



WELDING CONSUMABLE CERTIFICATE

Certificate No.: 848327-3689482-001_____

Report No.: KO3689482_____

Port of: KOBE, JAPAN_____

Date: 23 OCTOBER 2019_____

THIS IS TO CERTIFY

THAT THE UNDERSIGNED SURVEYOR TO THIS BUREAU DID, AT THE REQUEST OF KOBE STEEL, LTD. FUKUCHIYAMA PLANT, JAPAN, ATTEND THEIR PLANT AT FUKUCHIYAMA & FUJISAWA, JAPAN, ON THE 25TH DAY OF JUNE, 2019 AND ON SUBSEQUENT DATES, IN ORDER TO CARRY OUT A PLANT SURVEY OF FACILITIES AND ASSOCIATED QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES AND TO WITNESS AND REPORT ON THE ANNUAL APPROVAL TESTING OF WELDING CONSUMABLES; AND,

THAT THE FACILITY IS CONSIDERED CAPABLE OF PROVIDING AN ACCEPTABLE UNIFORM PRODUCT, AND THAT EACH WELDING CONSUMABLE LISTED BELOW WAS FOUND IN COMPLIANCE WITH THE SPECIFICATION INDICATED AND IS ELIGIBLE TO BE PLACED ON THIS BUREAU'S APPROVED WELDING CONSUMABLES LIST IN THE GAS METAL ARC WELDING INCLUDING MIG/TIG WELDING SECTION:

<u>TRADE NAME</u>	<u>SPECIFICATION</u>	<u>GRADE OR CLASS</u>	<u>SHIELDING GAS</u>	<u>POSITION</u>	<u>CURRENT/ POLARITY</u>	<u>SIZE</u>
MG-1CM	AWS A5.28	ER80S-G	C1	All	DCEP	1.2 - 1.6mm
MG-2CM	AWS A5.28	ER90S-G	C1	All	DCEP	1.2 - 1.6
MG-50D/M-GRITS/ FB-B3	ABS	2YA*	C1	F	DCEP	1.6
* Suitable for one side welding and subject to satisfactory procedure test at use's plant						
MG-60	ABS	3YQ500	C1	F,H,V-up,HF	DCEP	1.2 - 1.6
MG-S1CM	**	**	M21	All	DCEP	0.8 -1.6
** Mfr's guaranteed properties: Min. T.S. 550 MPa, Y.S. 470 MPa, El. 19%, PWHT:620+/-15 Cen. Deg. 1 Hr						
MG-S50	ABS	3YSA	M21	F, H V-up, OH	DCEP	1.2, 1.4, 1.6
MG-S50LT	ABS	3YSA*	M21	F, H V-up	DCEP	1.2
*Mfr's guaranteed Min. CVN 34 J at minus 60 Cen. Deg.						
MG-SM	AWS A 5.28	ER80S-G*	M21	F	DCEP	1.0 - 1.6
* Mfr's guaranteed properties: Min. Y.S. 400 N/mm2, T.S. 550 N/mm2, El. 25%, CVN 34 J AT 0 Cen. Deg. And chemical composition of wire(%): C 0.15 max, Mn 0.60 - 1.60, Si 0.30 - 0.90, S 0.025 max, P 0.025 max, Mo 0.40 - 0.65, Cu 0.40 max, Heat Treat. SR 620 Cen. Deg. For 1 Hr Suitable for welding 0.5% Mo steel by spray transfer arc.						

TO BE CONTINUED



Note: This Certificate evidences compliance with one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Certificate is a representation only that the structure, item of material, equipment, machinery or any other item covered by this Certificate has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping as of the date of issue. Parties are advised to review the Rules for the scope and conditions of classification and to review the survey records for a fuller description of any restrictions or limitation on the vessel's service or surveys. The validity, applicability and interpretation of this Certificate is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Certificate or in any notation made in contemplation of this Certificate shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.

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TRADE NAME	SPECIFICATION	GRADE OR CLASS	SHIELDING GAS	POSITION	CURRENT/ POLARITY	SIZE
TG-S1CM	**	**	Ar	All	DCEN	0.8 - 3.2 mm
**TIG welding for 1.25Cr/0.50 Mo steel: Properties under stress relieved conditions Min. T.S. 520 N/mm2, Y.P. 315 N/mm2 and El 22%						
TG-S2CM	**	**	Ar	All	DCEN	0.8 - 3.2
**TIG welding for 2.25Cr/1.0 Mo steel: Properties under stress relieved conditions Min. T.S. 520 N/mm2, Y.P. 315 N/mm2 and El 18%						
TG-S51T	ABS	3Y	Ar	F, H, V-up, OH	DCEN	1.6, 2.0, 2.4, 3.2
TG-S60A	ABS	5YQ460SA	Ar	All	DCEN	1.2 - 2.4
TG-SM	**	**	Ar	All	DCEN	1.6 - 3.2
** Mfr's guaranteed properties: Min. Y.S. 400 N/mm2, T.S. 550 N/mm2, El. 25%, CVN 34 J at 0 Cen. Deg. And chemical composition of wire(%): C 0.05 - 0.12, Mn 1.50 max, Si 0.80 max, S 0.025 max, P 0.025 max, Mo 0.40 - 0.65, Ni 0.20 max, Cu 0.40 max, Heat Treat. SR 620 Cen. Deg. For 1 Hr Suitable for welding 0.5% Mo steel by spray transfer arc.						
NO13924	**	**	Ar	F	DCEN	2.4 - 3.2
** Mfr's guaranteed properties: Min. Y.S. 370 N/mm2, T.S. 550 - 650 N/mm2, El. 19%, CVN 25 J at 0 Cen. Deg. Heat treatment SR (720 Cen. Deg. X 38 hr)						
TG-S308	AWS A5.9-2012	ER308*	Ar	All	DCEN	1.2 - 2.4
** Mfr's Specification: T.S. Min. 550 N/mm2, El. 35%, CVN 27 J at minus 20 Cen. Deg. Welding Technique: TIG Welding Process						
TG-S308L	AWS A5.9-2012	ER308L*	Ar	All	DCEN	1.2 - 3.2
** Mfr's Specification: Y.S. Min. 205 N/mm2, T.S. Min. 510 N/mm2, El. 35%, CVN 29 J at minus 196 Cen. Deg. Welding Technique: TIG Welding Process						
TG-S316L	AWS A5.9-2012	ER316L	Ar	All	DCEN	1.2 - 3.2
TG-S709S	AWS A5.14-2011	ERNiMo-8	Ar	F,H,V-up,OH,HF	DCEN	1.2 - 2.4



 T. OKAMOTO, SURVEYOR

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