

# MILL TEST CERTIFICATES



Contract No.	
Customer	COUTINHO&FERROSTAAL
L/C No.	
P/O No.	32201207CV01
Commodity	H-BEAM
Specification	ASTM A36/A572 G50/A992/ CSA350W

Head Office	1, Songhyeon-dong, Dong-gu, Incheon, 401-712, S. Korea
Certificate No.	IH20120800790 - 4
Class Cert. No.	
Date of Issue	2012-08-07

Dimensions & Length	Heat No.	Pieces Weights (kg)	Chemical Composition (%)											Tensile Test			Impact Test (V-notch)			Remarks (Impact Specimen Size)			
			C	Si	Mn	P	S	Cu	Mo	Al	Nb	Sn	CE <sup>(1)</sup>	Tensile Strength	Yield point	Elongation <sup>(2)</sup>	Yield Ratio	AVG	1		2	3	
			×100			×1000		×100		×1000			N/mm <sup>2</sup>			%			C				
12X12X87 40.00 FT	E 160783	10 15,780	19	15	62	31	18	23	9	1	12	15	34	525.8	398.1	28.0	0.76						
12X12X87 40.00 FT	E 160784	6 9,474	18	17	62	31	18	24	8					380.5	28.5	0.73							
12X12X87 40.00 FT	E 161074	3 4,737	19	16	62	31	13	24	8					413.8	24.0	0.77							
12X12X87 40.00 FT	E 161076	5 7,895	18	17	60	32	16	26	10		11	14	32	381.5	25.5	0.72							
12X12X96 40.00 FT	E 160780	1 1,742	16	15	63	25	17	25	11		13	12	31	402.1	24.0	0.74							
12X12X96 40.00 FT	E 160781	5 8,710	18	15	60	29	17	23	10		14	13	32	386.4	28.0	0.74							
12X12X96 40.00 FT	E 161049	12 20,904	17	16	59	37	15	19	2	4	12	29	32	543.3	408.0	25.0	0.75						
12X12X120 40.00 FT	E 157731	2 4,354	16	15	62	33	28	28	16		4	13	32	508.0	389.3	26.0	0.77						
12X12X120 40.00 FT	E 161053	10 21,770	19	16	103	26	18	24	8	3	14	14	42	547.2	412.8	24.0	0.75						
SUB TOTAL		54 95,376																					

(Note) (1) Ceq: (CE=C+Mn/6+Cr/5+V/50+Mo/5+Ni/15+Cu/15) (2) Gauge length: 200mm (3) Yield Ratio = YP/TS

**K.S. Shim**  
General Manager of Q.A Team

WE HEREBY CERTIFY THAT THE MATERIAL HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND ALSO WITH THE REQUIREMENTS CALLED FOR THE ABOVE ORDER