# MILL'S QUALITY CERTIFICATE

**SeAH Steel Corp.**
**(주)세 아 제 강**

HEAD OFFICE ; BONGNAE-DONG 1GA, JUNG-GU, SEOUL, KOREA
POHANG PLANT ; 14-1, JANGHEUNG-DONG, NAM-GU, POHANG

증명서번호
CERTIFICATE NO.: E201004-0134-000862(5005298)

제 품 명
COMMODITY : E.R.W STEEL PIPE

제 품 규 격
SPECIFICATION : API 5LB PSL1/ASTM A53B(2007)

발 급 일 자
DATE OF ISSUE : 2010.03.31

계 약 서 번 호
L/C No. (P/O No.) : 1103077721

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 | SB67817 (SHK3122060) | BBE | 12 " | X 0.375 " | X 6.120 M | 34 | 208.080 M | 15.325 | CONFIRM TO NACE NORM MR0175(LAST EDITION) *ERW: CHEMICAL COMPOSITION, HEAT TREATMENT AND HARDNESS ONLY *DSAW:CHEMICAL COMPOSITION AND HARDNESS ONLY |
| 2 | SB66603 (SHK3151090) | BBE | 12 " | X 0.250 " | X 6.120 M | 70 | 428.400 M | 21.467 | |
| 3 | SA39166 (SHK3152010) | BBE | 12 " | X 0.250 " | X 6.120 M | 244 | 1,493.280 M | 74.828 | |
| 4 | SB65958 (SHK3152020) | BBE | 12 " | X 0.250 " | X 6.120 M | 102 | 624.240 M | 31.281 | |

| 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 | | | | | | | | | |
| 1 | SB67817 (SHK3122060) | 1260 | G | G | G | G | | | G | | | | | | | | | |
| 2 | SB66603 (SHK3151090) | 840 | G | G | G | G | | | G | | | | | | | | | |
| 3 | SA39166 (SHK3152010) | 840 | G | G | G | G | | | G | | | | | | | | | |
| 4 | SB65958 (SHK3152020) | 840 | 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 *8 | DIR *9 | TENSILE STRENGTH psi | YIELD STRENGTH psi | E.L % *10 | IMPACT TEST (℃) ENERGY Joule | SHEAR AREA % | HARDNESS TEST HRC | 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 | | | | | | | | | | | 22 | |
| | | MIN | | | | | | | | | | | | | | | | 60200 | 35500 | | | | | |
| 1 | SB67817 (SHK3122060) | H | 18 | 1 | 75 | 14 | 8 | | | | | | | | | | | | | | | | | |
| | | P | 17 | 1 | 74 | 15 | 10 | TR | TR | 1 | TR | TR | 1 | 1 | | | T | 64250 | 43940 | 38 | | | 7 | G |
| | | P | 19 | 1 | 75 | 13 | 6 | TR | TR | 1 | TR | TR | 1 | 1 | | | W | 76000 | | | | | | |
| 2 | SB66603 (SHK3151090) | H | 15 | 2 | 68 | 11 | 5 | | | | | | | | | | | | | | | | | |
| | | P | 14 | 2 | 68 | 12 | 4 | TR | 2 | 1 | TR | 1 | 2 | 1 | | | T | 68310 | 50610 | 33 | | | 8 | G |
| | | P | 14 | 1 | 69 | 10 | 4 | TR | 2 | 1 | TR | 1 | 2 | 1 | | | W | 74400 | | | | | | |
| 3 | SA39166 (SHK3152010) | H | 17 | 3 | 71 | 15 | 5 | | | | | | | | | | | | | | | | | |
| | | P | 16 | 2 | 72 | 15 | 7 | 2 | 2 | 2 | TR | 1 | 2 | 1 | | | T | 70340 | 46260 | 32 | | | 8 | G |
| | | P | 18 | 3 | 71 | 16 | 4 | 2 | 2 | 2 | TR | 1 | 2 | 1 | | | W | 75710 | | | | | | |
| 4 | SB65958 (SHK3152020) | H | 14 | 1 | 70 | 10 | 5 | | | | | | | | | | | | | | | | | |
| | | P | 13 | 1 | 71 | 11 | 5 | 2 | TR | 1 | TR | 1 | TR | TR | | | T | 67730 | 47570 | 33 | | | 8 | G |
| | | P | 14 | 1 | 71 | 9 | 6 | 2 | TR | 1 | TR | 1 | TR | TR | | | W | 73960 | | | | | | |

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
*9-T:Base Metal Transverse, W:Weld Part Transverse *10-E.L:Elongation *11-S.N:Seam Normalizing *G:GOOD *Tr:Trace

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