

# **SMT-625**

**AWS A5.14/ ASME SFA5.14 ERNiCrMo-3**  
**JIS Z3334 YNiCrMo-3**  
**EN ISO 18274 Ni 6625 (NiCr22Mo9Nb)**

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**HYUNDAI WELDING CO., LTD.**



## ❖ Specification

AWS A5.14/ ASME SFA5.14 ERNiCrMo-3  
JIS Z3334 YNiCrMo-3  
EN ISO 18274 Ni 6625 (NiCr22Mo9Nb)

## ❖ Applications

-LNG storage tank manufacture, desulfurization ,Heat exchanger  
Building of chemical carrier

## ❖ Characteristics

- Excellent corrosion resistance of Crevice and Pitting, SCC
- Good Tensile Strength in High Temperature
- Good Impact value at Cryogenic temperature
- Inconel 601 + 625 welding, welding of steel and Nickel alloys  
Hardfacing of steel.

## ❖ Shielding

Ar, Ar+He

## ❖ Current

GMAW : DC+, GTAW : DC-

## ❖ Packing

SMT-625 (GMAW)	Size(mm)	1.0	1.2	1.4	1.6
	Weight	Spool : 12.5kg			
SMT-625 (GTAW)	Size(mm)	-	2.0	2.4	3.2
	Weight	5kg*1000mm			

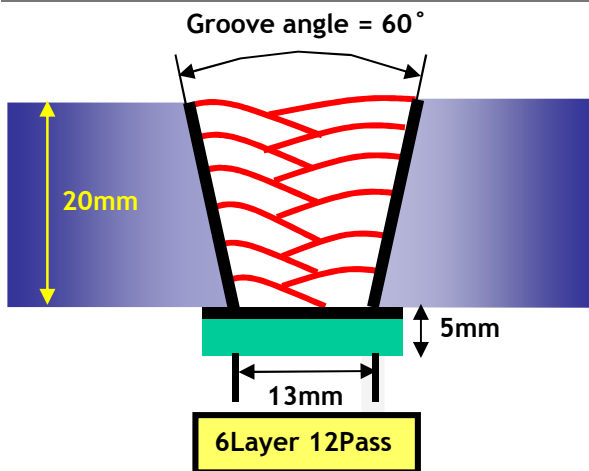
## ❖ Approvals

ABS, GL, LR, DNV



## Mechanical Properties & Chemical Composition of All Weld Metal (GMAW)

### ❖ Welding Condition



Size(mm)	: 1.2mm (GMAW)
Shielding Gas	: 70%Ar+30%He
Gas flow(ℓ /min.)	: 20~25
Amp.(A) / Voltage(V)	: 200/28
Stick-Out(mm)	: 20
Speed(cm/min.)	: 30

### ❖ Typical Chemical Composition of Wire(wt%)

C	Si	Mn	P	S	Ni	Cr	Mo
0.027	0.08	0.03	0.0001	0.0005	64.0	22.7	9.1
≤0.10	≤0.50	≤0.50	≤0.02	≤0.015	≥58.0	20.0~23.0	8.0~10.0
AWS A5.14 ERNiCrMo-3							

Ti	Al	Cu	Nb	Ta	Fe	Other*
0.21	0.10	0.03	3.55	0.003	0.34	0.001
≤0.40	≤0.40	≤0.50	Nb+Ta = 3.15~4.15		≤5.0	≤0.50
AWS A5.14 ERNiCrMo-3						

\* Other Elements Total shall include Pb, Sn, Zn

### ❖ Typical Chemical Composition of All-Weld Metal (wt%)

C	Si	Mn	P	S	Ni	Cr	Mo	Nb (+Ta)
0.017	0.12	0.04	0.0003	0.0008	62.33	22.05	8.80	3.59

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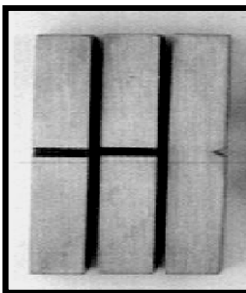


## Mechanical Properties & Chemical Composition of All Weld Metal (GMAW)

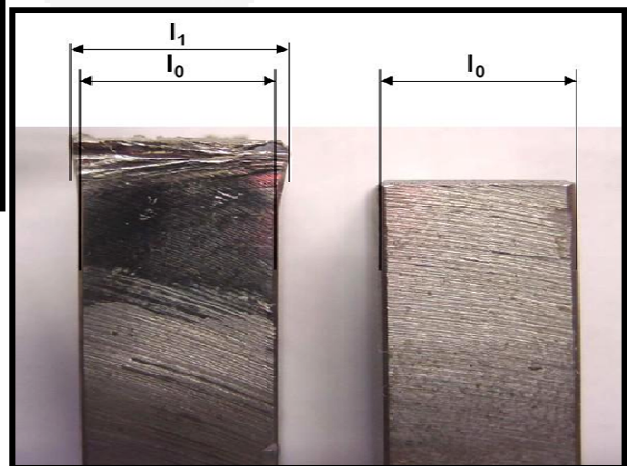
### ❖ Typical Mechanical Properties of All-Weld Metal (70%Ar + 30%He)

Tensile Test Results.		
T.S. (N/mm <sup>2</sup> )		EL. (%)
770		45
AWS A5.11 ENiCrMo-3	≥760	≥30

Charpy V-Notch Impact Value (Joules)							
°C	X1	X2	X3	X4	X5	X6	Avg.
-196	153	158	151	144	149	145	150
Lateral expansion (mm)							
°C	X1	X2	X3	X4	X5	X6	Avg.
-196	1.80	1.58	1.50	1.39	1.35	1.60	1.54



**Lateral expansion =  $l_1 - l_0$**

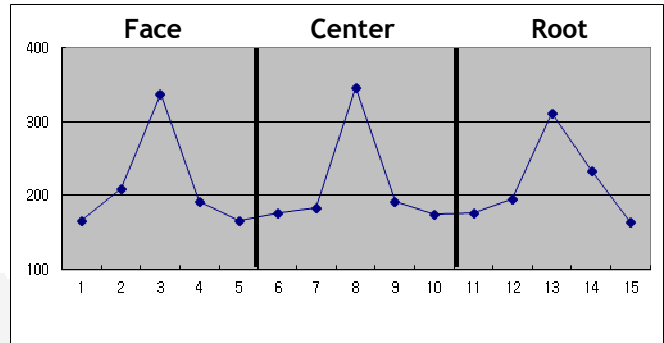
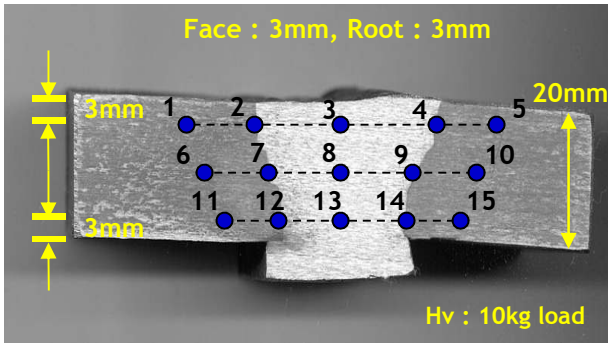


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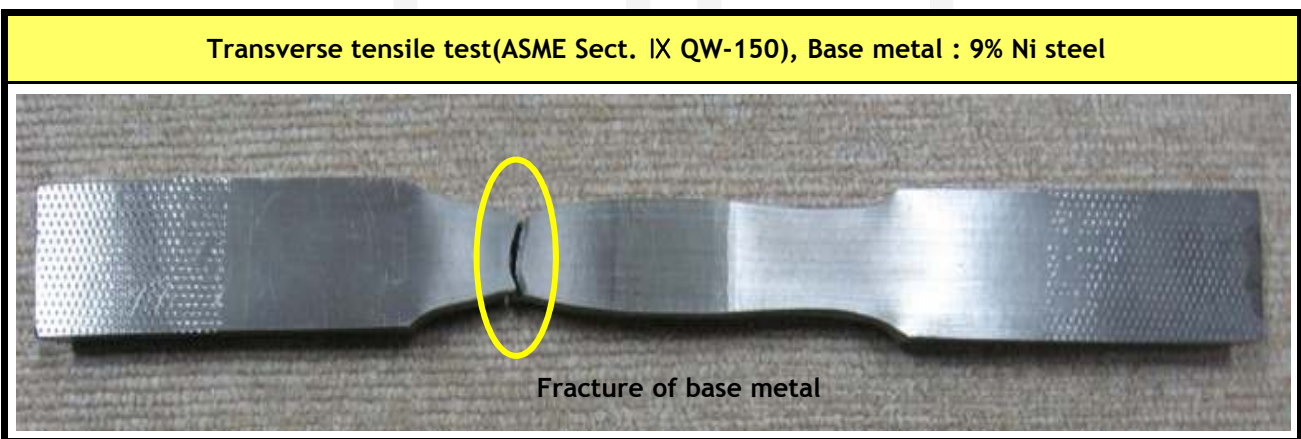
## Mechanical Properties & Chemical Composition of All Weld Metal (GMAW)

### ❖ Vickers hardness test of All-Weld Metal



H <sub>v</sub> , Vickers hardness test							
1	2	3	4	5	6	7	8
178	210	333	201	162	169	189	332
9	10	11	12	13	14	15	
189	179	178	202	309	207	171	

### ❖ Transverse Tensile Test



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## Bead Appearance (GMAW)

### ❖ Bead Appearance (H-Fillet & Flat Welding Position)



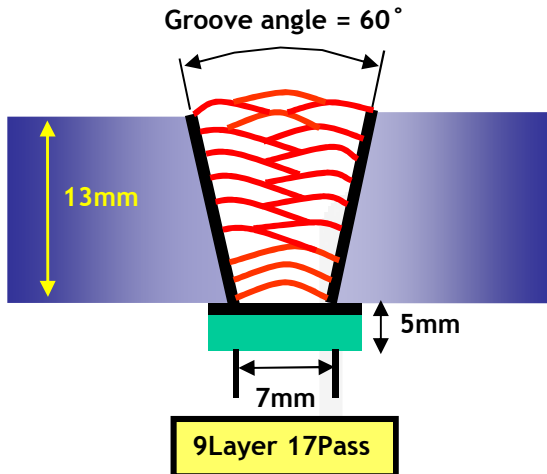
### Notice

***This test report is made for giving general information,  
and it's not meaning guarantee.  
Test results are changeable by several welding  
- parameter including base materials***



## Mechanical Properties & Chemical Composition of All Weld Metal (GTAW)

### ❖ Welding Condition



Size(mm)	: 2.4mm (GTAW)
Shielding Gas	: 100%Ar
Gas flow(ℓ /min.)	: 15~20
Amp.(A) / Voltage(V)	: 220/17
Interpass temperature	: ≤150℃
Heat input (KJ/cm)	: 5.0~15.0
Speed(cm/min.)	: 20

### ❖ Typical Chemical Composition of Wire(wt%)

C	Si	Mn	P	S	Ni	Cr	Mo
0.027	0.08	0.03	0.0001	0.0005	64.0	22.7	9.1
≤0.10	≤0.50	≤0.50	≤0.02	≤0.015	≥58.0	20.0~23.0	8.0~10.0
AWS A5.14 ERNiCrMo-3							

Ti	Al	Cu	Nb	Ta	Fe	Other*
0.21	0.10	0.03	3.55	0.003	0.34	0.001
≤0.40	≤0.40	≤0.50	Nb+Ta = 3.15~4.15		≤5.0	≤0.50
AWS A5.14 ERNiCrMo-3						

\* Other Elements Total shall include Pb, Sn, Zn

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## Mechanical Properties & Chemical Composition of All Weld Metal (GTAW)

### ❖ Typical Chemical Composition of All-Weld Metal (wt%)

C	Si	Mn	P	S	Ni	Cr	Mo	Nb (+Ta)
0.025	0.08	0.02	0.003	0.001	60.1	21.2	8.42	3.44

### ❖ Typical Mechanical Properties of All-Weld Metal (100%Ar)

Tensile Test Results.		
T.S. (N/mm <sup>2</sup> )	EL. (%)	
784	40	
AWS A5.14 ERNiCrMo-3	≥760	-

Charpy V-Notch Impact Value (Joules)							
°C	X1	X2	X3	X4	X5	X6	Avg.
-60	130	156	158	149	151	147	148
-196	125	125	141	131	137	124	130

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# Corrosion Test

## ❖ ASTM G28-02(Method A)

-Detecting Susceptibility to Intergranular Corrosion in Wrought, Nickel-Rich, Chromium-Bearing Alloys



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## TEST REPORT

411, Dawoon Dong, Joong-Gu, Ulsan, KOREA TEL 82-52-220-3000 FAX 82-52-220-3001

Report No : TAU-015412

Receipt Date : Sep.21.2011

Client : Sang-Wook, Kim

Test Completion Date : Sep.08.2011

HYUNDAI WELDING CO.,LTD.

#90-5, Jangheung-dong, Nam-gu, Pohang-si, Gyeongsangbuk-do, Korea.

Sample : Metallic Specimen(SMT-625(MIG))

### TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Ferric Sulfate-Sulfuric Acid Test(Corrosion rate)	mm/year		0.72	ASTM G28-02(Method A)

Sample : Metallic Specimen(SMT-625(TIG))

### TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Ferric Sulfate-Sulfuric Acid Test(Corrosion rate)	mm/year		0.33	ASTM G28-02(Method A)

USAGE : QUALITY CONTROL

- NOTE :
1. The test results on this test report are only limited to the samples and sample names provided by the customer and KTR do not guarantee the quality of all products of the customer.
  2. This test report shall not be used for public relation, advertisement, lawsuit and any other purposes outside the scope of its defined usage.

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## Bead Appearance (GTAW)

### ❖ Bead appearance (Flat H-Fillet Welding Position)

Base metal : 9% Ni steel 8T, Shielding gas : 100%Ar, Position : Flat H-Fillet(1F, PA) Welding Conditon:1pass 200A, 2~3pass 220A	
1PASS	
2PASS	
3PASS	

### Notice

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- parameter including base materials***