HYUNDAI WELDING

Rev. 02

SW-309HBF

FLUX CORED ARC WELDING CONSUMABLE
FOR WELDING OF DISSIMILAR METALS

HYUNDAI WELDING CO., LTD.

SW-309HBF

❖ Specification

AWS A5.22	E309HT1-1/-4
JIS Z3323	TS309H-BiF-FB1
EN ISO 17633-B	T 309H F M21/C1 2

❖ Applications

SW-309HBF is suitable for the welding of dissimilar metals such as stainless steel and carbon steel or stainless steel and low alloy steel. It may also be used to weld Type 304 base metals under severe corrosion conditions in need of a higher alloy content weld metal.

❖ Characteristics on Usage

These wires exhibit a spray like arc transfer, easy slag removal and can be welded within a wide range of parameters.
The operators benefit from a fast freezing slag system which assists them with good performance not only in flat and horizontal but also in all welding position.

❖ Note on Usage

Use 100% CO_2 gas or Ar+20%CO_2

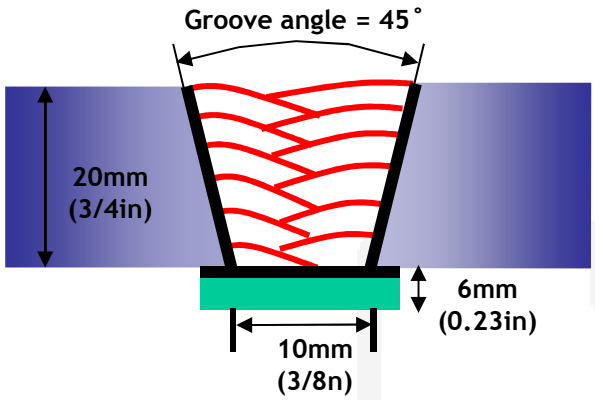
❖ Packing

Diameter	1.2mm (0.045in)			
Spool *including ball pac	5kg (11lbs)	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	:	1.2mm(0.045 in)
Shielding Gas	:	100% CO2
Flow Rate(ℓ /min.)	:	20~22
Amp./ Volt.	:	210/29
Stick-Out(mm)	:	20(3/4 in)
Pre-Heat(℃)	:	R.T . ℃(°F)
Interpass Temp.(℃)	:	≤150℃(302°F)
Polarity	:	DC(+)

❖ Mechanical Properties of All weld metal

Consumable	Tensile Test		CVN Impact Test J(ft · lbs)	
SW-309HBF	TS (Mpa/ksi)	EL (%)	-20℃ (-4°F)	-60℃ (-76°F)
	570(83)	40.0	55(40.6)	50(36.9)
AWS A5.22 E309HT-1/4	**≥550**	**≥ 30**	**Not Specified**	

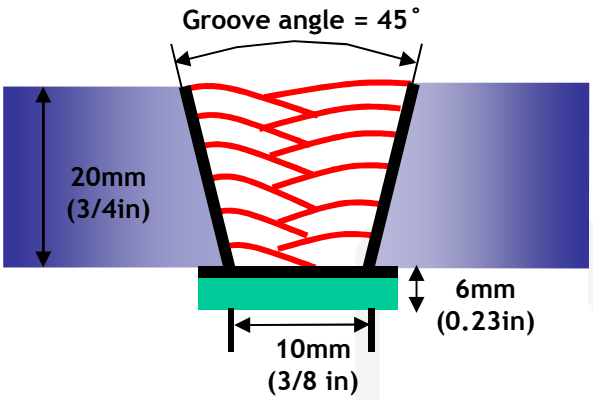
❖ Chemical Analysis of All weld metal(100% CO2 gas)

Consumable	Chemical Composition (%)									
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Bi
SW-309HBF	0.063	0.79	1.51	0.014	0.009	12.3	22.8	0.01	0.01	5ppm
AWS A5.22 E309HT-1/4	**0.04 ~0.10**	**≤1.0**	**0.5 ~2.5**	**≤0.04**	**≤0.03**	**12.0 ~14.0**	**22.0 ~25.0**	**≤0.75**	**≤0.75**	**-**

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	:	1.2mm(0.045in)
Shielding Gas	:	Ar + 20% CO2
Flow Rate(ℓ /min.)	:	20~22
Amp./ Volt.	:	210/29
Stick-Out	:	20mm(3/4 in)
Pre-Heat(℃)	:	R.T . ℃(°F)
Interpass Temp.(℃)	:	≤150℃(302°F)
Polarity	:	DC(+)

❖ Mechanical Properties of All weld metal

Consumable	Tensile Test		CVN Impact Test J(ft · lbs)	
SW-309HBF	TS (Mpa/ksi)	EL (%)	-20℃ (-4°F)	-60℃ (-76°F)
	574(83)	42.6	58(42.8)	54(39.8)
AWS A5.22 E309HT-1/4	**≥550**	**≥ 30**	**Not Specified**	

❖ Chemical Analysis of All weld metal(100% CO2 gas)

Consumable	Chemical Composition (%)									
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Bi
SW-309HBF	0.060	0.78	1.49	0.015	0.008	12.2	22.7	0.01	0.01	5ppm
AWS A5.22 E309HT-1/4	**0.04 ~0.10**	**≤1.0**	**0.5 ~2.5**	**≤0.04**	**≤0.03**	**12.0 ~14.0**	**22.0 ~25.0**	**≤0.75**	**≤0.75**	**-**

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Bead Appearance

Horizontal Fillet(2F, PB) , Base : STS 304L(6mm,0.23in)		Fillet Vertcal up(3F, PF) , Base : STS 304L(6mm,0.23in)	
			
100% CO2(210A/30V)			
			
Ar+20% CO2(210A/28V)		100% CO2(160A/26V)	Ar+20% CO2(160A/25V)

❖ δ – Ferrite No.

Consumable	Shielding Gas	Diagram			FERITSCOPE MP-30 * (FISCHER)
		Schaeffler	Delong	WRC(1992)	
SW-309HBF	100% CO_2	8.4	16.0	8.4	12~15
	Ar+20%CO_2	8.6	16.2	8.6	12~15

Welding Efficiency & Proper Welding Condition

❖ Deposition Rate & Efficiency

Consumable (size)	Shielding Gas	Welding Conditions		Wire Feed Speed m/min (in/min)	Deposition Efficiency(%)	Deposition Rate kg/hr(lb/hr)
		Amp. (A)	Volt. (V)			
1.2mm (0.045 in)	100%CO_2	210	30	12(472)	86~88	4.6(10.1)
	Ar-20%CO_2	210	29	12(472)	87~89	4.8(10.6)
Remark					Deposition efficiency =(Deposited metal weight/Wire weight used)×100	Deposition rate =(Deposited metal weight/Welding time,min.)×60

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.
			1.2mm (0.045 in)
SW-309HBF	100%CO_2 or Ar-20~25%CO_2	F	160~220Amp
		HF	160~220Amp
		V-Up & OH	140~180Amp