



CERTIFICATE OF WELDING CONSUMABLES

(43,Goedong-ro,Nam-gu,Pohang-si,Gyeongsangbuk-do,KOREA / TEL:054-289-8230 / FAX:054-285-8543)

P . O No. :

CUSTOMER : CHOSUN VINA CO., LTD.

DATE: AUG 25, 2020

Certificate No.: CS-2008-1172

Brand Name	Classification	Diameter (mm)	Lot No.	Weight (kg)	Remark
TGC-90B9	AWS ER90S-B9/ AWS ER62S-B9	2.4	6C11193	30	-

1. APPLIED CODE : AWS A5.28/A5.28M:2005 , EN 10204 3.1

2. MECHANICAL PROPERTIES OF WELD METAL					3. RADIOGRAPHIC TEST	4. HEAT TREATMENT
Item	Tension Test				Fig. 3	760 °C × 2Hr
	Y . S (MPa)	T . S (MPa)	Elon. (%)	R . A (%)		
Spec. (min.)	410	620	16	-		
Result	748	838	18.1	-	Accept.	

5. CHEMICAL COMPOSITION (☐ Weld Metal ☒ Filler Metal)

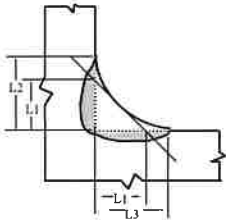
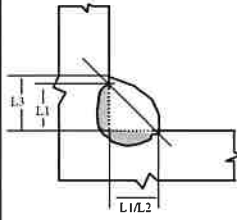
(unit : %)

Elements	C	Mn*	Si	P	S	Cu	Ni*	Cr	Mo	V	Al	Nb	N	Other Elements Total
Spec. (max.)	0.07-0.13	1.20	0.15-0.50	0.010	0.010	0.20	0.80	8.00-10.50	0.85-1.20	0.15-0.30	0.04	0.02-0.10	0.03-0.07	0.50
Result	0.104	0.52	0.25	0.007	0.002	0.038	0.52	8.55	1.00	0.16	0.01	0.06	0.04	0.02

*The sum of Mn and Ni shall be less than or equal to 1.50% Max.

6. FILLET WELD TEST

(unit : mm)

Welding Position	Item	Fillet Weld Size L1	Fillet Weld Leg L2 L3	Difference Between Length of fillet legs	Convexity	Dimension of Fillet Weld	
H	Spec.		Not required				
	Result						
OH	Spec.		Not required				
	Result						
V	Spec.		Not required				
	Result						

7. THE OTHER TESTS

Item	Moisture Test	Hydrogen Test	Bend Test	Remark
Spec.	max. (%)	max. (ml/100g)	Crack : max. mm	
Result	NR	NR	Result NR	-

We hereby certify that the above materials are satisfactory in compliance with the requirement specified in the contract.
Our quality system is certified in accordance with ISO9001:2015 by DNV GL CERTIFICATION B.V., THE NETHERLAND.

J. D. Oh

Manager of Quality Assurance Department