



HYUNDAI
W E L D I N G

Rev. 01

S-705EF × H-14

SUBMERGED ARC WELDING CONSUMABLES
FOR ONE-SIDE WELDING OF
MILD and 490MPa CLASS HIGH TENSILE STEEL.

HYUNDAI WELDING CO., LTD.



❖ *Specification*

AWS Not Specified

EN760 Not Specified

❖ *Applications*

One-side submerged arc welding of mild and 490MPa class high tensile steel.

❖ *Characteristics on Usage*

The usability with high heat input is good. As the deposition rate is high, It is very efficient. Suitable for one side welding of TMCP steel.

Impact properties of weld metal in the high heat input welding are good. Applicable to single or tandem electrode welding.

❖ *Note on Usage*

1. Dry the flux at 300~350°C (572~662°F) for 60 minutes before use.
2. When the flux height is excessive, poor bead appearance may occur.
3. Add new flux periodically to prevent the weld defects and bad bead appearance which occurs when continuously reusing the flux.



WELDING CONSUMABLES for TEST

❖ Flux

Consumable	Chemical Composition, wt%				
	SiO ₂ +TiO ₂	Al ₂ O ₃ +MnO	MgO+CaO	CaF ₂	FeO
S-705EF	15	10	35	10	30

Consumable	Particle Size (Mesh)	Type of Flux	B.I	H ₂ O _{1000℃} /CO ₂ (%)
S-705EF	20 × 80	Bonded	4.0	0.08/8.20

❖ Electrode

Consumable	Dia. (mm)	Chemical Composition, wt%				
		C	Si	Mn	P	S
H-14	4.8	0.12	0.05	1.95	0.016	0.011
AWS A5.17 EH14		0.10-0.20	≤0.10	1.70-2.20	≤0.03	≤0.03

❖ Iron Powder, Cut Wire

Consumables	Particle Size(mesh)				
	50	100	200	325	-325
IRN	10	50	15	10	15
CW	1.0 × 1.0 (mm)				

❖ Backing material

	Brand name	Remark
Backing material	CBM-G22	-

This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING CO., LTD. affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, shielding gas, plate chemistry and temperature, weldment design, fabrication methods and service requirements.



WELDING CONDITION

❖ Joint Preparation

Grade of Steel	Thickness (mm)	Joint Preparation	Welding Process	Deposition Method
DH36	20		Single-Electrode	Single layer
	25			

❖ Electrode shooting arrangement

Welding Process	Shooting Arrangement	Stick-out
Single-Electrode (AC)		35mm

❖ Welding Condition

Grade of Steel	Th. (mm)	Height of IRN, CW	Welding Process	Pass No.	Welding Condition			
					Amp.	Volt.	Cpm.	KJ/cm
DH36	20	15~16mm	AC	1	1000	36	22	98.1
	25	20~21mm	AC	1	1000	36	16	135.0

**TEST RESULTS (S-705EF/IRN/H-14/CBM-G22)***❖ Butt weld test result (One-side welding)*

Th. (mm)	Size (mm)	Current	Tensile Test			CVN Impact Test (Joule)					
			YS (MPa)	TS (MPa)	EI (%)	Temp. (°C)	Posi.	X1	X2	X3	Av.
20	4.8	AC	490	604	23.6	0	F	37	41	42	40
25							R	45	42	38	41
	F		37	40	60	46					
R	44		70	76	63						
2Y	-	-	≥37 5	490 – 660	≥22	0	≥34				

❖ Chemical composition (wt.%) of weld metal

Th. (mm)	Chemical Composition(wt.%)							
	C	Si	Mn	P	S	Mo	Ti	B
20	0.106	0.23	1.24	0.016	0.005	0.099	0.008	0.0007
25	0.104	0.28	1.25	0.014	0.008	0.137	0.009	0.0010

**TEST RESULTS (S-705EF/CW/H-14/CBM-G22)***❖ Butt weld test result (One-side welding)*

Th. (mm)	Size (mm)	Current	Tensile Test			CVN Impact Test (Joule)					
			YS (MPa)	TS (MPa)	EI (%)	Temp. (°C)	Posi.	X1	X2	X3	Av.
20	4.8	AC	480	584	22.6	0	F	32	50	55	46
R							42	48	50	47	
25			465	574	23.4	0	F	62	74	76	71
							R	78	84	90	84
2Y	-	≥37 5	490 – 660	≥22	0	≥34					

❖ Chemical composition (wt.%) of weld metal

Th. (mm)	Chemical Composition(wt.%)							
	C	Si	Mn	P	S	Mo	Ti	B
20	0.112	0.19	1.28	0.014	0.005	0.112	0.008	0.0008
25	0.101	0.20	1.40	0.016	0.009	0.151	0.008	0.0009



Approvals

❖ AUTHORIZED APPROVAL DETAILS

Consumables	KR	ABS	LR	BV	DNV	GL	NK
S-705EF/IRN /H-14/CBM-G22	2SMR, 2YSMR 2.0~6.4	2,2Y 2.0~6.4	2A, 2YA 2.0~6.4	A2M,A2YM 2.0~6.4	II YM T≤22mm 2.0~6.4	2YM 2.0~6.4	KAW2,KAW52-SMP 2.0~6.4
S-705EF/CW /H-14/CBM-G22	2SR,2YSR Max.thick.25mm 2.0~6.4	2,2Y 2.0~6.4	2A, 2YA Max.thick.25mm 2.0~6.4	A2M,A2YM 2.0~6.4	II YM T≤22mm 2.0~6.4	2YM 2.0~6.4	KAW52SP 2.0~6.4

This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING CO., LTD. affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, shielding gas, plate chemistry and temperature, weldment design, fabrication methods and service requirements.