



WELDING CONSUMABLE CERTIFICATE

Certificate No.: 650920-5813375-001

Report No.: 5813375

Port of: Shanghai, P. R. China

Date: 08-Aug-2023

THIS IS TO CERTIFY

THAT THE UNDERSIGNED SURVEYOR TO THIS BUREAU DID, AT THE REQUEST OF TIEN TAI ELECTRODE (KUNSHAN) CO., LTD., ATTEND THEIR PLANT AT KUNSHAN, P. R. CHINA, ON THE 25TH DAY OF APRIL, 2023 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 SHIELDED METAL ARC WELDING SECTION:

TRADE NAME	SPECIFICATION	GRADE OR CLASS	SHIELDING GAS	POSITION	CURRENT/ POLARITY	SIZE
TS-308L	AWS A5.4	E308L-16	--	ALL F	AC/DCEP	2.6~4.0mm 5.0mm
TS-309L	AWS A5.4	E309L-16	--	ALL F	AC/DCEP	2.6~4.0mm 5.0mm
TS-316L	AWS A5.4	E316L-16	--	ALL F	AC/DCEP	2.6~4.0mm 5.0mm
TL-508	ABS	3Y	--	ALL	AC/DCEP	2.6~5.0mm
TS-308LT	AWS A5.4	E308L-16	--	ALL	AC/DCEP	3.2, 4.0mm
Note: The manufacturer's guaranteed properties: Min. CVN: 29J @ -196 deg. C						
TL-507	ABS	3Y	--	ALL F	DCEP	2.6~4.0mm 5.0mm
TS-2209	AWS A5.4M	E2209-16	--	ALL	AC/DCEP	3.2~4.0mm
TNM-9	AWS A5.11	ENiCrMo-6	--	ALL	AC/DCEP	2.6~4.0mm
Note: The manufacturer's guaranteed properties: Min. Y.S.: 430Mpa, T. S.: 690Mpa, CVN: 47J @ -196 deg. C						
TN-58	ABS	4YQ460H5*	--	ALL	AC/DCEP	3.2~4.0mm
*Note: The manufacturer's guaranteed properties: CVN: 47J @ -50 deg. C						


Honglin, Yang SURVEYOR

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.



WELDING CONSUMABLE CERTIFICATE

Certificate No.: 650920-5813375-002_____

Report No.: 5813375_____

Port of: Shanghai, P. R. China_____

Date: 08-Aug-2023_____

THIS IS TO CERTIFY

THAT THE UNDERSIGNED SURVEYOR TO THIS BUREAU DID, AT THE REQUEST OF TIEN TAI ELECTRODE (KUNSHAN) CO., LTD. , ATTEND THEIR PLANT AT KUNSHAN, P. R. CHINA, ON THE 25TH DAY OF APRIL , 2023 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:

TRADE NAME	SPECIFICATION	GRADE OR CLASS	SHIELDING GAS	POSITION	CURRENT/ POLARITY	SIZE
TGS-2209	AWS A5.9	ER2209	100%Ar	ALL	DCEN	1.6~2.4mm
TM-56	ABS	3YSA	100%CO2	ALL	DCEP	0.8~1.6mm
TGS-308L	AWS A5.9	ER308L	100%Ar	ALL	DCEN	1.2~3.2mm
TGS-309L	AWS A5.9	ER309L	100%Ar	ALL	DCEN	1.2~3.2mm
TIG-50	ABS	3YSA	100%Ar	ALL	DCEN	1.2~3.2mm
TGS-316L	AWS A5.9	ER316L	100%Ar	ALL	DCEN	1.6~3.2mm

Note: The manufacturer's guaranteed properties: Min. CVN: 60J @ -196 deg. C

TGS-308L	AWS A5.9	ER308L	100%Ar	ALL	DCEN	1.6~2.4mm
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Note: The manufacture's guaranteed properties: Min. CVN: 31J @ -196 deg. C

TIG-80Ni1	ABS	4YQ460SA	100%Ar	ALL	DCEN	2.0, 2.4mm
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Note: The manufacturer's guaranteed properties: Min. CVN: 47J @ -50 deg. C



Honglin, Yang SURVEYOR
SHANGHAI

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WELDING CONSUMABLE CERTIFICATE

Certificate No.: 650920-5813375-003

Report No.: 5813375

Port of: Shanghai, P. R. China

Date: 08-Aug-2023

THIS IS TO CERTIFY

THAT THE UNDERSIGNED SURVEYOR TO THIS BUREAU DID, AT THE REQUEST OF TIEN TAI ELECTRODE (KUNSHAN) CO., LTD. , ATTEND THEIR PLANT AT KUNSHAN, P. R. CHINA, ON THE 25TH DAY OF APRIL , 2023 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 FLUX CORED ARC WELDING SECTION:

TRADE NAME	SPECIFICATION	GRADE OR CLASS	SHIELDING GAS	POSITION	CURRENT/ POLARITY	SIZE
TM-70C	ABS	3YAH10	100% CO2	F, H	DCEP	1.2~1.6mm
TM-70C	ABS	3YSAH10	100% CO2	F, H	DCEP	1.2~1.6mm
TWE-110K3	ABS	4YQ690SAH5	100% CO2	ALL	DCEP	1.1, 1.2mm
TWE-712	ABS	3YSAH10	100% CO2	ALL V-DOWN	DCEP	1.2~1.6mm
TFW-308L	AWS A5.22	E308LT1-1	100% CO2	ALL	DCEP	1.2, 1.6mm
TFW-308L	AWS A5.22	E308LT1-1	100% CO2	ALL	DCEP	1.2mm
Note: The manufacturer's guaranteed properties: CVN: 31J @ -196 deg.C						
TFW-309L	AWS A5.22	E309LT1-1	100% CO2	ALL	DCEP	1.2, 1.6mm
TFW-316L	AWS A5.22	E316LT1-1	100% CO2	ALL	DCEP	1.2, 1.6mm
TWE-81K2	ABS	5YQ460SAH5	100% CO2	ALL	DCEP	1.2, 1.4mm
TWE-81K2C	ABS	5Y400SAH5	100% CO2	ALL	DCEP	1.2, 1.4mm
TFW-2209	AWS A5.22	E2209T1-1	100% CO2	ALL	DCEP	1.2mm

Note: The manufacturer's guaranteed properties: CVN: 40J @ -20 deg. C

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FabCO 308L-T1	AWS A5.22	E308LT1-4	75-80%Ar+CO2	ALL	DCEP	1.2mm
FabCO 309L-T1	AWS A5.22	E309LT1-4	75-80%Ar+CO2	ALL	DCEP	1.2mm
FabCO 316L-T1	AWS A5.22	E316LT1-4	75-80%Ar+CO2	ALL	DCEP	1.2mm
FabCO 308L-T1	AWS A5.22	E308LT1-1	100% CO2	ALL	DCEP	1.2, 1.6mm
FabCO 309L-T1	AWS A5.22	E309LT1-1	100% CO2	ALL	DCEP	1.2, 1.6mm
FabCO 316L-T1	AWS A5.22	E316LT1-1	100% CO2	ALL	DCEP	1.2, 1.6mm

Note: FabCO 308L-T1 is identical to TFW-308L

FabCO 309L-T1 is identical to TFW-309L

FabCO 316L-T1 is identical to TFW-316L

TWE-711	ABS	3YSAH5	100% CO2	ALL, V-DOWN	DCEP	1.2~1.6mm
TWE-711Ni	ABS	4YSAH10	100% CO2	ALL	DCEP	1.2~1.6mm
TWE-711PRO	ABS	4Y400SAH5	100% CO2	ALL	DECP	1.2~1.4mm


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WELDING CONSUMABLE CERTIFICATE

Certificate No.: 650920-5813375-004

Report No.: 5813375

Port of: Shanghai, P. R. China

Date: 08-Aug-2023

THIS IS TO CERTIFY

THAT THE UNDERSIGNED SURVEYOR TO THIS BUREAU DID, AT THE REQUEST OF TIEN TAI ELECTRODE (KUNSHAN) CO., LTD., ATTEND THEIR PLANT AT KUNSHAN, P. R. CHINA, ON THE 25TH DAY OF APRIL, 2023 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 SUBMERGED ARC WELDING SECTION:

TRADE NAME	SPECIFICATION	GRADE OR CLASS	SHIELDING GAS	POSITION	CURRENT/ POLARITY	SIZE
TSW-14H/TF-560	ABS	4Y400TMH5	--	F	AC/DCEP	2.4~5.0mm
Wire TSW-14H to be used together with flux: TF-560 manufactured by Tien Tai Electrode Co., Ltd.						
TSW-14H*2/TF-560	ABS	4Y400TMH5	--	F	AC/DCEP	2.4~5.0mm
Wire TSW-14H to be used together with flux: TF-560 manufactured by Tien Tai Electrode Co., Ltd.						
TW-309L/TFS-300NB	AWS A5.9M	ER309L	--	F	DCEP	3.2, 4.0mm
Wire TW-309L to be used together with flux TFS-300NB manufactured by Tien Tai Electrode (Kunshan) Co., Ltd.						
TSW-12KHG/TF-210	ABS	5Y400TMH5	--	F	DCEP	2.4~5.0mm
Wire TSW-12KHG to be used together with flux TF-210 manufactured by Tien Tai Electrode (Kunshan) Co., Ltd.						
TSW-12KHG*2/TF-210	ABS	5Y400TMH5	--	F	DCEP	2.4~5.0mm
Manufacturer's guaranteed properties: Chemical Composition (%): C: 0.06-1.0; Si: Max. 0.10; Mn: 1.6-1.9; P: Max. 0.02; S: Max. 0.01; Cu: Max. 0.1						
Mechanical Properties: Y. S.: Min. 400 N/mm ² ; T. S.: 510~690 N/mm ² ; El: Min. 22%; CVN: 47J @ -60 deg. C						
Wire TSW-12KHG*2 to be used together with flux TF-210 manufactured by Tien Tai Electrode (Kunshan) Co., Ltd.						
TSW-E31/TF-250	ABS	5YQ460MH5	--	F	DCEP	2.4~5.0mm
TSW-E31*2/TF-250	ABS	5YQ460MH5	--	F	AC, DCEP	2.4~5.0mm

Hornglin, Yang / SURVEYOR

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