ATLANTIC
WELDING CONSUMABLES
大西洋焊接材料

大西洋

ATLANTIC

SINCE 1950

四川大西洋焊接材料股份有限公司
ATLANTIC CHINA WELDING CONSUMABLES,INC.
(中國電焊條廠)
(CHINA WELDING ELECTRODE PLANT)

地址：中国·四川·自贡市
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ISO 9001
APPROVED FIRM

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APPROVALS

CCS
China Classification Society

LR
Lloyd's Register of Shipping

ABS
American Bureau of Shipping

GL
Germanischer Lloyd

BV
Bureau Veritas

DNV
Det Norske Veritas

NK
Nippon Kaiji Kyokai

BKI
PT.Biro Klasifikasi Indonesia

KR
Korean Register of Shipping

CWB
Canadian Welding Bureau

TUV
Technischer Überwachungs-Verein

2016 Approvals list

SO.	Atlantic code	Norm	China	Britain	USA	Germany	France	Norway	Japan	Indonesia	Korea	Canada	Germany
			CCS	LR	ABS	GL	BV	DNV	NK	BKI	KR	CWB	TUV
1	CHE40	AWS E6013	2	2m	2	2	2	2	KMW2	2	——	E4313	
2	CHE42	ISO E43 03 A	3	3m	3	3	3	3	KMW3	——	——	——	
3	CHE421Fe-18	GB/T E4324	2	2m	2	2	2	2	KMW2	——	——	——	
4	CHE43	AWS E6019	2	2m	2	2	2	2	KMW2	——	——	——	
5	CHE50	AWS E7015	3YH10	3Ym,H15	3Y	3YH10	3YHH	3YH10	KMW53H10	——	——	E4915-H8	
6	CHE501Fe-18	AWS E7024	2Y	2Ym	2Y*	2Y	2Y	2	KMW52	——	——	——	
7	*CHE502*	GB/T E5003	*2Y*	*2Ym*	*2Y**	*2Y*	*2Y*	*2Y/H15*	KMW52	——	——	——	
8	CHE56	AWS E7016	3YH10	3Ym,H15	3Y	3YH10	3YHH	3YH10	KMW53H10	3YH10 2.5~5.0	——	——	
9	CHE58-1	AWS E7018-1	4YH5	4Ym,H5	4YH5	4YH5	4YHHH	4YH5	——	4YH5 2.5~5.0	——	E4918-1-H8	
10	CHE557RH	SFA E8015-G	4YH5	——	4YH5	——	——	4YH5	——	——	——	——	
11	CHE607RH	SFA E9015-G	4Y50H10	——	——	——	4Y50H10	——	KMW4Y50H10	——	——	——	
12	CHE707Ni	AWS E10015-G	——	——	——	——	3Y62	——	——	——	——	——	
13	CHS002	AWS E308L-16	——	——	——	——	——	——	——	——	——	E308L-16	
14	CHS022	AWS E316L-16	——	——	——	——	——	——	——	——	——	E316L-16	
15	CHS062	AWS E309L-16	——	——	——	——	——	——	——	——	——	E309L-16	
16	CHF101 / CHW-S2	AWS F6A0-EM12	3M	——	——	——	——	——	KAW3M	——	——	——	
17	CHF101 / CHW-S3	AWS F7A0-EH14	3YM, 3YT	3YM, 3YT	3YTM	3YM	A3YM	3YTM	KAW53M, KAW53T	——	——	F49A4-EH14	
18	CHF101/ CHW-S12	AWS F7A0-EM12K	——	3YM	3YM	3YM	A3YM	3YM	KAW53M	——	——	——	
19	CHF101/ CHW-S14	GB/T F5A4-H10Mn2	4YM	——	4YM	——	——	4YMH5	KAW54M	——	——	——	
20	CHF102A/ CHW-S6	AWS F7A4-EC-G	——	——	——	——	A4YM	——	——	——	——	——	
21	CHF105Q/ CHW-S50	AWS F62A4-EC-G	4Y50M	——	——	——	A4Y50MH10	——	KAW4Y50MH10	——	——	——	
22	CHF43 / CHW-S1	AWS F6A0-EL12	3M	3M 1.6~5.0	3M	3M	A3M	3M	——	——	——	——	
23	CHT711	AWS E71T1-C1A0-CS1	3YSMH10	3YSJH10 3YMJH10	3YSAH10	3YH10S	SA3YMH10	3YMSH10	KSW53G(C)H10 KAW53MG(C)H10	3YH10S 1.0~1.6	3YSMG(C)H10 1.0、1.2、1.4、1.6	E491T-9-H8	
24	CHT711M	AWS E71T1-M21A0-CS1	——	——	——	——	SA3YMH10	——	——	——	——	E491T-9M-H8	
25	CHT711L	AWS E71T1-C1A0-CS1	——	——	3YSAH5	——	——	3YMS(H5)	——	——	——	——	
26	CHT71Ni	AWS E71T1-C1A4-CS1	——	4YSMH5	4YSAH5	——	——	4YMS(H5)	——	——	——	——	
27	CHT81K2	AWS E81T1-C1A2-K2	——	——	4YSAH5	——	——	3YMSH5	——	——	——	——	
28	CHT70G	JIS YFEG-22C	3Y	——	3Y400A	——	——	3Y40	——	——	——	——	
29	CHT308L	AWS E308LT1-1	3041S	——	——	——	——	——	——	——	——	——	
30	CHT309L	AWS E309LT1-1	3091S	——	——	——	——	——	——	——	——	——	
31	CHT316L	AWS E316LT1-1	316LS	——	——	——	——	——	——	——	——	——	
32	CHW-50C3	AWS ER70S-3	——	——	——	——	——	——	——	——	——	B-G 49A 2 C G3 (ER49S-3)	G 38 4 M G2S
33	CHW-50C6SM	AWS ER70S-6	3YSM	3YSJH15 3YMJH15	3YSA	3YS	KSW53G(C) KAW53MG(C)	——	——	3YSM	——	B-G 49A 3 C G6 (ER49S-6)	

ATLANTIC

The Certificate of ISO 9001 Management Systems of ATLANTIC

The Certificate of CE approved by TUV

The Laboratory Accreditation Certificate of 17025 of ATLANTIC

CONTENTS

ATLANTIC CHINA WELDING CONSUMABLES INC. INTRODUCTION

With a sixty-six years experience, ATLANTIC CHINA WELDING CONSUMABLES INC. grew out of CHINA WELDING ELECTRODE PLANT, which is the first welding consumable manufactory in China and it had become a public listed incorporation in Shanghai Stock Exchange in 2001. The famous trademark “ATLANTIC” was registered in 1950 and it is awarded the “Well-known Trademarks in China”. “ATLANTIC” has 15 sub-factories around in China and its head-office is located in Zigong, Sichuan. The output of ATLANTIC products was more than 400,000 metric tons in 2015. “ATLANTIC” welding consumables are over 500 types, which divided into welding rods, welding wires and welding fluxes three categories that include mild steel rods, cellulose rods, high toughness steel rods, low alloy steel rods, hardfacing rods, stainless steel rods, cryogenic steel rods, heat resistant steel rods, cast iron rods, nickle and nickle alloy rods and copper rod; wires suitable for MAG, MIG, TIG, SAW, FCW as well as for aluminium alloy and copper alloy; fluxes are classified into fused, sintered (agglomerated) and bonded types for submerged arc welding and electroslag welding.

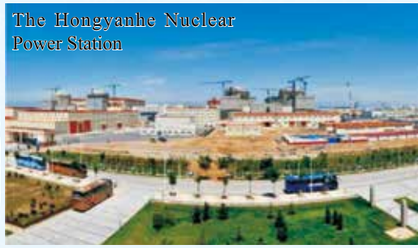
The “ATLANTIC” welding consumables have excellent quality and have been enjoyed a high reputation. They are widely used in power station boilers, pressure vessels, nuclear and space industries, bridges, ships, vehicles, petroleum and chemical industries, hydropower and thermal-power plants, metallurgical industries, skyscrapers, heavy machinery, and offshore drilling platforms etc. Some instances of focus projects of “ATLANTIC” in China and abroad: Three Gorges Dam Project on Yangtse River, Qinshan, Tianwan and Lingao (Daya Bay) Nuclear Power Stations, the 4,000km West-to-East Gas Transmission Pipe Line, the main gymnasiums for Beijing Olympic Game 2008, The National Centre for the Performing Arts, the 3T Terminal Building of Beijing International Airport, the new mansion of CCTV, the jumbo oil tanks of the National Strategic Petroleum Reserves in China, the San Francisco-Oakland Bay Bridge as well as the Hong Kong-Zhuhai-Macao Bridge and so on. The main products of “ATLANTIC” are approved by China Classification Society (CCS), Lloyd’s Register of Shipping (LR), American Bureau of Shipping (ABS), Bureau Veritas (BV), Germanischer Lloyd (GL), Det Norske Veritas (DNV), Nippon Kaiji Kyokai (NK), PT. Biro Klasifikasi Indonesia (BKI), Korean Register of Shipping (KR), Technischer Überwachungs-Verein (TÜV) and Canadian Welding Bureau (CWB) as well as CE(Conformite Europeenne). Lloyd’s Register Quality Assurance (LRQA) approves the ISO 9001 Management Systems of ATLANTIC CHINA WELDING CONSUMABLES INC. , and The Inspection Department of “ATLANTIC” is the only one achieves ISO 17025 “Laboratory Accreditation Certificate” in the welding industry of China.

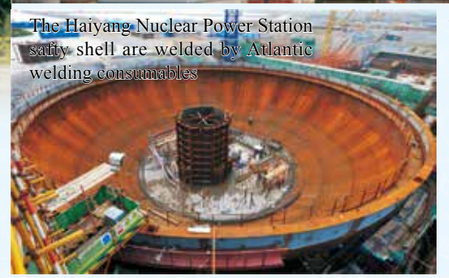
四川大西洋焊接材料股份有限公司是由国内第一家焊接材料制造厂“中国电焊条厂”改制设立的股份制上市公司，证券代码 600558。著名商标“大西洋”注册于 1950 年并获得“中国驰名商标”称号。“大西洋”总部位于四川省自贡市，目前拥有 15 个分子公司，2015 年产销量超过 40 万吨。“大西洋”焊接材料分电焊条、焊丝和焊剂三大类 500 多个品，主要产品有碳钢电焊条、纤维素电焊条、高强钢电焊条、低合金钢电焊条、堆焊电焊条、不锈钢电焊条、低温钢电焊条、耐热钢电焊条、铸铁电焊条、镍及镍合金电焊条、铜焊条；MAG、MIG 和 TIG 的气体保护焊丝、埋弧焊丝、药芯焊丝和铝焊丝、铜焊丝；以及适用于埋弧焊和电渣焊的各种熔炼型、烧结型和陶质型焊剂。

“大西洋”焊接材料质量优良、信誉卓著，被国内外用户广泛用于电站锅炉、压力容器、核工业、航天、桥梁、船舶、车辆、石油、化工、水电、火电、冶金、高层建筑、重型机械设备及海上钻进平台等重要工程，如举世闻名的长江三峡工程、秦山核电站、田湾核电站、大亚湾岭澳核电站、西气东输、北京奥运主场馆、国家大剧院、首都机场 3 号航站楼、国家石油战略储备工程、奥克兰海湾大桥以及港珠澳大桥等。公司主要产品经中国船级社（CCS）、英国劳埃德船级社（LR）、美国验船协会（ABS）、法国船级社（BV）、德国劳埃德船级社（GL）、挪威船级社（DNV）、日本海事协会（NK）、印尼船级社（BKI）、韩国船级社（KR）、德国技术标准局（TÜV）、加拿大焊接局（CWB）认可，以及欧盟 CE 认证。公司管理体系通过英国劳氏质量认证有限公司（LRQA）ISO9001 认证，公司检测所是国内同行业唯一通过 ISO17025 中国合格评定国家认可委员会认可的实验室。

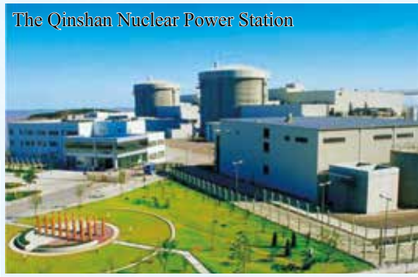
Performance Paradigm


The Fangchenggang Nuclear Power Station


The Hongyanhe Nuclear Power Station


The Haiyang Nuclear Power Station
safty shell are welded by Atlantic welding consumables


The Ningde Nuclear Power Station

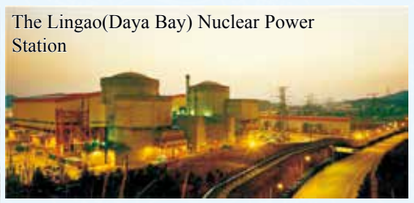

The Qinshan Nuclear Power Station


The Yangjiang Nuclear Power Station


The Sanmen Nuclear Power Station


The Taishan Nuclear Power Station

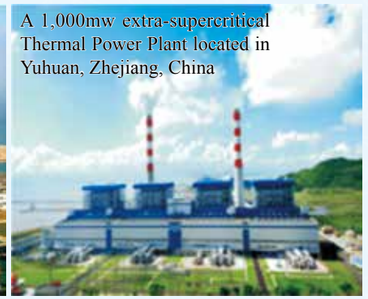

The Fuqing Nuclear Power Station


The Lingao(Daya Bay) Nuclear Power Station


The Lufeng Nuclear Power Station


The grand sight of Xiluodu Hydropower Station


The Haimen Thermal Power Plant

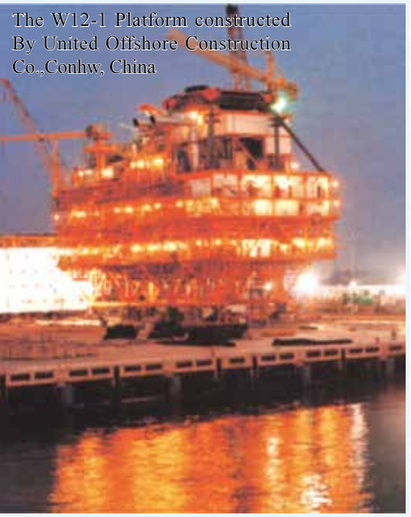

A 1,000mw extra-supercritical Thermal Power Plant located in Yuhuan, Zhejiang, China


The wind power field at Dabancheng, Xinjiang, China


The grand sight of the main dam of Three Gorges Project on Yangse River

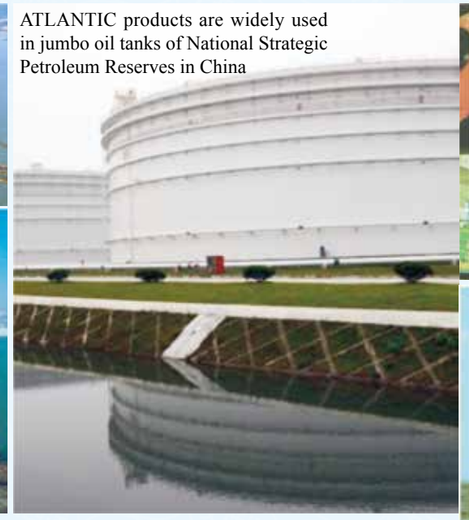

Urumuqi Petroleum Chemical Industry General

Performance Paradigm


The W12-1 Platform constructed By United Offshore Construction Co.,Conhw, China


Ting Kau Bridge in Hong Kong


Panama container shore bridge builted by Shanghai Zhenhua Port Machinery Co.Ltd for Oakland port of the USA


ATLANTIC products are widely used in jumbo oil tanks of National Strategic Petroleum Reserves in China


200ME boiler drum made by Harbin boiler factory

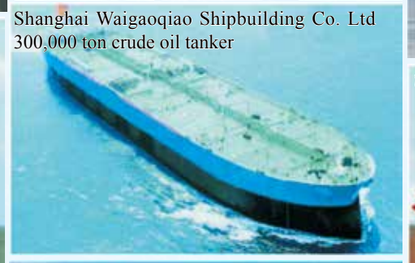

A 175,000mt bulk carrier made by Shanghai Waigaoqiao Shipbuilding Co., Ltd


Xiamen Golden Dragon United Automotive Industry Co., Ltd. production of luxury cars

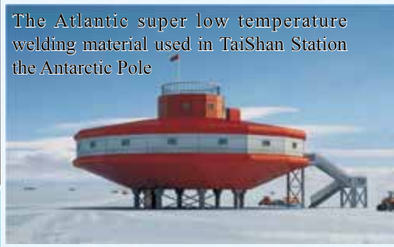

The skyscapter of Diwang Mansion at Shenzhen, China

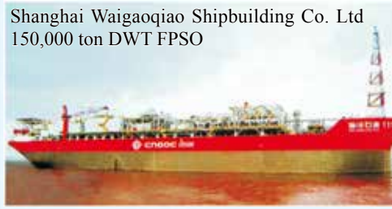

Hongkong Yangtze River Group Center

All the steel structure of Bank of Shanghai Headquarters are welded by Atlantic welding materials

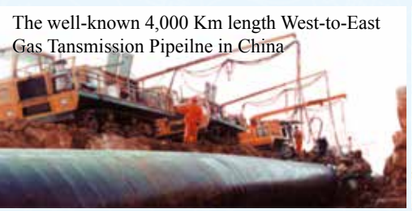

Shanghai Waigaoqiao Shipbuilding Co. Ltd 300,000 ton crude oil tanker

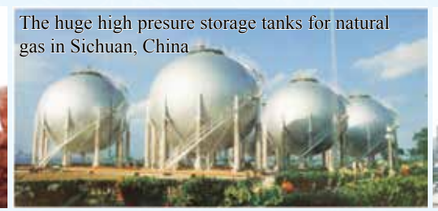

Suez tanker built by Shanghai Waigaoqiao Shipbuilding Co.Ltd


The Atlantic super low temperature welding material used in TaiShan Station the Antarctic Pole


Shanghai Waigaoqiao Shipbuilding Co. Ltd 150,000 ton DWT FPSO


Xi'an Vehicle Factory series of railway tanker


The well-known 4,000 Km length West-to-East Gas Tansmission Pipeilne in China


The huge high presure storage tanks for natural gas in Sichuan, China


The Lanzhou refining Works of CNPC


LNG gas storage


The Atlantic products are used in the field of aerospace, such as the Tiangong-1, Shenzhou nine and Long March two F

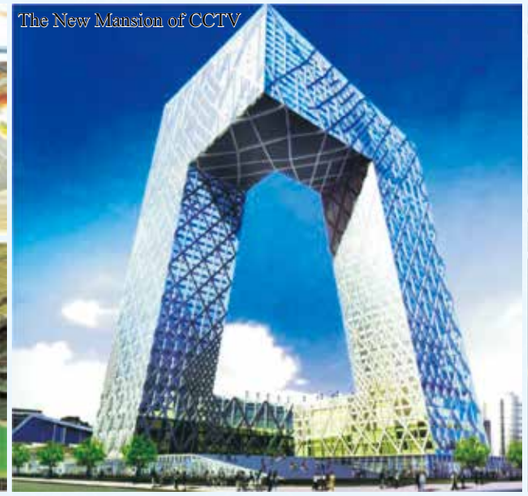

The National Centre for the Performing Arts, Which beside the Tiananmen Square, Beijing

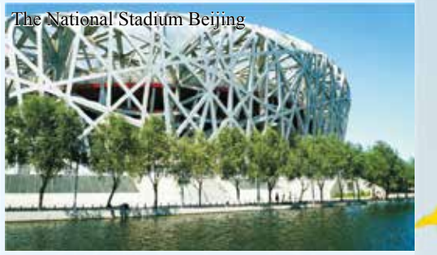

Guangxi Liuzhou Machinery Co. Ltd series of loader

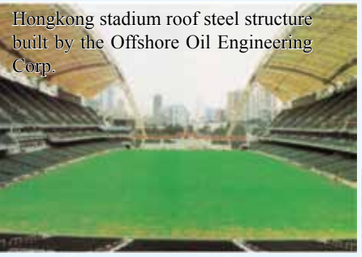

Guangxi Liuzhou Machinery Co., Ltd series of road roller

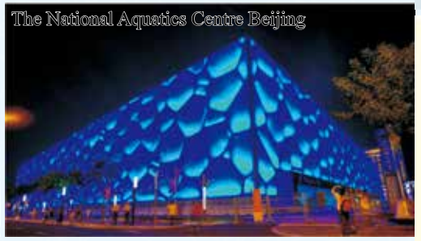

Hydraulic crane produced by Changjiang Crane Factory

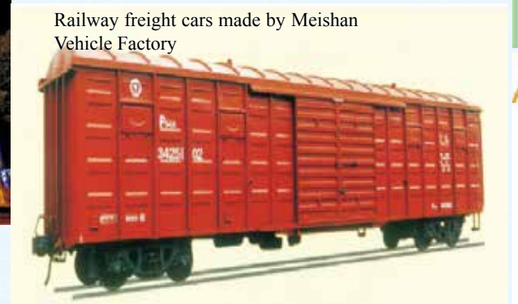

F1 International Racing Shanghai


The New Mansion of CCTV

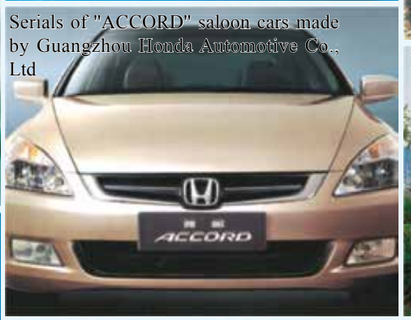

The National Stadium Beijing


Hongkong stadium roof steel structure built by the Offshore Oil Engineering Corp.

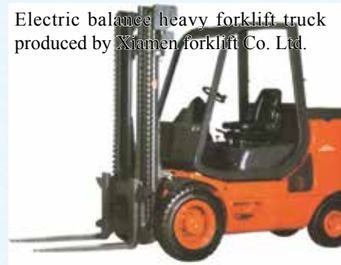

The National Aquatics Centre Beijing


Railway freight cars made by Meishan Vehicle Factory

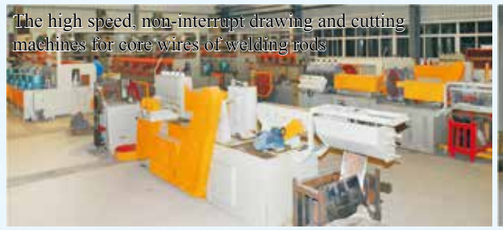

Wl40 excavator produced by Xiamen Construction Machinery Co. Ltd


Serials of "ACCORD" saloon cars made by Guangzhou Honda Automotive Co., Ltd


Hexiehao CRH is in the operation


Electric balance heavy forklift truck produced by Xiamen forklift Co. Ltd.

THE EXCELLENT PRODUCTION & INSPECTION EQUIPMENTS


The high speed, non-interrupt drawing and cutting machines for core wires of welding rods

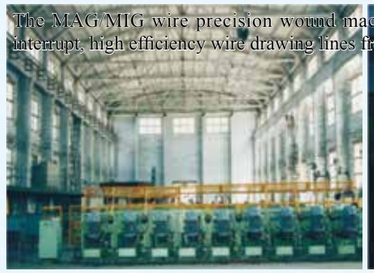

The automatically powder blending machine

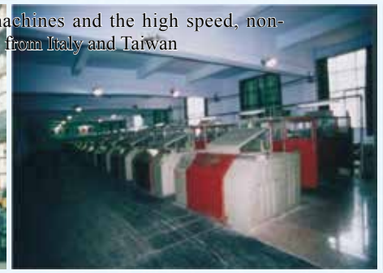

The UP320 hydraulic extrusion machines

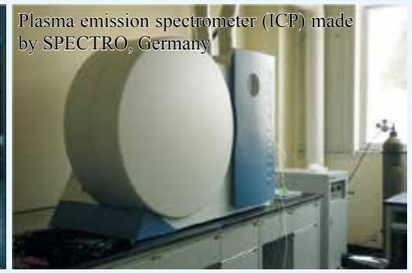

A high efficiency production line for welding rods made by Berner Gmbh & Co. KG, Germany


The low & high temperature continual baking oven for welding rods


A complete set of flux cored wire production line imported from Japan


The MAG MIG wire precision wound machines and the high speed, non-interrupt, high efficiency wire drawing lines from Italy and Taiwan




Plasma emission spectrometer (ICP) made by SPECTRO, Germany

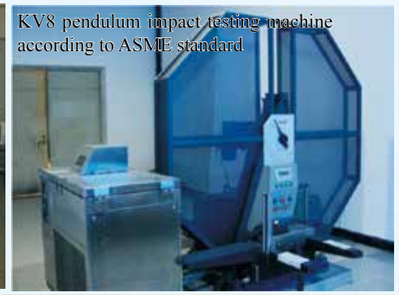

A late-model spectrometer made by SPECTRO, Germany


The TC500C Nitrogen & Oxygen Determinator made by LECO Corporation, USA

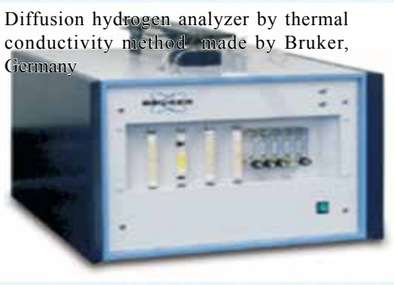

Scanning electronic microscope imported from Carl Zeiss AG Germany and energy spectrometer & WDS from Oxford, Britain


The spectrometer imported from Holland


Impact testing machine


KV8 pendulum impact testing machine according to ASME standard


NDT drop hammer impact test machine


Diffusion hydrogen analyzer by thermal conductivity method made by Bruker, Germany


Mercury diffusion hydrogen analyzer

CHE40

The Most Popular Covered Welding Rod for Mild Steels

AWS A5.1 E6013
BS EN ISO 2560-B-E 43 13 A
CSA W48-06 E4313
JIS Z3211 D4313
GB/T 5117 E4313

Type of Covering: High titania, potassium
Welding Position: F, H, HF, OH, V
Type of Current: AC, DCEP or DCEN

Features & Applications
CHE40 is the most popular mild steel welding rod. It is able to provide excellent welding performance and satisfactory weld metal can be obtained in all position welding. It is widely used in ordinary tensile strength mild steel structures especially suitable for intermittent welding to sheet steels and small work pieces as well as cosmetic welding with smooth and shiny appearance, e.g. top-hull of ships.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Ni	Cr	Mo	V
Standard	≤0.20	≤1.20	≤1.00	≤0.035	≤0.040	≤0.30	≤0.20	≤0.30	≤0.08
Typical	0.070	0.41	0.26	0.021	0.023	0.018	0.027	0.002	0.001

Mechanical Properties of Deposited Metal (AW)

	Yield Strength ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)	
				20℃	0℃
Standard	≥306	400-560	≥22	—	≥47
Typical	395	480	29	110	80

The standard of mechanical properties conforms to shipping institutions and the certificate of inspection would follow it unless the purchaser has special requirement.
X-ray radiographic inspection: Grade Ⅱ

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)		2.5x300	2.5x350	3.2x350	4.0x400	4.0x450	5.0x400	5.0x450
Pieces (5kg)		≈303	≈258	≈157	≈90	≈80	≈59	≈52
Current (A)	F, H	60-90	60-90	80-130	150-190	150-190	180-250	180-250
	V, OH	50-80	50-80	80-110	130-170	130-170		

Approvals

Institute	CCS	LR	ABS	BV	GL	DNV	BKI	NK	CWB
Grade	2	2m	2	2	2	2	2	KMW2	E4313

Notice: Normally the rod do not need to re-dry in case it is affected with damp seriously it should be re-baked at 150℃ for 30-60minutes before use.

CHE425

Vertical-down Covered Welding Rod for Mild Steels

AWS A5.1 E6011
BS EN ISO 2560-B-E 43 11 A
CSA W48-01 E4311
JIS Z3211 D4311
GBT/5117 E4311

Type of Covering: High cellulose, potassium
Welding Position: F, H, HF, OH, V, VD
Type of Current: DCEP or AC

Features & Applications
It is suitable for butt welding, corner joint welding and lap welding for sheet steels, such as structures of power plant's flue and air duct, oil tank of transformer, upper structures of hull, vehicle plate and so on. The welding rod is unfavourable to weave too wide and the length of voltaic arc should be appropriate. It is not suitable for multi-layer welding and not for cosmetic welding.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Ni	Cr	Mo	V
Standard	≤0.20	≤1.20	≤1.00	—	—	≤0.30	≤0.20	≤0.30	≤0.08
Typical	0.096	0.68	0.20	0.017	0.018	0.008	0.041	0.001	0.012

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Yield Strength ReL (MPa)	Elongation A4 (%)	Impact Value (J)
				-30℃
Standard	≥430	≥330	≥22	≥27
Typical	500	405	30	75

X-ray radiographic inspection: Grade Ⅱ

Sizes, Pieces & Recommended Current (DC^+ or AC)

Size (mm)		2.5 x 300	3.2 x 350	4.0 x 350	5.0 x 350
Pieces (5kg)		≈328	≈185	≈120	≈76
Current (A)	OH, VD	30-50	70-100	90-140	150-200

Notice: 1) Good condition of packaging and storage for it is important.
2) Normally it does not need to re-dry. When it is damped seriously re-bake it at temperature of 70℃ -80℃ for 0.5-1 hour before welding.
3) To increase performance of welding, when using dia. 5.0mm one, bigger thrust and smaller current are recommended.

CHE425G

Vertical-down Covered Welding Rod for Mild Steels

AWS A5.1 E6010
BS EN ISO 2560-B-E 43 10 A
CSA W48-01 E4310
GBT/5117 E4310

Type of Covering: High cellulose, sodium
Welding Position: F, H, HF, OH, V, VD
Type of Current: DCEP

Features & Applications
It is mainly used for backing welding of substrate, root passes, filler and cosmetic welding of mild steel pipes. It could be fashioned by one-side welding with back formation.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Ni	Cr	Mo	V
Standard	≤0.20	≤1.20	≤1.00	—	—	≤0.30	≤0.20	≤0.30	≤0.08
Typical	0.091	0.55	0.17	0.010	0.011	0.011	0.022	0.001	0.01

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Yield Strength ReL (MPa)	Elongation A4 (%)	Impact Value (J)
				-30℃
Standard	≥430	≥330	≥22	≥27
Typical	500	400	29	80

X-ray radiographic inspection: Grade Ⅱ

Sizes, Pieces & Recommended Current (DC^+)

Size (mm)		2.5 x 300	3.2 x 350	4.0 x 350	5.0 x 350
Pieces (5kg)		≈328	≈185	≈120	≈76
Current (A)	F, H	60-90	70-110	110-150	150-200
	OH, VD	50-80	60-100	100-140	140-180

Notice: 1) Good condition of packaging and storage for it is important.
2) Normally it does not need to re-dry. When it is damped seriously re-bake it at temperature of 70℃ -80℃ for 0.5-1 hour before welding.
3) To increase performance of welding, when using dia. 5.0mm one, bigger thrust and smaller current are recommended.

CHE501Fe

Covered Welding Rod for High Tensile Steels

AWS A5.1 E7014
BS EN ISO 2560-B-E 49 14 A
CSA W48-01 E4914
GB/T 5117 E5014

Type of Covering: Iron powder, titania
Welding Position: F, H, HF, OH, V
Type of Current: AC, DCEP or DCEN

Features & Applications
Its nominal deposited efficiency is about 110% and it is used for welding structures fabricated by equivalent tensile strength mild steels or low alloy steels, such as machineries, vehicles and so on.

Chemical Composition of Deposited Metal (%)

	C	Mn*	Si	S	P	Cr*	Ni*	Mo*	V*
Standard	—	≤1.25	≤0.90	≤0.035	≤0.035	≤0.20	≤0.30	≤0.30	≤0.08
Typical	0.065	0.60	0.40	0.020	0.025	0.001	0.011	0.013	0.06

The total amount of elements with * one should be≤1.50%

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Yield Strength ReL (MPa)	Elongation A4 (%)
Standard	≥490	≥400	≥17
Typical	560	480	25

X-ray radiographic inspection: Grade Ⅱ

Sizes & Recommended Current (AC or DC)

Size (mm)		2.5x300	3.2x350	4.0x400	5.0x400
Current (A)	F, H	60-90	80-130	150-190	180-250
	V, OH	50-80	70-120	130-170	—

Notice: Normally the rod does not need to re-dry in case it is affected with damp seriously re-bake it at 150℃ for 30-60 minutes before use.

CHE56

Covered Welding Rod for High Tensile Steels

AWS A5.1 E7016
BS EN ISO 2560-B-E4916-1 A
CSA W48-06 E4916
JIS Z3212 D5016
GB/T 5117 E5016

Type of Covering: Low hydrogen, potassium
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Features & Applications
It is used for main parts of ships, e.g. boilers, pressure vessels and pipes made by equivalent tensile strength steels, such as A, B, D, E, AH36, DH36 or EH36. Also it can be applied to homothetic strength structures of bridges, machineries, constructions, vehicles and so on. The weld metal has good performance of plasticity, impact toughness and crack resistance.

Chemical Composition of Deposited Metal (%)

	C	Mn*	Si	S	P	Cr*	Ni*	Mo*	V*
Standard	≤0.15	≤1.60	≤0.75	≤0.035	≤0.035	≤0.20	≤0.30	≤0.30	≤0.08
Typical	0.070	1.12	0.54	0.007	0.018	0.027	0.006	0.003	0.016

The total amount of elements with * one should be≤1.75%

Mechanical Properties of Deposited Metal (AW)

	Yield Strength ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)	
				-20℃	-30℃
Standard	≥375	490-660	≥22	≥47	≥27
Typical	450	550	30	185	170

The standard of mechanical properties conforms to shipping institutions and the certificate of inspection would follow it unless the purchaser has special requirement.
Diffusible hydrogen in deposited metal: ≤8ml/100g (mercury process)
X-ray radiographic inspection: Grade Ⅰ

Sizes & Recommended Current (DC+ or AC open circuit voltage ≥70V)

Size (mm)		2.5x300	3.2x350	4.0x400	5.0x400
Current (A)	F, H	70-110	100-140	140-180	180-230
	V, OH	50-80	80-110	130-170	—

Chemical Composition of Deposited Metal (%)

Institute	CCS	LR	ABS	BV	GL	DNV	NK	BKI
Grade	3YH10	3Ym, H15	3Y	3YHH	3YH10	3YH10	KMW53H10	3YH10

Notice: 1) The rod should be baked at 350℃ for 1 hour before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
3) Short arc and narrow-gap welding is recommended.

CHE58-1

Covered Welding Rod for High Tensile Steels

AWS A5.1 E7018-1/E7018
BS EN ISO 2560-B-E49 18-1 A
CSA W48-06 E4918-1H8
JIS Z3212 D5016
GB/T 5117 E5018-1

Type of Covering: Extra low hydrogen, potassium, iron powder
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Features & Applications
Its nominal deposited efficiency is about 110%. The weld metal shows excellent low temperature toughness and high crack resistance. It is widely used in important structures fabricated by equivalent tensile strength mild steels or low ally steels such as ships, boilers, high pressure vessels, bridges, skyscrapers, offshore drilling platforms, nuclear power plants and so on. It has been appointed to be honor consumables by almost all nuclear power projects in China due to its faithworthy quality.

Chemical Composition of Deposited Metal (%)

	C	Mn*	Si	S	P	Cr*	Ni*	Mo*	V*
Standard	≤0.15	≤1.60	≤0.75	≤0.035	≤0.035	≤0.20	≤0.30	≤0.30	≤0.08
Typical	0.068	1.36	0.51	0.010	0.016	0.027	0.006	0.003	0.016

The total amount of elements with * one should be≤1.75%

Mechanical Properties of Deposited Metal (AW)

	Yield Strength ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)		
				-20℃	-30℃	-46℃
Standard	≥375	490-660	≥22	≥47	≥27	≥27
Typical	440	540	30	170	150	130

The standard of mechanical properties conforms to shipping institutions and the certificate of inspection would follow it unless the purchaser has special requirement.
Diffusible hydrogen in deposited metal: ≤5ml/100g (mercury process)
X-ray radiographic inspection: Grade Ⅰ

Sizes, Pieces & Recommended Current (DC+ or AC open circuit voltage ≥70V)

Size (mm)		2.5 x 300	2.5 x 350	3.2 x 350	3.2 x 450	4.0 x 400	4.0 x 450	5.0 x 400	5.0 x 450
Pieces (5kg)		≈290	≈248	≈145	≈114	≈84	≈75	≈51	≈45
Current (A)	F, H	70-100	70-100	100-140	100-140	140-170	140-170	190-240	190-240
	V, OH	60-70	60-70	80-110	80-110	130-150	130-150	—	—

Approvals

Institute	CCS	LR	ABS	BV	GL	DNV	BKI	KR	CWB
Grade	4YH5	3Ym, H15	4YH5	4YHHH	4YH10	4YH5	4YH10	3YH10	E4918-1-H8

Notice: 1) The rod should be baked at 400℃ for 1-2 hours before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
3) Short Arc and narrow-gap welding is recommended.

CHS002

Extra-low Carbon Stainless Steel Covered Welding Rod

AWS A5.4 E308L-16
ISO 3581-A-E (19 9 L) R 3 2
ISO 3581-B-ES308L-16
BS EN 1600-E 19 9 L R 3 2
CSA W48-01 E308L-16
JIS Z3221 D308L-16
GB/T 983 E308L-16

Type of Covering: Lime-titania
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Features & Applications
It is used for welding stainless steel structures that fabricated by 022Cr19Ni10 or 06Cr18Ni11Ti (e.g. 304L or 308L) stainless steels, which work temperature ≤300℃, such as facilities of synthetic fibre, fertilizer, petrochemical equipment and so on. The weld metal has good resistance to intercrystalline corrosion.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Standard	≤0.04	0.50-2.50	≤1.00	18.0-21.0	9.0-11.0	≤0.75	≤0.75	≤0.03	≤0.04
Typical	0.029	0.86	0.63	19.80	9.60	0.078	0.10	0.012	0.024

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Elongation A4 (%)
Standard	≥520	≥35
Typical	575	46

Sizes Pieces & Recommended Current (DC+ or AC)

Size (mm)		2.0 x 300	2.5 x 300	3.2 x 350	4.0 x 400	5.0 x 400
Pieces (2kg)		≈172	≈110	≈57	≈33	≈22
Current (A)	F, H	30-50	60-85	85-120	115-160	160-200
	V, OH	30-45	50-70	75-105	95-130	—

Approvals

Institute	CWB
Grade	CSA W48 E308L-16

Notice: 1) The rod should be baked at 300℃ -350℃ for 1 hour before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, moisture and so on.
3) Smaller current and short arc are recommended in welding and weave beads no wider than 2.5 times of the diameter of the core rod is better.

CHS022

Extra-low Carbon Stainless Steel Covered Welding Rod

AWS A5.4 E316L-16
ISO 3581-A-E (19 12 3 L) R 3 2
ISO 3581-B-ES316L-16
BS EN 1600-E 19 12 3 L R 3 2
CSA W48-01 E316L-16
JIS Z3221 D316L-16
GB/T 983 E316L-16

Type of Covering: Lime-titania
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Features & Applications
It is suitable for welding facilities of synthetic fibre or urea, as well as for similar stainless steel structures. Also it could be used for welding structures made by category of chromium stainless steels that could not be PWHT or for welding dissimilar steels and ply steels. The weld metal has good performance of resistance to corrosion, heat and crack defect.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Standard	≤0.04	0.50-2.50	≤1.00	17.0-20.0	11.0-14.0	2.0-3.0	≤0.75	≤0.03	≤0.04
Typical	0.03	0.85	0.62	19.00	11.86	2.50	0.16	0.012	0.028

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Elongation A4 (%)
Standard	≥490	≥30
Typical	575	44

Sizes Pieces & Recommended Current (DC+ or AC)

Size (mm)		2.0 x 300	2.5 x 300	3.2 x 350	4.0 x 400	5.0 x 400
Pieces (2kg)		≈171	≈109	≈57	≈33	≈22
Current (A)	F, H	30-50	60-85	85-120	115-160	160-200
	V, OH	30-45	50-70	75-105	95-140	—

Approvals

Institute	CWB
Grade	CSA W48 E316L-16

Notice: 1) The rod should be baked at 300℃ -350℃ for 1 hour before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
3) Smaller current and short arc are recommended in welding and weave beads no wider than 2.5 times of the diameter of the core rod is better.

CHS062

Extra-low Carbon Stainless Steel Covered Welding Rod

AWS A5.4 E309L-16
ISO 3581-A-E (23 12 L) R 3 2
ISO 3581-B-ES309L-16
BS EN 1600-E 23 12 L R 3 2
CSA W48 E309L-16
JIS Z3221 D309L-16
GB/T 983 E309L-16

Type of Covering: Lime-titania
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Features & Applications
It is suitable for welding structures fabricated by similar extra-low carbon stainless steels or for welding structures fabricated by ply steels and dissimilar steels. Also it could be used for surfacing lining intermediate layer of pressure vessels of nuclear reactor. The weld metal has good resistance to weld intercrystalline corrosion although there is no niobium and titanium.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Standard	≤0.04	0.50-2.50	≤1.00	22.0-25.0	12.0-14.0	≤0.75	≤0.75	≤0.03	≤0.04
Typical	0.027	0.85	0.67	24.20	13.09	0.09	0.092	0.009	0.020

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Elongation A4 (%)
Standard	≥520	≥30
Typical	565	41

Sizes Pieces & Recommended Current (DC+ or AC)

Size (mm)		2.5 x 300	3.2 x 350	4.0 x 400	5.0 x 400
Current (A)	F, H	50-70	80-110	130-160	160-220
	V, OH	45-60	70-100	110-140	—

Approvals

Institute	CWB
Grade	CSA W48 E309L-16

Notice: 1) The rod should be baked at 300℃ -350℃ for 1 hour before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
3) Smaller current and short arc are recommended in welding and weave beads no wider than 2.5 times of the diameter of the core rod is better.

CHS102

Stainless Steel Covered Welding Rod

AWS A5.4 E308-16
ISO 3581-A-E (19 9) R 3 2
ISO 3581-B-ES308-16
BS EN 1600-E 19 9 R 3 2
CSA W48 E308-16
JIS Z3221 D308-16
GB/T 983 E308-16

Type of Covering: Lime-titania
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Features & Applications
It is used for welding structures made by 06Cr19Ni10 (e.g. 304 or 308) stainless steel that work temperature lower than 300℃. The weld metal has good mechanical properties and good resistance to intercrystalline corrosion. The welding performance is satisfied and its coating flux is not easy to be red when welding.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Standard	≤0.08	0.50-2.50	≤1.00	18.0-21.0	9.0-11.0	≤0.75	≤0.75	≤0.03	≤0.04
Typical	0.048	0.86	0.66	19.88	9.70	0.14	0.23	0.012	0.028

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Elongation A4 (%)
Standard	≥550	≥35
Typical	595	44

Sizes Pieces & Recommended Current (DC+ or AC)

Size (mm)		2.0 x 300	2.5 x 300	3.2 x 350	4.0 x 400	5.0 x 400
Pieces (2kg)		≈172	≈110	≈57	≈33	≈22
Current (A)	F, H	30-50	60-85	85-120	115-160	160-200
	V, OH	25-40	50-70	75-105	95-130	—

Notice: 1) The rod should be baked at 300℃ -350℃ for 1 hour before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, moisture and so on.
3) Smaller current and short arc are recommended in welding and weave beads no wider than 2.5 times of the diameter of the core rod is better.

CHS29.9

Duplex Stainless Steel Covered Welding Rod

AWS A5.4 E312-16
ISO 3581-A-E (29 9) R 3 2
ISO 3581-B-ES312-16
BS EN 1600 E 29 9 R 3 2
CSA W48 E312-16
JIS Z3221 D312-16
GB/T 983 E312-16

Type of Covering: Lime-titania
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Description
It deposits a ferritic-austenitic duplex weld metal with around 40% ferrite so it has excellent crack resistance. It is suitable for welding Cr29Ni9 cast steels, high carbon steels, tool steels, problem steels as well as for dissimilar steel welding.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Standard	≤0.15	0.5-2.5	≤1.00	28.0-32.0	8.0-10.5	≤0.75	≤0.75	≤0.03	≤0.04
Typical	0.085	1.11	0.78	29.39	9.97	0.16	0.20	0.011	0.028

Mechanical Properties of Deposited Metal (AW)

	Tensile Strength Rm (MPa)	Elongation A4 (%)
Standard	≥660	≥22
Typical	785	26

Sizes Pieces & Recommended Current (DC+ or AC)

Size (mm)		2.0 x 300	2.5 x 300	3.2 x 350	4.0 x 400	5.0 x 400
Pieces (2kg)		≈160	≈102	53	≈31	≈21
Current (A)	F, H	30-50	50-85	80-120	130-160	160-200
	V, OH	30-50	50-70	75-105	100-140	

Notice: 1) The rod should be baked at 300℃ -350℃ for 1 hour before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
3) When welding hardenable steel smaller current should be applied and for the big and thick weldment it should be preheated to 150℃ before welding.

CHC308

Pure Nickel Core Covered Welding Rod for Cast Iron

AWS A5.15 ENi-CI
ISO 1071-E C Ni-CI
JIS Z3252 DFCNi
GB/T 10044 EZNi-1

Type of Covering: Graphitemould
Welding Position: F, H, HF, OH, V
Type of Current: DCEP or AC

Features & Applications
It is the best for repair welding cracked or worn castings of grey cast iron, such as covers of cylinders, gear cases of engine seating and guideways of machine tools and so on. Also it is for joining cast iron parts with dissimilar metals or surfacing welding. Color of the coating is black red. The welding performance is very good and the machinability of the deposited metal is good.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	Ni	Al	Cu	Fe	Others
Standard	≤2.00	≤2.50	≤4.00	≤0.03	≥85	≤1.00	≤2.50	≤8.0	≤1.00
Typical	0.59	0.07	1.50	0.004	94.00	0.032	0.002	0.021	0.14

Sizes, Pieces & Recommended Current (DC^+ or AC)

Size (mm)	2.5 x 300	3.2 x 350	4.0 x 350	5.0 x 350
Pieces (2kg)	≈122	≈63	≈42	≈27
Current (A)	60-90	90-110	120-150	150-180

Notice: 1) The rod should be baked at 80℃ -120℃ for 1 hour before use.
2) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
3) When welding, hammering the weld joint to dispel stress around the welding region to avoid crack.
4) To increase ability of crack-resisting and machinable, small current is recommended, meanwhile could reduce impurities to permeate the weld seam from base metal.

CHT711

Flux Cored Wire for High Tensile Steels

AWS A5.36 E71T1 - C1A0 CS1
BS EN ISO 17632 T42 2 P C 1 H10
JIS Z3313 YFW-C50DR
CSA W48-01 E491T-1-H8
GB/T 10045 E501T-1

Type of Flux: Rutil
Welding Position: F, H, HF, OH, V, VD
Type of Current: DCEP

Features & Applications
CHT711 shows excellent welding performance and higher efficiency in welding. Vertical down welding could be applied. It is widely used in structures fabricated by equivalent mild steels and 490MPa grade high tensile strength steels, such as ships, pressure vessels, machineries, petrochemical industry equipments, bridges and so on.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P
Standard	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03
Typical	0.055	1.35	0.40	0.009	0.018

Mechanical Properties of Deposited Metal (AW)

	Yield Strength ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)		Shield Gas
				-20℃	-30℃	CO_2
Standard	≥375	490-660	≥22	—	≥27	purity≥99.98%
Typical	440	535	32	120	110	

The standard of mechanical properties conforms to shipping institutions and the certificate of inspection would follow it unless the purchaser has special requirement.

X-ray radiographic inspection: Grade Ⅰ
Diffusible hydrogen in deposited metal: ≤10ml/100g (mercury process)

Recommended Current (DC^+)

Diameter(mm)		1.0	1.2	1.4	1.6
Current (A)	F	100-280	120-300	150-380	180-430
	HF	100-280	120-280	150-320	180-380
	V, OH	80-260	120-260	150-270	180-280
	H	100-260	120-280	150-320-	180-330
	VD	100-260	200-280	220-300	250-300

Approvals

Institute	CCS	LR	ABS	GL	BV	DNV	NK	BKI	KR	CWB
Grade	3YSMH10	3YS, H10 3YM, H10	3YSAH10	3YH10S	SA3YMH10	Ⅲ YMS(H10)	KSW53G(C) H10 KAW53MG(C) H10	3YH10S	3YSMG(C1)H10	E491T-9-H8

Notice: 1) The flow rate of shield gas should within 20L-25L/min in welding.
2) The wire extention should be 15mm-25mm.
3) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
4) The welding conditions mentioned above for reference only and it is better to do a welding procedure qualification according to project before put it into formal welding.

CHW-50C6SM

MAG Wire for High Tensile Steel

AWS A5.18 ER70S-6
BS EN ISO 14341-A-G 42 3 C G3Si1
BS EN ISO 14341-B-G 49A 3 C G6
CSA W48-01 ER49S-6
JIS Z3312 YGW12
GB/T 8110 ER50-6

Welding Position: F, H, HF, OH, V
Type of Current: DCEP

Features & Applications
CHW-50C6SM has very good welding performance and the weld metal shows lower temperature impact toughness. It is mainly for butt and fillet welding structures made by shipping steels and low alloy steels, such as ships, containers, vehicles, engineering & construction machinery and so on.

Chemical Composition of the Wire (%)

	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu
Standard	0.06-0.15	1.40-1.85	0.80-1.15	≤0.035	≤0.025	≤0.15	≤0.15	≤0.15	≤0.03	≤0.50
Typical	0.078	1.53	0.85	0.010	0.011	0.029	0.022	0.008	0.010	0.12

Mechanical properties of Deposited Metal (AW)

	Yield Strength ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)			Shield Gas
				-20℃	-30℃	-40℃	CO_2
Standard	≥375	490-660	≥22	≥47	≥27	—	Purity ≥99.98%
Typical	425	540	30	102	89	70	

The standard of mechanical properties conforms to shipping institutions and the certificate of inspection would follow it unless the purchaser has special requirement.

Recommended Current (DC^+)

Diameter (mm)	0.6	0.8	0.9	1.0	1.2	1.6
Current (A)	40-120	40-140	40-180	50-220	80-350	120-550

Approvals

Institute	CCS	LR	ABS	GL	BV	DNV	NK
Grade	3YSM	3YS,H15 3YM,H15	3SA, 3YSA	3YS	SA3YM	Ⅲ YMS	KSW53G(C), KAW53MG(C)
Institute	BKI	KR	CWB	DB	CE	TUV	
Grade	3YSM	3YSMG(C1)	B-G 49A 3 C G6(ER49S-6)	G3Si1 DIN EN440	G3Si1 DIN EN440	EN440-G42 4 M G3Si1	

Notice: 1) To avoid rust the wire must be kept in dry condition and keep the package in good condition also before welding.
2) To avoid welding defect the shield gas should be pure particularly no moisture in it.
3) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
4) The welding conditions mentioned above for reference only and it is better to do a welding procedure qualification according to project before put it into formal welding.

CHF101/CHW-S12

SAW Flux/Wire Combination for High Tensile Steels

AWS A5.17 F7A4/EM12K
BS EN 756-S 38 4 FB S2Si
ISO 14171-A-S 38 4 FB S2Si
ISO 14171-B-S 49A4 FB SU21

Type of Flux: Agglomerated (sintered)
Type of Current: DCEP or AC

Features & Applications
CHF101 is fluoride-basic sintered flux and its basicity is about 1.8. The weld metal of this flux/wire combination shows fine appearance and it has satisfactory low temperature toughness. It is suitable to weld structures made by equivalent tensile strength mild steels or low alloy steels, such as ship structures, boilers, pressure vessels, as well as LPG cylinders.

Chemical Composition (%)

		C	Mn	Si	S	P	Cr	Ni	Cu
CHW-S12 (EM12K)	Standard	0.05-0.15	0.80-1.25	0.10-0.35	≤0.030	≤0.030	—	—	≤0.35
	Typical	0.080	1.06	0.22	0.011	0.016	0.025	0.026	0.10
Deposited Metal	Typical	0.054	1.30	0.30	0.014	0.021	0.020	0.010	0.042

Mechanical Properties of Deposited Metal (AW)

	Yield Strength ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)	
				-20℃	-40℃
Standard	≥375	490-660	≥22	≥34	≥27
Typical	410	510	32	120	105

The standard of mechanical properties conforms to shipping institutions and the certificate of inspection would follow it unless the purchaser has special requirement.

Quality Guarantee of Flux

Moisture	Solid Impurities	S	P	Mesh
≤0.10%	≤0.30%	≤0.060%	≤0.080%	10-60

Approvals

Institute	LR	ABS	GL	BV	DNV	NK
Grade	3YM	3YM	3YM	A3YM	Ⅲ YM	KAW53M

Notice: 1) To avoid rust the wire must be kept in dry condition and keep the package in good condition also before welding.
2) The flux should be re-baked at 300℃ -350℃ for 1.5-2 hours before use.
3) The surfaces to be welded must be cleaned away impurities of oil contamination, rust, moisture and so on.
4) The welding conditions mentioned above for reference only and it is better to do a welding procedure qualification according to project before put it into formal welding.

Welding Rods for Mild Steel

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Standard & Typical Mechanical Properties of Deposited Metal (AW)				Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE40	High titania Potassium	AWS A5.1 E6013 BS EN ISO 2560-B-E 43 13 A JIS Z3211 D4313	F,V, OH,H	AC or DC	≤0.20 0.070	≤1.20 0.41	≤1.00 0.26	≤0.035 0.021	≤0.040 0.023	≤0.20 0.027	≤0.30 0.018	≤0.30 0.002	≤0.08 0.01	ReH≥306 395	400-560 480	≥22 29	0℃ ≥47 80	Welding mild steel with normal tensile strength particularly suitable for intermittent welding to sheet and small workpoces.	CCS,LR,ABS, BV,GL,DNV, BKI,NK,CWB
CHE412	High titania Sodium	AWS A5.1 E6012 BS EN ISO 2560-B-E 43 12 A JIS Z3211 D4312	F,V, OH,H	AC or DC	≤0.20 0.08	≤1.20 0.50	≤1.00 0.35	≤0.035 0.020	≤0.040 0.026	≤0.20 0.03	≤0.30 0.017	≤0.30 0.003	≤0.08 0.01	≥330 400	≥430 490	≥17 28	0℃ ≥47 55	Suitable for welding sheet structures in all position.	—
CHE42	Lime titania	BS EN ISO 2560-B-E 43 03 A JIS Z3211 D4303	F,V, OH,H	AC or DC	≤0.20 0.067	≤1.20 0.40	≤1.00 0.18	≤0.035 0.019	≤0.040 0.022	— 0.015	— 0.006	— 0.012	— 0.012	ReH≥306 385	400-560 465	≥22 31	-20℃ ≥47 78	For welding structures with normal tensile strength such as ships, machineries and pipes etc.	CCS,LR,ABS, BV,GL,DNV,NK
CHE421D	Rutile Cellulose	AWS A5.1 E6013 BS EN ISO 2560-B-E 43 19 A JIS Z3211 D4313	F,VD, OH,H	AC or DC	≤0.20 0.068	≤1.20 0.39	≤1.00 0.28	≤0.035 0.017	≤0.040 0.023	≤0.20 0.027	≤0.30 0.02	≤0.30 0.003	≤0.08 0.02	≥330 420	≥430 500	≥17 27	0℃ 70	Vertical-down welding can perform for mild steel sheet structures, light structural frames, vehicles and so on.	—
CHE421Fe18	Iron powder Titanium	BS EN ISO 2560-B-E 43 14 A (Similar to E6024)	F, HF	AC or DC	≤0.12 0.063	≤1.25 0.56	≤0.90 0.45	≤0.035 0.015	≤0.040 0.024	—	—	—	—	ReH≥306 405	400-560 485	≥22 31	0℃ ≥47 87	Suitable for welding normal structures and ship structures made of mild steel, particularly suitable for flat and horizontal fillet and the welding efficiency is about 180%.	CCS,LR,ABS, BV,GL,DNV,NK
CHE43	Iron oxide Titania Potassium	AWS A5.1 E6019 BS EN ISO 2560-B-E 43 19 A JIS Z3211 D4301	F,V, OH,H	AC or DC	≤0.20 0.094	≤1.20 0.51	≤1.00 0.27	≤0.035 0.018	≤0.040 0.028	≤0.20 0.054	≤0.30 0.052	≤0.30 0.004	≤0.08 0.012	ReH≥306 385	400-560 480	≥22 29	0℃ ≥47 59	Suitable for welding ship hulls, pressure vessels, bridges as wll as structural fabrications.	CCS,LR,ABS, BV,GL,DNV,NK
CHE424	High iron oxide	AWS A5.1 E6020 BS EN ISO 2560-B-E 43 20 A	F, HF	AC or DC	≤0.20 0.075	≤1.20 0.63	≤1.00 0.10	≤0.035 0.018	≤0.040 0.027	≤0.20 0.029	≤0.30 0.017	≤0.30 0.002	≤0.08 0.02	≥330 370	≥430 470	≥22 26	0℃ 70	For welding general mild steel structures, such as heavy machinery and construction machinery and so on.	—
CHE424Fe16	High iron oxide Iron powder	AWS A5.1 E6027 BS EN ISO 2560-B-E 43 27 A	F, HF	AC or DC	≤0.20 0.070	≤1.20 0.67	≤1.00 0.27	≤0.035 0.015	≤0.040 0.022	≤0.20 0.025	≤0.30 0.02	≤0.30 0.003	≤0.08 0.02	≥330 345	≥430 440	≥22 32	-30℃ ≥27 75	Flat and horizontal fillet welding ship hulls, bridges, and general structures of building.	—
CHE425	High cellulose Potassium	AWS A5.1 E6011 BS EN ISO 2560-B-E 43 11 A	F,V, OH,H	AC or DC+	≤0.20 0.098	≤1.20 0.67	≤1.00 0.20	≤0.035 0.024	≤0.040 0.024	≤0.20 0.041	≤0.30 0.008	≤0.30 0.001	≤0.08 0.012	≥330 425	≥430 530	≥22 30	-30℃ ≥27 78	Suitable for vertical-down welding and lap welding for sheet structures.	—
CHE425G	High cellulose Sodium	AWS A5.1 E6010 BS EN ISO 2560-B-E 43 10 A	F,VD, OH,H	DC+	≤0.20 0.091	≤1.20 0.55	≤1.00 0.17	≤0.035 0.010	≤0.040 0.011	≤0.20 0.022	≤0.30 0.011	≤0.30 0.001	≤0.08 0.01	≥330 400	≥430 500	≥22 29	-30℃ ≥27 80	It is for all position welding general structures, including vertical down welding, especially pipelines, vessels.	—
CHE426	Low hydrogen Potassium	BS EN ISO 2560-B-E 43 16 A (Similar to E6016)	F,V, OH,H	AC or DC+	— 0.067	≤1.25 1.04	≤0.90 0.60	≤0.035 0.007	≤0.040 0.019	≤0.20 0.036	≤0.30 0.013	≤0.30 0.002	≤0.08 0.010	≥330 440	≥420 550	≥22 31	-30℃ ≥27 155	For welding important mild steel and low alloy steel structures.	—
CHE427	Low hydrogen Sodium	BS EN ISO 2560-B-E 43 15 A (Similar to E6015)	F,V, OH,H	DC+	— 0.076	≤1.25 0.87	≤0.90 0.41	≤0.035 0.010	≤0.040 0.020	≤0.20 0.035	≤0.30 0.013	≤0.30 0.002	≤0.08 0.010	≥330 420	≥420 520	≥22 32	-30℃ ≥27 160	For welding important mild steel and low alloy steel structures.	—
CHE47	Low hydrogen Sodium	BS EN ISO 2560-B-E 43 15 A (Similar to E6015)	F,V, OH,H	DC+	— 0.071	≤1.25 0.85	≤0.90 0.38	≤0.035 0.010	≤0.040 0.019	— 0.035	— 0.013	— 0.002	— 0.010	ReH≥306 410	400-560 505	A5(%)≥22 33	-20℃ ≥27 182	For welding important mild steel and low alloy steel structures, e.g. ships.	CCS,LR,ABS, BV,GL,DNV,NK
CHE48	Low hydrogen Potassium Iron powder	AWS A5.1 E6018 BS EN ISO 2560-B-E 43 18 A	F,V, OH,H	AC≥70V or DC+	≤0.03 0.028	≤0.60 0.56	≤0.40 0.33	≤0.015 0.010	≤0.025 0.016	≤0.20 0.047	≤0.30 0.022	≤0.30 0.010	≤0.08 0.014	≥330 400	≥430 500	A5(%)≥17 25	-30℃ ≥27 95	For welding important mild steel and low alloy steel structures.	—

Welding Rods for High Tensile Strength Steel

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Standard & Typical Mechanical Properties of Deposited Metal (AW)				Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE50	Low hydrogen Sodium	AWS A5.1 E7015 BS EN ISO 2560-B-E 49 15 -1 A	F,V, OH,H	DC+	— 0.078	≤1.60 1.21	≤0.75 0.51	≤0.035 0.010	≤0.040 0.020	— 0.037	— 0.014	— 0.002	— 0.010	ReH≥375 440	490-660 540	≥22 31	-20℃ ≥47 160	Suitable for welding important structures made of low alloy steel with corresponding grade of tensile strength, such as ships and heavy machinery.	CCS,LR,ABS, BV,GL,DNV, NK,CWB
CHE501Fe	Iron powder Titania	AWS A5.1 E7014 BS EN ISO 2560-B-E 49 14 -1 A	F,V, OH,H	AC or DC	≤0.15 0.065	≤1.25 0.60	≤0.90 0.40	≤0.035 0.020	≤0.035 0.025	≤0.20 0.001	≤0.30 0.11	≤0.30 0.013	≤0.08 0.06	≥400 480	≥490 560	≥17 25	20℃ 0℃ 70 50	It is suitable for welding mild steel and low alloy steel structures, such as vehicles and machinery.	—
CHE501Fe18	Iron powder Titania	AWS A5.1 E7024 BS EN ISO 2560-B-E 49 24 -1 A	F, H,HF	AC or DC	≤0.15 0.068	≤1.25 0.74	≤0.90 0.44	≤0.035 0.015	≤0.035 0.024	≤0.20 0.027	≤0.30 0.006	≤0.30 0.003	≤0.08 0.016	ReH≥375 450	490-660 510	≥22 27	0℃ ≥47 72	Suitable for flat and horizontal fillet welding ship structures, H beams of bridges, as well as general steel structures.	CCS,LR,ABS, BV,GL,DNV, NK
CHE502	Lime Titania-oxide	JIS D5003 BS EN ISO 2560-B-E 49 03 -1 A	F,V, OH,H	AC or DC	— 0.075	— 0.54	— 0.15	≤0.035 0.017	≤0.040 0.027	—	—	—	—	≥400 440	≥490 530	≥20 27	0℃ ≥27 75	For welding structures fabricated by low alloy steels.	CCS,LR,ABS, BV,GL,DNV, NK
CHE506	Low hydrogen Potassium	AWS A5.1 E7016 BS EN ISO 2560-B-E 49 16 -1 A	F,V, OH,H	AC or DC+	≤0.15 0.069	≤1.60 1.11	≤0.75 0.53	≤0.035 0.007	≤0.035 0.020	≤0.20 0.037	≤0.30 0.013	≤0.30 0.002	≤0.08 0.010	≥400 440	≥490 550	≥22 31	-30℃ ≥27 170	For welding important structures made by low alloy steels with corresponding grade of tensile strength.	—
CHE507	Low hydrogen Sodium	ASME SFA-5.1 E7015 BS EN ISO 2560-B-E 49 15 -1 A	F,V, OH,H	DC+	≤0.15 0.082	≤1.25 1.18	≤0.90 0.53	≤0.035 0.010	≤0.035 0.021	≤0.20 0.037	≤0.30 0.014	≤0.30 0.002	≤0.08 0.010	≥400 440	≥490 550	≥22 30	-30℃ ≥27 140	For welding important structures made by low alloy steel with corresponding grade of tensile strength.	—
CHE508	Low hydrogen Potassium Iron powder	AWS A5.1 E7018 BS EN ISO 2560-B-E 49 18 -1 A	F,V, OH,H	AC≥70V or DC+	≤0.15 0.068	≤1.60 1.38	≤0.75 0.41	≤0.035 0.012	≤0.035 0.015	≤0.20 0.011	≤0.30 0.035	≤0.30 0.001	≤0.08 0.002	≥400 465	≥490 560	≥22 29	-30℃ ≥27 130	Suitable for welding important low alloy structures, which belong to the same grade of tensile strength such as boilers, pressure vessels, pipelines and so on.	—
CHE56	Low hydrogen Potassium	AWS A5.1 E7016 BS EN ISO 2560-B-E 49 16 -1 A	F,V, OH,H	AC≥70V or DC+	≤0.15 0.070	≤1.60 1.12	≤0.75 0.54	≤0.035 0.007	≤0.040 0.018	≤0.20 0.027	≤0.30 0.006	≤0.30 0.003	≤0.08 0.016	ReH≥375 450	490-660 550	≥22 30	-20℃ -29℃ 185 140	It is suitable for welding important structures made by low alloy steels with corresponding grade of tensile strength, e.g. ships.	CCS,LR,ABS, BV,GL,DNV, BKI,NK
CHE58-1	Low hydrogen Potassium Iron powder	AWS A5.1 E7018-1/E7018 BS EN ISO 2560-B-E 49 18 -1 A	F,V, OH,H	AC≥70V or DC+	≤0.15 0.068	≤1.60 1.36	≤0.75 0.51	≤0.035 0.010	≤0.040 0.016	≤0.20 0.028	≤0.30 0.010	≤0.30 0.005	≤0.08 0.014	ReH≥375 440	490-660 540	≥22 30	-20℃ -29℃ -46℃ 170 140 130	Suitable for welding important structures fabricated by low alloy steels, such as ships, high pressure vessels, bridges and offshore drilling platforms and so on. which welding efficiency is about 110%.	CCS,LR,ABS, BV,GL,DNV, BKI,CWB

Welding Rods for Low Alloy Steel

Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Standard & Typical Mechanical Properties of Deposited Metal (AW)					Applications	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE505	AWS A5.5 E7011-G BS EN ISO 2560-B-E 49 11-1 A	VD,F, OH,H	AC or DC	— 0.098	≥1.00 0.67	≥0.80 0.20	≤0.03 0.024	≤0.03 0.024	≥0.30 0.018	≥0.50 0.005	≥0.20 0.50	≥0.10 0.011	≥0.20 0.20	AW	≥390 425	≥490 530	≥22 30	— -30℃ 78	Suitable for vertical down welding structures made of carbon steels and low alloy steels, e.g. pipes.	—
CHE505G	AWS A5.5 E7010-G BS EN ISO 2560-B-E 49 10-1 A	VD,F, OH,H	DC+	— 0.098	≥1.00 0.40	≥0.80 0.11	≤0.03 0.016	≤0.03 0.017	≥0.30 0.018	≥0.50 0.004	≥0.20 0.49	≥0.10 0.010	≥0.20 0.21	PWHT 620℃ X1h	≥390 420	≥490 535	≥22 28	— -30℃ 81	It is suitable for root passes, hot passes, filler and cover passes as well as for capping welding.	—
CHE505GX	AWS A5.5 E7010-P1 BS EN ISO 2560-B-E 49 10-G A	VD,F, OH,H	DC+	≤0.20 0.11	≤1.20 0.57	≤0.60 0.31	≤0.03 0.009	≤0.03 0.013	≤0.030 0.017	≤1.00 0.10	≤0.50 0.432	≤0.10 0.010	—	AW	≥415 470	≥490 540	≥22 22	-30℃ ≥27 50	It is suitable for vertical down welding and backing welding for root passes, hot passes, filler and cover passes as well as for capping of high press pipelines and similar structures.	—
CHE505Mo	AWS A5.5 E7010-A1 BS EN ISO 2560-B-E 49 10-1M3 P	VD,F, OH,H	DC+	≤0.12 0.074	≤0.60 0.33	≤0.40 0.11	≤0.03 0.010	≤0.03 0.009	—	—	0.40-0.65 0.48	—	—	PWHT 620℃ X1h	≥390 470	≥490 580	≥22 24	— -20℃ 70	It is suitable for root passes, hot passes, filler and cover passes welding as well as for capping welding.	—
CHE506NiLH	AWS A5.5 E7016-G BS EN ISO 2560-B-E 49 16-G P H5	F,V, OH,H	AC≥70V or DC+	— 0.070	≥1.00 1.12	≥0.80 0.54	≤0.03 0.007	≤0.03 0.018	≥0.30 0.014	≥0.50 0.50	≥0.20 0.004	≥0.10 0.012	≥0.20 0.22	PWHT 620℃ X1h	≥390 450	≥490 550	≥22 30	-30℃ ≥27 158	Welding important mild steel and low alloy steel structures, such as offshore drilling platforms, bridges, high pressure vessels, ships, etc.	—
CHE507NiLH	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P H5	F,V, OH,H	DC+	— 0.077	≥1.00 1.40	≥0.80 0.50	≤0.03 0.011	≤0.03 0.018	≥0.30 0.028	≥0.50 0.51	≥0.20 0.001	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥390 450	≥490 550	≥22 30	— -20℃ 110	Welding important mild steel and low alloy steel structures, such as bridges,offshore drilling platforms and high pressure vessels etc.	—
CHE507RH	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-Ni P H5	F,V, OH,H	DC+	— 0.080	≥1.00 1.36	≥0.80 0.47	≤0.03 0.010	≤0.03 0.010	≥0.30 0.025	≥0.50 0.50	≥0.20 0.001	≥0.10 0.012	≥0.20 0.11	PWHT 620℃ X1h	≥390 430	≥490 530	≥22 32	— -40℃ 130	For welding important projects of boilers, high pressure vessels, bridges, skyscrapers,offshore drilling platforms as well as nuclear structures.	—
CHE508Ni	AWS A5.5 E7018-G ISO 2560-B-E 49 18-G P	F,V, OH,H	AC≥70V or DC+	— 0.067	≥1.00 1.30	≥0.80 0.50	≤0.03 0.008	≤0.03 0.012	≥0.30 0.012	≥0.50 1.20	≥0.20 0.003	≥0.10 0.010	≥0.20 0.015	PWHT 620℃ X1h	≥390 470	≥490 580	≥22 28	— -40℃ 100	Welding low alloy steel structures with corresponding tensile strength.	—
CHE555G	AWS A5.5 E8010-G BS EN ISO 2560-B-E 55 10-G A	VD,F, OH,H	DC+	— 0.13	≥1.00 0.66	≥0.80 0.27	≤0.03 0.010	≤0.03 0.014	≤0.30 0.041	≥0.50 0.50	≥0.20 0.31	≥0.10 0.012	≥0.20 0.12	AW	≥460 470	≥550 580	≥19 25	— -30℃ 60	Suitable for fabricating huge diameter pipelines made by X70 or X75 grade steels.	—
CHE555GX	AWS A5.5 E8010-P1 BS EN ISO 2560-B-E 55 10-P1 A	VD,F, OH,H	DC+	≤0.20 0.099	≤1.20 0.60	≤0.60 0.18	≤0.030 0.012	≤0.030 0.011	≤0.30 0.013	≤1.00 0.642	≤0.50 0.43	≤0.10 0.010	—	AW	≥460 510	≥550 600	≥19 22	-30℃ ≥27 60	Suitable for fabricating huge diameter pipelines made by X70 or X80 grade steels.	—
CHE557	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.075	≥1.00 1.25	≥0.80 0.50	≤0.03 0.012	≤0.03 0.018	≥0.30 0.005	≥0.50 0.003	≥0.20 0.003	≥0.10 0.010	≥0.20 0.016	PWHT 620℃ X1h	≥460 480	≥550 590	≥19 24	— -40℃ 100	Welding medium carbon steel structures and low alloy steel structures.	—

Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Standard & Typical Mechanical Properties of Deposited Metal (AW)					Applications	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE557MoV	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.075	≥1.00 1.60	≥0.80 0.22	≤0.03 0.012	≤0.03 0.014	≥0.30 0.033	≥0.50 0.005	≥0.20 0.30	≥0.10 0.037	≥0.20 0.030	PWHT 620℃ X1h	≥460 540	≥550 630	≥19 24	— -40℃ 64	Mainly used for fabricating hull of huge hydraulic turbine at site as well as welding high cracking resistance structures.	—
CHE557Ni	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.069	≥1.00 1.25	≥0.80 0.25	≤0.03 0.013	≤0.03 0.018	≥0.30 0.007	≥0.50 0.90	≥0.20 0.002	≥0.10 0.011	≥0.20 0.010	PWHT 620℃ X1h	≥460 510	≥550 610	≥19 26	— -50℃ 82	Used for welding structures made by median carbon steel as well as low alloy steels, such as pressure vessels, bridges etc.	—
CHE557RH	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.075	≥1.00 1.25	≥0.80 0.22	≤0.03 0.008	≤0.03 0.016	≥0.30 0.023	≥0.50 0.76	≤0.20 0.20	≥0.10 0.018	≥0.20 0.020	PWHT 620℃ X1h	≥460 500	≥550 590	≥19 26	— -40℃ 120	For welding structures of pressure vessels, bridges, water-guiding pipes of hydro-electic power station as well as steel structures of ocean project.	CCS,ABS, DNV
CHE558	AWS A5.5 E8018-G BS EN ISO 2560-B-E 55 18-G P	F,V, OH,H	AC≥70V or DC+	— 0.080	≥1.00 1.12	≥0.80 0.30	≤0.03 0.012	≤0.03 0.030	≥0.30 0.010	≥0.50 0.09	≥0.20 0.003	≥0.10 0.015	≥0.20 0.010	PWHT 620℃ X1h	≥460 455	≥550 575	≥19 27	— -40℃ 98	Suitable for welding structures fabricated by medium carbon steels as well as low alloy steel, such as 15MnT,15MnV, etc.	—
CHE558Ni	AWS A5.5 E8018-C3 BS EN ISO 2560-B-E 55 18-N2 A	VD,F, OH,H	AC≥70V or DC+	≤0.12 0.069	0.40-1.25 1.05	≤0.80 0.63	≤0.03 0.010	≤0.03 0.015	≤0.15 0.029	0.80-1.10 0.96	≤0.35 0.22	≤0.05 0.010	—	AW	470-550 520	≥550 630	≥24 26	-40℃ ≥27 95	Suitable for welding structures made by same grade low alloy steels, such as 15MnTi,15MnV, etc.	—
CHE606	AWS A5.5 E9016-G ISO 18275-B-E 59 16-3M2 P	F,V, OH,H	AC≥70V or DC+	— 0.072	≥1.00 1.58	≥0.80 0.47	≤0.03 0.009	≤0.03 0.018	≥0.30 0.013	≥0.50 0.08	≥0.20 0.34	≥0.10 0.016	≥0.20 0.012	PWHT 620℃ X1h	≥530 590	≥620 680	≥17 24	— -30℃ 80	Welding medium carbon steel and low alloy high tensile steel structures with corresponding grade in strength, AC can be used in cases where no DC welding set is available.	—
CHE607	AWS A5.5 E9015-G ISO 18275-B-E 62 15-3M2 P	F,V, OH,H	DC+	— 0.084	≥1.00 1.55	≥0.80 0.50	≤0.03 0.011	≤0.03 0.021	≥0.30 0.031	≥0.50 0.008	≥0.20 0.34	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥530 580	≥620 680	≥17 25	— -30℃ 90	Welding medium carbon steel and low alloy steel structures with corresponding grade strength.	—
CHE607Ni	AWS A5.5 E9015-G ISO 18275-B-E 62 15-G P	F,V, OH,H	DC+	— 0.080	≥1.00 1.50	≥0.80 0.50	≤0.03 0.011	≤0.03 0.019	≥0.30 0.026	≥0.50 0.90	≥0.20 0.35	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥530 580	≥620 680	≥17 24	— -30℃ 90	For welding important structures such as hull of nuclear reactor, steam generator of boilers, chemical containers, etc.	—
CHE607RH	ASME SFA-5.5 E9015-G ISO 18275-B-E 62 15-G P H5	F,V, OH,H	DC+	— 0.072	≥1.00 1.51	≥0.80 0.35	≤0.03 0.008	≤0.03 0.014	≥0.30 0.008	≥0.50 1.00	≥0.20 0.24	≥0.10 0.009	≥0.20 0.010	PWHT 620℃ X1h	≥530 550	≥620 650	≥17 25	— -50℃ 80	For welding structures of pressure vessels, bridges, water-guiding pipes of hydro-electic power station as well as steel structures of ocean project, especially in good match with steel CF60 & CF62.	CCS, BV,NK
CHE608	AWS A5.5 E9018-G ISO 18275-B-E 62 18-G P	F,V, OH,H	AC≥70V or DC+	— 0.070	≥1.00 1.45	≥0.80 0.44	≤0.03 0.013	≤0.03 0.015	≥0.30 0.010	≥0.50 0.025	≥0.20 0.33	≥0.10 0.010	≥0.20 0.013	PWHT 620℃ X1h	≥530 550	≥620 640	≥17 24	— -30℃ 90	Suitable for welding structures fabricated by medium carbon steels as well as low alloy steels, such as 15MnVN, etc.	—
CHE62CFLH	AWS A5.5 E9015-G BS EN ISO 2560-B-E 62 15-G P H5	F,V, OH,H	DC+	— 0.056	≥1.00 1.46	≥0.80 0.30	≤0.03 0.020	≤0.03 0.030	≥0.30 0.030	≥0.50 0.98	≥0.20 0.35	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥530 560	≥620 655	≥17 25	— -20℃ 119	Mainly for Fabricating of important structures made by medium thick 62CF steel plate.	—
CHE658	AWS A5.5 E9018M ISO 18275-B-E 62 18-N3M1 A	F,V, OH,H	DC+	≤0.10 0.080	0.60-1.25 1.01	≤0.80 0.50	≤0.030 0.011	≤0.030 0.017	≤0.15 0.025	1.40-1.80 1.62	≤0.35 0.16	≤0.05 0.025	—	AW	540-620 590	≥620 680	≥24 27	-50℃ ≥27 75	Suitable for welding important structures such as hull of nuclear reactor, steam generator of boilers, chemical containers,etc. especially for military engineering structures.	—
CHE707	AWS A5.5 E10015-D2 ISO 18275-B-E 69 15-4M2 P BS EN 757-E55 3 MnMo B T	F,V, OH,H	DC+	≤0.15 0.102	1.65-2.00 1.91	≤0.60 0.42	≤0.03 0.008	≤0.03 0.019	—	≤0.90 0.009	0.25-0.45 0.37	—	—	PWHT 620℃ X1h	≥600 670	≥690 760	≥16 23	-50℃ ≥27 69	Welding medium carbon steel and low alloy steel structures with corresponding grade strength.	—
CHE707Ni	AWS A5.5 E10015-G ISO 18275-B-E 69 15-G P BS EN 757-E55 4 Z B T	F,V, OH,H	DC+	— 0.067	≥1.00 1.45	≥0.80 0.34	≤0.03 0.010	≤0.03 0.020	≥0.30 0.50	≥0.50 1.70	≥0.20 0.30	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥600 680	≥690 770	≥15 20	— -40℃ 90	For welding structures made by corresponding tensile strength low alloy steels, such as 14MnMoVB、WEL-TEN70 or HW56 (Japanese norm).	BV
CHE707RH	AWS A5.5 E10015-G ISO 18275-B-E 69 15-N3M2 P H5	F,V, OH,H	DC+	— 0.072	≥1.00 1.50	≥0.80 0.40	≤0.03 0.010	≤0.03 0.012	≥0.30 0.005	≥0.50 1.50	≥0.20 0.40	≥0.10 0.012	≥0.20 0.010	PWHT 620℃ X1h	≥600 650	≥690 740	≥15 22	— -50℃ 70	Suitable for welding important structures fabricated by low alloy steel, e.g. high pressure vessels, bridges as well as ocean projects etc.	—
CHE708	AWS A5.5 E10018M ISO 18275-B-E 69 18-4M2 P	F,V, OH,H	AC≥70V or DC+	≤0.10 0.065	0.75-1.70 1.04	≤0.60 0.34	≤0.030 0.010	≤0.030 0.020	≤0.35 0.052	1.40-2.10 1.71	0.25-0.50 0.33	≤0.05 0.025	—	AW	≥690 710	610-690 670	≥20 24	-50℃ ≥27 80	Welding low alloy steel structures with corresponding tensile strength, e.g. military engineering projects.	—
CHE757	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E62 A Z B T	F,V, OH,H	DC+	— 0.070	≥1.00 1.85	≥0.80 0.40	≤0.03 0.012	≤0.03 0.016	≥0.30 0.006	≥0.50 0.010	≥0.20 0.50	≥0.10 0.07	≥0.20 0.015	PWHT 620℃ X1h	≥670 680	≥760 780	≥15 18	— 25℃ 100	For welding important structures fabricated by 740MPa tensile strength or more low alloy steels.	—
CHE757Ni	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E62 4 MnNiMo B T	F,V, OH,H	DC+	— 0.060	≥1.20 1.60	≥0.80 0.20	≤0.03 0.014	≤0.03 0.014	≥0.30 0.025	≥0.50 2.35	≥0.20 0.52	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥670 720	≥760 810	≥15 21	— -40℃ 60	For welding important structures fabricated by same grade of tensile strength low alloy steels, e.g. WEL-TEN80 steel.	—
CHE758	AWS A5.5 E11018-G ISO 18275-B-E 76 18-G P BS EN 757-E62 5 Z B T	F,V, OH,H	AC≥70V or DC+	— 0.070	≥1.00 1.45	≥0.80 0.32	≤0.03 0.011	≤0.03 0.020	≥0.30 0.54	≥0.50 1.76	≥0.20 0.33	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥670 690	≥760 790	≥15 20	— -50℃ 50	For welding important structures made by 740MPa tensile strength or more low alloy steels as 15MnMoVN, WEL-TEN80, etc.	—
CHE758Ni	AWS A5.5 E11018M ISO 18275-B-E 76 18-G P	F,V, OH,H	AC≥70V or DC+	≤0.10 0.070	1.30-1.80 1.64	≤0.60 0.32	≤0.030 0.010	≤0.030 0.019	≤0.40 0.34	1.25-2.50 1.76	0.25-0.50 0.32	≤0.05 0.010	—	AW	680-760 700	≥760 775	≥20 23	-50℃ ≥27 50	For welding important structures fabricated by 740MPa tensile strength or more low alloy steels, especially for military engineering projects.	—
CHE80C	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.070	≥1.00 1.70	≥0.80 0.40	≤0.03 0.010	≤0.03 0.020	≥0.30 0.020	≥0.50 2.22	≥0.20 0.08	≥0.10 0.030	≥0.20 0.030	PWHT 620℃ X1h	≥670 720	≥760 850	≥15 18	— -40℃ 70	For welding important structures made by 780MPa tensile strength or more low alloy steels as WEL-TEN80C, ASTM A514 and A517, etc.	—
CHE807	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.060	≥1.00 1.50	≥0.80 0.33	≤0.03 0.013	≤0.03 0.014	≥0.30 0.005	≥0.50 1.60	≥0.20 0.50	≥0.10 0.020	≥0.20 0.013	PWHT 620℃ X1h	≥670 760	≥760 860	≥15 19	— 25℃ 60	Suitable for welding structures made by same grade of tensile strength low alloy steels, such as 14MnMoNbB, etc.	—
CHE807RH	AWS A5.5 E11015-G ISO 18275-B-E 76 15-N4M2 A H5 BS EN 757-E69 4 Mn2NiCrMo H5	F,V, OH,H	DC+	— 0.050	1.30-1.80 1.50	≥0.80 0.32	≤0.03 0.010	≤0.03 0.016	≥0.30 0.38	≥0.50 1.60	≥0.20 0.48	≥0.10 0.007	≥0.20 0.010	AW	≥670 760	≥760 860	≥15 19	— -40℃ 70	For welding important structures of pressure vessels, bridges, water-guiding pipes of hydro-electic power station as well as steel structures of ocean project, especially in good match with steel CF80.	—
CHE857	AWS A5.5 E12015-G ISO 18275-B-E 83 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.065	≥1.00 1.80	≥0.80 0.35	≤0.03 0.009	≤0.03 0.016	≥0.30 0.004	≥0.50 0.011	≥0.20 0.70	≥0.10 0.009	≥0.20 0.007	PWHT 620℃ X1h	≥740 800	≥830 900	≥14 19	— 25℃ 80	For welding important structures made by 830MPa grade of tensile strength or more low alloy steels.	—

Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Standard & Typical Mechanical Properties of Deposited Metal (AW)					Applications	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE857Cr	AWS A5.5 E12015-G ISO 18275-B-E 83 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.068	≥1.00 1.85	≥0.80 0.37	≤0.03 0.009	≤0.03 0.015	≥0.30 1.00	≥0.50 0.011	≥0.20 0.680	≥0.10 0.063	≥0.20 0.063	PWHT 620℃ X1h	≥740 810	≥830 920	≥14 19	— 25℃ 80	For welding high pressure vessels and other important structures fabricated by 830MPa grade of tensile strength or more low alloy steels.	—
CHE857CrNi	AWS A5.5 E12015-G ISO 18275-B-E 83 15-G A BS EN 757-E69 5 Mn2NiCrMo B	F,V, OH,H	DC+	— 0.058	≥1.00 1.40	≥0.80 0.29	≤0.03 0.014	≤0.03 0.018	≥0.30 1.6	≥0.50 2.50	≥0.20 0.56	≥0.10 0.010	≥0.20 0.010	AW	≥740 850	≥830 960	≥14 15	— -50℃ 60	For welding important structures made by 830MPa grade of tensile strength or more low alloy steels, such as WEL-TEN80 and or WEL-TEN80C.	—
CHE858	AWS A5.5 E12018-G ISO 18275-B-E 83 18-G P BS EN 757-E69 5 Mn2NiCrMo B T	F,V, OH,H	AC≥70V or DC+	— 0.060	≥1.00 2.10	≥0.80 0.35	≤0.03 0.010	≤0.03 0.018	≥0.30 0.75	≥0.50 2.20	≥0.20 0.52	≥0.10 0.010	≥0.20 0.010	PWHT 620℃ X1h	≥740 800	≥830 960	≥14 19	— -50℃ 45	For welding important structures made by 830MPa grade of tensile strength or more low alloy steels, such as WEL-TEN80 and or WEL-TEN80C.	—
CHE907Cr	AWS A5.5 E12015-G BS EN 757-E79 Z Z B T	F,V, OH,H	DC+	— 0.083	≥1.00 2.04	≥0.80 0.35	≤0.03 0.004	≤0.03 0.012	≥0.30 1.09	≥0.50 0.010	≥0.20 0.71	≥0.10 0.008	≥0.20 0.012	PWHT 620℃ X1h	≥740 840	≥830 1,005	≥14 18	—	It is suitable for vessels and structures fabricated by 880MPa grade of tensile strength low alloy steels or more.	—

Welding Rods for Corrosion Resisting Low Alloy Steel

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Standard & Typical Mechanical Properties of Deposited Metal (AW)					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHE502WCu	Lime titania	GB E5003-G	F,V, OH,H	AC or DC+	≤0.12 0.076	0.30-0.90 0.54	≤0.40 0.24	≤0.030 0.018	≤0.035 0.025	— 0.309	W 0.20-0.50 0.35	— 0.006	—	0.20-0.50 0.30	PWHT 620=X1h	≥390 450	≥490 540	≥22 27	-20℃ ≥27 50	Suitable for railway wagons, vehicles made by atmospheric corrosion and infection resistance steels.
CHE506NiCrCu	Low hydrogen Potassium	AWS A5.5 E7016-G BS EN ISO 2560-B-E 49 16-NCC A	F,V, OH,H	AC or DC+	— 0.052	≥1.00 0.89	≥0.80 0.35	≤0.03 0.010	≤0.03 0.018	≥0.30 0.50	≥0.50 0.38	≥0.20 0.004	≥0.10 0.010	≥0.20 0.30	AW	≥390 450	≥490 540	≥22 26	— -40℃ 120	Suitable for railway wagons, vehicles, locomotives fabricated by atmospheric corrosion and infection resistance steels.
CHE506WCu	Low hydrogen Potassium	AWS A5.5 E7016-G BS EN ISO 2560-B-E 49 16-G P	F,V, OH,H	AC or DC+	— 0.062	≥1.00 0.84	≥0.80 0.41	≤0.03 0.005	≤0.03 0.017	≥0.30 0.026	≥0.50 0.012	≥0.20 0.004	≥0.10 0.009	Cu≥0.20 0.23 W 0.28	PWHT 620℃ X1h	≥390 440	≥490 550	≥22 31	— -40℃ 110	Suitable for railway wagons, vehicles made by atmospheric corrosion and infection resistance steels, such as 09MnCuPTi or 09CuPTiRE, etc.
CHE507CrNi	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.070	≥1.00 0.66	≥0.80 0.50	≤0.03 0.012	≤0.03 0.017	≥0.30 0.80	≥0.50 0.30	≥0.20 0.005	≥0.10 0.008	≥0.20 0.30	PWHT 620℃ X1h	≥390 460	≥480 560	≥22 26	— -30℃ 110	For welding important marine corrosion resisting mild steel and low alloy steel structures with corresponding grade strength.
CHE507CuP	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.066	≥1.00 1.44	≥0.80 0.46	≤0.03 0.011	≤0.03 0.010	≥0.30 0.025	≥0.50 0.005	≥0.20 0.004	≥0.10 0.018	≥0.20 0.37	PWHT 620℃ X1h	≥390 460	≥480 560	≥22 28	— 25℃ 70	For welding atmospheric corrosion and marine corrosion resisting low alloy steel structures.
CHE507MnMo	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.070	≥1.00 0.50	≥0.80 0.30	≤0.03 0.015	≤0.03 0.020	≥0.30 0.020	≥0.50 0.005	≥0.20 0.35	≥0.10 0.007	≥0.20 0.17	PWHT 620℃ X1h	≥390 440	≥490 550	≥22 28	— -20℃ 120	For welding of high pressue, high temperature H2S corrosion resisting steel structures.
CHE556NiCrCu	Low hydrogen Potassium	AWS A5.5 E8016-G BS EN ISO 2560-B-E 55 16-NCC A	F,V, OH,H	AC or DC+	— 0.053	≥1.00 1.53	≥0.80 0.33	≤0.03 0.012	≤0.03 0.015	≥0.30 0.70	≥0.50 0.45	≥0.20 0.007	≥0.10 0.010	≥0.20 0.29	AW	≥460 500	≥550 620	≥19 24	— -40℃ 90	Suitable for welding structures made by atmospheric corrosion and infection resistance steels, e.g. ASTM A424 & A588 steels.
CHE556H	Low hydrogen Potassium	AWS A5.5 E8016-B1 BS EN ISO 2560-B-E 55 16-G P	F,V, OH,H	AC or DC+	0.05-0.12 0.065	≤0.90 0.60	≤0.60 0.30	≤0.03 0.007	≤0.03 0.011	0.40-0.65 0.44	—	0.40-0.65 0.49	—	—	PWHT 620℃ X1h	≥460 485	≥550 620	≥19 25	— -20℃ 90	Sutable for welding structures of skyscrapers and jumbo public buildings which fabricated by fire resisting and atmospheric corrosion and infection resistance steels.
CHE558NiCrCu	Iron powder Low hydrogen Potassium	AWS A5.5 E8018-W2 BS EN ISO 2560-B-E 55 18-NCC1 A	F,V, OH,H	AC or DC+	≤0.12 0.055	0.50-1.30 1.00	0.35-0.80 0.55	≤0.03 0.013	≤0.03 0.018	0.45-0.70 0.60	0.40-0.80 0.65	—	—	0.30-0.75 0.48	PWHT 620℃ X1h	≥460 500	≥550 610	≥19 23	-20℃ ≥27 82	Suitable for welding structrues made by atmospheric corrosion and infection resistance steels, e.g. ASTM A424 & A588 steels.
CHE606NiCrCu	Low hydrogen Potassium	AWS A5.5 E9016-G ISO 18275-B-E 59 16-NCC1 A	F,V, OH,H	AC or DC+	0.063	≥1.00 1.47	≥0.80 0.30	≤0.03 0.015	≤0.03 0.014	≥0.30 0.59	≥0.50 0.72	≥0.20 0.22	≥0.10 0.12	≥0.20 0.31	AW	≥530 550	≥620 650	≥17 23	— -40℃ 80	Suitable for welding structures fabricated by atmospheric corrosion & infection resisting alloy steels, e.g. Q500N-QR1.
CHE607CrCu	Low hydrogen Sodium	AWS A5.5 E9015-G ISO 18275-B-E 62 15-G A	F,V, OH,H	DC+	0.023	≥1.00 1.27	≥0.80 0.45	≤0.03 0.016	≤0.03 0.019	≥0.30 0.52	≥0.50 0.69	≥0.20 0.24	≥0.10 0.14	≥0.20 0.30	AW	≥530 560	≥620 645	≥17 22	— -40℃ 80	Suitable for welding important structures made by atmospheric corrosion and marine water corrosion low alloy steels, e.g. WNQ570.
CHE707CrCu	Low hydrogen Sodium	AWS A5.5 E10015-G ISO 18275-B-E 69 15-G A	F,V, OH,H	DC+	0.042	≥1.00 1.49	≥0.80 0.30	≤0.03 0.007	≤0.03 0.012	≥0.30 1.05	≥0.50 1.25	≥0.20 0.22	≥0.10 0.13	≥0.20 0.23	AW	≥600 640	≥690 730	≥16 19	— -40℃ 105	Suitable for welding important structures made by atmospheric corrosion and marine water corrosion low alloy steels, e.g. WNQ690.

Welding Rods for Heat-resisting Low Alloy Steel

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)											Standard & Typical Mechanical Properties of Deposited Metal (AW)					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHH107	Low hydrogen Sodium	AWS A5.5 E7015-A1 ISO 3580-B-E 49 15-1M3 EN 1599-E Mo B	F,V, OH,H	DC+	≤0.12 0.068	≤0.90 0.69	≤0.60 0.31	≤0.03 0.009	≤0.03 0.016	—	—	0.40-0.65 0.49	—	—	—	PWHT 620℃ X1h	≥390 460	≥490 550	≥22 27	— 25℃ 220	For welding boiler pipelines working temperature of which is below 510℃ . Also it is suitable for structures fabricated by normal low alloy tensile strength steels.
CHH108	Iron powder Low hydrogen Potassium	AWS A5.5 E7018-A1 ISO 3580-B-E 49 18-1M3 EN 1599-E Mo B	F,V, OH,H	AC≥70V or DC+	≤0.12 0.063	≤0.90 0.76	≤0.80 0.28	≤0.03 0.013	≤0.03 0.015	—	—	0.40-0.65 0.57	—	—	—	PWHT 620℃ X1h	≥390 410	≥490 510	≥22 30	— 25℃ 220	For welding boiler pipelines working temperature of which is below 510℃ . Also it is suitable for structures fabricated by normal low alloy tensile strength steels.
CHH127	Low hydrogen Sodium	AWS A5.5 E9015-G ISO 3580-B-E 62 15-G EN 1599-E Z B	F,V, OH,H	DC+	0.06	≥1.00 1.20	≥0.80 0.20	≤0.03 0.006	≤0.03 0.007	≥0.30 0.32	≥0.50 1.10	≥0.20 0.35	≥0.10 0.15	≥0.20 0.30	—	PWHT 620℃ X1h	≥530 550	≥620 650	≥17 20	— -40℃ 58	It is one kind of bainite & ferrite type welding rods and it is suitable for welding structures fabricated by heat-resisting steels such as WB36.
CHH202	Lime titania	ISO 3580-B-E 55 13-CM EN 1599-E CrMo0.5 R	F,V, OH,H	AC or DC+	0.05-0.12 0.077	≤0.90 0.60	≤0.60 0.16	≤0.035 0.017	≤0.035 0.024	0.40-0.65 0.53	—	0.40-0.65 0.51	—	—	—	PWHT 620℃ X1h	≥440 510	≥540 600	≥16 24	25℃ ≥16 24	Welding boiler pipelines or heat transmitters, working temperature of which is below 510℃ . Also it is suitable for structures made by low alloy pearlitic high tensile strength steels.
CHH207	Low hydrogen Sodium	ISO 3580-B-E 55 15-CM EN 1599-E CrMo0.5 B	F,V, OH,H	DC+	0.05-0.12 0.070	≤0.90 0.70	≤0.60 0.53	≤0.035 0.015	≤0.035 0.015	0.40-0.65 0.50	—	0.40-0.65 0.54	—	—	—	PWHT 620℃ X1h	≥440 520	≥540 620	≥17 25	25℃ ≥27 150	Suitable for welding high temperature, high press chemical equipment made by low alloy CrMo pearlitic steels working temperature of which is below 510℃ .
CHH302	Lime titania	ISO 3580-B-E 55 13-1CM EN 1599-E CrMo1 R	F,V, OH,H	AC or DC+	0.05-0.12 0.073	≤0.90 0.57	≤0.60 0.37	≤0.035 0.016	≤0.035 0.023	0.80-1.50 1.07	—	0.40-0.65 0.63	—	—	—	PWHT 620℃ X1h	≥440 600	≥540 690	≥16 19	—	Suitable for fabricating structures of boiler pipes, high press vessels, petroleum thermal cracking equipment, which work temperature is below 520℃ .
CHH307	Low hydrogen Sodium	ISO 3580-B-E 55 15-1CM EN 1599-E CrMo1 B	F,V, OH,H	DC+	0.05-0.12 0.067	≤0.90 0.70	≤0.60 0.37	≤0.035 0.011	≤0.035 0.015	0.80-1.50 1.14	—	0.40-0.65 0.51	—	—	—	PWHT 620℃ X1h	≥440 510	≥540 610	≥17 24	25℃ ≥27 160	For welding low alloy CrMo steel structures, which work temperature is below 520℃ , such as boiler pipes, petroleum thermal cracking equipment, etc.
CHH308	Iron powder Low hydrogen Potassium	AWS A5.5 E8018-B2 ISO 3580-B-E 55 18-1CM EN 1599-E CrMo1 B	F,V, OH,H	AC≥70V or DC+	0.05-0.12 0.080	≤0.90 0.73	≤0.80 0.24	≤0.03 0.009	≤0.03 0.013	1.00-1.50 1.31	—	0.40-0.65 0.52	—	—	—	PWHT 690℃ X1h	≥460 540	≥550 640	≥19 22	— 25℃ 170	For welding low alloy CrMo steel structures, which work temperature is below 520℃ , such as boiler pipes, petroleum thermal cracking equipment, etc.
CHH407	Low hydrogen Sodium	AWS A5.5 E9015-B3 ISO 3580-B-E 62 15-2C1M EN 1599-E CrMo2 B	F,V, OH,H	DC+	0.05-0.12 0.067	≤0.90 0.65	≤1.00 0.38	≤0.030 0.012	≤0.030 0.016	2.00-2.50 2.23	—	0.90-1.20 1.02	—	—	—	PWHT 690℃ X1h	≥530 570	≥620 680	≥17 20	— 25℃ 140	Welding of corresponding low alloy steel structures, such as gas transmission pipeline with high temperature, high pressure turbogenerator unit and boiler, working temperature of which is below 550℃ .
CHH408	Iron powder Low hydrogen Potassium	AWS A5.5 E9018-B3 ISO 3580-B-E 62 18-2C1M EN 1599-E CrMo2 B	F,V, OH,H	AC≥70V or DC+	0.05-0.12 0.080	≤0.90 0.75	≤0.80 0.24	≤0.030 0.010	≤0.030 0.012	2.00-2.50 2.34	—	0.90-1.20 1.14	—	—	—	PWHT 690℃ X1h	≥530 580	≥620 680	≥17 20	— 25℃ 180	Suitable for fabricating structures made by Cr2.5Mo low alloy steels, which working temperature below 550℃ , e.g. equipments of chemical and petroleum industries as well as high temperature, high press pipes.
CHH427	Low hydrogen Sodium	AWS A5.5 E9015-G ISO 3580-B-E 62 15-G EN 1599-E Z B	F,V, OH,H	DC+	0.06	≥1.00 0.60	≥0.80 0.25	≤0.03 0.008	≤0.03 0.009	≥0.30 2.10	≥0.50 0.65	≥0.20 0.10	≥0.10 0.20	≥0.20 0.32	Nb 0.02 W 1.45	PWHT 750℃ X2h	≥530 540	≥620 630	≥17 19	— 25℃ 120	It is one kind of bainite heat resisting welding rods specialized for welding pipes on cooling wall of industrial boilers.
CHH517	Low hydrogen Sodium	AWS E8015-B6 EN 1599-E CrMo5 B ISO 3580-B-E 55 15-5CM B	F,V, OH,H	DC+	0.05-0.10 0.06	≤1.00 0.75	≤0.90 0.51	≤0.03 0.012	≤0.03 0.015	4.00-6.00 5.18	≤0.40 0.02	0.45-0.65 0.53	—	—	—	PWHT 740℃ X1h	≥460 550	≥550 680	≥19 22	— 25℃ 120	It is suitable for welding structures made by Cr5Mo pearlitic steels, e.g. pipes which work condition need to bear 400℃ and need to resist corrosion of hydrogen.
CHH717	Low hydrogen Sodium	AWS A5.5 E9015-B9 ISO 3580-B-E 62 15-9C1MV EN 1599-E CrMo91 B	F,V, OH,H	DC+	0.08-0.13 0.094	≤1.20 0.75	≤0.30 0.22	≤0.01 0.004	≤0.01 0.009	8.0-10.5 9.32	≤0.80 0.66	0.85-1.20 1.03	0.15-0.30 0.208	Cu ≤ 0.25 0.020 N 0.02- 0.07 0.030	Nb 0.02- 0.10 0.053 Al ≤0.04 0.005	PWHT 760℃ X6h	≥530 630	≥620 740	≥17 21	— 25℃ 80	Suitable for fabricating pipes of supercritical steam turbines and boilers, which made by martensite heat resisting steels. Both preheating and interpass temperature should be 232℃ -288℃ and the weld zone should be tempered at 730℃ -760℃ for 6 hours after welding.

Welding Rods for Cryogenic Steel

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Standard & Typical Mechanical Properties of Deposited Metal (AW)					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHL107	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-N7 P	F,V, OH,H	DC+	— 0.04	≥1.00 0.45	≥0.80 0.18	≤0.03 0.003	≤0.03 0.012	≥0.30 0.20	≥0.50 3.20	≥0.20 0.21	≥0.10 0.11	≥0.20 0.30	PWHT 620℃ X1h	≥390 430	≥490 530	≥22 30	— -100℃ 80	For welding structures made by 3.5Ni low alloy steel, which work temperature is about -100℃ .
CHL607	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.05	≥1.00 0.99	≥0.80 0.39	≤0.03 0.009	≤0.03 0.015	≥0.30 0.23	≥0.50 1.84	≥0.20 0.20	≥0.10 0.13	≥0.20 0.23	PWHT 620℃ X1h	≥390 430	≥490 540	≥22 30	— -60℃ 110	For welding structures made by 09MnD low alloy steel, which work temperature is around -60℃ .
CHL608	Iron powder Low hydrogen Potassium	AWS A5.5 E8018-C1 BS EN ISO 2560-B-E 55 18-N5 P	F,V, OH,H	AC≥70V or DC+	≤0.12 0.075	≤1.25 1.00	≤0.80 0.56	≤0.03 0.010	≤0.03 0.016	—	2.00-2.75 2.20	—	—	—	PWHT 620℃ X1h	≥460 520	≥550 630	≥19 25	-60℃ ≥27 85	For welding structures made by 2.5Ni low alloy steel, which work temperature is about -60℃ .

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Standard & Typical Mechanical Properties of Deposited Metal (AW)					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHL707	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-N5 P	F,V, OH,H	DC+	≤0.055	≥1.00 0.94	≥0.80 0.51	≤0.03 0.007	≤0.03 0.014	≥0.30 0.23	≥0.50 2.42	≥0.20 0.24	≥0.10 0.14	≥0.20 0.28	PWHT 620℃ X1h	≥390 500	≥490 590	≥22 28	— -70℃ 80	For welding structures made by 2.5Ni low alloy steel, which work temperature is around -70℃ .
CHL708	Iron powder Low hydrogen Potassium	AWS A5.5 E7018-G BS EN ISO 2560-B-E4918-N5 P	F,V, OH,H	AC≥70V or DC+	≤0.04	≥1.00 0.50	≥0.80 0.28	≤0.03 0.015	≤0.03 0.012	≥0.30 0.11	≥0.50 2.40	≥0.20 0.14	≥0.10 0.11	≥0.20 0.27	PWHT 620℃ X1h	≥390 435	≥490 525	≥22 25	— -70℃ 100	For welding structures made by 2.5Ni low alloy steel, which work temperature is around -70℃ .
CHL807	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	≤0.045	≥1.00 0.60	≥0.80 0.27	≤0.03 0.010	≤0.03 0.015	≥0.30 0.24	≥0.50 1.80	≥0.20 0.22	≥0.10 0.10	≥0.20 0.23	PWHT 620℃ X1h	≥390 445	≥490 530	≥22 30	— -80℃ 100	For welding structures made by 1.5Ni low alloy steel which work temperature is around -80℃ .

Welding Rods for Stainless Steel

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Mechanical Properties of Deposited Metal			Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
CHK202	Lime titania	AWS A5.4 E410-16 ISO 3581-B-ES410-16 EN 1600 E 13 R 3 2	F,V, OH,H	AC or DC+	≤0.12 0.054	≤1.00 0.14	≤0.90 0.44	≤0.030 0.013	≤0.040 0.025	11.0-13.5 12.3	≤0.70 0.15	≤0.75 0.016	≤0.75 0.033	—	PWHT 860℃ X2h	≥450 495	≥20 30	It is suitable for welding structures made by 06Cr13 or 1Cr13 stainless steels, also can be used for surfacing corrosion resisting and abrasion.	—
CHK207	Low hydrogen sodium	AWS A5.4 E410-15 ISO 3581-B-ES410-15 EN 1600 E 13 B 4 2	F,V, OH,H	DC+	≤0.12 0.061	≤1.00 0.57	≤0.90 0.48	≤0.030 0.007	≤0.040 0.023	11.0-13.5 12.26	≤0.70 0.31	≤0.75 0.011	≤0.75 0.031	—	PWHT 860℃ X2h	≥450 545	≥20 29	It is suitable for welding structures made by 06Cr13 or 1Cr13 stainless steels, also can be used for surfacing corrosion resisting and abrasion.	—
CHK232	Lime titania	AWS A5.4 E410NiMo-16 ISO 3581-B-ES410NiMo-16 EN 1600 E 13 4 R 3 2	F,V, OH,H	AC or DC+	≤0.06 0.027	≤1.00 0.20	≤0.90 0.17	≤0.030 0.010	≤0.040 0.019	11.0-12.5 11.85	4.00-5.00 4.70	0.40-0.70 0.55	≤0.75 0.027	—	PWHT 620℃ X1h	≥760 870	≥15 17	It is suitable for welding structures made by 06Cr13 stainless steels, also can be used for surfacing corrosion resisting and abrasion.	—
CHK307	Low hydrogen sodium	AWS A5.4 E430-15 ISO 3581-B-ES430-15 EN 1600 E 17 B 4 2	F,V, OH,H	DC+	≤0.10 0.063	≤1.00 0.52	≤0.90 0.76	≤0.030 0.004	≤0.040 0.018	15.0-18.0 17.10	≤0.60 0.14	≤0.75 0.13	≤0.75 0.034	—	PWHT 790℃ X2h	≥450 550	≥20 22	Welding Cr17 stainless steel structures, which working condition of resisting corrosion by nitric acid and heat resistance.	—
CHS001	Extra low carbon Silicon titania	AWS A5.4 E308L-17 ISO 3581-B-ES308L-17 EN 1600 E19 9 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.032	0.50-2.50 0.80	≤0.90 0.66	≤0.030 0.010	≤0.040 0.023	18.0-21.0 19.24	9.0-11.0 9.57	≤0.75 0.13	≤0.75 0.095	—	AW	≥520 570	≥35 47	It is suitable for welding facilities of synthetic fibre,fertilizer, petrochemical equipment, etc. which fabricated by 022Cr19Ni10 stainless steel as well as 06Cr18Ni11Ti stainless steel that working temperature below 300℃ .	—
CHS002	Extra low carbon Lime titania	AWS A5.4 E308L-16 ISO 3581-B-ES308L-16 EN 1600 E19 9 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.029	0.50-2.50 0.86	≤0.90 0.63	≤0.030 0.012	≤0.040 0.024	18.0-21.0 19.8	9.0-11.0 9.60	≤0.75 0.078	≤0.75 0.10	—	AW	≥520 575	≥35 46	It is suitable for welding facilities of synthetic fibre,fertilizer, petrochemical equipment, etc. which fabricated by 022Cr19Ni10 stainless steel as well as 06Cr18Ni11Ti stainless steel that working temperature below 300℃ .	CWB
CHS007	Extra low carbon Low hydrogen Sodium	AWS A5.4 E308L-15 ISO 3581-B-ES308L-15 EN 1600 E 19 9 L B 4 2	F,V, OH,H	DC+	≤0.04 0.025	0.50-2.50 1.00	≤0.90 0.45	≤0.030 0.012	≤0.040 0.011	18.0-21.0 19.80	9.0-11.0 10.0	≤0.75 0.15	≤0.75 0.23	—	AW	≥520 580	≥35 48	It is suitable for welding facilities of synthetic fibre,fertilizer, petrochemical equipment, etc. which fabricated by 022Cr19Ni10 stainless steel as well as 06Cr18Ni11Ti stainless steel that working temperature below 300℃ .	—
CHS021	Extra low carbon Silicon titania	AWS A5.4 E316L-17 ISO 3581-B-ES316L-17 EN 1600 E 19 12 3 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.026	0.50-2.50 0.76	≤0.90 0.64	≤0.030 0.010	≤0.040 0.021	17.0-20.0 18.47	11.0-14.0 11.91	2.00-3.00 2.36	≤0.75 0.15	—	AW	≥490 555	≥30 44	It widely be used in stainless steel structures of equipment of petrochemical, fertilizer, synthetic fibre, and paper industries. Also it could be used in welding dissimilar steel structures that cannot be PWHT.	—
CHS022	Extra low carbon Lime titania	AWS A5.4 E316L-16 ISO 3581-B-ES316L-16 EN 1600 E 19 12 3 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.030	0.50-2.50 0.85	≤0.90 0.621	≤0.030 0.012	≤0.040 0.028	17.0-20.0 19.00	11.0-14.0 11.86	2.00-3.00 2.50	≤0.75 0.16	—	AW	≥490 575	≥30 44	It widely be used in stainless steel structures of equipment of petrochemical, fertilizer, synthetic fibre, and paper industries. Also it could be used in welding dissimilar steel structures that can not be PWHT.	CWB
CHS032	Extra low carbon Lime titania	AWS A5.4 E317L-16 EN 1600 E 19 13 4 NL R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.028	0.50-2.50 0.90	≤0.90 0.55	≤0.030 0.012	≤0.040 0.032	18.0-21.0 19.39	12.0-14.0 12.49	3.00-4.00 3.42	≤0.75 0.26	—	AW	≥520 595	≥30 44	It is suitable for welding structures that resisting corrosion of organic acid, nitric acid, sulphuric acid and acetic acid,etc.due to higher Mo in it.	—
CHS041	Extra low carbon Silicon titania	AWS A5.4 E309LMo-17 ISO 3581-B-ES309LMo-17 EN 1600 E 23 12 2 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.024	0.50-2.50 0.90	≤0.90 0.63	≤0.030 0.010	≤0.040 0.021	22.0-25.0 23.10	12.0-14.0 13.22	2.00-3.00 2.40	≤0.75 0.17	—	AW	≥550 630	≥30 35	For welding corresponding extra-low carbon stainless steel structures and dissimilar steels, e.g. ammonia or urea converters.	—
CHS042	Extra low carbon Lime titania	AWS A5.4 E309LMo-16 ISO 3581-B-ES309LMo-16 EN 1600 E 23 12 2 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.026	0.50-2.50 0.86	≤0.90 0.64	≤0.030 0.011	≤0.040 0.023	22.0-25.0 23.14	12.0-14.0 13.25	2.00-3.00 2.42	≤0.75 0.16	—	AW	≥550 635	≥30 36	For welding corresponding extra-low carbon stainless steel structures and dissimilar steels, e.g. ammonia or urea converters.	—
CHS061	Extra low carbon Silicon titania	AWS A5.4 E309L-17 ISO 3581-B-ES309L-17 EN 1600 E 23 12 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.027	0.50-2.50 0.854	≤0.90 0.680	≤0.030 0.008	≤0.040 0.021	22.0-25.0 24.189	12.0-14.0 12.999	≤0.75 0.122	≤0.75 0.099	—	AW	≥520 568	≥30 41	For welding stainless steel structures of synthetic fibre, petrochemical equipment and nuclear reactor and so on. Also it can be used in dissimilar steels of stainless steels with carbon or low alloy steels.	—
CHS062	Extra low carbon Lime titania	AWS A5.4 E309L-16 ISO 3581-B-ES309L-16 EN 1600 E 23 12 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.027	0.50-2.50 0.85	≤0.90 0.67	≤0.030 0.009	≤0.040 0.020	22.0-25.0 24.20	12.0-14.0 13.09	≤0.75 0.090	≤0.75 0.092	—	AW	≥520 565	≥30 41	For welding stainless steel structures of synthetic fibre, petrochemical equipment and nuclear reactor and so on. Also it can be used in dissimilar steels of stainless steels with carbon or low alloy steels.	CWB
CHS067	Extra low carbon Low hydrogen	AWS A5.4 E309L-15 ISO 3581-B-ES309L-15 EN 1600 E 23 12 L B 4 2	F,V, OH,H	DC+	≤0.04 0.027	0.50-2.50 0.95	≤0.90 0.42	≤0.030 0.009	≤0.040 0.020	22.0-25.0 24.00	12.0-14.0 13.02	≤0.75 0.10	≤0.75 0.090	—	AW	≥520 560	≥30 41	For welding stainless steel structures of synthetic fibre, petrochemical equipment and nuclear reactor and so on. Also it can be used in dissimilar steels of stainless steels with carbon or low alloy steels.	—

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Mechanical Properties of Deposited Metal			Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
CHS101	Silicon titania	AWS A5.4 E308-17 ISO 3581-B-ES308-17 EN 1600 E 19 9 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.047	0.50-2.50 0.80	≤0.90 0.75	≤0.030 0.010	≤0.040 0.028	18.0-21.0 19.80	9.0-11.0 9.90	≤0.75 0.15	≤0.75 0.30	—	AW	≥550 590	≥35 45	For welding 06Cr19Ni10 or Crl8Ni9Ti stainless steel structures, which working temperature is below 300℃.	—
CHS102	Lime titania	AWS A5.4 E308-16 ISO 3581-B-ES308-16 EN 1600 E 19 9 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.048	0.50-2.50 0.86	≤0.90 0.66	≤0.030 0.012	≤0.040 0.028	18.0-21.0 19.88	9.0-11.0 9.70	≤0.75 0.14	≤0.75 0.23	—	AW	≥550 595	≥35 44	For welding 06Cr19Ni10 or Crl8Ni9Ti stainless steel structures, which working temperature is below 300℃. It is popular for civil use, e.g.family decorating.	—
CHS102MnMo	Lime titania	AWS A5.4 E307-16 ISO 3581-B-ES307-16 EN 1600 E 18 9 Mn Mo R 3 2	F,V, OH,H	AC or DC+	0.04-0.14	3.30-4.75	≤0.90	≤0.030	≤0.040	18.0-21.5	9.0-10.7	0.5-1.5	≤0.75	—	AW	≥590	≥30	Suitable for welding structures made by ASTM307 stainless steel or dissimilar steels, also it can be used surfacing impingement & corrosion resisting steels and transition layers.	—
CHS107	Low hydrogen sodium	AWS A5.4 E308-15 ISO 3581-B-ES308-15 EN 1600 E 19 9 B 4 2	F,V, OH,H	DC+	≤0.08 0.060	0.50-2.50 1.30	≤0.90 0.47	≤0.030 0.007	≤0.040 0.024	18.0-21.0 19.88	9.0-11.0 9.90	≤0.75 0.13	≤0.75 0.18	—	AW	≥550 600	≥35 44	For welding corrosion resisting structures made by 06Cr18Ni9 stainless steel, which working temperature is lower than 300℃. It could welding high Cr steels or surfacing also.	—
CHS131	Silicon titania	AWS A5.4 E347-17 ISO 3581-B-ES347-17 EN 1600 E 19 9 Nb R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.044	0.50-2.50 0.90	≤0.90 0.80	≤0.030 0.010	≤0.040 0.028	18.0-21.0 19.80	9.0-11.0 9.80	≤0.75 0.20	≤0.75 0.30	Nb 8×C-1.00 0.60	AW	≥520 620	≥30 35	Suitable for welding important corrosion resisting structures made by Crl8Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g.06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
CHS132	Lime titania	AWS A5.4 E347-16 ISO 3581-B-ES347-16 EN 1600 E 19 9 Nb R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.047	0.50-2.50 0.95	≤0.90 0.76	≤0.030 0.012	≤0.040 0.027	18.0-21.0 19.84	9.0-11.0 9.70	≤0.75 0.11	≤0.75 0.19	Nb 8×C-1.00 0.58	AW	≥520 650	≥30 35	Suitable for welding important corrosion resisting structures made by Crl8Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g. 06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
CHS137	Low hydrogen sodium	AWS A5.4 E347-15 ISO 3581-B-ES347-15 EN 1600 E 19 9 Nb B 4 2	F,V, OH,H	DC+	≤0.08 0.063	0.50-2.50 1.51	≤0.90 0.46	≤0.030 0.007	≤0.040 0.023	18.0-21.0 19.80	9.0-11.0 9.78	≤0.75 0.11	≤0.75 0.19	Nb 8×C-1.00 0.66	AW	≥520 655	≥30 36	Suitable for welding important corrosion resisting structures made by Crl8Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g. 06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
CHS157Mn	Low hydrogen sodium	Similar to AWS A5.4 E307-15	F,V, OH,H	DC+	0.04-0.14 0.07	6.00-9.00 7.36	≤0.70 0.45	≤0.030 0.012	≤0.035 0.020	18.0-22.0 20.2	9.0-11.0 10.0	— 0.115	— 0.179	25℃ ≥90 100	AW	≥540 635	≥30 38	Suitable for welding high strength, high toughness steels, e.g.H617. It could be used for welding dissimilar steels also. Mainly for military vehicles, such as panzers, tanks, etc.	—
CHS201	Silicon titania	AWS A5.4 E316-17 ISO 3581-B-ES316-17 EN 1600 E 19 12 2 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.036	0.50-2.50 0.81	≤0.90 0.630	≤0.030 0.013	≤0.040 0.028	17.0-20.0 18.88	11.0-14.0 11.92	2.00-3.00 2.49	≤0.75 0.21	—	AW	≥520 578	≥30 42	Suitable for 06Cr17Ni12Mo2 & Cr18Ni12Mo2 stainless steel structures for organic acid or inorganic acid mediums. Also it could be used in high Cr steel or dissimilar steels that cannot be PWHT.	—
CHS202	Lime titania	AWS A5.4 E316-16 ISO 3581-B-ES316-16 EN 1600 E 19 12 2 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.037	0.50-2.50 0.82	≤0.90 0.64	≤0.030 0.013	≤0.040 0.028	17.0-20.0 18.81	11.0-14.0 12.00	2.00-3.00 2.50	≤0.75 0.19	—	AW	≥520 575	≥30 42	Suitable for 06Cr17Ni12Mo2 & Cr18Ni12Mo2 stainless steel structures for organic acid or inorganic acid mediums. Also it could be used in high Cr steel or dissimilar steels that cannot be PWHT.	—
CHS207	Low hydrogen Sodium	AWS A5.4 E316-15 ISO 3581-B-ES316-15 EN 1600 E 19 12 2 B 4 2	F,V, OH,H	DC+	≤0.08 0.051	0.50-2.50 1.22	≤0.90 0.49	≤0.030 0.008	≤0.040 0.022	17.0-20.0 18.78	11.0-14.0 12.2	2.0-3.0 2.40	≤0.75 0.14	—	AW	≥520 575	≥30 43	Suitable for 06Cr17Ni12Mo2 & Cr18Ni12Mo2 stainless steel structures for organic acid or inorganic acid mediums. Also it could be used in high Cr steel or dissimilar steels that cannot be PWHT.	—
CHS212	Lime titania	AWS A5.4 E318-16 EN 1600 E 19 12 3 Nb R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.043	0.50-2.50 1.35	≤0.90 0.41	≤0.030 0.009	≤0.040 0.026	17.0-20.0 18.65	11.0-14.0 12.20	2.00-3.00 2.42	≤0.75 0.19	Nb 6×C-1.00 0.69	AW	≥520 610	≥30 38	For welding important structures of urea synthesizing or equipment of vinylon that get to corrosion medium, which fabricated by 06Cr17Ni12Mo-2Ti, 06Cr17Ni12Mo2Nb and extra-low 022Cr17Ni12Mo2 stainless steels.	—
CHS301	Silicon titania	AWS A5.4 E309-17 ISO 3581-B-ES309-17 EN 1600 E 22 12 R 32	F,V, OH,H	AC or DC+	≤0.15 0.066	0.50-2.50 1.01	≤0.90 0.63	≤0.030 0.011	≤0.040 0.029	22.0-25.0 24.30	12.0-14.0 12.84	≤0.75 0.30	≤0.75 0.20	—	AW	≥550 590	≥30 40	For welding stainless steels within same system as well as high chromium steels and high manganese steels. Also it could welding dissimilar steels, e.g. Cr19Ni10 with mild steel.	—
CHS302	Lime titania	AWS A5.4 E309-16 ISO 3581-B-ES309-16 EN 1600 E 22 12 R 32	F,V, OH,H	AC or DC+	≤0.15 0.064	0.50-2.50 0.98	≤0.90 0.64	≤0.030 0.012	≤0.040 0.027	22.0-25.0 24.34	12.0-14.0 12.85	≤0.75 0.29	≤0.75 0.20	—	AW	≥550 595	≥30 39	For welding stainless steels within same system as well as high chromium steels and high manganese steels. Also it could welding dissimilar steels, e.g. Cr19Ni10 with mild steel.	—
CHS307	Low hydrogen Sodium	AWS A5.4 E309-15 ISO 3581-B-ES309-15 EN 1600 E 22 12 B 4 2	F,V, OH,H	DC+	≤0.15 0.077	0.50-2.50 1.46	≤0.90 0.58	≤0.030 0.009	≤0.040 0.025	22.0-25.0 23.80	12.0-14.0 12.80	≤0.75 0.13	≤0.75 0.21	—	AW	≥550 590	≥30 39	For welding stainless steels within same system as well as high chromium steels and high manganese steels. Also it could welding dissimilar steels.	—
CHS312	Lime titania	AWS A5.4 E309Mo-16	F,V, OH,H	AC or DC+	≤0.12 0.057	0.50-2.50 0.92	≤0.90 0.63	≤0.030 0.016	≤0.040 0.028	22.0-25.0 23.23	12.0-14.0 13.16	2.00-3.00 2.44	≤0.75 0.20	—	AW	≥550 625	≥230 36	Suitable for welding stainless steel containers that corrosion resisting of vitriol, ammonia or sulfurous acid, etc. Also it could be used for composite steels or dissimilar steels welding.	—
CHS385	Extra low carbon Lime titania	AWS A5.4 E385-16 EN 1600 E20 25 5 Cu N L	F,V, OH,H	AC or DC+	≤0.03 0.021	1.0-2.50 1.81	≤0.75 0.29	≤0.020 0.005	≤0.030 0.016	19.5-21.5 20.60	24.0-26.0 24.97	4.2-5.2 4.79	1.2-2.0 1.71	—	AW	≥520 610	≥30 40	For welding structures get to sulphuric acid or chloride corrosin medium ordinarily. Also it could be used in welding 904L or 00Cr19Ni13M stainless steel.	—
CHS402	Lime titania	AWS A5.4 E310-16 ISO 3581-B-ES310-16 EN 1600 E 25 20 R 3 2	F,V, OH,H	AC or DC+	0.08-0.20 0.13	1.00-2.50 1.99	≤0.75 0.38	≤0.030 0.009	≤0.030 0.021	25.0-28.0 27.01	20.0-22.5 21.44	≤0.75 0.13	≤0.75 0.104	—	AW	≥550 655	≥30 39	Suitable for welding heat resisting stainless steel structures and high hardenability steels, such as Cr5Mo, Cr9Mo, Cr13 and Cr18. Also it could welding dissimilar steels.	—
CHS407	Low hydrogen Sodium	AWS A5.4 E310-15 ISO 3581-B-ES310-15 EN 1600 E 25 20 B 4 2	F,V, OH,H	DC+	0.08-0.20 0.133	1.00-2.50 1.74	≤0.75 0.45	≤0.030 0.008	≤0.030 0.018	25.0-28.0 26.60	20.0-22.5 21.30	≤0.75 0.11	≤0.75 0.087	—	AW	≥550 605	≥30 38	Suitable for welding heat resisting stainless steel structures and high hardenability steels, such as Cr5Mo, Cr9Mo, Cr13 and Cr18. Also it could welding dissimilar steels.	—
CHS412	Lime titania	AWS A5.4 E310Mo-16	F,V, OH,H	AC or DC+	≤0.12 0.083	1.00-2.50 1.92	≤0.75 0.37	≤0.030 0.012	≤0.030 0.021	25.0-28.0 26.71	20.0-22.0 21.09	2.00-3.00 2.50	≤0.75 0.10	—	AW	≥550 680	≥30 38	Suitable for welding heat resisting stainless steels or dissimilar steels. It shows excellent toughness for the carbon steel and low alloy steel that with hardenability.	—
CHS507	Low hydrogen Sodium	GB E16-25MoN-15	F,V, OH,H	DC+	≤0.12 0.064	0.50-2.50 1.87	≤0.90 0.64	≤0.030 0.007	≤0.035 0.0189	14.0-18.0 16.59	22.0-27.0 24.43	5.00-7.00 6.11	≤0.50 0.15	N ≥0.10 0.16	AW	≥610 675	≥30 41	Suitable for welding quenched low alloy steels, medium alloy steels, dissmilar steels structures which are required for higer rigidity and similar heat-resisting high strengh steels.	—

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Mechanical Properties of Deposited Metal			Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
CHS517	Low hydrogen Sodium	DGS K 401.111-2004	F,V, OH,H	DC+	≤0.10 0.071	≤1.20 0.91	1.30-2.10 1.60	≤0.030 0.007	≤0.030 0.019	19.0-25.0 23.35	21.0-25.0 22.54	≥2.80 3.91	≥2.80 3.83	—	AW	≥540 655	≥30 33	Suitable for welding structures made by vitriol corrosion resisting steels that with similar chemical composition.	—
CHS29.9	Lime titania Duplex	AWS A5.4 E312-16 ISO 3581-B-ES312-16 EN 1600 E 29 9 R 3 2	F,V, OH,H	AC or DC+	≤0.15 0.085	0.50-2.50 1.11	≤0.90 0.78	≤0.030 0.011	≤0.040 0.028	28.0-32.0 29.39	8.0-10.5 9.97	≤0.75 0.16	≤0.75 0.20	—	AW	≥660 785	≥22 26	For welding high carbon steels, tool steels, dissimilar steels, Cr29Ni9 cast steels, duplex stainless steels as well as problem steels.	—
CHS2209	Extra low carbon lime titania Duplex	AWS A5.4 E2209-16 EN 1600 E 22 9 3 N L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.026	0.50-2.00 0.90	≤0.90 0.61	≤0.030 0.013	≤0.040 0.023	21.5-23.5 22.84	8.5-10.5 9.45	2.5-3.5 3.05	≤0.75 0.097	N 0.08-0.20 0.12	AW	≥690 785	≥20 29	For welding extra-low carbon stainless steel structures in petrochemical and hydraulic projects industries, e.g. structures fabricated by 00Cr22Ni-5Mo3N duplex stainless steel.	—
CHS2553	Lime titania Duplex	AWS A5.4 E2553-16	F,V, OH,H	AC or DC+	≤0.06 0.025	0.50-1.50 1.00	≤1.00 0.68	≤0.030 0.012	≤0.040 0.013	24.0-27.0 25.00	6.5-8.5 7.3	2.9-3.9 3.3	1.5-2.5 1.8	—	AW	≥760 880	≥15 20	It is suitable for duplex stainless steels that contain 25% Cr, e.g. O22C-r25Ni7Mo4N, 03Cr25Ni6Mo3Cu2N, UNS 32550(Alloy255) and so on.	—

Welding Rods for Hardfacing

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)											Hardness of Deposited Metal HRC	Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	W	Nb	Other Elements		
CHR107	Low hydrogen Sodium	GB/T 984 EDPMn2-15	F,V, OH,H	DC+	≤0.20 0.089	≤3.50 2.80	—	—	—	—	—	—	—	—	—	—	HB≥220 300.6	Surfacing and repair welding of worn parts surface of low carbon, medium carbon and low alloy steel.
CHR112	Lime titania	GB/T 984 EDPCrMo-A1-03	F,V, OH,H	AC or DC+	≤0.25 0.20	—	—	—	—	≤2.00 1.00	—	≤1.50 0.52	—	—	—	≤2.00	HB≥220	Surfacing and repair welding of worn parts surface of low carbon, medium carbon and low alloy steel.
CHR127	Low hydrogen Sodium	GB/T 984 EDPMn4-15	F,V, OH,H	DC+	≤0.20 0.11	≤4.50 3.60	—	—	—	—	—	—	—	—	—	≤2.00	≥30 41.1	Surfacing of worn surface of low and medium carbon steels or low alloy steels.
CHR132	Lime titania	GB/T 984 EDPCrMo-A2-03	F,V, OH,H	AC or DC+	≤0.50 0.29	—	—	—	—	≤3.00 2.00	—	≤1.50 0.74	—	—	—	—	≥30 44.5	Surfacing and repair welding of worn surface of low and medium carbon steels or low alloy steels.
CHR172	Lime titania	GB/T 984 EDPCrMo-A3-03	F,V, OH,H	AC or DC+	≤0.50 0.34	—	—	—	—	≤2.50 2.30	—	≤2.50 1.90	—	—	—	—	≥40 50.4	Surfacing of worn parts of gear wheel, mining machinery etc.
CHR207	Low hydrogen Sodium	GB/T 984 EDPCrMnSi-A1-15	F,V, OH,H	DC+	0.30-1.00 0.90	≤2.50 2.00	≤1.00 0.67	≤0.035 0.007	≤0.035 0.025	≤3.50 3.00	—	—	—	—	—	≤1.00	≥50 55.2	Surfacing of worn parts of bulldozer blade propeller etc.
CHR212	Lime titania	GB/T 984 EDPCrMo-A4-03	F,V, OH,H	AC or DC+	0.30-0.60 0.45	—	—	—	—	≤5.00 4.00	—	≤4.00 1.30	—	—	—	—	≥50 57.7	One layer and multi-layer surfacing of worn parts surface of gear wheel, excavator and mining machinery etc.
CHR237	Low hydrogen Sodium	GB/T 984 EDPCrMoV-A1-15	F,V, OH,H	DC+	0.30-0.60 0.50	—	—	—	—	8.00-10.00 9.40	—	≤3.00 2.40	0.50-1.00 0.67	—	—	≤4.00	≥50 57.2	Surfacing of silt worn and atmosphere corrosive hydraulic machinery, excavator and parts of mining machinery etc.
CHR256	Low hydrogen Potassium	AWS A5.13 EFeMn-A	F,V, OH,H	AC≥70V or DC+	≤1.10 0.80	11.00-16.00 13.30	≤1.30 0.50	—	—	—	—	—	—	—	—	≤5.00	HB≥170 193.8	Surfacing of easy-impacted, easy-worn parts of crushers, rails, bulldozers etc.
CHR266	Low hydrogen Potassium	AWS A5.13 EFeMn-B	F,V, OH,H	AC or DC+	0.5-1.0 0.80	12.00-16.00 13.00	≤1.30 0.51	—	—	—	—	0.50-1.50 1.30	—	—	—	≤1.00 0.78	HB≥170 199	It is suitable for hardfacing abraded parts of crusher machines, excavators, bulldozers, switches of railway and so on.
CHR276	Low hydrogen Potassium	GB/T 984 EDCrMn-B-16	F,HF	AC or DC+	≤0.80 0.65	11.00-18.00 12.58	≤1.30 0.72	—	—	13.00-17.00 14.30	≤2.00 0.052	≤2.00 1.00	—	—	—	≤4.00	HB≥210 212.6	Surfacing of high manganese steel structures.
CHR307	Low hydrogen Sodium	GB/T 984 EDD-D-15	F,V, OH,H	DC+	0.70-1.00 0.90	—	—	≤0.035 0.010	≤0.040 0.019	3.80-4.50 4.30	—	—	1.00-1.50 1.20	17.00-19.50 18.80	—	≤1.50	≥55 61.8	Surfacing of blade of semifinished cutting tool made of medium carbon steel, and repair welding worn cutting tool or other tool.
CHR322	Lime titania	GB/T 984 EDRCrMo WV-A1-03	F,V, OH,H	AC or DC+	≤0.50 0.42	—	—	≤0.035 0.011	≤0.040 0.026	≤5.00 4.30	—	≤2.50 2.00	≤1.00 0.60	7.00-10.00 8.60	—	—	≥55 60.3	Surfacing of blade of model and cutting, and repair welding of mechanical parts requiring high function for wear resistance.
CHR327	Low hydrogen Sodium	GB/T 984 EDRCrMo WV-A1-15	F,V, OH,H	DC+	≤0.50 0.41	—	—	≤0.035 0.013	≤0.040 0.025	≤5.00 3.90	—	≤2.50 1.98	≤1.00 0.60	7.00-10.00 8.70	—	—	≥55	Surfacing of blade of model and cutting, and repair welding of mechanical parts requiring high function for wear resistance.
CHR337	Low hydrogen Sodium	GB/T 984 EDRCrW-15	F,V, OH,H	DC+	0.25-0.55 0.43	—	—	≤0.035 0.008	≤0.040 0.019	2.00-3.50 2.90	—	—	—	7.00-10.00 9.40	—	≤1.00	≥48 59.3	Surfacing of forging model for cast steel and forge steel. Also repair welding of forging model.
CHR397	Low hydrogen Sodium	GB/T 984 EDRCrMnMo-15	F,V, OH,H	DC+	≤0.60 0.46	≤2.50 1.00	≤1.00 0.62	≤0.035 0.006	≤0.040 0.019	≤2.00 1.20	—	≤1.00 0.64	—	—	—	—	≥40 55.2	Surfacing of cast steels and heat forging model. Also repair welding of worn forging model.
CHR502	Lime titania	GB/T 984 EDCr-A1-03	F,V, OH,H	AC or DC+	≤0.15 0.13	—	—	≤0.03 0.007	≤0.04 0.024	10.00-16.00 11.30	—	—	—	—	—	—	≥40 55.5	It is widely for hardfacing carbon steel and low alloy steel axis, shafts and valves that working temperature is below 450℃.
CHR507	Low hydrogen Sodium	JIS DF-4A GB/T 984 EDCr-A1-15	F,V, OH,H	DC+	≤0.15 0.13	—	—	≤0.030 0.008	≤0.040 0.020	10.00-16.00 13.20	—	—	—	—	—	≤2.50	≥40 43.1	Surfacing of axles and valves made of carbon steel and alloy steel, working temperature of which is below 450℃.
CHR507Mo	Low hydrogen Sodium	GB/T 984 EDCr-A2-15	F,V, OH,H	DC+	≤0.20 0.12	—	—	—	—	10.00-16.00 12.30	≤6.00 1.50	≤2.50 1.60	—	≤2.00 1.20	—	≤2.50	≥37 42.3	Surfacing of valves, which work temperature should be below 510℃.

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)											Hardness of Deposited Metal HRC	Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	W	Nb	Other Elements	
CHR517	Low hydrogen Sodium	GB/T 984 EDCr-B-15	F,V, OH,H	DC+	≤0.25 0.18	—	—	—	—	10.00-16.00 13.00	—	—	—	—		≤5.00	≥45 51.0	Surfacing of axles made of carbon steel and low alloy steel valves, working temperatures of which is below 450℃.
CHR547Mo	Low hydrogen Sodium	GB/T 984 EDCrNi-B-15	F	DC+	≤0.18 0.14	0.60-5.00 1.40	3.80-6.50 4.25	≤0.030 0.006	≤0.040 0.020	14.00-21.00 17.28	6.50-12.00 10.30	3.50-7.00 4.98	—	—	0.50-1.20 0.85	≤2.50	≥37 47.0	Surfacing and sealing surface for high pressure valves working temperature of which is below 600℃.
CHR547MoA	Low hydrogen Sodium	DGS K 501.41-2004	F	DC+	≤0.18 0.13	1.00-2.50 1.31	2.00-3.20 2.60	≤0.030 0.010	≤0.040 0.027	14.00-20.00 16.00	8.00-12.50 9.63	3.50-7.00 6.10	≤1.50 0.68	≤2.80 2.00	0.50-1.20 0.73	—	≥37 45.4	Surfacing and sealing surface for high pressure valves working temperature of which is below 600℃.
CHR577	Low hydrogen Sodium	JIS DF-ME GB/T 984 EDCrMn-C-15	F	DC+	≤1.10 1.00	12.00-18.00 13.70	≤2.00 1.24	—	—	12.00-18.00 14.30	≤6.00 0.13	≤4.00 3.30	—	—	—	≤3.00	≥28 32.2	Surfacing and sealing surface for middle temperature high pressure valves working temperature of which is below 510℃.
CHR608	Graphite	GB/T 984 ED Z-A1-08	F,V, OH,H	AC or DC+	2.50-4.50 2.80	—	—	—	—	3.00-5.00 4.80	—	3.00-5.00 4.20	—	—	—	—	≥55 59.2	Surfacing parts of agricaltural machinery and mining equipments worn and inpacled by grits.
CHR618	Graphite	DGS K 501.51-2004	F,V, OH,H	AC or DC+	≤4.00	1.00-2.50	—	≤0.030	≤0.050	15.00-25.00	—	3.00-6.50	—	—	—	≤6.00	≥48	Surfacing parts worn by grit, air, water at normal and middle temperature.
CHR646	Low hydrogen Potassium	GB/T 984 EDZCr-B-16	F	AC or DC+	1.50-3.50 2.20	≤1.00 0.12	—	—	—	22.00-32.00 29.00	—	—	—	—	—	≤7.00	≥45 51.2	Surfacing structures of high temperature and high temperature wear resistance corrosion resistance. Such as hydraulic turbine vanes, parts of high pressure pump, etc.
CHR648	Graphite	GB/T 984 EDZCr-B-08	F	AC or DC+	1.50-3.50 2.20	≤1.00 0.15	—	—	—	22.00-32.00 28.00	—	—	—	—	—	≤7.00	≥45 53.0	Surfacing structures of high temperature and high temperature wear resistance corrosion resistance. Such as hydraulic turbine vanes, parts of high pressure pump, etc.
CHR678	Graphite	GB/T 984 EDZ-B1-08	F	AC or DC+	1.50-3.50 1.60	—	—	—	—	—	—	—	—	8.00-10.00 8.60	—	≤1.00	≥50 54.0	Surfacing of parts for mining machinery and crusher machinery.
CHR698	Graphite	GB/T 984 EDZ-B2-08	F	AC or DC+	≤3.00 1.70	—	—	—	—	4.00-6.00 5.13	—	—	—	8.50-14.00 11.24	—	≤3.00	≥60 63.0	Surfacing of mining machinery and mud pump.
CHR707	Low hydrogen Sodium	GB/T 984 EDW-A-15	F	DC+	1.50-3.00 2.70	≤2.00 1.33	≤4.0 0.51	—	—	—	—	—	—	40.00-50.00 43.00	—	Fe Rem.	≥60 64.6	Surfacing of rock strong wear resisting parts, such as concrete mixer vanes, bulldozer and vanes, excavater vanes.

Welding Rods for Cast Iron

Item Code	Type of Electrode	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Applications
					C	Mn	Si	S	P	V	Ni	Cu	Fe	
CHC100	Oxide flux with carbon steel core	AWS A5.15 ESt GB/T 10044 EZFe-2	F,V, OH,H	AC or DC+	≤0.15 0.050	≤0.60 0.30	≤0.15 0.15	≤0.040 0.013	≤0.040 0.014	—	—	—	Remain	Repair welding defects of normal cast iron and old steel ingot model used over a long period of time, non machinable.
CHC208	Graphite with carbon steel core	AWS A5.15 ECI GB/T 10044 EZC	F,V, OH,H	AC or DC+	2.00-4.00 2.70	≤0.75 0.40	2.50-6.50 4.20	≤0.10 0.004	≤0.15 0.016	— 0.005	— 0.005	— 0.027	Remain 73.900	For repair welding defects of gray cast iron, which is non machinable.
CHC308	Graphite with pure nickel core	AWS A5.15 ENi-CI ISO 1071-E C	F,V, OH,H	AC or DC+	≤2.00 0.59	≤1.00 0.07	≤2.50 1.50	≤0.030 0.004	—	Others ≤1.0 0.14	≥90.0 95.10	—	≤8.0 0.21	Suitable for repair cracked or worn castings and surfacing welding, as well as joining cast iron parts with dissimilar metals. The deposited metal is very good machinable and with a high toughness and excellent crack resistibility.
CHC408	Graphite with nickel-ferro core	AWS A5.15 ENiFe-CI ISO 1071-E C NiFe-CI-A	F,V, OH,H	AC or DC+	≤2.00 0.71	≤2.50 0.24	≤4.00 1.00	≤0.030 0.007	—	Others ≤1.0 0.25	45-60 55.16	≤2.50 0.055	Remain 42.70	Suitable for repairing or surfacing cracked and worm parts made of gray cast iron or ncdular iron, as well as joining cast iron with dissimilar metals. It is machinable.
CHC508	Graphite with monelmetal core	AWS A5.15 ENiCu-B ISO 1071-E C NiCu-B	F,V, OH,H	AC or DC+	0.35-0.55	≤2.30	≤0.75	≤0.025	—	Others ≤1.0	60-70	25-35	3.0-6.0	Repair welding grey iron casting strength of which is not so highly required.

Welding Rods for Copper or Copper Alloy

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)										Mechanical Properties of Deposited Metal		Applications
					C	Mn	Fe	Si	S	P	Ni	Pb	Ti	Other Elements	Tensile Strength Rm (MPa)	Elongation A4 (%)	
CHCu107	Low hydrogen Red copper core	AWS A5.6 ECu	F	DC+	>95.0 98.00	≤3.00 0.29	—	≤0.50 0.15	—	≤0.30 0.011	—	≤0.020 0.004	—	Fe+Al+Ni+Zn ≤0.50	≥170 260	≥20 29	Mainly for welding copper structures, such as conductive lugs, heat exchangers, and it could surface marine corrosive carbon steel parts also.
CHCu307	Lime titania Cu70Ni30 alloy core	GB ECuNi-B	F	DC+	Remain	≤2.50	≤2.50	≤0.50	≤0.015	≤0.020	29.0-33.0	≤0.020	≤0.50	Pb+Zn ≤0.50	≥350	≥20	Suitable for welding structures of 70-30 Cu-Ni alloy or 70-30 Cu-Ni alloy with 645- III steel clad metal.

Welding Rods for Nickel or Nickel Based Alloy

Item Code	Type of Electrode	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)													Standard & Typical Mechanical Properties of Deposited Metal			Applications
					C	Mn	Si	Fe	S	P	Ni	Cu	Nb+Ta	Al	Ti	Cr	Other Elements	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHN102	Lime titania Pure nickel core	AWS A5.11 ENi-1 ISO 14172-ENi2061	F,V, OH,H	AC or DC+	≤0.10 0.054	≤0.75 0.20	≤1.25 0.80	≤0.75 0.24	≤0.02 0.004	≤0.03 0.009	≥92.0 94.0	≤0.25 0.054	—	≤1.0 0.17	1.0-4.0 1.42	—	≤0.50	≥410 470	≥20 37	—	It is suitable for welding forging parts of pure nickel (UNS N02200, UNS N02201) and cast iron parts. And it could weld composite NiFe or surfacing transition layer of steel parts. Also for dissimilar metals.
CHN317	Low hydrogen	AWS A5.11 ENiCrFe-1 ISO 14172-ENi6062	F,V, OH,H	DC+	≤0.08 0.015	≤3.50 2.65	≤0.75 0.39	≤11.0 5.37	≤0.015 0.008	≤0.030 0.005	≥62.0 72.1	≤0.50 0.012	1.5-4.0 2.88	—	—	13.0-17.0 15.76	≤0.50	≥550 640	≥30 43.5	—	It is suitable for welding NiCrFe alloys (UNS N06600, UNS N06601), composite NiCrFe alloys. Also for dissimilar metals.
CHN327	Low hydrogen	AWS A5.11 ENiCrFe-2 ISO 14172-ENi6133	F,V, OH,H	DC+	≤0.10 0.026	1.00-3.50 2.84	≤0.75 0.42	≤12.0 6.0	≤0.020 0.006	≤0.030 0.009	≥62.0 70.71	≤0.50 0.055	0.5-3.0 1.12	— 0.044	Mo 0.50-2.50 1.81	13.0-17.0 15.77	≤0.50	≥550 610	≥30 42	—	It is suitable for welding NiCrFe alloys (UNS N08800, UNS N06600)and for welding dissimilar metals.
CHN337	Low hydrogen	AWS A5.11 ENiCrFe-3 ISO 14172-ENi6182	F,V, OH,H	DC+	≤0.10 0.030	5.00-9.50 6.90	≤1.00 0.40	≤10.00 5.00	≤0.015 0.008	≤0.030 0.008	≥59.0 70.00	≤0.50 0.062	1.0-2.5 1.50	—	≤1.00 0.101	13.0-17.0 16.00	≤0.50	≥550 620	≥30 43	—	Suitable for welding structures made by UNS N06600 NiCrFe alloy, composite NiCrFe alloy and dissimilar metals of nickel alloy with steel. Also surfacing.
CHN347	Low hydrogen Sodium	AWS A5.11 ENiCrFe-4	F,V, OH,H	DC+	≤0.20	1.0-3.5	≤1.0	≤12.0	≤0.020	≤0.030	≤60	≤0.50	1.0-3.5	—	Mo 1.0-3.5	13.0-17.0	≤0.50	≥650	≥20	—	Suitable for welding 9%Ni alloy steel. It can be used for welding corrosion resisting & heat-resisting nickel alloy as well as dissimilar steel. Also hardfacing could be done.
CHN357	Low hydrogen Sodium	AWS A5.11 ENiCrMo-3 ISO 14172-ENi6182	F,V, OH,H	DC+	≤0.10 0.017	≤1.0 0.50	≤0.75 0.35	≤7.0 5.20	≤0.020 0.010	≤0.030 0.005	≥55 60	≤0.50 0.040	3.15-4.15 3.30	—	Mo 8.0-10.0 8.5	20.0-23.0 21.0	Co ≤0.12 0.050	≥760 790	≥30 35	-196℃ ≥30 50	Suitable for welding structures made by UNS N06625 NiCrMo alloy, composite NiCrMo alloy and for dissimilar metals of nickel alloy with steel. Also surfacing.
CHN367	Low hydrogen Sodium	AWS A5.11 ENiCrMo-6 ISO 14172-ENi6620	F,V, OH,H	DC+	≤0.10 0.017	2.00-4.00 3.20	≤1.00 0.18	≤10.0 5.5	≤0.020 0.010	≤0.030 0.005	≥55 60	≤0.50 0.10	0.5-2.0 0.86	—	Mo 5.0-9.0 7.00	12.0-17.0 13.80	W 1.0-2.0 1.30	≥620 680	≥35 40	-196℃ ≥30 130	Suitable for welding Ni9%(UNS K81340) alloy,dissimilar steels as well as welding problem metals.

Flux Cored Wires

Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Standard & Typical Mechanical Properties of Deposited Metal						Applications	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp. (℃)	Akv Value (J) Joule	Shield Gas		
CHT611	AWS A5.36 E61T1-C1AZ EN ISO 17632-A-T35 2PC1H10	F,VD, OH,H	DC+	—	≤1.75	≤0.90	≤0.03	≤0.03	—	—	—	—	AW	≥330	430-600	≥22	0	≥47 120	CO_2	Suitable for all position as well as vertical down welding for mild steel structures.	—
				0.055	0.90	0.30	0.008	0.02	—	—	—	—		430	505	29	-20	100			
CHT701	AWS A5.36 E70T1-C1A0 EN ISO 17632-A-T42 2RC3H10	F,HF	DC+	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03	—	—	—	—	AW	≥390	490-670	≥22	-20	≥22 70	CO_2	It is suitable for flat or horizontal filler of structures fabricated by thick or medial thick armor plate with 490MPa grade tensile strength.	—
				0.06	1.40	0.45	0.011	0.018	—	—	—	—		450	545	28					
CHT70B	AWS A5.36 E70T5-C1A2 EN ISO 17632-A-T42 3BC3H5	F,HF,V	DC+	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03	—	—	—	—	AW	≥390	490-670	≥22	-30	≥27 150	CO_2	It is suitable for flat or horizontal filler of higher tensile, better crack resisting mild steel structures fabricated by 490MPa grade tensile strength steels. Also it could be vertical up welding on which angle below 45°.	—
				0.07	1.50	0.50	0.013	0.018	—	—	—	—		435	545	28					
CHT70BM	AWS A5.36 E70T5-M21A2 EN ISO 17632-A-T42 3BM3H5	F,HF,V	DC+	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03	—	—	—	—	AW	≥390	490-670	≥22	-30	≥27 150	75-80%Ar + balance CO_2	It is suitable for flat or horizontal filler of higher tensile, better crack resisting mild steel structures fabricated by 490MPa grade tensile strength steels. Also it could be vertical up welding on which angle below 45°.	—
				0.07	1.46	0.50	0.013	0.018	—	—	—	—		450	550	28					
CHT711	AWS A5.36 E71T1-C1A0 EN ISO 17632-A-T42 2PC1H10	F,VD, OH,H	DC+	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03	—	—	—	—	AW	≥390	490-670	≥22	0	125	CO_2	It is widely used in structures fabricated by mild steel and 490MPa grade tensile strength steel, such as ships, pressure vessels, machinery, bridges, etc.	CCS,LR, ABS,BV, GL,DNV, KR,NK, BKI,CWB
				0.055	1.35	0.40	0.009	0.018	—	—	—	—		440	535	32	-20	≥27 110			
CHT711M	AWS A5.36 E71T1-M21A0 EN ISO 17632-A-T42 2PM1H10	F,VD, OH,H	DC+	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03	—	—	—	—	AW	≥390	490-670	≥22	-20	≥27	75-80%Ar + balance CO_2	It is widely used in structures fabricated by mild steel and 490MPa grade tensile strength steel, such as ships, pressure vessels, machinery, bridges and so on.	BV,CWB
				0.055	1.3	0.40	0.009	0.018	—	—	—	—		440	540	30		120			
CHT71Ni	AWS A5.36 E71T1-C1A4 EN ISO 17632-A-T42 4PC1H10	F,V, OH,H	DC+	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03	—	≤0.5	—	—	AW	≥390	490-670	≥22	-40	≥27 80	CO_2	Suitable for structures fabricated by mild steel or 490MPa grade tensile strength steels, such as pressure vessels, ships, offshore drilling platforms, pipelines and so on.	LR,ABS, DNV
				0.04	1.30	0.35	0.015	0.02	—	0.45	—	—		425	520	30					
CHT80B	AWS A5.36 E80T5-C1AZ-G EN ISO 17632-A-T46 3BC3H5	F,HF,V	DC+	—	≥1.0	—	≤0.03	≤0.03	—	—	—	—	AW	≥470	550-690	≥19	-30	≥27 150	CO_2	It is suitable for flat, horizontal filler or vertical up welding on which angle below 45°, higher tensile, better crack-resisting structures that fabricated by 550MPa grade tensile strength, heat resistant low alloy steels, such as ships, pressure vessels of petroleum chemical, bridges, etc.	—
				0.07	1.5	0.5	0.013	0.018	—	0.2	—	—		480	560	30					

Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Standard & Typical Mechanical Properties of Deposited Metal							Applications	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp. (℃)	Akv Value (J) Joule	Shield Gas		
CHT80B2B	AWS A5.36 E80T5-C1PZ-B2 ISO 17634-B-T55T5-0C-1CM	F,HF,V	DC+	0.05-0.12	≤1.25	≤0.80	≤0.03	≤0.03	1.0-1.5	—	0.4-0.65	—	PWHT	≥470	550-690	≥19	25	≥47 180	CO_2	It is suitable for flat, horizontal filler or vertical up welding on which angle below 45°, higher tensile strength, better crack-resisting structures that fabricated by 550MPa grade heat resistant low alloy steels, which work temperature lower than 520℃ ,Welded piece should be preheated to 150-300℃ before welding.	—
				0.06	0.80	0.30	0.010	0.012	1.15	—	0.45	—	690℃ X1h	510	600	24					
CHT81B2	AWS A5.36 E81T1-C1PZ-B2 ISO 17634-B-T55T1-1C-1CM	F,V, OH,H	DC+	0.05-0.12	≤1.25	≤0.80	≤0.03	≤0.03	1.0-1.5	—	0.4-0.65	—	PWHT	≥470	550-690	≥19	25	≥27 75	CO_2	Suitable for welding 550MPa grade heat resistant low alloy steel structures,which work temperature lower than 520 ℃ , e.g.15CrMoR (1%Cr-0.5%Mo). Welded piece should be pre-heated to 150-300℃ before welding.	—
				0.058	0.80	0.25	0.01	0.011	1.15	—	0.45	—	690℃ X1h	550	630	23					
CHT81B2M	AWS A5.36 E81T1-M21PZ-B2 ISO 17634-B-T55T1-1M21-1CM	F,V, OH,H	DC+	0.05-0.12	≤1.25	≤0.80	≤0.03	≤0.03	1.0-1.5	—	0.4-0.65	—	PWHT	≥470	550-690	≥19	25	≥27 100	75-80%Ar + balance CO_2	Suitable for welding 550MPa grade heat resistant low alloy steel structures,which work temperature lower than 520 ℃ , e.g.15CrMoR (1%Cr-0.5%Mo). Welded piece should be pre-heated to 150-300℃ before welding.	—
				0.06	0.80	0.25	0.01	0.011	1.15	—	0.45	—	690℃ X1h	555	635	24					
CHT81B6	AWS A5.36 E81T1-C1PZ-B6 ISO 17634-B-T55T1-1C-5CM	F,V, OH,H	DC+	0.05-0.12	≤1.25	≤1.0	≤0.03	≤0.04	4.0-6.0	≤0.40	0.4-0.65	Cu≤0.50	PWHT	≥470	550-690	≥19	25	≥27 95	CO_2	It is suitable for fabricate structures made by 550MPa grade Cr5Mo steel. Welded piece should be preheated to 150-300℃ before welding.	—
				0.06	0.75	0.25	0.01	0.011	4.2	0.015	0.52	0.02	745℃ X2h	530	640	20					
CHT81K2	AWS A5.36 E81T1-C1A2-K2 ISO 17632-B-T553T1-1CA-N3	F,V, OH,H	DC+	≤0.15	0.5-1.75	≤0.80	≤0.03	≤0.03	≤0.15	1.0-2.0	—	—	AW	≥470	550-690	≥19	-30	≥27 111	CO_2	It is used in structures fabricated by 550MPa grade tensile strength steel, such as ships, pressure vessels, machinery, bridges, offshore drilling platforms and so on.	ABS,DNV
				0.05	1.35	0.35	0.008	0.017	0.02	1.45	—	—		495	580	28					
CHT81Ni1	AWS A5.36 E81T1--C1A2-Ni1 EN ISO 17632-A-T46 31NiPC1H10	F,V, OH,H	DC+	≤0.12	≤1.50	≤0.80	≤0.03	≤0.03	—	0.80-1.10	≤0.35	—	AW	≥470	550-690	≥19	-30	≥27 90	CO_2	It is used in structures fabricated by 550MPa grade tensile strength steel, such as ships, pressure vessels, machinery, bridges, petrochemical industry and so on.	—
				0.055	1.35	0.35	0.005	0.015	—	0.95	0.10	—		520	605	25					
CHT81Ni2	AWS A5.36 E81T1--C1A2-Ni2 EN ISO 17632-A-T46 42NiPC1H10	F,V, OH,H	DC+	≤0.12	≤1.50	≤0.80	≤0.03	≤0.03	—	1.75-2.75	—	—	AW	≥470	550-690	≥19	-40	≥27 90	CO_2	It is used in structures fabricated by 550MPa grade tensile strength steel, such as ships, pressure vessels, machinery, bridges, petrochemical industry, offshore drilling platforms, etc.	—
				0.05	1.30	0.35	0.008	0.017	—	2.20	—	—		485	580	28					
CHT91B3	AWS A5.36 E91T1-C1PZ-B3 ISO 17634-B-T62T1-1C-2C1M	F,V, OH,H	DC+	0.05-0.12	≤1.25	≤0.80	≤0.03	≤0.03	2.0-2.5	—	0.90-1.20	—	PWHT	≥540	620-760	≥17	25	≥27 60	CO_2	Suitable for welding 600MPa grade 25%Cr-1%Mo (12Cr2Mo1R) heat resistant low alloy steel structures, which work temperature below 550 ℃ , such as high temperature, high pressure pipes, chemical industry equipment, petroleum thermal cracking equipment, etc. Welded piece should be pre-heated to 150-300℃ before welding.	—
				0.06	0.80	0.25	0.012	0.018	2.26	—	1.06	—	690℃ X1h	600	730	20					
CHT91K2	AWS A5.36 E91T1--C1A0-K2 ISO 17632-B-T572T1-1CA-N3	F,V, OH,H	DC+	≤0.15	0.5-1.75	≤0.80	≤0.03	≤0.03	≤0.15	1.0-2.0	≤0.35	≤0.05	AW	≥540	620-760	≥17	-20	≥27 70	CO_2	Suitable for welding structures fabricated by 600MPa grade tensile strength steel, such as ships, pressure vessels, machinerries, petroleum & chemical industries, bridges etc.	—
				0.05	1.45	0.40	0.013	0.018	0.022	1.55	0.13	0.012		560	650	23					
CHT70C6	AWS A5.36 E70T15-M21A2-CS1 ISO 17632-B-T493T15-0M21A	F,H, HF, VD	DC+	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03	—	—	—	—	—	≥400	≥480	≥22	-30	≥27 70	75-85%Ar + balance CO_2	Mainly for flat and horizontal fillet welding structures fabricated by mild steels or 490MPa tensile strength steels, e.g. ships, automobiles, pipes, machinery and so on. Vertical down welding could be performed if take lower current.	—
				0.05	1.45	0.76	0.018	0.015	—	—	—	—	—	450	550	27					
CHT308L	AWS A5.22 E308LT1-1	F,H, HF, VD	DC+	≤0.04	0.5-2.5	≤1.0	≤0.03	≤0.04	18.0-21.0	9.0-11.0	≤0.5	Cu≤0.50	—	—	≥520	≥35	-20	55	CO_2	Suitable for welding structures fabricated by 18Cr8Ni (SUS 304, SUS 304L) metal, which carbon contained in the weld joint lower than 0.04%, such as facilities of medical apparatus, foodstuff industry, petrochemical industry, fertilizer industry and pressure vessels. The integrative welding performance of it is very good and the weld metal has good heat resistance and excellent intercrystalline corrosion resistance.	CCS
				0.03	1.74	0.60	0.003	0.016	19.29	9.34	0.034	0.08	—	—	570	40					
CHT309L	AWS A5.22 E309LT1-1	F,H, HF, VD	DC+	≤0.04	0.5-2.5	≤1.0	≤0.03	≤0.04	22.0-25.0	12.0-14.0	≤0.5	Cu≤0.50	—	—	≥520	≥25	-20	55	CO_2	Suitable for welding dissimilar joint consisting of stainless steel with carbon steel or low alloy steel as well as for welding ply steel structures of petrochemical industry. Also it is used for surfacing inner transition metal of pressure vessels of nuclear reactor. The weld metal has excellent crack resistance and good corrosion resistance.	CCS
				0.027	1.68	0.58	0.003	0.018	23.82	12.39	0.08	0.07	—	—	545	39					
CHT316L	AWS A5.22 E316LT1-1	F,H, HF, VD	DC+	≤0.04	0.5-2.5	≤1.0	≤0.03	≤0.04	17.0-20.0	11.0-14.0	2.0-3.0	Cu≤0.50	—	—	≥485	≥30	-20	55	CO_2	Suitable for welding important stainless steel structures of equipment of petrochemical, synthetic fibre, chemical fertilizer or storage devices that fabricated by 18Cr12Ni2Mo (SUS 316, SUS 316L) steel. The mechanical properties of its deposited metal are stable and the weld joint has excellent heat resistance and intercrystalline corrosion resistance.	CCS
				0.033	1.74	0.57	0.004	0.018	18.54	11.98	2.32	0.08	—	—	545	40					
CHT2209	AWS A5.22 E2209T1-1	F,H, HF, VD	DC+	≤0.04	0.5-2.0	≤1.0	≤0.03	≤0.04	21.0-24.0	7.5-10.0	2.5-4.0	Cu≤0.50	—	—	≥690	≥20	—	—	CO_2	Used for welding important structures of petrochemical industry that fabricated by SUS 2209 duplex steel.	—
				0.033	1.01	0.61	0.0036	0.015	22.906	8.1901	3.1589	0.022	—	—	764	30.5					

Solid Wires for MAG / MIG Welding

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, typical)										Mechanical Properties of Deposited Metal (Typical)						Application	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A 4(%)	Akv Value (J) Temp. (℃)	Akv Value (J) Joule	Shield Gas		
CHW-50C	AWS A5.18 ER70S-7 BS EN ISO 14341-A-G 42 Z C G4Si1 BS EN ISO 14341-B-G 49A Z C G7	F,V, OH,H	DC+	0.08	1.97	0.72	0.019	0.020	0.020	0.021	—	0.20	≤0.5	AW	425	545	30	25	135	CO_2	Single-pass & multi-pass welding for structures fabricated by 500MPa tensile strength carbon steels or low alloy steels. Crack resistance of weld is satisfactory.	—
CHW-50C2	AWS A5.18 ER70S-2 BS EN ISO 14341-A-G 42 3 C G2Ti BS EN ISO 14341-B-G 49A 3 C G2	F,V, OH,H	DC+	0.05	1.20	0.60	0.010	0.016	Al 0.08	Ti 0.11	Zr 0.08	0.20	≤0.5	AW	445	540	25	-30	60	CO_2	Single-pass & multi-pass welding and butt or fillet structures fabricated by 450MPa or 500MPa tensile strength mild steel or low alloy steels. Particularlly for the welding environment with impurities.	—
															465	550	27		80	CO_2(20%) + Ar(80%)	
CHW-50C3	AWS A5.18 ER70S-3 BS EN ISO 14341-A-G 38 4 M G2Si1 BS EN ISO 14341-B-G 49A 4 M G3 CSA W48-01 ER49S-3 JIS Z3312 YGW16	F,V, OH,H	DC+	0.099	1.11	0.62	0.011	0.015	0.020	0.021	0.007	0.18	V 0.008	AW	435	540	29	-40	90	CO_2(20%) + Ar(80%)	Suitable for single-pass & multi-pass welding and butt or fillet structures made of 450MPa and 500MPa tensile strength steel, in particular for high speed welding sheet steel, e.g. automobile.	CWB, TUV
CHW-50C6SM	AWS A5.18 ER70S-6 BS EN ISO 14341-A-G 42 3 C G3Si1 BS EN ISO 14341-B-G 49A 2 C G6 CSA W48-01 ER49S-6 JIS Z3312 YGW12	F,V, OH,H	DC+	0.06-0.15	1.40-1.85	0.80-1.15	≤0.035	≤0.025	≤0.15	≤0.15	≤0.15	≤0.5	V ≤0.03 0.01	AW	≥375	490-660	≥22	-20	≥47	CO_2	For welding of structures fabricated by 500MPa tensile strength mild steels or low alloy steels. It is widely used in marine containers, vehicles, ships and machinery.	CCS, LR, ABS, GL, NK, BKI, CWB
				0.078	1.53	0.85	0.010	0.011	0.022	0.029	0.008	0.12			425	540	30		102			
CHW-50C8	AWS A5.18 ER70S-G BS EN ISO 14341-B-G 49A 3 C G11 JIS Z3312 YGW11	F,V, OH,H	DC+	0.10	1.45	0.71	0.013	0.011	Ti 0.15	—	—	0.14	≤0.5	AW	440	560	30	-30	75	CO_2	Particularly for high speed backing welding for huge pipe lines that fabricated by X65 or X70 steels as well as other structures made by 450MPa or 500MPa tensile strnegth carbon steels or low alloy steels, such as engineering machinery, bridges, high pressure vessels and so on.	—
CHW-55B2	AWS A5.28 ER80S-B2 BS EN ISO 21952-A-G (CrMo1Si) BS EN ISO 21952-B-G 1CM3 JIS Z3317 YG1CM	F,V, OH,H	DC+	0.075	1.22	0.68	0.009	0.013	1.21	—	0.50	0.14	≤0.5	PWHT 690℃ X1h	505	610	21	25	90	CO_2	Suitable for structures fabricated by 1.25Cr-0.5Mo series pearlitic heat-resisting low alloy steels such as heavy equipments of thermal power stations and nuclear power stations, petroleum & chemical industries which working temperature is below 550℃ .	—
															545	645	23		130	CO_2(20%) + Ar(80%)		
CHW-55B2V	AWS A5.28 ER80S-G	F,V, OH,H	DC+	0.081	1.36	0.70	0.010	0.012	1.25	V 0.26	0.61	0.15	≤0.5	PWHT 730℃ X2h	640	720	20	25	70	CO_2(20%) + Ar(80%)	Suitable for structures fabricated by 1.25Cr-0.5Mo-0.25V series pearlitic heat-resisting low alloy steels such as heavy equipments of thermal power stations and nuclear power stations, petroleum & chemical industries which work temperature is lower than 550℃	—
CHW-55B6	AWS A5.28 ER80S-B6 JIS Z3317 YG5CM BS EN ISO 21952-A-G CrMo5Si BS EN ISO 21952-B-G (5CM)	F,V, OH,H	DC+	0.08	1.14	0.65	0.009	0.013	5.10	—	0.58	0.12	≤0.5	PWHT 745℃ X2h	480	605	22	25	90	CO_2	It is suitable for welding heat resisting structures, especially widely be used on the refining equipment of petroleum industry.	—
															485	615	24		120	CO_2(20%) + Ar(80%)		
CHW-55C1	AWS A5.28 ER80S-Ni1 BS EN ISO 14341-A-G 46 5 M G3Ni1 BS EN ISO 14341-B-G 55A 5 M GN2 JIS Z3315 YGL1-4A（A）	F,V, OH,H	DC+	0.084	1.06	0.53	0.010	0.010	0.07	0.93	0.02	0.21	Ti 0.01	AW	475	570	27	-45	70	CO_2	It is suitable for important structures that fabricated by low alloy steels with low temperature (-45℃) toughness.	—
															485	580	30		110	CO_2(20%) + Ar(80%)		
CHW-60C	AWS A5.28 ER80S-G BS EN ISO 14341-B-G 55A 3 M G3M1T JIS Z3312 YGW19	F,V, OH,H	DC+	0.07	1.70	0.60	0.008	0.013	Ti 0.15	—	0.18	0.21	≤0.5	AW	510	610	27	-30	90	CO_2	It is widely used in structures fabricated by 550MPa or 600MPa high tensile strength low alloy steels, e.g. X70, 62CF, 15MnMo, etc. such as heavy machine equipments, bridges, vehicles, skyscrapers and so on. the welded piece should be tempered at 310℃ not shorter than 2 hour after welding.	—
															550	650	24		85	CO_2(20%) + Ar(80%)		
CHW-62B3	AWS A5.28 ER90S-B3 BS EN ISO 21952-A-G CrMo2Si BS EN ISO 21952-B-G (2C1M3) JIS Z3317 YG2CM	F,V, OH,H	DC+	0.092	0.92	0.64	0.006	0.015	2.31	—	1.04	0.20	≤0.5	PWHT 690℃ X1h	550	680	20	25	80	CO_2	Suitable for structures fabricated by 2.25Cr1Mo series pearlitic heat-resisting low alloy steels such as thermal power projects, nuclear & space projects, petroleum & chemical projects which working temperature is below 580℃ .	—
															585	705	19		122	CO_2(20%) + Ar(80%)		
CHW-65A	AWS A5.28 ER80S-G	F,V, OH,H	DC+	0.06	1.60	0.60	0.006	0.010	0.40	Ti & B Few	0.20	0.12	≤0.5	AW	515	615	28	-20	110	CO_2(20%) + Ar(80%)	For multi-pass welding of heavy structures made by 550MPa or 600MPa high tensile strength low alloy steels such as hydro-projects and thermal power projects, petroleum & chemical projects as well as heavy engineering machinery	—
CHW-65C	AWS A5.28 ER80S-G BS EN ISO 14341-B-G 55A 3 C GN1	F,V, OH,H	DC+	0.06	1.64	0.61	0.006	0.011	Ti & B Few	0.70	0.19	0.11	≤0.5	AW	510	605	27	-20	120	CO_2	For multi-pass welding of heavy structures made by 550MPa or 600MPa high tensile strength low alloy steels such as hydro-projects and thermal power projects, petroleum & chemical projects as well as heavy engineering machinery	—
CHW-70C	AWS A5.28 ER100S-G BS EN ISO 14341-B-G 57A 2 M GN-2M3T	F,V, OH,H	DC+	0.083	1.72	0.62	0.008	0.014	Ti 0.10	1.14	0.42	0.24	≤0.5	AW	630	720	21	-20	70	CO_2	For welding of heavy structures made by 690MPa-720MPa high tensile strength low alloy steels such as hydro-projects and thermal power projects, petroleum & chemical projects,heavy engineering machinery as well as heavy trucks.	—
															650	750	23		95	CO_2(20%) + Ar(80%)		
CHW-80C	AWS A5.28 ER110S-G	F,V, OH,H	DC+	0.074	1.75	0.47	0.004	0.008	0.30	2.11	0.54	0.20	≤0.5	PWHT 310℃ X1h	665	775	23	-40	90	CO_2(20%) + Ar(80%)	For multi-pass welding of heavy structures made by 760MPa grade high tensile low alloy steels, e.g. heavy engineering machinery.	—

Solid Wires for MIG Welding

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, Typical)										Mechanical Properties of Deposited Metal (Typical)					Applications
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Others	Yield Point Rp02 (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	Shield Gas	
CHM-307Si	AWS A5.9 ER307Si BS EN ISO 14343-A-G 18 8 Mn	F,V, OH,H	DC	0.077	6.88	0.77	0.009	0.02	19.12	8.57	0.04	0.16	—	—	605	42.5	25℃ 100	97Ar+3%O_2	Suitable for welding structures fabricated by high tensile strength steels and dissimilar steels, e.g.armor plate, H617 steel, etc.
CHM-308	AWS A5.9 ER308 BS EN ISO 14343-B-SS308 JIS Z3321 Y308	F,V, OH,H	DC	0.05	1.79	0.48	0.013	0.022	19.72	9.40	0.008	0.09	—	—	580	42	—	98%Ar+2%O_2	For Cr18Ni8, Cr18Ni12, Cr20Ni10 austenitic stainless steels, such as 301 ,302 & 308, etc. especially 304.
CHM-308L	AWS A5.9 ER308L BS EN ISO 14343-A-G(19 9 L) BS EN ISO 14343-B-SS308L JIS Z3321 Y308L	F,V, OH,H	DC	0.024	1.72	0.48	0.010	0.018	19.76	9.83	0.007	0.09	—	—	560	45	—	98%Ar+2%O_2	Suitable for extra-low carbon 00Cr19Ni10 structures. Also it could fabricat 0Cr18Ni10Ti structures, which working temperature lower than 300℃ . E.g. synthetic fibre, fertilizer & chemical industrial equipment and so on.
CHM-308LSi	AWS A5.9 ER308LSi BS EN ISO 14343-A-G(19 9 L Si) BS EN ISO 14343-B-SS308LSi	F,V, OH,H	DC	0.021	1.77	0.79	0.010	0.018	19.70	9.85	0.005	0.17	—	—	575	43	—	98%Ar+2%O_2	Suitable for extra-low carbon 00Cr19Ni10 stainless steels structures, which need better resistance to inter-crystal corrosion, e.g. synthetic fibre, petrochemical chemical industrial equipments.
CHM-309	AWS A5.9 ER309 BS EN ISO 14343-A-G(22 12 H) BS EN ISO 14343-B-SS309 JIS Z3321 Y309	F,V, OH,H	DC	0.06	2.05	0.40	0.011	0.020	23.83	13.26	0.007	0.06	—	—	580	39	—	98%Ar+2%O_2	Suitable for welding similar chemical composition stainless steel structures and dissimilar steel, e.g. Cr19Ni10 with mild steel, as well as for welding high Mn and High Cr steels.
CHM-309L	AWS A5.9 ER309L BS EN ISO 14343-A-G(23 12 L) BS EN ISO 14343-B-SS309L JIS Z3321 Y309L	F,V, OH,H	DC	0.026	2.11	0.38	0.008	0.017	23.56	12.30	0.006	0.15	—	—	570	38	—	98%Ar+2%O_2	For welding extra low carbon stainless steel structures with sililar chemical composition, such as synthetic fibre, petrochemical equipment as well as nuclear reactor. Also it could be used for dissimilar steel welding.
CHM-309LSi	AWS A5.9 ER309LSi BS EN ISO 14343-A-G(23 12 L Si) BS EN ISO 14343-B-SS309LSi	F,V, OH,H	DC	0.024	2.11	0.68	0.011	0.015	23.56	12.31	0.004	0.16	—	—	560	40	—	98%Ar+2%O_2	For welding extra low carbon 00Cr22Ni12 stainless steel structures, such as synthetic fibre, petrochemical equipment as well as nuclear reactor. Also it could be used for dissimilar steel welding.
CHM-310	AWS A5.9 ER310 BS EN ISO 14343-A-G(25 20) BS EN ISO 14343-B-SS310 JIS Z3321 Y310	F,V, OH,H	DC	0.09	1.65	0.53	0.020	0.014	26.80	21.40	0.006	0.18	—	—	605	37	—	98%Ar+2%O_2	For welding Cr25Ni20 stainless steels structures, which provide good oxidation corrosion resistance and heat resistance. Also it could be used for dissimilar steel welding and for welding high Cr, high Mn steels.
CHM-316	AWS A5.9 ER316 BS EN ISO 14343-B-SS316 JIS Z3321 Y316	F,V, OH,H	DC	0.052	2.08	0.52	0.012	0.019	18.74	11.30	2.18	0.09	—	—	580	33	—	98%Ar+2%O_2	Mainly for welding structures in chemical industry and power engineering that made by Cr19Ni12Mo2 stainless steels such as AISI316,SUS316. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHM-316L	AWS A5.9 ER316L BS EN ISO 14343-A-G(19 12 3 L) BS EN ISO 14343-B-SS316L JIS Z3321 Y316L	F,V, OH,H	DC	0.025	2.05	0.48	0.009	0.018	18.54	11.50	2.18	0.07	—	—	570	34	—	98%Ar+2%O_2	Mainly for welding structures in chemical industry and power engineering that made by 00Cr19Ni12Mo2 stainless steels such as AISI316L,-SUS316L. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHM-316LSi	AWS A5.9 ER316LSi BS EN ISO 14343-A-G(19 12 3 L Si) BS EN ISO 14343-B-SS316LSi	F,V, OH,H	DC	0.025	2.10	0.85	0.006	0.015	18.50	11.50	2.18	0.070	—	—	580	35	—	98%Ar+2%O_2	Suitable for welding extra-low carbon 00Cr19Ni12Mo2 austenitic stainless steel structures and it shows a excellent corrosion resistance. Mainly for chemical industrial equipments.
CHM-321	AWS A5.9 ER321 BS EN ISO 14343-B-SS321 JIS Z3321 Y321	F,V, OH,H	DC	0.028	1.85	0.45	0.010	0.019	18.92	9.25	0.007	0.07	Ti 0.34	—	575	40	—	98%Ar+2%O_2	It is suitable for welding structures made by 1Cr18Ni9Ti austenitic stainless steel as well as the one with similar composition.
CHM-347	AWS A5.9 ER347 BS EN ISO 14343-A-G(19 9 Nb) BS EN ISO 14343-B-SS347 JIS Z3321 Y347	F,V, OH,H	DC	0.52	1.81	0.51	0.008	0.021	20.01	10.01	0.006	0.10	Nb0.59	—	585	39	—	98%Ar+2%O_2	It is suitable for welding structures made by 1Cr18Ni11Nb austenitic stainless steel as well as the one with similar composition.
CHM-409	AWS A5.9 ER409 BS EN ISO 14343-B-SS409	F,V, OH,H	DC	0.034	0.29	0.23	0.003	0.021	12.32	0.26	0.04	0.061	Ti 0.06	—	—	—	—	97%Ar+3%O_2	Particularly for welding thin sheet in exhaust system of automobile.
CHM-410	AWS A5.9 ER410 BS EN ISO 14343-A-G(13) BS EN ISO 14343-B-SS410 JIS Z3321 Y410	F,V, OH,H	DC	0.06	0.47	0.38	0.012	0.011	12.90	0.20	0.03	0.17	—	—	540	35	—	98%Ar+2%O_2	Suitable for welding Cr13 stainless steels.
CHM-410NiMo	AWS A5.9 ER410NiMo BS EN ISO 14343-A-G 13 4 BS EN ISO 14343-B-SS(410NiMo)	F,V, OH,H	DC	0.013	0.66	0.50	0.008	0.011	12.85	4.79	0.630	0.021	—	735	850	17.5	0℃ 80	98%Ar+2%O_2	Mainly for welding structures made by martensitic stainless steels, such as 0Cr13Ni5Mo, 15Cr13, 08Cr13 and 08Cr13Al, e.g. the rotating wheel of hydraulic turbine, valves or pumps.
CHM-NiCrMo-6	AWS A5.14 ERNiCrMo-6 JIS Z3334 YNiCrMo-6	F,V, OH,H	DC	0.006	2.60	0.37	0.002	0.015	15.12	Balance	5.80	Cu 0.07 Nb 1.08	Fe 1.46 W 1.33	410	675	37	-196℃ 150	Ar+30%He+0.5%CO_2	Mainly for welding Nickel base alloys. Also it could be used for problem alloys, copious cooling steels and dissimilar metals.

Solid Wires for TIG Welding

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, typical)										Mechanical Properties of Deposited Metal (Typical)							Application
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4(%)	Akv Value (J) Temp. (℃)	Akv Value (J) Joule	Shield Gas	
CHG-308	AWS A5.9 ER308 BS EN ISO 14343-B-SS308 JIS Z3321 Y308	F,V, OH,H	DC	0.05	1.79	0.48	0.013	0.022	19.72	9.40	0.005	0.06	—	AW	—	580	42	—	—	Ar	For Cr18Ni8, Cr18Ni12, Cr20Ni10 austenitic stainless steels, such as 301 ,302 & 308, etc. especially 304.
CHG-308L	AWS A5.9 ER308L BS EN ISO 14343-A-W(19 9 L) BS EN ISO 14343-B-SS308L JIS Z3321 Y308L	F,V, OH,H	DC	0.024	1.72	0.48	0.010	0.018	19.76	9.83	0.006	0.06	—	AW	—	560	45	—	—	Ar	Suitable for extra-low carbon 00Cr19Ni10 structures. Also it could fabricat 0Cr18Ni-10Ti structures, which working temperature lower than 300℃ . E.g. synthetic fibre, fertilizer & chemical industrial equipment and so on.
CHG-309	AWS A5.9 ER309 BS EN ISO 14343-A-W(22 12 H) BS EN ISO 14343-B-SS309 JIS Z3321 Y309	F,V, OH,H	DC	0.06	2.05	0.34	0.011	0.020	23.83	13.26	0.008	0.06	—	AW	—	580	39	—	—	Ar	Suitable for welding similar chemical composition stainless steel structures and dissim-ilar steel, e.g. Cr19Ni10 with mild steel, as well as for welding high Mn and High Cr steels.
CHG-309L	AWS A5.9 ER309L BS EN ISO 14343-A-W(23 12 L) BS EN ISO 14343-B-SS309L JIS Z3321 Y309L	F,V, OH,H	DC	0.026	2.11	0.38	0.008	0.017	23.56	12.31	0.006	0.07	—	AW	—	570	38	—	—	Ar	For welding extra low carbon stainless steel structures with sililar chemical composi-tion, such as synthetic fibre, petrochemical equipment as well as nuclear reactor. Also it could be used for dissimilar steel welding.
CHG-310	AWS A5.9 ER310 BS EN ISO 14343-A-W(25 20) BS EN ISO 14343-B-SS310 JIS Z3321 Y310	F,V, OH,H	DC	0.09	1.65	0.53	0.015	0.021	25.81	20.34	0.020	0.08	—	AW	—	610	38	—	—	Ar	For welding Cr25Ni20 stainless steels structures, which provide good oxidation cor-rosion resistance and heat resistance. Also it could be used for dissimilar steel welding and for welding high Cr, high Mn steels.
CHG-316	AWS A5.9 ER316 BS EN ISO 14343-B-SS316 JIS Z3321 Y316	F,V, OH,H	DC	0.04	1.71	0.52	0.009	0.018	18.54	11.50	2.18	0.08	—	AW	—	600	31	—	—	Ar	Mainly for welding structures in chemical industry and power engineering that made by Cr19Ni12Mo2 stainless steels such as AISI316,SUS316. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHG-316L	AWS A5.9 ER316L BS EN ISO 14343-A-W(19 12 3 L) BS EN ISO 14343-B-SS316L JIS Z3321 Y316L	F,V, OH,H	DC	0.025	1.71	0.48	0.009	0.018	18.54	11.50	2.18	0.09	—	AW	—	580	32	—	—	Ar	Mainly for welding structures in chemical industry and power engineering that made by 00Cr19Ni12Mo2 stainless steels such as AISI316L,SUS316L. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHG-321	AWS A5.9 ER321 BS EN ISO 14343-B-SS321 JIS Z3321 Y321	F,V, OH,H	DC	0.028	1.85	0.45	0.010	0.021	18.92	9.25	0.007	0.08	Ti 0.34	AW	—	575	40	—	—	Ar	It is suitable for welding structures made by 1Cr18Ni9Ti austenitic stainless steel as well as the one with similar composition.
CHG-347	AWS A5.9 ER347 BS EN ISO 14343-A-W(19 9 Nb) BS EN ISO 14343-B-SS347 JIS Z3321 Y347	F,V, OH,H	DC	0.05	1.81	0.51	0.008	0.021	20.01	10.10	0.009	0.12	Nb 0.59	AW	—	585	39	—	—	Ar	It is suitable for welding structures made by 1Cr18Ni11Nb austenitic stainless steel as well as the one with similar composition.
CHG-410	AWS A5.9 ER410 BS EN ISO 14343-A-G(13) BS EN ISO 14343-B-SS410 JIS Z3321 Y410	F,V, OH,H	DC	0.06	0.47	0.38	0.012	0.011	12.90	0.20	Nb0.81	0.17	—	AW	—	540	35	—	—	Ar	Suitable for Cr13 stainless steels. The base metal should be tempered at 850℃ for 2 hours after welding.
CHG-52T	AWS A5.18 ER70S-G JIS Z3316 YGT50	F,V, OH,H	DC	0.090	1.45	0.78	0.012	0.014	—	—	—	0.14	Ti 0.17	AW	440	560	30	-30	75	Ar	Widely used for structures fabricated by 500-550MPa tensil strength low alloy steels of X60,X65,X70,18Nb and 12 ～ 16Mn etc. such as bridges,heavy engineering machi-nary, vehicles, skyscrapers, petroleum & chemical industry equipment and so on.
CHG-53	AWS A5.18 ER70S-3 BS EN 1668-W 38 4 W2Si ISO 636-A-W 38 4 W2Si ISO 636-B-W 49A 4 W3 JIS Z3316 YGT50	F,V, OH,H	DC	0.099	1.11	0.62	0.011	0.015	0.020	0.021	0.007	0.18	V 0.08	AW	435	540	29	-40	120	Ar	For structures fabricated by 500MPa grade tensil strength mild steels or low alloy steels, e.g. bridges, vehicles and so on.
CHG-55B2	AWS A5.28 ER80S-B2 BS EN ISO 21952-A-W (CrMo1Si) BS EN ISO 21952-B-W 1CM3 JIS Z3316 YGT1CM	F,V, OH,H	DC	0.076	1.15	0.67	0.007	0.015	1.25	—	0.50	0.20	—	AW	505	620	23	25	80	Ar	Suitable for structures fabricated by 1.25Cr-0.5Mo series pearlitic heat-resisting low alloy steels such as high press steam pipes of boiler or steam turbine which work tem-perature is lower than 510℃ .
CHG-55B2V	AWS A5.28 ER80S-G	F,V, OH,H	DC	0.080	1.35	0.70	0.010	0.012	1.25	—	0.58	0.20	V 0.27	AW	515	640	22	25	85	Ar	Suitable for structures fabricated by 1.25Cr-0.5Mo-0.2%V series pearlitic heat-resisting low alloy steels such as high press steam pipes of boilers, nuclear reactors, petrochemi-cal equipments which work temperature is lower than 510℃ .
CHG-55B6	AWS A5.28 ER80S-B6 BS EN ISO 21952-A-W CrMo5Si BS EN ISO 21952-B-W (5CM) JIS Z3316 YGT5CM	F,V, OH,H	DC	0.080	1.14	0.65	0.009	0.013	5.10	—	0.58	0.12	—	PWHT 740℃ X2h	470	610	22	25	180	Ar	It is widely used for superheaters, heat exchangers, pipes of industry boilers as well as high pressure vessels that fabricated by 5% Cr-0.5% Mo heat resisting low alloy steels.
CHG-55C1	AWS A5.28 ER80S-Ni1 BS EN 1668-W 46 5 W3Ni1 ISO 636-A-W 46 5 W3Ni1 ISO 636-B-W 55A 5 WN2	F,V, OH,H	DC	0.084	1.06	0.53	0.010	0.010	0.070	0.93	0.001	0.21	Ti 0.010	AW	430	520	30	-45	200	Ar	Suitable for structures fabricated by low alloys steels, which has low temperature toughness and the working temperature of it around -45℃ .
CHG-56	AWS A5.18 ER70S-6 BS EN 1668-W 42 3 W3Si1 ISO 636-A-W 42 3 W3Si1 ISO 636-B-W 49A 3 W6 JIS Z3316 YGT50	F,V, OH,H	DC	0.07	1.47	0.90	0.011	0.012	0.020	0.021	0.007	0.18	V 0.008	AW	430	530	29	-30	90	Ar	Suitable for single-pass or multi-pass welding for structures fabricated by 500MPa ten-sil strength mild steels or low alloy steels, e.g. vehicles, containers, bridges, machinary and so on.

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, typical)										Mechanical Properties of Deposited Metal (Typical)							Application
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4(%)	Akv Value (J) Temp. (℃)	Akv Value (J) Joule	Shield Gas	
CHG-62B3	AWS A5.28 ER90S-B3 BS EN ISO 21952-A-W CrMo2Si BS EN ISO 21952-B-W (2C1M3) JIS Z3316 YGT2CM	F,V, OH,H	DC	0.09	0.92	0.65	0.006	0.013	2.30	0.002	1.04	0.27	—	PWHT 690℃ X1h	575	680	23	25	90	Ar	Suitable for structures fabricated by 2.25Cr-1Mo series heat-resisting low alloy steels (T22/P22, 10CrMo910, STBA24/STPA24). Such as high press steam pipes of boilers which work temperature is lower than 580℃ .
CHG-91	AWS A5.28 ER90S-B9 BS EN ISO 21952-B-W 9C1MV	F,V, OH,H	DC	0.084	0.92	0.18	0.006	0.006	9.09	Ni 0.70 Nb 0.07	Mo 1.06 Al 0.024	Cu 0.020 N 0.063	V 0.23	PWHT 755℃ X1h	590	680	20	25	80	Ar	Suitable for superheaters and re-superheaters belong to subcritical, critical or supercritical boilers, which fabricated by martensite heat-resisting T/P91 alloy steel. The tensile strength in 630℃ high temperature achieves 340MPa.
CHG-92	AWS A5.28 ER90S-G BS EN ISO 21952-A-W CrMoWV12Si	F,V, OH,H	DC	0.12	0.84	0.29	0.006	0.007	Cr 9.56 Co 0.88	Ni 0.62 Nb 0.067	Mo 0.64 Al 0.020	Cu 0.027 N 0.063	V 0.23 W 1.57	PWHT 760℃ X4h	660	755	24	25	210	Ar	It is suitable for welding structures fabricated by high temperature resisting low alloy steels such as 9% Cr-1.5% W-Mo-Nb-N, T/P92 or NF616,and the structures have long service period under a working temperature of 650℃ .
CHG-S5	AWS A5.18 ER70S-7 BS EN 1668-W 42 Z W4Si1 ISO 636-A-W 42 Z W4Si1 ISO 636-B-W 49A Z W12	F,V, OH,H	DC	0.087	1.88	0.77	0.006	0.015	0.020	0.021	—	0.14	—	AW	445	545	31	25	127	Ar	Suitable for single-pass or multi-pass welding for structures fabricated by 500MPa tensil strength mild steels or low alloy steels, e.g. vehicles, containers, bridges, machinary and so on.
CHG-SH	AWS A5.18 ER70S-G	F,V, OH,H	DC	0.10	1.45	0.89	0.005	0.011	0.020	0.048	0.002	0.16	—	PWHT 620℃ X1h	390	510	32	-30	210	Ar	It is suitable for pressure vessels of high temperature separators and recycle hydrogen knockout drums that fabricated by 16Mn（HIC）steels.
CHG-NiCrMo-6	AWS A5.14 ERNiCrMo-6 JIS Z3334 YNiCrMo-6	F,V, OH,H	DC	0.006	2.60	0.37	0.002	0.015	15.12	Balance	5.80	Cu 0.07 Nb 1.08	Fe 1.46 W 1.33	AW	440	640	40	-196	180	Ar	Mainly for welding Nickel base alloys. Also it could be used for problem alloys, copious cooling steels and dissimilar metals.

Solid Wire for Oxyfuel Gas Welding

Item Code	Diameter (mm)	AWS A5.2	Chemical Composition of Wire (%)											Applications
				C	Mn	Si	S	P	Cu	Cr	Ni	Mo	Al	
CHW-G1	2.0-5.0	R45	Standard	≤0.08	≤0.50	≤0.10	≤0.035	≤0.040	≤0.30	≤0.20	≤0.30	≤0.20	≤0.02	Filler metal in oxygen gas welding for mild steels especially for steel sheets.
			Typical	0.07	0.4	0.018	0.011	0.014	0.04	0.04	0.02	0.01	0.01	

Solid Wires for Submerged Arc Welding

Item Code	Equivalent Norm	Chemical Composition of Wire (%)										Mechanical Properties of Deposited Metal (Typical)									Application	Remark
			C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Combined Flux	Welding Posititon	Current	Equivalent Norm	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) ℃	Akv Value (J) Joule		
CHW-S1	AWS A5.17 EL12 BS EN 756 S1 ISO 14171-A-S1 ISO 14171-B- SU11	Standard Typical	0.04-0.14 0.07	0.25-0.60 0.40	≤0.10 0.018	≤0.030 0.011	≤0.030 0.014	—	—	—	≤0.35 0.10	CHF43	F	DC+ or AC	AWS A5.17 F6A0/EL12	AW	360	450	29	-20	80	Suitable for welding structures fabricated by 450MPa tensil strength steel especially high speed welding for thin plate, e.g. LPG cylinder.	CHF43/ CHW-S1 approved by CCS, LR, ABS, GL, BV, DNV & NK
												CHF501	F	DC+ or AC	AWS A5.17 F7AZ/EL12	AW	425	530	29	0	70		
CHW-S2	AWS A5.17 EM12 BS EN 756-S2 ISO 14171-A-S2 ISO 14171-B-SU22	Standard Typical	0.06-0.15 0.066	0.80-1.25 0.88	≤0.10 0.022	≤0.030 0.013	≤0.030 0.010	0.020	0.021	—	≤0.35 0.075	CHF101	F	DC+ or AC	AWS A5.17 F6A0/EM12	AW	370	470	30	-20	120	For welding structures made by 450MPa-500MPa tensile strength steels, such as boiler, bridges, pressure vessels as well as LPG cylinders.	CHF101/ CHW-S2 approved by CCS & NK
												CHF103	F	DC+ or AC	AWS A5.17 F6A4/EM12	AW	360	480	31	-40	110		
CHW-S3	AWS A5.17 EH14 BS EN 756 S3 ISO 14171-A- S3 ISO 14171-B- SU33	Standard Typical	0.10-0.20 0.13	1.70-2.20 1.87	≤0.10 0.05	≤0.030 0.011	≤0.030 0.013	0.018	0.015	—	≤0.35 0.020	CHF101	F	DC+ or AC	AWS A5.17 F7A0/EH14	AW	440	530	30	-20	150	Suitable for structures made by 500MPa-550MPa tensile strength steels, such as ship hulls, bridges, pressure vessels and H-beam structures.	CHF101/ CHW-S3 approved by CCS, LR,ABS,GL, BV,DNV, NK,CWB
												CHF105	F	DC+	AWS A5.17 F7A4/EH14	AW	430	510	28	-40	120		

Item Code	Equivalent Norm	Chemical Composition of Wire (%)										Mechanical Properties of Deposited Metal (Typical)										Application	Remark
			C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Combined Flux	Welding Posititon	Current	Equivalent Norm	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) ℃	Akv Value (J) Joule		
CHW-S4	AWS A5.17 EM13K BS EN 756-S2Si2 ISO 14171-A-S2Si2 ISO 14171-B- SU25	Standard Typical	0.06-0.16 0.089	0.90-1.40 1.01	0.35-0.75 0.61	≤0.030 0.016	≤0.030 0.016	—	—	—	≤0.35 0.110	CHF101	F	DC+ or AC	AWS A5.17 F7A0/EM13K	AW	425	535	32	-20	110	Suitable for structures fabricated by 500MPa-550MPa tensile strength steels, such as ship hulls, bridges, pressure vessels and H-beam structures.	—
CHW-S5	AWS A5.17 EH12K ISO 14171-B-SU42	Standard Typical	0.06-0.15 0.084	1.50-2.00 1.84	0.25-0.65 0.65	≤0.025 0.009	≤0.025 0.020	— 0.020	— 0.021	—	≤0.35 0.046	CHF101	F	DC+ or AC	AWS A5.17 F7A0/EH12K	AW	450	590	26	-20	85	For welding structures made by 450MPa-500MPa tensile strength carbon steel or low alloy steels , such as boiler, bridges, pressure vessels and so on.	—
CHW-S6	AWS A5.17 EH11K BS ISO 14171-B-SU31	Standard Typical	0.07-0.15 0.08	1.40-1.85 1.49	0.80-1.15 0.84	≤0.030 0.009	≤0.030 0.014	—	—	—	≤0.35 0.18	—	F	DC+	—		—	—	—	—	—	For welding structures made by 450MPa-500MPa tensile strength carbon steel or low alloy steels , such as boiler, bridges, pressure vessels and so on.	—
CHW-S7	AWS A5.23M EA3 BE EN 756-S3Mo ISO 14171-A-S3Mo ISO 14171-B-SU4M3	Standard Typical	0.05-0.17 0.070	1.65-2.20 1.70	≤0.20 0.18	≤0.025 0.007	≤0.025 0.010	0.020	—	0.45-0.65 0.52	≤0.35 0.11	CHF101	F	DC+	AWS A5.23M F62P2-EA3-A3	PWHT 620℃ ×1h	570	660	25	-20	95	Suitable for fabricating important structures made by 690MPa tensile strength low alloy steels that need high toughness, e.g. BHW35, WEL-TEN70, HW56, SM570, etc.	—
												CHF113	F	DC+	AWS A5.23M F62P4-EA3-A3	PWHT 620℃ ×1h	600	690	24	-40	60		—
CHW-S8	AWS A5.23M EB3	Standard Typical	0.05-0.15 0.090	0.40-0.80 0.80	0.05-0.30 0.15	≤0.025 0.010	≤0.025 0.011	2.25-3.00 2.61	—	0.90-1.10 1.01	≤0.35 0.10	CHF603	F	DC+	AWS A5.23M F55PZ-EB3-B3	PWHT 690℃ ×4h	475	570	22	25	85	Widely be used in important structures of thick hull pressure vessels of nuclear reactors, equipment of petro-refining, hydrocracking, aerospace engineering, steam pipes of thermal power station and so on.	—
CHW-S9	AWS A5.23M EA4 BS EN 756-S3Mo ISO 14171-A-S3Mo ISO 14171-B-SU3M3	Standard Typical	0.05-0.17 0.080	1.20-1.70 1.30	≤0.20 0.20	≤0.025 0.008	≤0.025 0.011	—	—	0.45-0.65 0.47	≤0.35 0.20	CHF101GX	F	DC+	AWS A5.23M F55A3-EA4-A2	AW	540	630	24	-30	80	Specially for fabricating huge diameter pipe line by 600MPa tensile strength low alloy steels that require lower S & P.	—
CHW-S10	AWS A5.23M EF3 ISO 14171-A-S3Ni1Mo ISO 14171-B-SUN2M31	Standard Typical	0.10-0.18 0.105	1.70-2.40 1.80	≤0.30 0.18	≤0.025 0.006	≤0.025 0.012	0.020	0.70-1.10 0.83	0.40-0.65 0.62	≤0.35 0.15	CHF105	F	DC+	AWS A5.23M F69P3-EF3-F3	PWHT 620℃ ×1h	660	735	24	-30	70	It is used to important structures made by 650MPa-800MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—
CHW-S11	AWS A5.23M EB2	Standard Typical	0.07-0.15 0.095	0.45-1.00 0.73	0.05-0.30 0.15	≤0.025 0.007	≤0.025 0.011	1.00-1.75 1.36	—	0.40-0.65 0.48	≤0.35 0.22	CHF105	F	DC+	AWS A5.23M F55P3-EB2-B2	PWHT 690℃ ×1h	490	570	25	-30	100	For welding structures fabricated by 1.2Cr-0.5Mo pearlitic heat resistant steels e.g. equipments of petrochemical industry, thermal power plant and nuclear power plant made by 13CrMoA, 15CrMo, 12CrMo.	—
CHW-S12	AWS A5.17 EM12K BS EN 756-S2Si ISO 14171-A-S2Si ISO 14171-B-SU21	Standard Typical	0.05-0.15 0.08	0.80-1.25 1.06	0.10-0.35 0.22	≤0.030 0.014	≤0.030 0.016	0.025	0.026	—	≤0.35 0.10	CHF101	F	DC+ or AC	AWS A5.17 F7A4/EM12K	AW	420	510	31	-40	110	Suitable for fabricating normal strength structures made by 450MPa-500MPa tensile strength mild steels, e.g. LPG cylinder.	—
												CHF301	F	DC+ or AC	AWS A5.17 F7A0/EM12K	AW	430	540	28	-20	70		—
CHW-S13	AWS A5.23M ENi3 BS EN 755 S2Ni3 ISO 14171-A-S2Ni3 ISO 14171-B-SUN7	Standard Typical	≤0.13 0.09	0.60-1.20 1.00	0.05-0.30 0.15	≤0.020 0.009	≤0.020 0.011	≤0.15 0.03	3.10-3.80 3.45	—	≤0.35 0.12	CHF105DR	F	DC+	AWS A5.23M F48P7-ENi3-Ni3	PWHT 620℃ ×2h	480	560	28	-70	80	Suitable for welding structures made by low temperature service alloy steels, which contains 2.5Ni or 3.5Ni.	—
CHW-S14	AWS A5.17 EH14 BS EN 756 S3 ISO 14171-A- S3 ISO 14171-B- SU33	Standard Typical	0.10-0.20 0.10	1.70-2.20 1.73	≤0.10 0.02	≤0.030 0.006	≤0.030 0.009	0.016	0.037	—	≤0.35 0.18	CHF101	F	DC+	AWS A5.17 F7A4-EH14	AW	415	520	32	-40	120	Suitable for structures made by 500MPa tensile strength steels and heat cracking resisting of it is much better than normal EH14 wire since it has much lower S & P.	—
CHW-S15	AWS A5.17 EM12 BS EN 756-S2 ISO 14171-A-S2 ISO 14171-B-SU22	Standard Typical	0.06-0.15 0.080	0.80-1.25 0.91	≤0.10 0.02	≤0.030 0.005	≤0.030 0.008	0.020	0.021	—	≤0.35 0.056	CHF101	F	DC+	AWS A5.17 F6A2-EM12	AW	355	460	30	-30	150	Suitable for structures made by 450MPa tensile strength steels and heat cracking resisting of it is much better than normal EM12 wire since it has much lower S & P.	—
CHW-S16	AWS A5.23M EA2 BE EN 756-S2Mo ISO 14171-A-S2Mo ISO 14171-B-SU2M3	Standard Typical	0.05-0.17 0.09	0.95-1.35 1.10	≤0.20 0.15	≤0.025 0.008	≤0.025 0.010	—	—	0.45-0.65 0.53	≤0.35 0.11	CHF101	F	DC+	AWS A5.23M F55P2-EA2-A4	PWHT 620℃ ×1h	560	660	26	-20	100	Suitable for fabricating important structures made by 650MPa tensile strength low alloy steels, such as cranes, heavy trucks & engineering machinery,bridges and high pressue vessels, etc.	—
CHW-S18	AWS A5.17 EL8 BS EN 756-S1 ISO 14171-A-S1 ISO 14171-B-SU11	Standard Typical	≤0.10 0.07	0.25-0.60 0.40	≤0.07 0.018	≤0.030 0.011	≤0.030 0.014	—	—	—	≤0.35 0.10	CHF43	F	DC+	AWS A5.17 F6A0-EL8	AW	360	455	30	-20	75	Suitable for welding structures fabricated by 450MPa tensile strength steel, e.g. LPG cylinder or ship structures as same strength.	—
CHW-S19	AWS A5.23M EG	Typical	0.139	0.57	0.260	0.004	0.012	0.950	0.040	0.49	0.16	CHF101	F	DC+	AWS A5.23M F55P2-EG-B2	PWHT 620℃ ×1h	535	620	25	-20	150	For welding structures made by 1Cr-0.5Mo pearlitic heat resistant steels that working temperature is lower than 520℃ , e.g. pipes of industry boiler, facilities of petroleum refining plant and so on.	—

Item Code	Equivalent Norm	Chemical Composition of Wire (%)										Mechanical Properties of Deposited Metal (Typical)										Application	Remark
			C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Combined Flux	Welding Posititon	Current	Equivalent Norm	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) ℃	Akv Value (J) Joule		
CHW-91	AWS A5.23M EB9	Standard Typical	C 0.07-0.13 0.09 N 0.03-0.07 0.06	Mn ≤1.25 1.25	≤0.30 0.20	≤0.010 0.006	≤0.010 0.010	Cr 8.00-10.00 9.18 V 0.15-0.25 0.23	≤1.00 0.73	Mo 0.80-1.10 0.98 Nb 0.02-0.10 0.07	Cu ≤0.10 0.12 Al ≤0.04 0.024	CHF91	F	DC+	AWS A5.23M F62PZ-EB9-B9	PWHT 760℃ ×4h	575	685	21	20	90	Specially for welding superheaters and re-superheaters belong to subcritical, critical or supercritical boilers of thermal power plants, which fabricated by martensite heat-resisting T/P91 alloy steel.	—
CHW-SG	AWS A5.23M EG	Standard Typical	0.088	1.70	0.058	0.008	0.011	—	0.30	—	0.12	CHF101GX	F	DC+	DGS K 1101.51-2004	AW	460	550	29	-20	160	Suitable for welding 550MPa tensile strength tructures, which require extra lower S & P in weld metal, especially for spiral or longitudinal welded huge diameter pipe made by X65, X70 steels.	—
CHW-SG4	AWS A5.23M EA4	Standard Typical	0.085	1.63	0.27	0.002	0.008	—	—	0.32	0.08	CHF102GX	F	DC+	AWS A5.23M F62A2-EA4-A4	AW	550	650	25	-10	160	It is mainly for welding pipe lines fabricated by X80 steel. Also it could be used for other structures made by high strength, high toughness low alloy steels, e.g. WPHY80.	—
CHW-SH	AWS A5.23M EG	Standard Typical	0.080	1.58	0.100	0.002	0.005	0.170	0.182	—	0.13	CHF102SH	F	DC+	AWS A5.17 F7P2-EG	PWHT 620℃ ×2h	410	520	32	-30	150	It is suitable for pressure vessels of high temperature separators and recycle hydrogen knockout drums that fabricated by 16Mn（HIC）steels.	—
CHW-308	AWS A5.9 ER308 JIS Z3324 YS308 BS EN ISO 14343-B-SS308	Standard Typical	≤0.08 0.056	1.00-2.50 1.43	0.30-0.65 0.32	≤0.030 0.006	≤0.030 0.021	19.50-22.00 19.81	9.00-11.00 9.45	≤0.75 0.10	≤0.75 0.11	CHF260	F	DC+	—	AW	—	580	40	—	—	For welding austenitic stainless steel structures that require acid proof and it be used for hardfacing rolls also.	—
CHW-308L	AWS A5.9 ER308L JIS Z3324 YS308L BS EN ISO 14343-A-G(19 9 L) BS EN ISO 14343-B-SS308L	Standard Typical	≤0.03 0.023	1.00-2.50 1.68	0.30-0.65 0.59	≤0.030 0.011	≤0.030 0.019	19.50-22.00 20.88	9.00-11.00 9.12	≤0.75 0.41	≤0.75 0.20	CHF601	F	DC+	—	AW	—	530	42	—	—	For welding extra low carbon Cr18Ni8 stainless steel.	—
CHW-309	AWS A5.9 ER309 JIS Z3324 YS309 BS EN ISO 14343-A-G(22 12 H) BS EN ISO 14343-B-SS309	Standard Typical	≤0.12 0.06	1.00-2.50 2.05	0.30-0.65 0.34	≤0.030 0.010	≤0.030 0.018	23.00-25.00 23.83	12.00-14.00 13.26	—	≤0.75 0.10	CHF601	F	DC+	—	AW	—	540	38	—	—	For welding Cr22Ni12 stainless steel. The weld metal shows a good heat resistance & corrosion resistance feature. Also it could be used in dissimilar steels.	—
CHW-309L	AWS A5.9 ER309L JIS Z3324 YS309L BS EN ISO 14343-A-G(23 12 L) BS EN ISO 14343-B-SS309L	Standard Typical	≤0.03 0.026	1.00-2.50 2.11	0.30-0.65 0.38	≤0.030 0.016	≤0.030 0.014	23.00-25.00 23.56	12.00-14.00 12.31	—	≤0.75 0.13	CHF601	F	DC+	—	AW	—	530	39	—	—	For welding extra low carbon Cr24Ni13 stainless steel. It could be used for root welding also.	—
CHW-310	AWS A5.9 ER310 JIS Z3324 YS310 BS EN ISO 14343-A-G(25 20) BS EN ISO 14343-B-SS310	Standard Typical	0.08-0.15 0.09	1.00-2.50 1.90	0.30-0.65 0.35	≤0.030 0.015	≤0.030 0.014	25.00-28.00 26.80	20.00-22.50 21.40	—	≤0.75 0.12	CHF601	F	DC+	—	AW	—	560	40	—	—	For welding Cr25Ni20 stainless steel. The weld metal shows a good heat resistance & oxidation resistance feature.	—
CHW-316	AWS A5.9 ER316 JIS Z3324 YS316 BS EN ISO 14343-B-SS316	Standard Typical	≤0.08 0.04	1.00-2.50 1.88	0.30-0.65 0.33	≤0.030 0.013	≤0.030 0.018	18.00-20.00 19.27	11.00-14.00 12.70	2.00-3.00 2.26	≤0.75 0.11	CHF601	F	DC+	—	AW	—	540	38	—	—	For welding Cr18Ni12Mo2 stainless steel. The weld metal has very good heat crack resistance character.	—
CHW-316L	AWS A5.9 ER316L JIS Z3324 YS316L BS EN ISO 14343-A-G(19 12 3 L) BS EN ISO 14343-B-SS316L	Standard Typical	≤0.03 0.020	1.00-2.50 1.85	0.30-0.65 0.38	≤0.030 0.010	≤0.030 0.015	18.00-20.00 18.73	11.00-14.00 12.50	2.00-3.00 2.36	≤0.75 0.10	CHF601	F	DC+	—	AW	—	530	39	—	—	For welding extra low carbon Cr18Ni12Mo2 stainless steel. The weld metal has excellet heat crack resistance & corrosion resistance character.	—
CHW-317	AWS A5.9 ER317 JIS Z3324 YS317 BS EN ISO 14343-B-SS317	Standard Typical	≤0.08 0.04	1.00-2.50 1.86	0.30-0.65 0.46	≤0.030 0.012	≤0.030 0.017	18.50-20.50 19.30	13.00-15.00 14.20	3.00-4.00 3.50	≤0.75 0.11	CHF601	F	DC+	—	AW	—	550	38	—	—	Suitable for fabricating stainless steel containers that resisting corrosion of vitriol,ammonia, sulfurous acid or salt, etc.	—
CHW-347	AWS A5.9 ER347 JIS Z3324 YS347 BS EN ISO 14343-A-G(19 9 Nb) BS EN ISO 14343-B-SS347	Standard Typical	≤0.08 0.06	1.00-2.50 1.84	0.30-0.65 0.41	≤0.030 0.018	≤0.030 0.020	19.00-21.50 19.40	9.00-11.00 9.50	Nb 0.89	≤0.75 0.12	CHF601	F	DC+	—	AW	—	550	39	—	—	For welding important resisting corrosion structures made by 1Cr18Ni9Ti stainless steels.	—
CHW-410	AWS A5.9 ER410 JIS Z3324 YS410 BS EN ISO 14343-A-G(13) BS EN ISO 14343-B-SS410	Standard Typical	≤0.12 0.10	≤0.60 0.47	≤0.50 0.42	≤0.030 0.011	≤0.030 0.016	11.50-13.50 11.80	≤0.60 0.20	—	≤0.75 0.14	CHF601	F	DC+	—	AW	—	510	26	—	—	Hard facing surface of structures made of 0Cr13 or 1Cr13 stainless steels.	—
CHW-2209	AWS A5.9 ER2209	Standard Typical	≤0.03 0.01	0.50-2.00 1.52	≤0.90 0.60	≤0.030 0.007	≤0.030 0.011	21.50-23.50 22.90	7.50-9.50 9.27	Mo 2.50-3.50 3.23 N 0.08-0.20 0.09	≤0.75 0.10	CHF601A	F	DC+	DGS K 901.71-2007	AW	650	770	28	-30	70	It is used for welding structures of chemical carriers and facilities of petrochemical, sea water desalinization, salt works, nuclear energy that fabricated by duplex stainless steels.	—

Flux/Wire Combinations for Submerged Arc Welding

Flux/wire Combination	Norm of Combination	Type of Flux	Current	Chemical Composition of Deposited Metal (%, Standard or Typical)										Mechanical Properties of Deposited Metal (Standard & Typical)					Application	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHF101/CHW-S2	AWS A5.17 F6A0/EM12 BS EN 756-S 35 2 FB S2 ISO 14171-A-S 35 2 FB S2 ISO 14171-B-S 43A 2 FB SU22	Sintered	DC+ or AC	Standard Typical	— 0.046	— 1.14	— 0.18	— 0.014	— 0.018	— 0.040	— 0.011	— —	— 0.070	AW	≥330 370	415-550 470	≥22 30	-20℃ ≥27 120	Suitable for welding 450MPa tensile strength mild steels or low alloy steels such as 16Mn,16MnCu, etc. Widely for manufacturing LPG cylinders.	CCS, NK
CHF101/CHW-S3	AWS A5.17 F7A0/EH14 BS EN 756-S 38 2 FB S3 ISO 14171-A-S 38 2 FB S3 ISO 14171-B-S 49A 2 FB SU33	Sintered	DC+ or AC	Standard Typical	— 0.052	— 1.60	— 0.32	— 0.010	— 0.020	— 0.015	— 0.004	— —	— 0.040	AW	≥400 430	480-650 525	≥22 30	-20℃ ≥27 150	It is applied to structures fabricated by 550MPa tensile strength steels, such as ship hulls, bridges, pressure vessels, as well as H-beam structures.	CCS, LR, ABS, GL, BV, DNV, NK, CWB
CHF101/CHW-S4	AWS A5.17 F7A0/EM13K BS EN 756-S 38 2 FB S2Si2 ISO 14171-A-S 38 2 FB S2Si2 ISO 14171-B-S 49A 2 FB SU25	Sintered	DC+ or AC	Standard Typical	— 0.050	— 1.26	— 0.77	— 0.015	— 0.024	— 0.002	— 0.004	— 0.001	— 0.110	AW	≥400 425	480-650 535	≥22 32	-20℃ ≥27 110	It is applied to weld 500MPa tensile strength structures, such as bridges, pressure vessels, as well as H-beam structures.	—
CHF101/CHW-S5	AWS A5.17 F7A0/EH12K ISO 14171-B-S 49A 2 FB SU42	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.95	— 0.85	— 0.011	— 0.024	— 0.020	— 0.13	— 0.001	— 0.090	AW	≥400 450	480-650 590	≥22 26	-20℃ ≥27 85	Suitable for weld 550MPa tensile strength structures, such as bridges, pressure vessels, as well as H-beam structures.	—
CHF101/CHW-S7	AWS A5.23M F62P2/EA3-A3 BS EN 756-S 50 2 FB S3Mo ISO 14171-A-S 50 2 FB S3Mo ISO 14171-B-S 57P 2 FB SU4M3	Sintered	DC+ or AC	Standard Typical	— 0.055	— 1.75	— 0.37	— 0.008	— 0.014	— 0.020	— 0.001	— 0.420	— 0.140	PWHT 620℃ X1h	≥540 570	620-760 660	≥17 25	-20℃ ≥27 95	It is suitable for welding structures fabricated by 550MPa-650MPa tensile strength structures, such as facilities of chemical industry, bridges, pressure vessels, as well as H-beam structures.	—
CHF101/CHW-S9	AWS A5.23M F55P2/EA4-A4 BS EN 756-S 46 2 FB S3Mo ISO 14171-A-S 46 2 FB S3Mo ISO 14171-B-S 55P 2 FB SU3M3	Sintered	DC+ or AC	Standard Typical	— 0.060	— 1.52	— 0.40	— 0.006	— 0.017	— 0.060	— 0.080	— 0.350	— 0.220	PWHT 620℃ X1h	≥470 545	550-700 630	≥20 27	-20℃ ≥27 100	It is used to weld 550MPa-650MPa tensile strength structures, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, offshore drilling platforms and so on.	—
CHF101/CHW-S11	AWS A5.23M F55P2/EB2-B2	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.07	— 0.30	— 0.006	— 0.012	— 1.100	— —	— 0.400	— 0.210	PWHT 690℃ X1h	≥470 500	550-700 590	≥20 28	-20℃ ≥27 120	Suitable for welding structures fabricated by 1.25Cr-0.5Mo pearlitic heat resistant steels, such as equipments of thermal power or nuclear power plants, petrochemical industry, which made by steels of 13CrMoA, 15CrMo, 12CrMo.	—
CHF101/CHW-S12	AWS A5.17 F7A4/EM12K BS EN 756-S 38 4 FB S2Si ISO 14171-A-S 38 4 FB S2Si ISO 14171-A-S 38 4 FB S2Si	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.30	— 0.30	— 0.011	— 0.020	— 0.020	— 0.010	— —	— 0.044	AW	≥400 420	480-650 510	≥22 30	-40℃ ≥27 110	Widely used in structures fabricated by mild steel and low alloy steels, e.g. ships, H-beams, etc.	LR, ABS, GL, BV, DNV, NK
CHF101/CHW-S16	AWS A5.23M F55P2/EA2-A4 BE EN 756-S 46 2 FB S2Mo ISO 14171-A-S 46 2 FB S2Mo ISO 14171-B-S 55P 2 FB SU2M3	Sintered	DC+ or AC	Standard Typical	— 0.065	— 1.31	— 0.40	— 0.006	— 0.017	— —	— —	— 0.420	— 0.100	PWHT 620℃ X1h	≥470 560	550-700 660	≥20 26	-20℃ ≥27 100	It is used to weld structures made by 550MPa-650MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—
CHF102/CHW-S3	AWS A5.17 F7A4/EH14 BS EN 756-S 38 4 FB S3 ISO 14171-A-S 38 4 FB S3 ISO 14171-B-S 49A 4 FB SU33	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.72	— 0.37	— 0.011	— 0.020	— 0.012	— 0.006	— —	— 0.045	AW	≥400 435	480-650 550	≥22 30	-40℃ ≥27 100	Suitable for welding structures made by 550MPa tensile strength carbon steels or low alloy steels such as press vessels, boilers,equipment of petrochemical industry, etc.	—
CHF102/CHW-S10	AWS A5.23M F69A4/EF3-F3	Sintered	DC+ or AC	Standard Typical	— 0.068	— 1.85	— 0.53	— 0.007	— 0.015	— 0.076	— 1.21	— —	— 0.151	AW	≥610 614	690-830 806	≥16 23.4	-40℃ ≥27 105	It is used to important structures made by 650MPa-800MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—
CHF102A/CHW-SG	AWS A5.23 F7A4/EG	Sintered	DC+ or AC	Standard Typical	— 0.067	— 1.55	— 0.45	— 0.006	— 0.015	— —	— 0.255	— —	— 0.100	AW	≥375 490	490-660 580	≥22 28	-40℃ ≥27 140	Suitable for welding important structures, e.g. offshore drilling platforms, which diffusion hydrogen required extra lower.	BV
CHF103/CHW-S2	AWS A5.17 F6A4/EM12 BS EN 756-S 35 4 FB S2 ISO 14171-A-S 35 4 FB S2 ISO 14171-B-S 43A 4 FB SU22	Sintered	DC+ or AC	Standard Typical	— 0.070	— 0.95	— 0.20	— 0.014	— 0.017	— 0.040	— 0.010	— —	— 0.210	AW	≥330 360	415-550 480	≥22 31	-40℃ ≥27 110	It is suitable for weld 450MPa-500MPa tensile strength structures, such as boilers, bridges, pressure vessels, as well as LPG cylinders.	—
CHF105/CHW-S3	AWS A5.17 F7A4/EH14 BS EN 756-S 38 4 FB S3 ISO 14171-A-S 38 4 FB S3 ISO 14171-B-S 49A 4 FB SU33	Sintered	DC+	Standard Typical	— 0.065	— 1.25	— 0.35	— 0.009	— 0.015	— 0.010	— 0.034	— —	— 0.044	AW	≥400 430	480-650 510	≥22 28	-40℃ ≥27 120	Suitable for welding structures fabricated by 500MPa-550MPa tensile strength carbon steel or low alloy steels.	—
CHF105/CHW-S9	AWS A5.23M F55A3/EA4-A2 BS EN 756-S 46 3 FB S3Mo ISO 14171-A-S 46 3 FB S3Mo ISO 14171-B-S 55A 3 FB SU3M3	Sintered	DC+	Standard Typical	— 0.065	— 1.12	— 0.54	— 0.005	— 0.014	— 0.080	— 0.060	— 0.340	— 0.150	AW	≥470 530	550-700 625	≥20 23	-30℃ ≥27 70	It is used to weld structures made by 550MPa-650MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—

Flux/wire Combination	Norm of Combination	Type of Flux	Current	Chemical Composition of Deposited Metal (%, Standard or Typical)										Mechanical Properties of Deposited Metal (Standard & Typical)					Application	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHF105/CHW-S10	AWS A5.23M F69P3/EF3-F3 ISO 14171-A-S3Ni1Mo ISO 14171-B-SUN2M31	Sintered	DC+	Standard Typical	— 0.070	— 1.42	— 0.45	— 0.008	— 0.017	— 0.060	— 0.710	— 0.490	— 0.190	PWHT 620℃ X1h	≥610 660	690-830 735	≥16 24	-30℃ ≥27 70	It is used to important structures made by 650MPa-800MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—
CHF105/CHW-S11	AWS A5.23M F55P3/EB2-B2	Sintered	DC+	Standard Typical	— 0.070	— 0.63	— 0.39	— 0.006	— 0.016	— 1.120	—	— 0.400	— 0.200	PWHT 690℃ X1h	≥470 490	550-700 570	≥20 25	-30℃ ≥27 100	Suitable for welding structures fabricated by 1.2Cr-0.5Mo pearlitic heat resistant steels, such as facilities of thermal power plant, nuclear power plant and petrochemical industry that made by steels of 13CrMoA, 15CrMo, 12CrMo.	—
CHF113/CHW-S7	AWS A5.23M F62P4/EA3-A3 BE EN 756-S 50 4 FB S3Mo ISO 14171-A-S 50 4 FB S3Mo ISO 14171-B-S 57P 4 FB SU4M3	Sintered	DC+	Standard Typical	— 0.060	— 1.79	— 0.29	— 0.010	— 0.018	— 0.50	—	— 0.420	— 0.110	PWHT 620℃ X1h	≥540 600	620-760 690	≥17 24	-40℃ ≥27 60	it is suitable for structures made by 650MPa tensile strength low alloy steel, which need high toughness, e.g. bridges, heavy machinery, facilities of chemical industry.	—
CHF115/CHW-S7	AWS A5.23M F69P2/EA3-A3 BS EN 756-S 50 2 FB S3Mo ISO 14171-A-S 50 2 FB S3Mo ISO 14171-B-S 57P 2 FB SU4M3	Sintered	DC+	Standard Typical	— 0.060	— 1.80	— 0.25	— 0.008	— 0.015	— 0.50	—	— 0.450	— 0.150	PWHT 620℃ X1h	≥610 630	690-830 735	≥16 23	-20℃ ≥27 100	it is suitable for structures made by 700MPa tensile strength low alloy steel, which need high toughness, e.g. bridges, heavy machinery, facilities of chemical industry.	—
CHF250G/CHW-S9	AWS A5.23M F55A2/EA4-A2 BS EN 756-S 46 2 AS S3Mo ISO 14171-A-S 46 2 AS S3Mo ISO 14171-B-S 55A 2 AS SU3M3	Fused	DC+	Standard Typical	— 0.060	— 1.16	— 0.45	— 0.008	— 0.013	—	—	— 0.330	— 0.190	AW	≥470 495	550-700 580	≥20 22	-20℃ ≥27 70	It is suitable for welding structures made by 550MPa tensile strength low alloy steels,e.g. pressure vessels in petrochemical industry and nuclear industry. Also the flux could be used in electroslag welding (ESW).	—
CHF260/CHW-308L	GB/T 17854 F308L-H03Cr21Ni-10Si	Fused	DC+	Standard Typical	≤0.03 0.023	1.00-2.50 1.68	0.30-0.65 0.59	≤0.03 0.011	≤0.03 0.019	19.50-22.00 20.88	9.00-11.00 9.12	≤0.75 0.41	≤0.75 0.20	AW	— 396	≥480 622	≥25 36	25℃ ≥60 90	For welding structures made by low carbon Cr18Ni8 stainless steels.	—
CHF26H/CHW-S7CG	AWS A5.23M F62P3/EA3-A4	Sintered	DC+ or AC	Standard Typical	— 0.051	— 1.41	— 0.37	— 0.007	— 0.012	—	—	— 0.490	— 0.120	PWHT 580℃ X2.5h	≥490 550	≥610 650	≥20 26	-30℃ ≥47 70	Suitable for multi-pass & multi-layer with horizontal butting welding of 610MPa tensile strength low alloy steels, particularlly for jumbo oil reserving tanks.	—
CHF301/CHW-S1	AWS A5.17 F6A0/EL12 BS EN 756-S 35 2 CS S1 ISO 14171-A-S 35 2 CS S1 ISO 14171-B-S 43A 2 CS SU11	Sintered	DC+ or AC	Standard Typical	— 0.058	— 0.86	— 0.58	— 0.015	— 0.024	—	—	—	— 0.060	AW	≥330 365	415-550 470	≥22 30	-20℃ ≥27 60	For structures fabricated by 450MPa tensile strength mild steels or low alloy steels.	—
CHF301/CHW-S12	AWS A5.17 F7A0/EM12K BS EN 756-S 38 2 CS S2Si ISO 14171-A-S 38 2 CS S2Si ISO 14171-B-S 49A 2 CS SU21	Sintered	DC+ or AC	Standard Typical	— 0.060	— 1.30	— 0.75	— 0.010	— 0.025	— 0.020	— 0.010	—	— 0.050	AW	≥400 430	480-650 540	≥22 28	-20℃ ≥27 70	Suitable for structures fabricated by 500MPa tensile strength mild steels or low alloy steels, e.g. boilers, LPG cylinders, etc.	—
CHF302/CHW-S2	AWS A5.17 F7A0/EM12 BS EN 756-S 38 2 CS S2 ISO 14171-A-S 38 2 CS S2 ISO 14171-B-S 49A 2 CS SU22	Sintered	DC+ or AC	Standard Typical	— 0.059	— 1.13	— 0.57	— 0.012	— 0.020	— 0.022	— 0.004	—	— 0.100	AW	≥400 415	480-650 510	≥22 28	-20℃ ≥27 70	Suitable for structures fabricated by 500MPa tensile strength mild steels or low alloy steels, e.g. boilers, LPG cylinders, etc.	—
CHF330/CHW-S3	AWS A5.17 F6AZ/EH14 ISO 14174-S F MS 1 EN 760-S F MS 1	Fused	DC+ or AC	Standard Typical	— 0.055	— 1.39	— 0.43	— 0.011	— 0.036	— 0.017	— 0.010	—	— 0.076	AW	≥330 380	415-550 490	≥22 31	0℃ ≥27 70	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels, e.g. boilers, pressure vessels.	—
CHF331/CHW-S3	AWS A5.17 F7A0/EH14 BS EN 756-S 38 2 MS S3 ISO 14171-A-S 38 2 MS S3 ISO 14171-B-S 49A 2 MS SU33	Fused	DC+ or AC	Standard Typical	— 0.070	— 1.40	— 0.38	— 0.013	— 0.020	—	—	—	— 0.110	AW	≥400 415	480-650 525	≥22 27	-20℃ ≥27 70	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels.	—
CHF350/CHW-S3	AWS A5.17 F6A0/EH14 ISO 14174-S F MS 1 EN 760-S F MS 1	Fused	DC+ or AC	Standard Typical	— 0.044	— 1.31	— 0.33	— 0.008	— 0.037	— 0.034	— 0.030	—	— 0.12	AW	≥330 370	415-550 480	≥22 28	-20℃ ≥27 80	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels.	—
CHF43/CHW-S1	AWS A5.17 F6A0/EL12	Fused	DC+ or AC	Standard Typical	— 0.055	— 1.00	— 0.38	— 0.021	— 0.028	—	—	—	— 0.220	AW	≥330 360	415-550 450	A5 ≥22 29	-20℃ ≥34 80	Suitable for welding structures fabricated by 450MPa tensile strength steels, e.g. LPG cylinder as well as ship structures with same strength.	CCS, LR, ABS, GL, BV, DNV
CHF43/CHW-S18	AWS A5.17 F6A2/EL8	Fused	DC+ or AC	Standard Typical	0.056	1.08	0.35	0.02	0.026	—	—	—	0.2	AW	≥330 370	415-550 470	≥22 29	-20℃ ≥34 85	Suitable for welding structures fabricated by 450MPa tensile strength steels, e.g. LPG cylinder as well as ship structures with same strength.	—
CHF501/CHW-S1	AWS A5.17 F7AZ/EL12 BS EN 756-S 38 0 AR S1 ISO 14171-A-S 38 0 AR S1 ISO 14171-B-S 49A 0 AR SU11	Sintered	DC+ or AC	Standard Typical	— 0.069	— 1.06	— 0.56	— 0.014	— 0.028	—	—	—	— 0.200	AW	≥400 425	480-650 530	≥22 29	0℃ ≥27 70	It is used for welding structures around 500MPa tensile strength of boilers, ships, pressure vessels. Particularly it is suitable for high speed welding thin steel plate.	—
CHF501/CHW-S2	AWS A5.17 F7AZ/EM12	Sintered	DC+ or AC	Standard Typical	— 0.062	— 1.30	— 0.58	— 0.009	— 0.039	— 0.028	— 0.015	— 0.001	— 0.117	AW	≥400 450	480-650 550	≥22 30	0℃ ≥27 60	It is used for welding structures made by 550MPa mild steels or low alloy steels, e.g. boilers, pressure vessels and bridges. It is suitable for high speed welding thin steel plate.	—

Flux/wire Combination	Norm of Combination	Type of Flux	Current	Chemical Composition of Deposited Metal (%, Standard or Typical)										Mechanical Properties of Deposited Metal (Standard & Typical)					Application	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHF601/CHW-308	GB/T 17854 F308/H0Cr21Ni10	Sintered	DC+	Standard Typical	— 0.030	— 1.23	— 0.47	— 0.013	— 0.025	— 19.20	— 9.42	— —	— —	AW	—	≥520 590	≥30 42	—	For welding structures made by Cr18Ni8 stainless steels of facilities in petrochemicl industry.	—
CHF601/CHW-316	—	Sintered	DC+	Standard Typical	— 0.025	— 1.86	— 0.67	— 0.013	— 0.025	— 17.80	— 11.30	— 2.10	— 0.020	AW	—	≥520 600	≥25 30	—	For welding Cr18Ni12Mo2 stainless steel. The weld metal has very good heat crack resistance character.	—
CHF601A/CHW-2209	DGS K 901.71-2007	Sintered	DC+	Standard Typical	— 0.018	— 1.16	— 0.62	— 0.015	— 0.010	— 23.60	— 8.47	— 3.49	— 0.021	AW	≥480 650	690-900 770	≥25 28	-30℃ ≥35 70	It is used for welding structures of chemical carriers and facilities of petrochemical, sea water desalinization, salt works, nuclear energy that fabricated by duplex stainless steels.	—
CHF603/CHW-S8	AWS A5.23M F48PZ/EB3-B3	Sintered	DC+	Standard Typical	— 0.070	— 0.72	— 0.10	— 0.004	— 0.011	— 2.030	— —	— 0.870	— 0.120	PWHT 690℃ X4h	≥314 518	520-690 600	≥19 22	25℃ ≥61 160	Widely be used in welding important thick hull pressure vessels of nuclear reactors as well as important steam pipes of thermal power stations.	—
CHF611/CHW-S4	AWS A5.17 F7AZ/EM13K ISO 14171-A-S 38 0 Z S2Si2 ISO 14171-B-S 49A 0 Z SU25	Sintered	DC+ or AC	Standard Typical	— 0.061	— 1.76	— 0.95	— 0.016	— 0.018	—	—	—	— 0.190	AW	≥400 560	480-650 620	≥22 30	0℃ ≥27 55	Suitable for high speed welding with both single wire or twin wires. Application for structures fabricated by mild steel or low grade low alloy steels.	—
CHF71H/CHW-S3	AWS A5.17 F7A0-EH14 BS EN 756-S 38 2 MS S3 ISO 14171-A-S 38 2 MS S3 ISO 14171-B-S 49A 2 MS SU33	Sintered	DC+ or AC	Standard Typical	— 0.067	— 1.58	— 0.51	— 0.012	— 0.015	—	—	—	— 0.10	AW	≥400 420	480-650 535	≥22 27	-20℃ ≥27 65	It is used to multipass & multilayer with horizontal butting welding structures made by 600MPa-650MPa tensile strength low alloy steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—

Solid Wires for Copper & Copper Alloy

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, Typical)								Mechanical Properties of Deposited Metal (Typical)						Application
				Cu	Sn	Mn	Si	Al	Pb	P	Others	Hardness of Deposited Metal HB	Yield Strength Rp0.2 (MPa)	Tensile Strength Rm (MPa)	Elongation A(%)	welding Condition	Shield Gas	
CHG-Cu1898	AWS A5.7 ERCu EN ISO 24373-S Cu 1898(CuSn1)	F,HF,V,	DC-	≥98.0 98.37	≤1.0 0.77	≤0.5 0.35	≤0.5 0.35	≤0.01 0.001	≤0.02 0.002	≤0.15 0.07	≤0.50	72	175	285	32	TIG Rod	Ar	Used for TIG welding and OAW (oxy-acetylene welding) structures fabricated by deoxidized copper or red copper.
CHM-Cu1898	AWS A5.7 ERCu EN ISO 24373-S Cu 1898(CuSn1)	F,HF,V,	DC+	≥98.0 98.37	≤1.0 0.77	≤0.5 0.35	≤0.5 0.35	≤0.01 0.001	≤0.02 0.002	≤0.15 0.07	≤0.50	72	175	285	32	MIG Wire	Ar	Used for MIG structures fabricated by deoxidized copper or red copper.
CHG-Cu5180	AWS A5.7 ERCuSn-A EN ISO 24373-S Cu 5180(CuSn5P)	F,HF,V,	DC-	Remain	—	4.0-6.0 5.54	—	≤0.01 0.005	≤0.02 0.006	0.1-0.35 0.12	≤0.50	80	240	340	25	TIG Rod	Ar	Suitable for butt welding copper with rhinemetal or brass with steels, particularly it is suitable for repair welding copper castings.
CHM-Cu5180	AWS A5.7 ERCuSn-A EN ISO 24373-S Cu 5180(CuSn5P)	F,HF,V,	DC+	Remain	—	4.0-6.0 5.54	—	≤0.01 0.005	≤0.02 0.006	0.1-0.35 0.12	≤0.50	80	240	340	25	MIG Wire	Ar	Suitable for butt welding copper with rhinemetal or brass with steels, particularly it is suitable for repair welding copper castings.
CHG-Cu6100	AWS A5.7 ERCuAl-A1 EN ISO 24373-S Cu 6100(CuAl7)	F,HF,V,	DC-	Remain	—	≤0.5 0.32	≤0.1 0.08	6.0-8.5 7.13	≤0.02 0.002	Zn≤0.2 0.005	≤0.50	105	270	450	34	TIG Rod	Ar	Suitable for butt welding or surfacing copper aluminium alloys, aluminizing steels and ferrosteels; butt welding copper aluminium alloy anticorrosive tube with special brass; surfacing propellers of ships, sliding guideways of machines and so on.
CHM-Cu6100	AWS A5.7 ERCuAl-A1 EN ISO 24373-S Cu 6100(CuAl7)	F,HF,V,	DC+	Remain	—	≤0.5 0.32	≤0.1 0.08	6.0-8.5 7.13	≤0.02 0.002	Zn≤0.2 0.005	≤0.50	105	270	450	34	MIG Wire	Ar	Suitable for butt welding or surfacing copper aluminium alloys, aluminizing steels and ferrosteels; butt welding copper aluminium alloy anticorrosive tube with special brass; surfacing propellers of ships, sliding guideways of machines and so on.
CHG-Cu6560	AWS A5.7 ERCuSi-A EN ISO 24373-S Cu 6560(CuSi3Mn)	F,HF,V,	DC-	Remain	≤0.1 0.06	≤1.5 0.96	2.8-4.0 2.93	≤0.01 0.002	≤0.02 0.004	Zn≤1.0 0.05	≤0.50	95	260	380	35	TIG Rod	Ar	Used for dissimilar metal TIG welding and surfacing of copper with cast iron or copper with steel, as well as for brazing galvanized steel sheet, such as brazing doorframes of motor vehicles and motorcycle parts, surfacing rubbing surface of locomotives & carriages and heavy machineries.
CHM-Cu6560	AWS A5.7 ERCuSi-A EN ISO 24373-S Cu 6560(CuSi3Mn)	F,HF,V,	DC+	Remain	≤0.1 0.06	≤1.5 0.96	2.8-4.0 2.93	≤0.01 0.002	≤0.02 0.004	Zn≤1.0 0.05	≤0.50	95	260	380	35	MIG Wire	Ar	Used for dissimilar metal surfacing of copper with cast iron or copper with steel, as well as for brazing galvanized steel sheet, such as brazing doorframes of motor vehicles and motorcycle parts, surfacing rubbing surface of locomotives & carriages and heavy machineries.

Solid Wires for Aluminum & Aluminium Alloy

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, Typical)										Mechanical Properties of Deposited Metal (Typical)					Application
				Si	Fe	Cu	Mn	Mg	Zn	Ti	Al	Be	Others	Yield Strength Rp0.2 (MPa)	Tensile Strength Rm (MPa)	Elongation A(%)	welding Condition	Shield Gas	
CHG-Al 1100	AWS A5.10 ER100/R1100 EN ISO 18273-S Al 1100(Al99.0Cu)	F,HF,V,	AC	Si+Fe≤0.95 0.26		0.05-0.20 0.080	≤0.05 0.006	—	≤0.10 0.008	—	≥99.0 Remain	≤0.0003 0.0001	—	35	95	24	TIG Rod	Ar	Used for welding aluminium structures of industries of electricity, chemical, foodstuff, metallurgy, locomotives & carriages and so on.
CHM-Al 1100	AWS A5.10 ER100/R1100 EN ISO 18273-S Al 1100(Al99.0Cu)	F,HF,V,	DC+	Si+Fe≤0.95 0.26		0.05-0.20 0.080	≤0.05 0.006	—	≤0.10 0.008	—	≥99.0 Remain	≤0.0003 0.0001	—	35	95	24	MIG Wire	Ar	Used for welding aluminium structures of industries of electricity, chemical, foodstuff, metallurgy, locomotives & carriages and so on.
CHG-Al 4043	AWS A5.10 ER4043/R4043 EN ISO 18273-S Al 4043(AlSi5)	F,HF,V,	AC	4.5-6.0 5.2	≤0.80 0.15	≤0.30 0.009	≤0.05 0.008	≤0.05 0.006	≤0.10 0.004	≤0.20 0.07	Remain	≤0.0003 0.0001	—	110	150	14	TIG Rod	Ar	Used for welding aluminium alloy structures of ships, locomotives & carriages, motor vehicles, containers, sports apparatus, furniture as well as industries of chemical, foodstuff and machelloning, etc.
CHM-Al 4043	AWS A5.10 ER4043/R4043 EN ISO 18273-S Al 4043(AlSi5)	F,HF,V,	DC+	4.5-6.0 5.2	≤0.80 0.15	≤0.30 0.009	≤0.05 0.008	≤0.05 0.006	≤0.10 0.004	≤0.20 0.07	Remain	≤0.0003 0.0001	—	110	150	14	MIG Wire	Ar	Used for welding aluminium alloy structures of ships, locomotives & carriages, motor vehicles, containers, sports apparatus, furniture as well as industries of chemical, foodstuff and machelloning, etc.
CHG-Al 5183	AWS A5.10 ER5183/R5183 EN ISO 18273-S Al 5183(AlMg4.5Mn0.7A)	F,HF,V,	AC	≤0.40 0.08	≤0.40 0.12	≤0.10 0.006	0.50-1.0 0.65	4.3-5.2 4.75	≤0.25 0.005	≤0.15 0.08	Remain	≤0.0003 0.0001	Cr 0.05-0.25 0.130	150	280	18	TIG Rod	Ar	Used for welding aluminium magnesium alloy structures of ships, offshore platforms, locomotives & carriages, motor vehicles, containers, cryogenic vessels and so on. Its weld metal has good resistance to brine corrosion.
CHM-Al 5183	AWS A5.10 ER5183/R5183 EN ISO 18273-S Al 5183(AlMg4.5Mn0.7A)	F,HF,V,	DC+	≤0.40 0.08	≤0.40 0.12	≤0.10 0.006	0.50-1.0 0.65	4.3-5.2 4.75	≤0.25 0.005	≤0.15 0.08	Remain	≤0.0003 0.0001	Cr 0.05-0.25 0.130	150	280	18	MIG Wire	Ar	Used for welding aluminium magnesium alloy structures of ships, offshore platforms, locomotives & carriages, motor vehicles, containers, cryogenic vessels and so on. Its weld metal has good resistance to brine corrosion.
CHG-Al 5356	AWS A5.10 ER5356/R5356 EN ISO 18273-S Al 5356(AlMg5CrA)	F,HF,V,	AC	≤0.25 0.05	≤0.40 0.13	≤0.10 0.08	0.05-0.20 0.12	4.5-5.5 4.85	≤0.10 0.008	0.05-0.20 0.10	Remain	≤0.0003 0.0001	Cr 0.05-0.20 0.070	150	265	20	TIG Rod	Ar	used for welding or surfacing structures of wrought aluminum alloy or cast aluminum alloy that contains 5% magnesium (Mg), such as bicycles, sports apparatus, locomotives & carriages, motor vehicles, ships as well as pressure vessels of chemical industry, aviation industry, armament and so on.
CHM-Al 5356	AWS A5.10 ER5356/R5356 EN ISO 18273-S Al 5356(AlMg5CrA)	F,HF,V,	DC+	≤0.25 0.05	≤0.40 0.13	≤0.10 0.08	0.05-0.20 0.12	4.5-5.5 4.85	≤0.10 0.008	0.05-0.20 0.10	Remain	≤0.0003 0.0001	Cr 0.05-0.20 0.070	150	265	20	MIG Wire	Ar	used for welding or surfacing structures of wrought aluminum alloy or cast aluminum alloy that contains 5% magnesium (Mg), such as bicycles, sports apparatus, locomotives & carriages, motor vehicles, ships as well as pressure vessels of chemical industry, aviation industry, armament and so on.

● ABBREVIATIONS

ABBREVIATION OF STANDARDS 采用标准代号

AWS	American Welding Society	美国焊接协会标准
BS	British Standards	英国国家标准
CSA	Canadian Standards Association	加拿大标准协会标准
CWB	Canadian Welding Bureau	加拿大焊接局
DIN	Dectsche Industrie Normen	德国工业标准
EN	European Normen	欧盟标准
GB	Chinese National Standards	中国国家标准
ISO	International Standard Organization	国际标准化组织标准
JIS	Japanese Industrial Standards	日本工业标准

ABBREVIATION OF WELDING 焊接名词符号

AAW	Argon Arc Welding	氩弧焊
CO_2 W	Carbon-dioxide Gas Shield Arc Welding	二氧化碳气体保护电弧焊
ESW	Electro-slag Welding	电渣焊
FCW	Flux-cored Wire	药芯焊丝
MCW	Metal Powder Cored Wire	金属粉芯焊丝
GMAW	Metal Gas Arc Welding	熔化极气体保护电弧焊
MAG	Metal Active Gas Arc Welding	熔化极活性气体保护电弧焊
MGAW	Mixed Gas Arc Welding	混合气体保护电弧焊
MIG	Metal Inert Gas Arc Welding	熔化极惰性气体保护电弧焊
SAW	Submerged Arc Welding	埋弧焊
SMAW	Shielded Metal Arc Welding (Manual Metal Arc Welding)	手工电弧焊
TIG (GTAW)	Tungsten Inert Gas Arc Welding	钨极惰性气体保护电弧焊

NOTATION OF WELDING POSITIONS 焊接位置标示

F	Flat Welding or Downhand Welding	平焊
H	Horizontal Welding	横焊
HF	Horizontal Fillet Welding	横角焊
OH	Overhead Welding	仰焊
V	Vertical Up Welding	向上立焊
VD	Vertical Down Welding	向下立焊

POSTWELD CONDITION 焊接试样(状态)条件

AW	As-welded	焊态
PWHT	Postweld Heat Treated	焊后热处理

● DIMENSIONS OF STANDARD PACKING FOR WELDING RODS

For Carbon Steel Welding Rods (L×W×H mm)

Length of Rod	5kg Paper Box	20kg Carton	1,000kg Pallet
300	308×83×60	325×256×95	980×770×720
350	358×78×53	375×228×90	1200×750×600
400	408×72×52	425×224×84	1200×850×570
450	458×72×46	475×200×83	1000×950×570
500	508×65×52	525×224×77	1120×1050×540

Carbon steel welding rods on pallet
5kg / box / shrink wrapped,
then 20kg (4 boxes) / carton,
last 1,000kg (50 cartons) / pallet

For Stainless Steel & Cast Iron Welding Rods (L×W×H mm)

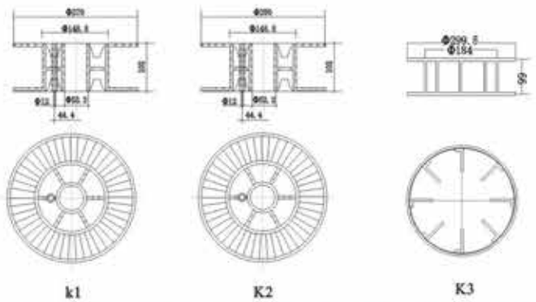
Length of Rod	2kg Plastic Box	20kg Carton	Pallet (L×W)
250	270×66×50	295×346×113	1040×890
300	320×66×42	345×348×97	1050×1040
350	370×66×32	395×344×84	1030×790
400	420×66×30	442×346×74	1040×890

● DIMENSIONS OF PACKING FOR MAG/MIG WIRES

For Spool Packing of MAG/MIG Wires (mm)

kgs/Spool	Carton(L×W×H)	Pallet(L×W×H)	
20kgs/Spool	295×290×105	1,200kgs (60spools)	1,160×860×670
15kgs/Spool	265×260×105	1,080kgs (72spools)	1,080×760×800
15kgs/Spool	265×260×105	900kgs (60spools)	1,080×760×690

Remark: Wires are precision layer wound on spool



MAG / MIG wires on spool
20kg / spool / carton,
then 1,200kg (60 spools) / pallet

Specification of Spools for MAG/MIG Wires (mm)

Code of Spool	K1	K2	K3
Material	Plastic	Plastic	Metal Wire
kgs/Spool	20kgs	15kgs	20kgs

For Kraft Drum (Pail) Packing of MAG/MIG Wires (mm)

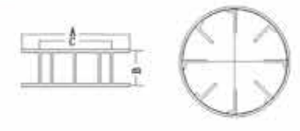
Kg/Drum	Diameter×High	Pallet (L×W×H)	
350kgs	660×760	700kgs(2Drums)	1,360×680×900
250kgs	520×800	1,000kgs(4Drums)	1,050×1,050×930
100kgs	520×520	400kgs(4Drums)	1,050×1,050×650

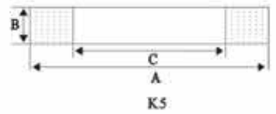
MAG / MIG wires in drum (pail)
250kg / drum, then 1,000kg (4 drums) / pallet
350kg / drum, then 700kg (2 drums) / pallet

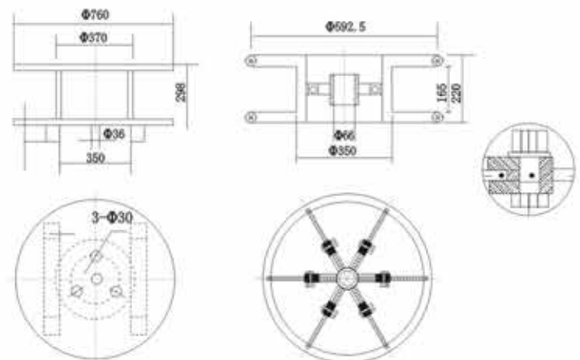
● DIMENSIONS OF PACKING FOR SAW WIRES

Packing for SAW Wires (mm)

Weight of Wire		25kgs/ Spool (K4)	25kgs/Coill (K5)	250kgs/Coill (K5)	350kgs/Coill (K5)
Dimensions	A	420	400	840	890
	B	90	90	180	180
	C	310	310	640	640
Dimensions of Carton		435×435×100	410×410×100		
Dimensions of Pallet (Crate)		950×950×1100	880×880×850	850×850×500	880×880×500







Specification of Reels for SAW Wires (mm)

Code of Reel	K6	K7
Material	Wooden	Steel
Weight of Wire	200-250kgs	200-250kgs