 176 181	249 170 166	100 100 100	100 100 100	100 100 100						211 220 207		
14	VK550551 (SPWZ052090)	2970	G		G	G	G	G	H P P P	7 6 6 6	25 23 23 23	148 148 146 146	13 13 13 13	2 1 1 1	1 1 1 1	0 0 0 0					2 15 T W	86440 90790	77300	89	44	B W H	222 101 184	194 116 38	78 139 175	165 119 132	100 100 100	100 100 100	100 100 100						200 220 210		

OTHERS : \*1-BRE:BACK REBELD ENR(30° - 35°) \*2-GR: \*3-Residual Magnetism(Gauss) \*4-Dir:Direction \*5-LOC:Location  
 \*6-RT:Radiographic Test \*7-Radiographic Test of Each Pipe End \*8-G:Guided Bend Test \*9-Analysis-B:Heat, P:Product  
 \*10-UT:Ultrasonic Test \*11-Values below Significant Figure, 2:X100, 3:X1000, 4:X10000 \*7-C1(X100):C+Si/30+Mn/20+Cu/20+Ni/10+Cr/20+Mo/15+V/10+Nb/9+Ti/10+Al \*8-E.L:Elongation(U-2°)  
 \*9-T:Base Transverse, W:Weil Transverse \*10-B:Base, H:HA, Z:W:Weil  
 \* THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 : 2004 ISO 10474 3.1 : 2013(3.1.B:1991)

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH ABOVE SPECIFICATION AND THE RESULTS OF ALL TEST ARE ACCEPTABLE.  
 THE USE OF THE MATERIAL OUTSIDE THE SPECIFICATIONS INDICATED ON THIS CERTIFICATE MAY CAUSE SAFETY AND/OR MONETARY PROBLEMS. FURTHERMORE, ANY ORGANIZATION OR PERSON(S) WHO DELIBERATELY MODIFIES THE CERTIFICATE WILL BE PROSECUTED FOR FORGING AN OFFICIAL DOCUMENT ACCORDING TO THE PROVISIONS OF THE CRIMINAL CODE (231)  
 THIS MILL TEST REPORT IS NOT RELATED THE ACCREDITATION STANDARD (KSG Q ISO/IEC 17025, OPERATION INSTRUCTIONS AND ETC.) AND KOLAS ACCREDITATION.

S.R. Ahn  
 Manager of Q.M Dept.

