CERTIFICATE NO(성적서 번호) : DC01623
DATE OF ISSUE(발행일자) : 2019-12-05
CONTRACT(P/O) NO.(계약번호) : 28991
PR NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
705, Yeompo-ro, Buk-gu, Ulsan, Korea

No	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec Min. / Max.	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Max. Value	CVN Impact Test ※2 ※3	Specimen size	CVN Impact Test(℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	av
									Min.		415	415	240														
									Max.																		
1	EB BE	10" X 0.500 " X 6.150 M	10	5,013	61.5	R28806	1950	5		T	483	534	449		43												
2	EB BE	10" X 0.500 " X 6.150 M	49	24,566	301.35	SQ05406	1950	5		T	480	532	347		42												
		TOTAL	59	29,579	362.85																						

No	Heat No.	Spec	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	2:×100 3:×1000 4:×10000	Zn-Coating Test: Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3									
		Min.																					
		Max.		30		120	50	45	40	40	40	150	80	1000									
1	R28806		H	6	1	78	14	4															
			P	6	2	81	14	TR	3	1	2	14	2	78									
			P	6	2	81	14	TR	3	1	2	14	2	79									
2	SQ05406		H	19	1	84	14	3															
			P	20	1	82	10	4	2	2	2	26	1	83									
			P	20	1	83	11	4	2	2	2	27	2	85									

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

SURVEYOR

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H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01622
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CONTRACT(P/O) NO.(계약번호) : 28991
PR NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No	Hydrostatic Test Pressure (PSI)	Hydrostatic Test Time (SEC)	Spec.	※2	Tensile Strength Base (MPa)	Tensile Strength Weld (MPa)	Yield Strength (MPa)	Y/R Rate (%)	E.L (%)	Hardness Test ※3	Hardness Test Max. Value	CVN Impact Test ※2 ※3	CVN Impact Test Specimen size	CVN Impact Test (℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	av
									Min.		415	415	240		28												
									Max.											Criteria : In the case of 10×10)							
1	EB BE	24" X 0.375 " X 6 150 M	31	26,859	190,65	SU35130	660	5		T	461	471	296		43												
		TOTAL	31	26,859	190 65																						

No	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	2:×100	3:×1000	4:×10000	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Colapse Pressure (psi)	H.I.C Test CLR (%)	CTR (%)	CSR (%)	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3											
		Min.																							
		Max.		30		120	50	45	40	40	40	150	80	1000											
1	SU35130		H	18	TR	50	10	3																	
			P	18	1	49	7	2	1	1	2	30	1	69											
			P	19	1	50	7	2	1	1	2	30	1	69											

Remark
※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max, an increase of 0.06% Mn above the specified max will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

SURVEYOR

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H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01501

DATE OF ISSUE(발행일자) : 2019-12-04

CONTRACT(P/O) NO.(계약번호) : 28991

PR NO (주문서번호) : F191000108

COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE

SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL

울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. / Max	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	EL %	Hardness Test ※3	Max. Value	CVN Impact Test ※2 ※3 Specimen size	CVN Impact Test(℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	a
									Min.		415	415	240													
									Max.										Criteria : in the case of 10×10							
1	EB BE	20" X 0.375 " X 6.150 M	35	25.189	215.25	9831309	790	5		T	513	522	359		37											
2	EB BE	20" X 0.375 " X 6.150 M	4	2,879	24.6	R29713	790	5		T	528	492	404		39											
		TOTAL	39	28,068	239.85																					

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	Zn-Coating Test: Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test
				Chemical Composition(%) 2:×100 3:×1000 4:×10000																		
				2	2	2	3	3	2	2	2	3	3	3								
		Min.																				
		Max.		30		120	50	45	40	40	40	150	80	1000								
1	9831309		H	18	1	63	16	3														
			P	19	1	63	14	3	1	1	1	19	1	62								
			P	19	1	63	14	3	1	1	1	19	1	62								
2	R29713		H	6	13	102	11	2														
			P	6	11	102	9	1	2	1	2	12	2	67								
			P	6	12	103	9	1	2	1	2	13	2	68								

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI

QA Manager

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CERTIFICATE NO(성적서 번호) : DC01513
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CONTRACT(P/O) NO.(계약번호) : 28991
PR NO (주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec Min. / Max.	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test Max. Value	CVN Impact Test ※2 ※3	CVN Impact Test(℃) Absorbed Energy(Joule) Specimen size	1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	av
									Spec		415	415	240		29												
1	EB 8E	16" X 0.500 " X 6.150 M	35	26.540	215.25	SQ17570	1310	5		T	486	505	323		46				Criteria : In the case of 10×10								
		TOTAL	35	26.540	215.25																						

No.	Heat No.	Spec	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	2:×100 3:×1000 4:×10000	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Colapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3					psi	%	%	%	
		Min																					
		Max.		30		120	50	45	40	40	40	150	80	1000									
1	SQ17570		H	19	1	84	15	3															
			P	20	1	83	10	6	2	2	2	22	1	75									
			P	19	1	83	10	6	2	2	2	22	1	75									

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01621
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CONTRACT(P/O) NO.(계약번호) : 28991
PR NO (주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL

출신공장 : 울산광역시 북구 염포로 705
705, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure (PSI)	Hydrostatic Test Time (SEC)	Spec. Min. / Max.	※2	Tensile Strength Base (MPa)	Tensile Strength Weld (MPa)	Yield Strength (MPa)	Y/R Rate (%)	E.L (%)	Hardness Test ※3	Hardness Test Max. Value	CVN Impact Test ※2 ※3	CVN Impact Test Specimen size	CVN Impact Test Absorbed Energy (Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test (℃) Shear Area (%) 1	2	a
							PSI	SEC	Min. / Max.		MPa	MPa	MPa	%	%												
											415	415	240														
																			Criteria : In the case of 10×10								
1	EB BE	12" X 0.250 " X 6.150 M	69	21,094	424.35	9742023	820	5		T	560	570	405		31												
2	EB BE	12" X 0.250 " X 6.150 M	185	56,558	1,137.75	9851516	820	5		T	511	547	387		36												
3	EB BE	12" X 0.250 " X 6.150 M	140	42,800	861	KF149	820	5		T	487	550	365		36												
4	EB BE	12" X 0.250 " X 6.150 M	20	6,114	123	P84513	820	5		T	554	565	474		34												

Chemical Composition(%) 2:×100 3:×1000 4:×10000

No.	Heat No.	Spec.	※4	C	S	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10
				2	2	2	3	3	2	2	2	3	3	3
		Min.												
		Max.		30		120	50	45	40	40	40	150	80	1000
1	9742023		H	18	1	62	15	3						
			P	19	1	64	13	3	TR	1	1	34	1	60
			P	19	1	64	13	3	TR	1	1	34	1	60
2	9851516		H	18	2	62	16	3						
			P	18	1	63	14	2	TR	1	1	33	1	61
			P	18	1	63	14	2	TR	1	1	34	1	63
3	KF149		H	19	1	81	14	4						
			P	18	TR	78	10	4	1	1	1	35	2	66
			P	18	TR	78	11	4	1	1	1	35	2	66
4	P84513		H	6	16	100	10	2						
			P	7	15	104	5	1	1	1	2	12	2	50
			P	7	15	105	5	1	1	1	2	12	2	52

No.	Heat No.	Zn-Coating Test: Zn Coating	Copper Sulfate Test: Time	Copper Sulfate Test: Result	HC-Test Collapse Pressure (psi)	H.I.C Test CLR (%)	H.I.C Test CTR (%)	H.I.C Test CSR (%)	S.S.C.C Test
1	9742023								
2	9851516								
3	KF149								
4	P84513								

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max, an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

SURVEYOR

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H.K. CHOI

QA Manager

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CERTIFICATE NO(성적서 번호) : DC01621
DATE OF ISSUE(발행일자) : 2019-12-05
CONTRACT(P/O) NO.(계약번호) : 28991
PR NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure (PSI)	Hydrostatic Test Time (SEC)	Spec Min. / Max.	※2	Tensile Strength Base (MPa)	Tensile Strength Weld (MPa)	Yield Strength (MPa)	Y/R Rate (%)	E.L (%)	Hardness Test ※3	Hardness Test Max. Value	CVN Impact Test ※2 ※3	CVN Impact Test Specimen size	CVN Impact Test Absorbed Energy (Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test (℃) Shear Area (%) 1	2	a
							PSI	SEC	Min. / Max.		MPa	MPa	MPa	%	%												
											415	415	240														
																			Criteria : in the case of 10×10)								
5	EB BE	12" X 0.250 " X 6.150 M	120	36,686	738	PT448	820	5		T	533	596	400		34												
6	EB BE	12" X 0.250 " X 6.150 M	55	16,814	338.25	PT521	820	5		T	502	582	377		38												
7	EB BE	12" X 0.250 " X 6.150 M	15	4,586	92.25	R21540	820	5		T	541	560	442		34												
		TOTAL	604	184,652	3,714.6																						

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	2:×100 3:×1000 4:×10000	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				Chemical Composition(%)												Zn-Coating Test			HC-Test	H.I.C Test			
				2	2	2	3	3	2	2	2	3	3	3					psi	%	%	%	
		Min.																					
		Max.		30		120	50	45	40	40	40	150	80	1000									
5	PT448		H	18	1	78	13	5															
			P	19	1	76	10	6	1	2	2	38	2	94									
			P	20	1	77	10	6	1	2	3	39	2	95									
6	PT521		H	19	1	81	12	4															
			P	19	1	77	9	5	3	1	2	35	2	95									
			P	19	1	78	9	5	3	1	2	36	2	97									
7	R21540		H	6	14	101	15	1															
			P	6	16	113	19	8	TR	1	3	37	3	76									
			P	6	16	114	18	7	TR	1	3	37	3	77									

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01581
DATE OF ISSUE(발행일자) : 2019-12-05
CONTRACT(P/O) NO.(계약번호) : 28991
PR NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. / Max.	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test Max. Value	※2 ※3	CVN Impact Test Specimen size	CVN Impact Test (℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	a
									Min.		415	415	240		29												
									Max.																		
1	EB BE	12" X 0.500 ' X 6.150 M	37	22,170	227.55	SQ15189	1650	5		T	484	529	331		43					Criteria : In the case of 10×10)							
		TOTAL	37	22,170	227.55																						

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3				psi	%	%	%	
		Min.																				
		Max.		30		120	50	45	40	40	40	150	80	1000								
1	SQ15189		H	19	1	85	15	3														
			P	20	1	86	10	1	2	1	2	18	2	67								
			P	19	1	86	10	1	2	1	2	18	2	67								

Chemical Composition(%) 2:×100 3:×1000 4:×10000

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark
※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max, an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01580

DATE OF ISSUE(발행일자) : 2019-12-05

CONTRACT(P/O) NO.(계약번호) : 28991

PR NO.(주문서번호) : F191000108

COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE

SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL

울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure (PSI)	Hydrostatic Test Time (SEC)	Spec Min. / Max.	※2	Tensile Properties(Gage Length : 2 inch) Tensile Strength Base (MPa)	Tensile Strength Weld (MPa)	Yield Strength (MPa)	Y/R Rate (%)	E.L (%)	Hardness Test ※3	Hardness Test Max. Value	※2 ※3	CVN Impact Test CVN Impact Test(℃) Absorbed Energy(Joule) Specimen size	1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	a
									Min.		415	415	240														
									Max.										Criteria : In the case of 10×10								
1	EB BE	10" X 0.250 " X 6.150 M	100	25.676	615	G79201	980	5		T	508	524	392		40												
2	EB BE	10" X 0.250 " X 6.150 M	84	21.568	516.6	G79202	980	5		T	524	524	408		38												
3	EB BE	10" X 0.250 " X 6.150 M	105	26.960	645.75	SU37717	980	5		T	500	580	346		37												
		TOTAL	289	74,204	1,777.35																						

Chemical Composition(%) 2:×100 3:×1000 4:×10000

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10
				2	2	2	3	3	2	2	2	3	3	3
		Min.												
		Max.		30		120	50	45	40	40	40	150	80	1000
1	G79201		H	9	17	96	13	3						
			P	9	16	98	13	4	1	2	2	22	2	81
			P	9	16	97	12	4	1	2	2	22	2	80
2	G79202		H	9	17	99	18	3						
			P	10	16	97	15	6	1	2	3	23	2	78
			P	10	16	98	14	5	1	2	3	23	2	78
3	SU37717		H	15	14	109	10	3						
			P	16	14	109	10	6	2	1	1	29	2	76
			P	16	14	109	10	5	2	1	1	29	2	77

Zn Coating	Zn-Coating Test Copper Sulfate Test Time	Result	HC-Test Collapse Pressure (psi)	H.I.C Test CLR (%)	CTR (%)	CSR (%)	S.S.C.C Test

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max, an increase of 0.06% Mn above the specified max will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR – ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI

QA Manager

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CONTRACT(P/O) NO.(계약번호) : 28991
PR NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 705
705, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec Min. / Max	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	EL %	Hardness Test ※3 Max. Value	※2 ※3	CVN Impact Test Specimen size	CVN Impact Test(℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	a
											415	415	240													
									Max.									Criteria : In the case of 10×10								
1	EB BE	10" X 0.500 " X 6.150 M	1	501	6.15	R26528	1950	5		T	481	532	442		38											
2	EB BE	10" X 0.500 " X 6.150 M	2	1,003	12.3	R28806	1950	5		T	483	534	449		43											
		TOTAL	3	1,504	18.45																					

Chemical Composition(%) 2 : ×100 3 : ×1000 4 : ×10000

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CV3 ※10
				2	2	2	3	3	2	2	2	3	3	3
		Min.												
		Max.		30		120	50	45	40	40	40	150	80	1000
1	R26528		H	6	1	74	12	4						
			P	6	1	75	13	4	4	1	3	14	2	88
			P	7	1	76	13	5	4	1	3	14	2	89
2	R28806		H	6	1	78	14	4						
			P	6	2	81	14	TR	3	1	2	14	2	78
			P	6	2	81	14	TR	3	1	2	14	2	79

Zn-Coating Test: Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CV3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR – ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01582

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CONTRACT(P/O) NO.(계약번호) : 28991

PR NO.(주문서번호) : F191000108

COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE

SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL

출신공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. / Max.	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test Max. Value	※2 ※3	CVN Impact Test Specimen size	CVN Impact Test (℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	a
									Min.		415	415	240														
									Max.											Criteria : In the case of 10×10							
1	EB BE	16" X 0.312 " X 6.150 M	1	479	6.15	G80401	820	5		T	535	500	424		38												
2	EB BE	16" X 0.312 " X 6.150 M	21	10,052	129.15	R00735	820	5		T	465	467	383		41												
3	EB BE	16" X 0.312 " X 6.150 M	4	1,915	24.6	R28137	820	5		T	532	507	424		39												
4	EB BE	16" X 0.312 " X 6.150 M	9	4,308	55.35	R28140	820	5		T	530	507	420		39												

Chemical Composition(%) 2 : ×100 3 : ×1000 4 : ×10000

No.	Heat No.	Spec. Min. / Max	※4	C 2	Si 2	Mn ※7 2	P 3	S 3	Cu 2	Ni 2	Cr 2	Mo 3	V 3	CM3 ※10 3
		Max		30		120	50	45	40	40	40	150	80	1000
1	G80401		H	9	17	93	16	3						
			P	7	16	105	13	7	3	1	2	31	3	92
			P	7	16	106	13	7	3	1	2	31	3	92
2	R00735		H	7	1	75	13	7						
			P	7	1	79	12	10	2	1	2	28	2	83
			P	7	1	79	12	11	2	1	2	28	2	84
3	R28137		H	6	16	102	12	1						
			P	7	15	105	13	7	3	1	2	31	2	93
			P	7	15	105	13	7	3	1	2	31	2	93
4	R28140		H	7	16	103	15	2						
			P	7	15	105	13	7	3	1	2	31	2	93
			P	7	16	105	13	7	3	1	2	31	3	94

Zn-Coating Test: Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI

QA Manager

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CERTIFICATE NO(성적서 번호) : DC01582
DATE OF ISSUE(발행일자) : 2019-12-05
CONTRACT(P/O) NO.(계약번호) : 28991
PR NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. / Max.	※2	Tensile Properties (Gage Length : 2 inch) Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test Max. Value	CVN Impact Test ※2 ※3	CVN Impact Test (℃) Specimen size	Absorbed Energy (Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test (℃) Shear Area (%) 1	2
							PSI	SEC	Min. / Max.		415	415	240							Criteria : In the case of 10×10)						
5	EB BE	16" X 0.312 " X 6.150 M	4	1,915	24.6	R28145	820	5		T	528	493	419		37											
6	EB BE	16" X 0.312 " X 6.150 M	13	6,223	79.95	R28149	820	5		T	492	495	367		41											
7	EB BE	16" X 0.312 " X 6.150 M	8	3,829	49.2	R28388	820	5		T	486	498	367		41											
		TOTAL	60	28,721	369																					

Chemical Composition(%) 2 : ×100 3 : ×1000 4 : ×10000

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	Zn-Coating Test: Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3				psi	%	%	%	
		Min.																				
		Max.		30		120	50	45	40	40	40	150	80	1000								
5	R28145		H	6	18	103	15	2														
			P	7	17	95	21	11	TR	1	2	30	3	69								
			P	8	17	95	22	11	TR	1	2	30	3	70								
6	R28149		H	6	15	102	12	2														
			P	7	16	105	15	9	2	1	2	30	3	86								
			P	7	16	106	15	8	2	1	2	30	3	87								
7	R28388		H	6	15	103	9	1														
			P	8	17	95	22	11	TR	2	2	30	3	70								
			P	8	17	94	22	11	TR	1	2	30	3	69								

Remark
※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max an increase of 0.06% Mn above the specified max will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR – ASTM A53(2018ED)

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

SURVEYOR

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H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01607
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CONTRACT(P/O) NO.(계약번호) : 28991
PR NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure (PSI)	Hydrostatic Test Time (SEC)	Spec. Min. / Max	※2	Tensile Properties(Gage Length : 2 inch) Tensile Strength Base (MPa)	Tensile Strength Weld (MPa)	Yield Strength (MPa)	Y/R Rate (%)	E.L (%)	Hardness Test ※3	Hardness Test Max. Value	※2 ※3	CVN Impact Test CVN Impact Test(℃) Absorbed Energy(Joule) Specimen size	1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	av
									Min.		415	415	240														
									Max																		
																			Criteria : In the case of 10×10)								
1	EB BE	12" X 0.250 " X 6,150 M	2	611	12.3	P84513	820	5		T	554	565	474		34												
2	EB BE	12" X 0.250 " X 6,150 M	1	306	6.15	R21540	820	5		T	541	560	442		34												
		TOTAL	3	917	18.45																						

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3								
		Min.																psi	%	%	%	
		Max.		30		120	50	45	40	40	40	150	80	1000								
1	P84513		H	6	16	100	10	2														
			P	7	15	104	5	1	1	1	2	12	2	50								
			P	7	15	105	5	1	1	1	2	12	2	52								
2	R21540		H	6	14	101	15	1														
			P	6	16	113	19	8	TR	1	3	37	3	76								
			P	6	16	114	18	7	TR	1	3	37	3	77								

2 : ×100 3 : ×1000 4 : ×10000

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

SURVEYOR

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H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01588

DATE OF ISSUE(발행일자) : 2019-12-05

CONTRACT(P/O) NO.(계약번호) : 28991

PR NO.(주문서번호) : F191000108

COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE

SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL

울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. / Max.	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	EL %	Hardness Test ※3	Hardness Test Max. Value	CVN Impact Test ※2 ※3	CVN Impact Test(℃) Specimen size	Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2
									Min.		415	415	240		25											
									Max.																	
1	EB BE	10" X 0.225" X 6.150 M	111	25,715	682.65	SU41051	880	5		T	474	514	329		36				Criteria : In the case of 10×10							
		TOTAL	111	25,715	682.65																					

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3								
		Min.																				
		Max.		30		120	50	45	40	40	40	150	80	1000								
1	SU41051		H	18	1	50	11	2														
			P	18	1	49	8	TR	2	1	2	26	1	69								
			P	18	1	49	8	TR	2	1	2	26	1	70								

Chemical Composition(%) 2:×100 3:×1000 4:×10000

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI

QA Manager

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CERTIFICATE NO(성적서 번호) : DC01608
DATE OF ISSUE(발행일자) : 2019-12-05
CONTRACT(P/O) NO.(계약번호) : 28991
PR NO (주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. / Max.	※2	Tensile Properties (Gage Length : 2 inch) Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3 Max. Value	※2 ※3	CVN Impact Test CVN Impact Test(℃) Absorbed Energy(Joule) Specimen size	1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2	a
									Min.		415	415	240		28			Criteria : in the case of 10×10)								
									Max.																	
1	EB BE	12" X 0.375 " X 6.150 M	56	25,410	344.4	SP52113	1240	5		T	450	502	332		39											
		TOTAL	56	25,410	344.4																					

No	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	2:×100 3:×1000 4:×10000	Zn-Coating Test Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3									
		Min.																					
		Max.		30		120	50	45	40	40	40	150	80	1000									
1	SP52113		H	18	1	40	13	4															
			P	17	1	42	5	1	2	1	2	20	1	67									
			P	17	1	42	4	TR	2	1	2	20	1	67									

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark
※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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H.K. CHOI
QA Manager

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CONTRACT(P/O) NO.(계약번호) : 28991

PR NO.(주문서번호) : F191000108

COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE

SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL

울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec Min. / Max.	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test Max. Value	※2 ※3	CVN Impact Test Specimen size	CVN Impact Test(℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(%) 1	2
									Min.		415	415	240		28											
									Max.																	
																				Criteria : In the case of 10×10						
1	EB BE	12" X 0.406" X 6.150 M	51	24.998	313.65	SU40326	1340	5		T	444	500	309		44											
		TOTAL	51	24.998	313.65																					

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				Chemical Composition(%) 2:×100 3:×1000 4:×10000											Zn-Coating Test			HC-Test	H.I.C Test			
				2	2	2	3	3	2	2	2	3	3	3				psi	%	%	%	
		Min.																				
		Max.		30		120	50	45	40	40	40	150	80	1000								
1	SU40326		H	19	1	50	14	4														
			P	19	1	50	4	TR	TR	1	1	20	1	46								
			P	19	1	49	5	TR	TR	1	1	20	1	47								

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관끝)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR - ASTM A53(2018ED)

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SURVEYOR

H.K. CHOI

QA Manager

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CERTIFICATE NO(성적서 번호) : DC01502
DATE OF ISSUE(발행일자) : 2019-12-04
CONTRACT(P/O) NO.(계약번호) : 28991
PR.NO.(주문서번호) : F191000108
COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE
SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL
울산공장 : 울산광역시 북구 염포로 706
706, Yeompo-ro, Buk-gu, Ulsan, Korea

No	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. Max.	※2	Tensile Properties(Gage Length : 2 inch) Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test Max. Value	※2 ※3	CVN Impact Test Specimen size	CVN Impact Test(℃) Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test(℃) Shear Area(% 1	2
									Min.		415	415	240													
									Max.											Criteria : In the case of 10×10						
1	EB BE	14" X 0.375 " X 6.150 M	16	7,995	98.4	SP51748	1120	5		T	453	468	311		43											
2	EB BE	14" X 0.375 " X 6.150 M	108	53,966	664.2	SZ60463	1120	5		T	466	481	343		44											
		TOTAL	124	61,961	762.6																					

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	2:×100 3:×1000 4:×10000	Zn-Coating Test: Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3									
		Min.																					
		Max.		30		120	50	45	40	40	40	150	80	1000									
1	SP51748		H	17	1	46	16	3															
			P	17	1	44	15	3	2	1	2	14	1	63									
			P	17	1	44	16	3	2	1	2	14	1	63									
2	SZ60463		H	17	2	47	15	7															
			P	17	2	48	12	6	2	1	2	24	1	72									
			P	17	2	47	11	5	1	1	2	24	1	72									

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※7) For each reduction of 0.01% below the specified C max. an increase of 0.06% Mn above the specified max. will be permitted up to a max. of 1.65%
※10) CM3=Cu+Ni+Cr+Mo+V
※ SPEC YEAR – ASTM A53(2018ED)

SURVEYOR

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H.K. CHOI
QA Manager

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CERTIFICATE NO(성적서 번호) : DC01503

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CONTRACT(P/O) NO.(계약번호) : 28991

PR NO (주문서번호) : F191000108

COMMODITY(제품명) : E.R.W. CARBON STEEL PIPE

SPECIFICATION(제품규격) : ASTM A53 B

검사증명서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사): 현대종합상사(주)

HYUNDAI STEEL

울산공장 : 울산광역시 북구 염포로 705
705, Yeompo-ro, Buk-gu, Ulsan, Korea

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA×THICK×LENGTH (외경×두께×길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (M)	HEAT No	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min / Max	※2	Tensile Strength Base MPa	Tensile Strength Weld MPa	Yield Strength MPa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test Max. Value	CVN Impact Test ※2 ※3	CVN Impact Test Specimen size	CVN Impact Test Absorbed Energy(Joule) 1	2	3	avg	Shear Area (%)	D.W.T Test Shear Area 1	2
									Min		415	415	240													
									Max																	
1	EB BE	14" X 0.438" X 6.150 M	46	26,748	282.9	SQ07155	1310	5		T	465	468	321		43											
2	EB BE	14" X 0.438" X 6.150 M	32	18,607	196.8	SQ09556	1310	5		T	502	510	348		38											
		TOTAL	78	45,355	479.7																					

Criteria : In the case of 10×10

No.	Heat No.	Spec.	※4	C	Si	Mn ※7	P	S	Cu	Ni	Cr	Mo	V	CM3 ※10	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				2	2	2	3	3	2	2	2	3	3	3				psi	%	%	%	
		Min.																				
		Max.		30		120	50	45	40	40	40	150	80	1000								
1	SQ07155		H	18	1	80	12	3														
			P	18	1	79	9	2	2	1	2	14	1	68								
			P	18	1	79	8	1	2	1	2	14	1	69								
2	SQ09556		H	19	1	85	11	3														
			P	19	1	84	7	1	3	2	2	16	1	89								
			P	19	1	85	7	1	3	2	2	16	1	91								

2 : ×100 3 : ×1000 4 : ×10000

Heat Treatment	Non-Destructive Test (U.T)	Flattening / Bending Test	Visual & Dimension
GOOD	GOOD	GOOD	GOOD

Remark

※1) Type of pipe end(관종)
EB:ERW Black BE:Bevel End
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