MILL'S QUALITY CERTIFICATES

SeAH Steel Corp.
(주)세 아 제 강

HEAD OFFICE; SEAH TOWER, 45 YANGHWA-RO, MAPO-GU, SEOUL, KOREA
POHANG PLANT; 14-1, JANGHEUNG-DONG, NAM-GU, POHANG

증명서번호
CERTIFICATE NO.: E201303-0145-000602(5009422)
제 품 명
COMMODITY : H.F.W STEEL PIPE
제 품 규 격
SPECIFICATION : API 5LB PSL1/ASTM A53B(2012)

발 급 일 자
DATE OF ISSUE : 2013.03.27
계 약 서 번 호
L/C No. (P/O No.) : 1103108267
수 요 가
CUSTOMER : PLESA
주 문 자
SHIPPER : DUFERCO SA

NO.	HEAT NO. (BATCH NO.)	관 단 TYPE *1	주 문 치 수 ORDER SIZE	수 량 QUANTITY 본 수 PCS	총 길 이 TOTAL LENGTH	중량(M/T) WEIGHT	비 고 REMARK
1	4-3450 (SHN3142110)	BBE	10 " X 0.500 " X 6.120 M	127	777.240 M	63.384	* NACE MR 0175
2	4-3445 (SHN3153060)	BBE	14 " X 0.250 " X 6.120 M	122	746.640 M	41.147	* AS PER ATTACHED RIDER
3	4-3444 (SHN3153070)	BBE	14 " X 0.250 " X 6.120 M	54	330.480 M	18.213	* HEAT TREATMENT TEMPERATURE OF WELD SEAM : MIN 900℃
4	4-3444 (SHN3162120)	BBE	14 " X 0.500 " X 6.120 M	46	281.520 M	30.232	

NO.	HEAT NO (BATCH NO.)	HYDROSTATIC TEST 5 Sec. psi	RESULT	N·D·T U *2	VISUAL & DIMENSION	FLATTENING	SHOCK	COMPRESSION	RESIDUAL MAGNETISM GAUSS	BENDING *3	DRIFT	CRUSH	FLARING	FLANGE	REVERSE FLATTENING
기준 SPEC									30						
1	4-3450 (SHN3142110)	1990	G	G	G	G			G						
2	4-3445 (SHN3153060)	770	G	G	G	G			G						
3	4-3444 (SHN3153070)	770	G	G	G	G			G						
4	4-3444 (SHN3162120)	1530	G	G	G	G			G						

NO.	HEAT NO (BATCH NO.)	ZINC COATING TEST WEIGHT OF ZINC COAT -ING	균일성 C.S *4	알칼리 ALK *5	DESIG *6	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti		CEQ C2 *8	DIR *9	TENSILE STRENGTH psi	YIELD STRENGTH psi	E.L % *10	IMPACT TEST (℃) ENERGY Joule	SHEAR AREA %	HARDNESS TEST HRB	HEAT TREATMENT SN *11
						*7 2			*7 3		*7 2	*7 2	*7 2	*7 2	*7 3	*7 3	*7 3										
기준 SPEC					MAX	26		120	30	30	40	40	40	15	80											99	
					MIN																60200	35500					
1	4-3450 (SHN3142110)				H	18	19	46	15	4									26								
					P	17	20	47	17	5	1	1	1	TR	2	2	2		25	T	69760	50760	38			83	G
					P	18	20	47	16	4	1	1	1	TR	2	2	2		26	W	76430						
2	4-3445 (SHN3153060)				H	18	18	45	16	3									26								
					P	17	18	46	16	3	1	1	1	TR	2	1	2		25	T	70920	49600	36			83	G
					P	17	19	46	17	4	1	2	1	TR	2	1	2		25	W	77300						
3	4-3444 (SHN3153070)				H	17	17	44	15	3									24								
					P	17	18	45	15	4	1	1	1	TR	1	2	T1		25	T	69610	49450	37			83	G
					P	18	18	45	17	4	1	1	1	TR	2	2	1		26	W	77010						
4	4-3444 (SHN3162120)				H	17	17	44	15	3									24								
					P	18	17	45	15	3	1	1	2	TR	2	2	2		26	T	65550	50470	39			83	G
					P	18	18	45	14	3	1	1	2	TR	2	2	2		26	W	76720						

NOTE *1 ~ *11: Refer To Others

OTHERS
*1-BBE:Black Beveled End(30°)
*2-U:Weld Seam Ultrasonic Test
*6-H:Heat(Ladle) Analysis, P:Product Analysis *7-2:X100, 3:X1000 *8-C2:C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
*9-T:Base Metal Transverse, W:Weld Part Transverse *10-E.L:Elongation *11-S.N:Seam Normalizing *G:GOOD *Tr:Trace

* THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 (ISO 10474 3.1.B)

Surveyor :

· 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)

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N. J. Baek

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수 요 가
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주 문 자
SHIPPER : DUFERCO SA

NO.	HEAT NO. (BATCH NO.)	관 단 TYPE *1	주 문 치 수 ORDER SIZE			수 량 QUANTITY 본 수 PCS	총 길 이 TOTAL LENGTH	중량(M/T) WEIGHT	비 고 REMARK
5	4-3445 (SHN3181010)	BBE	12 "	X 0.250 "	X 6.120 M	46	281.520 M	14.107	* NACE MR 0175
6	4-3444 (SHN3181020)	BBE	12 "	X 0.250 "	X 6.120 M	66	403.920 M	20.240	* AS PER ATTACHED RIDER
7	4-3446 (SHN3181030)	BBE	12 "	X SCH40	X 6.120 M	243	1,487.160 M	118.452	* HEAT TREATMENT TEMPERATURE OF WELD SEAM : MIN 900℃
8	4-3445 (SHN3181040)	BBE	12 "	X SCH40	X 6.120 M	35	214.200 M	17.061	

NO.	HEAT NO (BATCH NO.)	HYDROSTATIC TEST 5 Sec. psi	RESULT	N.D.T U *2	VISUAL & DIMENSION	FLATTENING	SHOCK	COMPRESSION	RESIDUAL MAGNETISM GAUSS	BENDING *3	DRIFT	CRUSH	FLARING	FLANGE	REVERSE FLATTENING	ZINC COATING TEST WEIGHT OF ZINC COAT-ING	균일성 C.S *4	알칼리 ALK *5
기준 SPEC									30									
5	4-3445 (SHN3181010)	840	G	G	G	G			G									
6	4-3444 (SHN3181020)	840	G	G	G	G			G									
7	4-3446 (SHN3181030)	1360	G	G	G	G			G									
8	4-3445 (SHN3181040)	1360	G	G	G	G			G									

NO.	HEAT NO (BATCH NO.)	DESIG *6	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti		CEQ C2 *8	DIR *9	TENSILE STRENGTH psi	YIELD STRENGTH psi	E.L % *10	IMPACT TEST (℃) ENERGY Joule	SHEAR AREA %	HARDNESS TEST HRB	HEAT TREATMENT SN *11
			2			3		2	2	2	2	3	3	3										
			*7																					
기준 SPEC		MAX	26		120	30	30	40	40	40	15	80											99	
		MIN																60200	35500					
5	4-3445 (SHN3181010)	H	18	18	45	16	3									26								
		P	17	18	46	18	2	1	1	1	TR	1	2	1		25	T	69180	48000	37			83	G
		P	18	19	45	19	2	2	1	1	TR	1	2	1		26	W	77590						
6	4-3444 (SHN3181020)	H	17	17	44	15	3									24								
		P	17	18	44	15	3	1	1	1	TR	3	2	1		25	T	70340	47280	38			83	G
		P	17	18	43	14	3	1	1	1	TR	2	2	1		25	W	76140						
7	4-3446 (SHN3181030)	H	18	18	48	22	3									26								
		P	17	19	47	22	4	1	2	2	TR	1	1	2		25	T	68310	52350	37			84	G
		P	18	18	49	22	3	1	2	1	TR	1	1	2		27	W	79910						
8	4-3445 (SHN3181040)	H	18	18	45	16	3									26								
		P	17	17	44	15	3	2	2	1	TR	TR	2	1		25	T	69760	49160	38			83	G
		P	18	17	46	17	4	2	2	1	TR	TR	2	1		26	W	76870						

NOTE: *1 ~ *11: Refer To Others

OTHERS:
*1-BBE:Black Beveled End(30°)
*2-U:Weld Seam Ultrasonic Test
*6-H:Heat(Ladle) Analysis, P:Product Analysis *7-2:X100, 3:X1000 *8-C2:C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
*9-T:Base Metal Transverse, W:Weld Part Transverse *10-E.L:Elongation *11-S.N:Seam Normalizing *G:GOOD *Tr:Trace

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제 품 규 격
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수 요 가 :
CUSTOMER : PLESA
주 문 자 :
SHIPPER : DUFERCO SA

NO.	HEAT NO. (BATCH NO.)	관 단 TYPE *1	주 문 치 수 ORDER SIZE			수 량 QUANTITY 본 수 PCS	총 길 이 TOTAL LENGTH	중량(M/T) WEIGHT	비 고 REMARK
9	4-3445 (SHN3221040)	BBE	12 "	X SCH40	X 6.120 M	134	820.080 M	65.319	* NACE MR 0175
10	4-3447 (SHN3222030)	BBE	12 "	X 0.500 "	X 6.120 M	106	648.720 M	63.224	* AS PER ATTACHED RIDER
11	4-3444 (SHN3222050)	BBE	12 "	X 0.250 "	X 6.120 M	206	1,260.720 M	63.175	* HEAT TREATMENT TEMPERATURE OF WELD SEAM : MIN 900℃
12	SB59518 (SIN2143060)	BBE	18 "	X 0.500 "	X 6.120 M	11	67.320 M	9.368	

NO.	HEAT NO (BATCH NO.)	HYDROSTATIC TEST 5 Sec. psi	RESULT	N.D.T U *2	VISUAL & DIMENSION	FLATTENING	SHOCK	COMPRESSION	RESIDUAL MAGNETISM GAUSS	BENDING *3	DRIFT	CRUSH	FLARING	FLANGE	REVERSE FLATTENING	ZINC COATING TEST WEIGHT OF ZINC COAT-ING	균일성 C.S *4	알칼리 ALK *5
기준 SPEC									30									
9	4-3445 (SHN3221040)	1360	G	G	G	G			G									
10	4-3447 (SHN3222030)	1680	G	G	G	G			G									
11	4-3444 (SHN3222050)	840	G	G	G	G			G									
12	SB59518 (SIN2143060)	1190	G	G	G	G			G									

NO.	HEAT NO (BATCH NO.)	DESIG *6	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti		CEQ C2 *8	DIR *9	TENSILE STRENGTH psi	YIELD STRENGTH psi	E.L % *10	ENERGY Joule	SHEAR AREA %	HARDNESS TEST HRB	HEAT TREATMENT SN *11
			2			3		2	2	2	2	3	3	3										
			*7																					
기준 SPEC		MAX	26		120	30	30	40	40	40	15	80											99	
		MIN																60200	35500					
9	4-3445 (SHN3221040)	H	18	18	45	16	3									26								
		P	18	17	45	18	4	1	1	2	TR	1	2	1		26	T	69610	50610	37			84	G
		P	19	17	46	17	4	1	1	2	TR	1	2	1		27	W	78320						
10	4-3447 (SHN3222030)	H	18	18	46	16	3									26								
		P	17	17	47	18	3	1	1	TR	TR	2	2	1		25	T	68890	51480	37			83	G
		P	17	18	47	16	5	1	1	TR	TR	2	2	1		25	W	77880						
11	4-3444 (SHN3222050)	H	17	17	44	15	3									24								
		P	16	17	45	16	3	1	1	1	TR	1	1	2		24	T	69760	49740	37			83	G
		P	16	18	44	17	4	1	2	1	TR	1	1	2		24	W	76870						
12	SB59518 (SIN2143060)	H	17	1	77	14	8									30								
		P	16	1	77	13	9	2	1	2	TR	2	1	1		29	T	71210	53800	39			84	G
		P	16	1	78	15	10	2	1	2	TR	2	1	1		30	W	77740						

NOTE: *1 ~ *11: Refer To Others

OTHERS:
*1-BBE:Black Beveled End(30°)
*2-U:Weld Seam Ultrasonic Test
*6-H:Heat(Ladle) Analysis, P:Product Analysis *7-2:X100, 3:X1000 *8-C2:C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
*9-T:Base Metal Transverse, W:Weld Part Transverse *10-E.L:Elongation *11-S.N:Seam Normalizing *G:GOOD *Tr:Trace

* THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 (ISO 10474 3.1.B)

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NO.	HEAT NO. (BATCH NO.)	관 단 TYPE *1	주 문 치 수 ORDER SIZE	수 량 QUANTITY 본 수 PCS	총 길 이 TOTAL LENGTH	중량(M/T) WEIGHT	비 고 REMARK
13	4-3450 (SIN3182080)	BBE	18 " X 0.250 " X 6.120 M	72	440.640 M	31.338	* NACE MR 0175
14	4-3448 (SIN3192080)	BBE	18 " X 0.375 " X 6.120 M	34	208.080 M	21.815	* AS PER ATTACHED RIDER
15	4-3450 (SIN3192090)	BBE	18 " X 0.375 " X 6.120 M	12	73.440 M	7.699	* HEAT TREATMENT TEMPERATURE OF WELD SEAM : MIN 900℃
16	4-3448 (SIN3192210)	BBE	18 " X 0.500 " X 6.120 M	26	159.120 M	22.142	

NO.	HEAT NO (BATCH NO.)	HYDROSTATIC TEST 5 Sec. psi	RESULT	N·D·T U *2	VISUAL & DIMENSION	FLATTENING	SHOCK	COMPRESSION	RESIDUAL MAGNETISM GAUSS	BENDING *3	DRIFT	CRUSH	FLARING	FLANGE	REVERSE FLATTENING	ZINC COATING TEST WEIGHT OF ZINC COAT-ING	균일성 C.S *4	알칼리 ALK *5	DESIG *6	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti		CEQ C2 *8	DIR *9	TENSILE STRENGTH psi	YIELD STRENGTH psi	E.L % *10	IMPACT TEST (℃) ENE-RGY Joule	SHEAR AREA %	HARD-NESS TEST HRB	HEAT TREAT MENT SN *11
																				CHEMICAL COMPOSITION(%)															TENSILE TEST (Gage Length : 50mm)						
																					2			3		2	2	2	2	3	3	3									
기준 SPEC									30										MAX	26		120	30	30	40	40	40	15	80												99	
																			MIN																60200	35500					
13	4-3450 (SIN3182080)	600	G	G	G	G			G										H	18	19	46	15	4									26								
																			P	17	20	47	16	4	1	2	1	TR	2	1	1		25	T	70920	50900	35			83	G
																			P	18	19	46	15	5	1	2	2	TR	2	1	1		26	W	76290						
14	4-3448 (SIN3192080)	890	G	G	G	G			G										H	15	18	44	7	3									22								
																			P	15	18	45	7	4	2	1	1	TR	1	1	1		23	T	67870	49310	38			84	G
																			P	16	18	43	5	4	2	1	1	TR	1	1	2		24	W	76290						
15	4-3450 (SIN3192090)	890	G	G	G	G			G										H	18	19	46	15	4									26								
																			P	17	19	46	17	4	1	1	1	TR	2	2	1		25	T	67730	46410	40			84	G
																			P	17	18	47	16	5	1	2	1	TR	2	2	1		25	W	76580						
16	4-3448 (SIN3192210)	1190	G	G	G	G			G										H	15	18	44	17	3									22								
																			P	15	17	45	19	4	1	2	2	TR	3	1	2		23	T	65990	48730	38			83	G
																			P	16	17	45	18	5	1	2	2	TR	3	1	2		24	W	77010						

NOTE *1 ~ *11: Refer To Others

OTHERS
*1-BBE:Black Beveled End(30°)
*2-U:Weld Seam Ultrasonic Test
*6-H:Heat(Ladle) Analysis, P:Product Analysis *7-2:X100, 3:X1000 *8-C2:C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
*9-T:Base Metal Transverse, W:Weld Part Transverse *10-E.L:Elongation *11-S.N:Seam Normalizing *G:GOOD *Tr:Trace

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NO.	HEAT NO. (BATCH NO.)	관 단 TYPE *1	주 문 치 수 ORDER SIZE	수 량 QUANTITY 본 수 PCS	총 길 이 TOTAL LENGTH	중량(M/T) WEIGHT	비 고 REMARK
17	4-3448 (SIN3211080)	BBE	16 " X 0.500 " X 6.120 M	85	520.200 M	64.141	* NACE MR 0175 * AS PER ATTACHED RIDER * HEAT TREATMENT TEMPERATURE OF WELD SEAM : MIN 900℃

COPY

NO.	HEAT NO (BATCH NO.)	HYDROSTATIC TEST 5 Sec. psi	RESULT	N.D.T U *2	VISUAL & DIMENSION	FLATTENING	SHOCK	COMPRESSION	RESIDUAL MAGNETISM GAUSS	BENDING *3	DRIFT	CRUSH	FLARING	FLANGE	REVERSE FLATTENING	ZINC COATING TEST WEIGHT OF ZINC COAT-ING	균일성 C.S *4	알칼리 ALK *5
기준 SPEC									30									
17	4-3448 (SIN3211080)	1340	G	G	G	G			G									

NO.	DESIG *6	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti		CEQ *8	DIR *9	TENSILE STRENGTH psi	YIELD STRENGTH psi	E.L % *10	IMPACT TEST (℃) ENERGY Joule	SHEAR AREA %	HARDNESS TEST HRB	HEAT TREATMENT SN *11
		2			3		2	2	2	2	3	3	3		C2								
		*7																					
기준 SPEC	MAX	26		120	30	30	40	40	40	15	80											99	
	MIN																60200	35500					
17	H	15	18	44	17	3									22								
	P	15	18	45	19	5	2	2	1	TR	3	2	2		23	T	66130	53510	38			82	G
	P	16	17	43	18	4	2	2	1	TR	3	2	2		24	W	76580						

NOTE *1 ~ *11: Refer To Others

OTHERS
*1-BBE:Black Beveled End(30°)
*2-U:Weld Seam Ultrasonic Test
*6-H:Heat(Ladle) Analysis, P:Product Analysis *7-2:X100, 3:X1000 *8-C2:C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
*9-T:Base Metal Transverse, W:Weld Part Transverse *10-E.L:Elongation *11-S.N:Seam Normalizing *G:GOOD *Tr:Trace

* THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 (ISO 10474 3.1.B)

Surveyor :

· 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)

Manager of Q.M Dept.
N. J. Baek