

# **SW-309MoL Cored**

FLUX CORED ARC WELDING CONSUMABLE  
FOR WELDING OF 22% Cr-12% Ni -2.5% Mo STAINLESS STEEL  
MILD STEELS, LOW-ALLOY STEELS



## SW-309MoL Cored

### ❖ Specification

<b>AWS A5.22</b>	E309LMoT1-1/-4
<b>JIS Z3323</b>	TS309LMo-FB1
<b>EN ISO 17633-A</b>	T 23 12 2 L P M21/C1 2

### ❖ Applications

SW-309MoL Cored is designed for welding of 22%Cr-12%Ni-2.5% Mo stainless steels, cladding of Mild steels,

### ❖ Characteristics on Usage

1. SW-309MoL Cored is suitable for all position welding makes easier re-arc-ing, beautiful bead appearance and better slag removability.
2. SW-309MoL Cored is for the applications of resistance to heat and corrosion and the joining of stainless steels to mild or low alloy steels

### ❖ Note on Usage

Use 100% CO<sub>2</sub> gas or Ar+20~25% CO<sub>2</sub> gas

### ❖ Packing

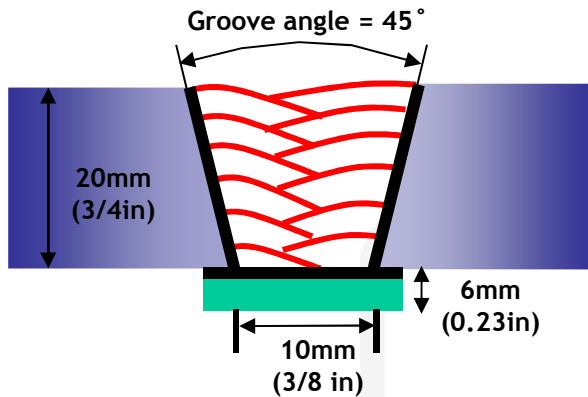
Diameter	1.2mm (0.045in)	1.4 (0.052in)	1.6 (1/16in)	
Spool *including ball pac	5kg (11lbs)	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Diameter(mm)</b>	: 1.2mm(0.045in)
<b>Shielding Gas</b>	: 100% CO <sub>2</sub>
<b>Flow Rate(ℓ /min.)</b>	: 20~22
<b>Amp./ Volt.</b>	: 210/30
<b>Stick-Out(mm)</b>	: 20(3/4 in)
<b>Pre-Heat(°C)</b>	: R.T . °C(°F)
<b>Interpass Temp.(°C)</b>	: ≤150°C(302°F)
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of All weld metal

Consumable	Tensile Test		CVN Impact Test J(ft · lbs)	
	TS (Mpa/ksi)	EL (%)	-20°C (-4°F)	-60°C (-76°F)
SW-309MoL Cored	693(100)	32.4	47(34.6)	44(32.4)
AWS A5.22 E309LMoTX-X	≥ 520	≥ 25	Not Specified	

### ❖ Chemical Analysis of All weld metal(wt%)

Consumable	Shielding Gas	Chemical Composition (%)								
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu
SW-309MoL Cored	100%CO <sub>2</sub>	0.031	0.64	1.39	0.021	0.010	12.42	22.24	2.37	0.08
AWS A5.22 E309MoLTX-X		≤0.04	≤1.0	0.5 ~2.5	≤0.04	≤0.03	12.0 ~16.0	21.0 ~25.0	2.0~3.0	≤ 0.5

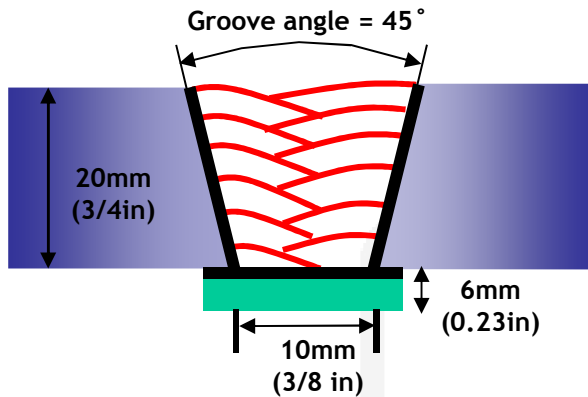
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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.



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Diameter(mm)</b>	: 1.2mm(0.045in)
<b>Shielding Gas</b>	: Ar+200% CO <sub>2</sub>
<b>Flow Rate(ℓ /min.)</b>	: 20~22
<b>Amp./ Volt.</b>	: 210/29
<b>Stick-Out(mm)</b>	: 20(3/4 in)
<b>Pre-Heat(°C)</b>	: R.T. . °C(°F)
<b>Interpass Temp.(°C)</b>	: ≤150°C(302°F)
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of All weld metal

Consumable	Tensile Test		CVN Impact Test J(ft · lbs)	
	TS (Mpa/ksi)	EL (%)	-20°C (-4°F)	-60°C (-76°F)
SW-309MoL Cored	661(96)	29.6	47(34.6)	44(32.4)
AWS A5.22 E309LMoTX-X	≥ 520	≥ 25	Not Specified	

### ❖ Chemical Analysis of All weld metal(wt%)


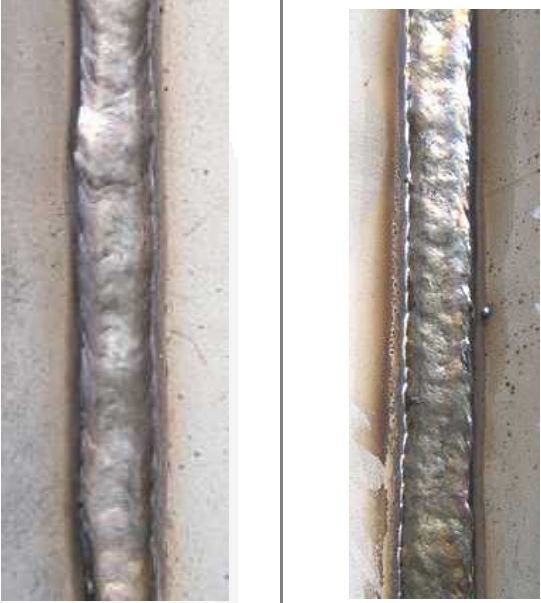

Consumable	Shielding Gas	Chemical Composition (%)								
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu
SW-309MoL Cored	Ar+ 20% CO <sub>2</sub>	0.035	0.75	1.35	0.021	0.015	12.47	22.34	2.20	0.12
AWS A5.22 E309LMoTX-X		≤0.04	≤1.0	0.5 ~2.5	≤0.04	≤0.03	12.0 ~16.0	21.0 ~25.0	2.0~3.0	≤0.5

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.



**Mechanical Properties  
& Chemical Composition of All Weld Metal**

❖ **Bead Appearance**

Horizontal Fillet(2F, PB) , Base : STS 304L(6mm,0.23in)	Fillet Vertical up(3F, PF) , Base : STS 304L(6mm,0.23in)	
		
100% CO2(220A/30V)	100% CO2(160A/25V)	Ar+20% CO2(160A/24V)
		
Ar+20% CO2(220A/28V)		

❖ **δ – Ferrite No.**

Consumable	Shielding Gas	Diagram			FERITSCOPE MP-30 * (FISCHER)
		Schaeffler	Delong	WRC(1992)	
SW-309MoL Cored	100% CO2	15.4	25.4	21.8	18.0~19.0
	Ar+20% CO2	14.3	25.0	20.9	17.0~18.0

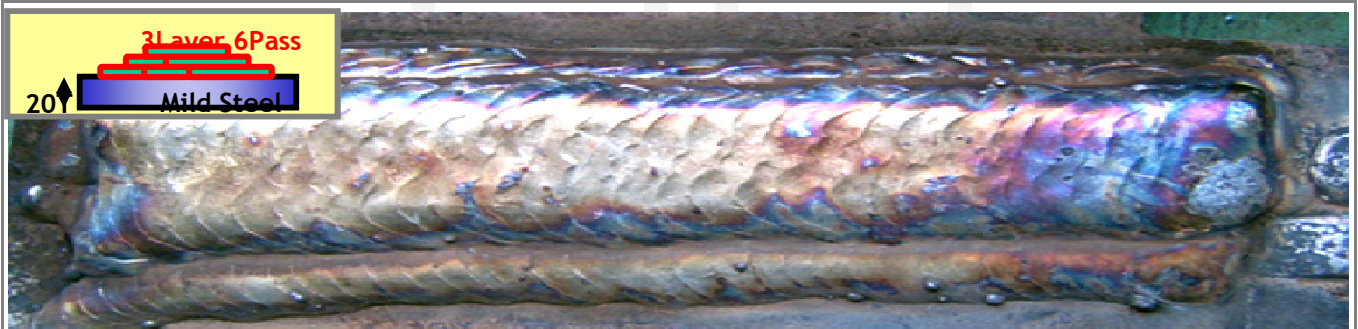
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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.



## Bead Appearance

### ❖ Over-layer

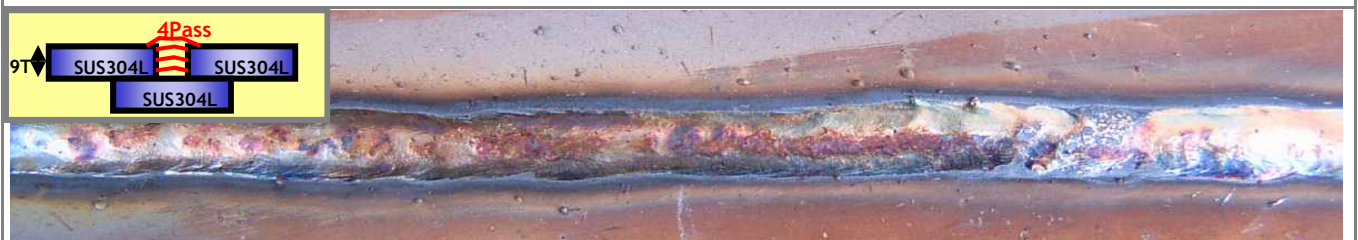
Bead Appearance (High Heat Input Welding Parameter)



300A/36V(100% CO<sub>2</sub>)



300A/36V(100% CO<sub>2</sub>)



260A/34V 40CPM(100% CO<sub>2</sub>)

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.



# SW-309MoL Cored

## 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 <sub>2</sub>	210	30	12(472)	86~88	4.6(10.1)
	Ar-20%CO <sub>2</sub>	210	29	12(472)	87~89	4.8(10.6)
1.6mm (1/16 in)	100%CO <sub>2</sub>	290	33	8.9(350)	86~88	5.5(12.1)
	Ar-20%CO <sub>2</sub>	290	32	8.9(350)	87~89	5.(12.6)
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)	1.6mm (1/16 in)
SW-309MoL Cored	100%CO <sub>2</sub> or Ar-20~25%CO <sub>2</sub>	F	160~220Amp	250~290Amp
		HF	160~220Amp	250~290Amp
		V-Up & OH	140~180Amp	-

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.



## SW-309MoL Cored

### Approvals

Consumable	Shielding Gas	DNV	GL	NK
SW-309MoL Cored	C1	309MoL(-20℃)	4459S	KW309MoLG(C)
		1.2~1.6	1.2~1.6	1.2~1.6
		<b>CWB</b>	-	-
		AWS A5.22-95 E309LMoT1-1	-	-
		0.9~1.6		
Consumable	Shielding Gas	DNV	CWB	-
SW-309MoL Cored	M21	309MoL(-20℃)	AWS A5.22-95 E309LMoT1-4	
		1.2~1.6	0.9~1.6	

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.