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WELDING CONSUMABLES



大西洋

®

ATLANTIC

SINCE 1950

ATLANTIC

WELDING CONSUMABLES

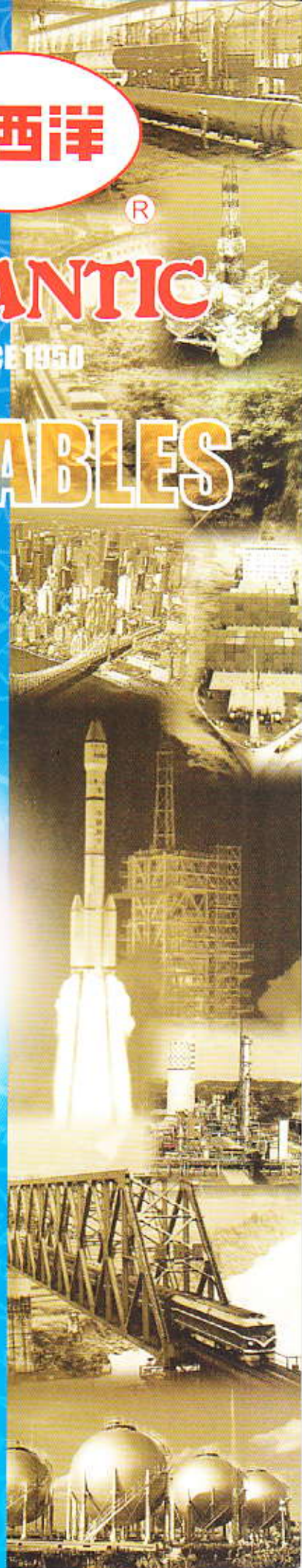
大西洋焊接材料



ISO 9001
APPROVED FIRM

四川大西洋焊接材料股份有限公司
ATLANTIC CHINA WELDING CONSUMABLES, INC.

(中国电焊条厂)
CHINA WELDING ELECTRODE PLANT



大西洋

ATLANTIC

SINCE 1950



The Certificate of ISO 9001 Quality Management System of ATLANTIC

The Laboratory Accreditation Certificate of ISO 17025 of ATLANTIC

APPROVALS:



CCS
中国船级社
China Classification Society



LR
英国劳埃德船级社
Lloyd's Register of Shipping



ABS
美国船级社
American Bureau of Shipping



GL
德国劳埃德船级社
Germanischer Lloyd



BV
法国船级社
Bureau Veritas



DNV
挪威船级社
Det Norske Veritas



NK
日本海事协会
Nippon Kaiji Kyokai



BKI
印尼船级社
PT. Biro Klasifikasi Indonesia



KR
韩国船级社
Korean Register of Shipping



CWB
加拿大焊接局
Canadian Welding Bureau



CE
欧盟标准委员会
Conformite Europeenne



DB
德国铁路公司
Deutsche Bahn AG



TUV
德国技术监督协会
Technischer Überwachungs-Verein

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ATLANTIC CHINA WELDING CONSUMABLES, INC.

四川大西洋焊接材料股份有限公司



With a sixty years experience, ATLANTIC CHINA WELDING CONSUMABLES, INC. grew out of CHINA WELDING ELECTRODE PLANT, which is the first welding consumable manufactory in China and nowadays it has become a public listed incorporation in Shanghai Stock Exchange as well as the leading one in China. The famous trademark "ATLANTIC" was registered in 1950 and it is awarded the "Well-known Trademarks in China". The head-office of ATLANTIC is located in Zigong which covers an area of 99,900 square meters and it has 7 sub-factories in China. The output of ATLANTIC products was more than 350,000 metric tons in 2008. The "ATLANTIC" welding consumables are over 400 types, which divided into welding rods, welding wires and automatic welding fluxes three categories. The products include mild steel rods, cellulose rods, high toughness steel rods, low alloy steel rods, hardfacing rods, stainless steel rods, low temperature steel rods, Mo and Cr-Mo heat resistant steel rods, cast iron rods, Ni and Ni alloy rods; wires suitable for MAG, MIG, TIG, SAW, FCW and MCW (Metal Alloy Powder Cored Wire) welding; fluxes are classified into fused, sintered (agglomerated) and bonded types for submerged arc welding (SAW) and electroslag welding (ESW). A new producing base of ATLANTIC is being constructed, which covers a land of 136,300 square meters and when it is accomplished the output of ATLANTIC products will be over 400,000 metric tons per year.

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. at home and abroad. Such as world known projects: Three Gorges Dam Project on Yangtse River and Xiaolangdi Key Water Control Project on Yellow River, Qinshan, Tianwan and Lingao (Daya Bay) Nuclear Power Stations, the 4,000km long West-to-East Gas Transmission Pipe Line, the jumbo oil tanks of the National Strategic Petroleum Reserves in China and the Hangzhou Bay Bridge, it is the longest marine span bridge in the world and so on. Also the amazing architectural complex in Beijing: 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 main products of "ATLANTIC" are approved by the 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), Deutsche Bahn AG (DB), Canadian Welding Bureau (CWB) as well as CE (Conformite Europeenne). Lloyd's Register Quality Assurance (LRQA) approves the ISO 9001 Quality Management System of ATLANTIC CHINA WELDING CONSUMABLES, INC. and The Inspection Department of ATLANTIC is the only one achieves ISO 17025 "Laboratory Accreditation Certificate" in the 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“中国驰名商标”称号。“大西洋”焊接材料分电焊条、焊丝和焊剂三大类400多个品种。2008年产销量超35万吨。四川大西洋焊接材料股份有限公司目前有七个生产工厂, 位于自贡的公司总部占地面积99,900余平方米。主要产品有碳钢电焊条、纤维素电焊条、低合金钢电焊条、不锈钢电焊条、低温钢电焊条、钎及铬钼耐热钢电焊条、镍及镍合金电焊条、堆焊电焊条、铸铁电焊条; MAG、MIG和TIG的气体保护焊丝、埋弧自动焊丝、药芯焊丝和金属粉芯焊丝; 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。目前, 一个占地205亩的新生产基地正在紧锣密鼓地建设中, 并已出产品。待工程全面完成后, “大西洋”的年产量将超40万吨。

“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井平台等重要工程, 如举世闻名的长江三峡工程、黄河小浪底工程、大亚湾岭澳核电站、秦山核电站、田湾核电站、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、中央电视台新大厦、国家石油战略储备工程以及目前世界第一长的杭州湾跨海大桥等。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)、德国铁路股份有限公司 (DB)、加拿大焊接局 (CWB) 认可, 以及欧盟CE认证。公司质量管理体系通过英国劳氏质量认证有限公司 (LRQA) ISO 9001 认证。公司检测所是目前国内同行业唯一通过ISO 17025中国合格评定国家认可委员会认可的实验室。



ACHIEVEMENTS OF "ATLANTIC"



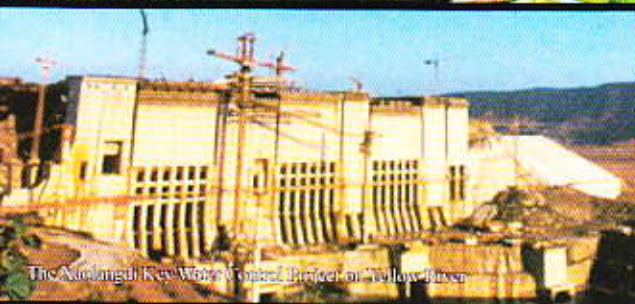
The Lingao (Daya Bay) Nuclear Power Station, near Hong Kong.



Atomic Energy of Canada Limited is the general contractor of Gando Project of Qomshen Nuclear Power Station.



The Tianwan Nuclear Power Station in Jiangsu, China.



The Xiangshui Key Water Control Project on Yellow River.



The Longtan Hydropower Station on the Hongshui River, Guangxi, China.



Three 1000MW Pressurized Water Reactor (PWR) Generators for Lingao (Daya Bay) Nuclear Power Station manufactured by Jiangling Boiler Group Co., Ltd.



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



The grand sight of Erbin Hydropower Station, Sichuan Province.



The windpower field at Dabashan, Ningbo, China.



A 1,000MW ultra-supercritical Thermal Power Plant located in Tianjin, Shandong, China.



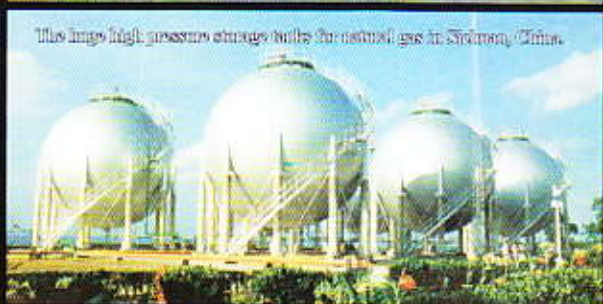
A 155,000t Capesize bulk carrier built by Shanghai Waigaoqiao Shipbuilding Co., Ltd.



A 174,000t multi-purpose bulk carrier fabricated by Beihai Shipbuilding Heavy Industry Co., Ltd.



A 52,500t oil tanker manufactured by Guangzhou Shipyard International Co., Ltd.



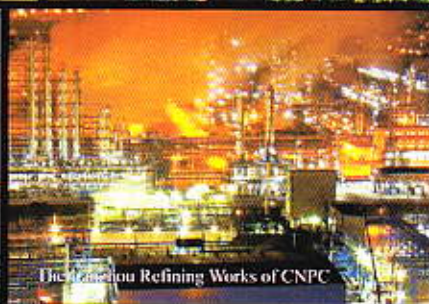
The large high pressure storage tanks for natural gas in Sichuan, China.



The well-known 4,000km length West-to-East Gas Transmission Pipeline in China.



ATLANTIC products are widely used in joints of tanks of the 100,000t Strategic Petroleum Reservoir in China.



The Jiaohou Refining Works of CNPC.



Fujian Petrochem (Chemical Industry Group).



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



The National Stadium, Beijing



The National Aquatics Centre, Beijing



The Shanghai Stadium



The W121 Platform constructed by Uthmaniyah Construction Co., Company, China



The four post-pier quayside container cranes for the Port of Bremerhaven Germany manufactured by Shanghai振华重工 (Zhenhua Heavy Industry Co., Ltd.)



The Shanghai World Financial Centre



The skyscraper of Diwong Mansion at Shenzhen, China



The 31 Terminal Building of Beijing International Airport



Boards of marine containers fabricated by China International Marine Containers (Group) Ltd. (CIMC), which is the largest manufacturer of marine containers in the world



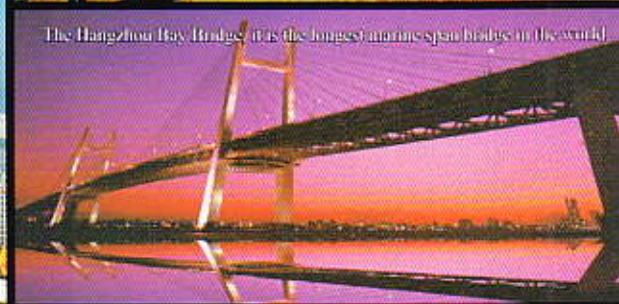
A high-speed train running on Qinghai-Tibet Rail Road



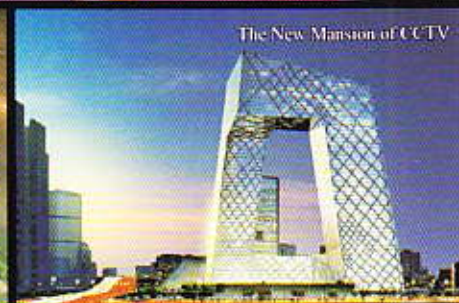
Yangtze River Bridge in Hong Kong (the front view)



The Donghai Bridge near Shanghai



The Hangzhou Bay Bridge, it is the longest marine span bridge in the world



The New Mansion of CCTV



Series of "ACCORD" sedan cars made by Guangzhou Honda Automotive Co., Ltd.

THE EXCELLENT PRODUCTION & INSPECTION EQUIPMENTS



A laboratory SPECTROLAB spectrometer made by THE CECO Analytical Instruments GmbH & Co. KG, Germany.



The CEMTEC Carbon & Sulfur Analyzer made by IKA & Co. GmbH, TUSA.



The TC 500C Nitrogen & Oxygen Determinator made by LECO Corporation, USA.



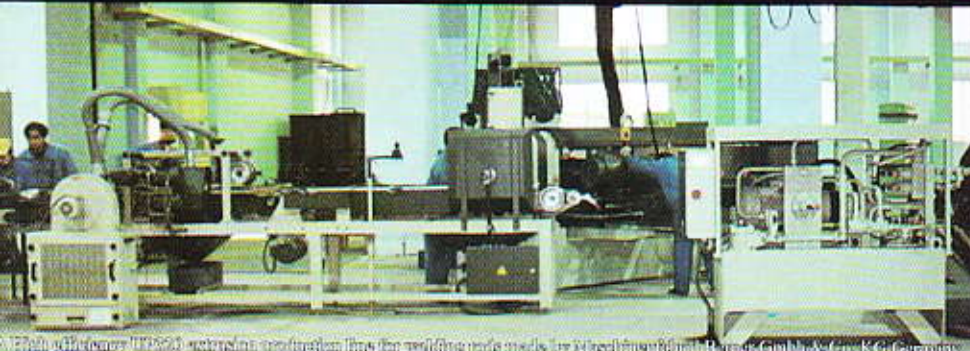
The XRF-ANALYZER Sequential X-ray Fluorescence Spectrometer made by Shimadzu Co., Japan.



The hydraulic extension machine in the new factory of AGLASTEC.



The ED W1000 automatic belt-circuiting welding rods made by H. W. Steinhilber Maschinenbau GmbH, Germany.



A high efficiency UP200 extension production line for welding rods made by H. W. Steinhilber Maschinenbau GmbH & Co. KG, Germany.



The MAG / MIG wire production machine for MAG / MIG wires made by H. W. Steinhilber Maschinenbau GmbH, Germany.



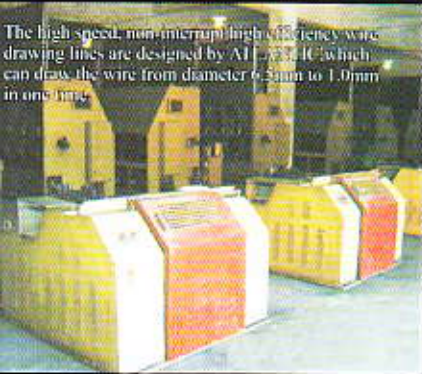
Production line for submerged arc welding (SAW) wires.



A corner of the automatic welding line for various wire types.



The MAG / MIG wire production wound machines imported from SAMP STEEL, Italy.



The high speed, non-interrupt high efficiency wire drawing lines are designed by AGLASTEC which can draw the wire from diameter 6.3mm to 1.0mm in one time.



The high speed, non-interrupt drawing and bending machines for various wires and welding rods.



The automatic flux-cored wire production line manufactured by AGLASTEC.



CHE40

The Most Popular Welding Rod for Mild Steel

AWS A5.1 E6013
BS EN ISO 2560-B-E 43 13 A
CSA W48-01 E4313
JIS Z3211 D4313
GB/T 5117 E4313

CHE40 is the most popular mild steel welding rod with high titania potassium type coating. It is able to provide excellent welding performance and satisfactory weld 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 steel and small work pieces as well as cosmetic welding with smooth and shiny appearance.

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

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)	2.5×300	2.5×350	3.2×350	4.0×400	4.0×450	5.0×400	5.0×450
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
	V.OH	50-80	50-80	80-110	130-170	130-170	—

Approvals	CCS	LR	ABS	BV	GL	DNV	BKI	NK	CWB
Grade	2	2N	2	2	2	2	2	KMW2	E4313



CHE421D

Mild Steel Welding Rod for Vertical-down Welding

AWS A5.1 E6013
BS EN ISO 2560-B-E 43 19 A
CSA W48-01 E4313
JIS Z3211 D4313
CSA E4313

CHE421D is a high titania (rutile) potassium type welding rod with cellulose in coating. Both all position welding and vertical-down welding could be performed. It is suitable for mild steel structures of small work pieces, sheet and hull of vehicles etc.

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	0.068	0.39	0.28	0.017	0.023	0.02	0.027	0.003	0.02

Mechanical Properties of Deposited Metal (AW)

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				0°C
Standard	≥330	≥430	≥17	—
Typical	420	500	27	70

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)	2.5×350	3.2×350	4.0×400	5.0×400
Pieces (5kg)	≈268	≈163	≈96	≈62
Current (A)	F.H	60-100	80-150	160-200
	OH, VD	60-90	80-110	150-170



CHE421Fe18

Iron Powder Welding Rod for Mild Steel

BS EN ISO 2560-B-E 43 14 A
JIS Z3211 D4324
GB/T 5117 E4324
Similar to AWS E6024

CHE421Fe18 is an iron powder titania type welding rod with 180% nominal welding efficiency. It is suitable for flat or horizontal fillet welding mild steel structures fabricated of medium and thick plate, e.g. ship structures, H-beams and so on.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P
Standard	≤0.12	≤1.25	≤0.90	≤0.035	≤0.040
Typical	0.063	0.56	0.45	0.015	0.024

Mechanical Properties of Deposited Metal (AW)

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				0°C
Standard	≥306	400-560	≥22	≥47
Typical	405	485	31	87

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)	3.2×400	4.0×450	5.0×450
Pieces (5kg)	≈73	≈49	≈32
Current (A)	F, HF	120-150	160-200
			220-250

Approvals	CCS	LR	ABS	BV	GL	DNV	NK
Grade	2	2N	2	2	2	2	KMW2



CHE43

Welding Rod for Mild Steel

AWS A5.1 E6019
BS EN ISO 2560-B-E 43 19 A
JIS Z3211 D4301
GB/T 5117 E4301

CHE43 is an iron oxide titania (ilmenite) potassium type welding rod for mild steel. All position welding could be performed especially for flat and horizontal fillet. It is suitable for medium and thick armor plate structures. Such as ships, bridges, machinery and buildings, etc.

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	0.094	0.51	0.27	0.018	0.028	0.052	0.054	0.004	0.012

Mechanical Properties of Deposited Metal (AW)

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				-20°C
Standard	≥306	400-560	≥22	≥47 (Average)
Typical	385	480	29	59

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)	2.5×350	3.2×350	4.0×400	4.0×450	5.0×400	5.0 x 450
Pieces (5kg)	≈240	≈153	≈88	≈78	≈57	≈51
Current (A)	F, H	40-70	100-130	150-200	150-200	190-240
					190-240	190-240

Approvals	CCS	LR	ABS	BV	GL	DNV	NK
Grade	2	2N	2	2	2	2	KMW2



CHE425

Vertical-down Welding Rod for Mild Steel

**AWS A5.1 E6011
BS EN ISO 2560-B-E43 11A
CSA W48-01 E4311
JIS Z3211 D4311
GB/T 5117 E4311**

CHE425 is a high cellulose potassium type welding rod for mild steel. It is suitable for vertical-down welding and lap welding for sheet structures. Such as smoke pipes, wind pipes, oil tanks of transformer, outside cover of vehicles, etc. It is not good for wide weave when welding and it is not suitable for multi-layer or face welding.

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	0.096	0.67	0.20	0.024	0.024	0.008	0.041	0.001	0.012

Mechanical Properties of Deposited Metal (AW)

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

Sizes, Pieces & Recommended Current (AC or DC)

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



CHE425G

Vertical-down Welding Rod for Mild Steel

**AWS A5.1 E6010
BS EN ISO 2560-B-E43 10 A
CSA W48-01 E4310
GB/T 5117 E4310**

CHE425G is a high cellulose sodium type welding rod. It shows a very good performance in welding of all positions, vertical down and overhead. The rod forms on double sides by one side welding. It is suitable for welding root passes, hot passes, filler and cover passes as well as for capping of general pipes and similar structures. Keeping the rods in dry condition and the rods do not need to re-bake before welding. In welding small current is recommended and swaying breadth should be less than 2.5 times of diameter of the steel core of rod.

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	0.091	0.55	0.17	0.010	0.011	0.011	0.022	0.001	0.03

Mechanical Properties of Deposited Metal (AW)

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

Sizes, Pieces & Recommended Current (DC)

Size (mm)	2.5×300	3.2×350	4.0×350	5.0×350
Pieces (5kg)	≈355	≈192	≈124	≈78
Current (A)	F, H	60-90	70-110	110-150
	OH, VD	50-80	60-100	100-140



CHE501Fe18

Iron Powder Welding Rod for Mild Steel or High Tensile Steel

AWS A5.1 E7024
BS EN ISO 2560-B-E 49 24-1A
GB/T 5117 E5024
JIS Z3212 D5003

CHE501Fe18 is a high deposition rate iron powder titania type welding rod for mild steel or high tensile steel giving a metal recovery of about 180%. It is suitable for welding structures fabricated by H-beams or T-beams, as well as flat and horizontal fillet welding medium and thick plate. The rods should be baked for 1 hour at the temperature of 150 °C before welding.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Cr*	Ni*	Mo*	V*
Standard	≤0.15	≤1.25	≤0.90	≤0.035	≤0.035	≤0.20	≤0.30	≤0.30	≤0.08
Typical	0.068	0.74	0.44	0.015	0.024	0.027	0.006	0.003	0.016

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

Mechanical Properties of Deposited Metal (AW)

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				0°C
Standard	≥375	490-660	≥22	≥47
Typical	450	510	27	72

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)	3.2×400	4.0×450	5.0×450	5.0×500
Pieces (5kg)	≈76	≈50	≈32	≈28
Current (A) F, HF	120-150	160-200	220-250	220-250

Approvals	CCS	LR	ABS	BV	GL	DNV	NK
Grade	2Y	2Y	2Y	2Y	2Y	2Y	KMW52



CHE505G

Cellulose Welding Rod for Pipeline

AWS A5.5 E7010-G
BS EN ISO 2560-B-E 49 10-1A
GB/T 5117 E5010-G

CHE505G is a high cellulose sodium type welding rod. The rod shows a very good performance in welding of all positions and vertical-down, overhead. It performs on double sides by one side welding. It is mainly used for welding root passes, hot passes, filler and cover passes as well as for capping of huge diameter high press pipelines fabricated by X60, X65 and X70 grade steel and similar structures. Keeping the rods in dry condition and the rods do not need to re-bake before welding. In welding small current is recommended and swaying breadth should be less than 2.5 times of diameter of the rod.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu
Standard	—	≥1.00	≥0.80	≤0.03	≤0.03	≥0.30	≥0.50	≥0.20	≥0.10	≥0.20
Typical	0.098	0.40	0.11	0.016	0.017	0.018	0.004	0.49	0.010	0.21

Mechanical Properties of Deposited Metal (PWHT: 620 °C 1h)

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				-30°C
Standard	≥390	≥490	≥22	—
Typical	420	535	28	81

X-ray defectoscopy; II

Sizes, Pieces & Recommended Current (DC)

Size (mm)	2.5×300	3.2×350	4.0×350	5.0×350
Pieces (5kg)	≈355	≈192	≈124	≈78
Current (A)	E, H	60-90	70-110	110-150
	OH, VD	50-80	60-100	100-140
				150-200
				140-180



CHE505Mo

Cellulose Welding Rod for Vertical-down Welding

AWS A5.5 E7010-A1
BS EN ISO 2560-B-E 49 10-1M3 P
GB/T 5117 E5010-A1

CHE505Mo is a high cellulose sodium type welding rod with Mo. It shows a very good performance in welding especially vertical down and overhead. It performs double sides by one side welding. It is suitable for root passes, hot passes, filler and cover passes as well as for capping welding. Keeping the rods in dry condition and the rods do not need to re-bake before welding. In welding small current is recommended and swaying breadth should be less than 2.5 times of diameter of the rod.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Mo
Standard	≤0.12	≤0.60	≤0.40	≤0.030	≤0.030	0.40-0.65
Typical	0.074	0.33	0.11	0.010	0.009	0.48

Mechanical Properties of Deposited Metal (PWHT: 620°C x 1h)

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)
				-20°C
Standard	≥390	≥490	≥22	—
Typical	470	580	24	70

X-ray defectoscopy: II

Sizes & Recommended Current (DC⁺)

Size (mm)	2.5×300	3.2×350	4.0×350	5.0×350
Pieces (5kg)	≈355	≈192	≈124	≈78
Current (A)	F, H	60-80	70-120	110-150
	OH, VD	50-70	60-100	100-140



CHE555GX

Cellulose Welding Rod for High Press Pipeline

AWS A5.5 E8010-P1
BS EN ISO 2560-B-E 55 10-P1 A
GB/T 5117 E5510-B

CHE555GX is a high tensile strength cellulose sodium type welding rod. Very good performance can be obtained by all position welding, overhead and vertical down welding. Especially suitable for fabricating huge diameter high press pipelines made by X70 or X80 grade steels. Backing weld, filling welding and lap welding could be operated and forming on double sides by one side welding. Keeping the rods in dry condition and the rods do not need to re-bake before welding. In welding small current is recommended and swaying breadth should be less than 2.5 times of diameter of the rod.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Cr	Ni	Mo	V
Standard	≤0.20	≤1.20	≤0.60	≤0.03	≤0.03	≤1.00	≤1.00	≤0.50	≤0.10
Typical	0.099	0.60	0.18	0.012	0.011	0.642	0.64	0.43	0.010

Mechanical Properties of Deposited Metal (AW)

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				-30°C
Standard	≥460	≥550	≥19	≥27
Typical	510	600	22	60

X-ray defectoscopy: II

Sizes, Pieces & Recommended Current (DC⁺)

Size (mm)	2.5×300	3.2×350	4.0×350	5.0×350
Pieces (5kg)	≈355	≈192	≈123	≈78
Current (A)	F, H	60-90	70-110	110-150
	OH, VD	50-80	60-100	100-140



CHE56

Low Hydrogen Welding Rod for High Tensile Steel

AWS A5.1 E7016
BS EN ISO 2560-B-E4916-1A
CSA W48-01 E4916H8
JIS Z3212 D5016
GB/T 5117 E5016

CHE56 is a low hydrogen potassium type welding rod. The deposited metal shows a satisfactory plasticity, impact toughness and crack resistance. It is widely for fabricating structures made of 550MPa tensile strength mild steels and low alloy steels, such as ships, boilers, high press vessels, bridges, sky-scrapers, and so on. The groove of base metal should be cleared impurities away and the rod must be baked at a temperature to 350°C then be held 1-2 hours before welding.

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	0.04	0.02	0.011	0.01

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

Mechanical Properties of Deposited Metal (AW)

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)		
				-20°C	-30°C	-45°C
Standard	≥375	490-660	≥22	≥47	≥27	≥27
Typical	450	550	30	185	150	120

The content of diffusion hydrogen of deposited metal <5ml/100g (ISO 3960) and a typical one is 2.2ml/100g

Sizes, Pieces & Recommended Current (DC or AC ≥70V)

Size (mm)	2.5×300		3.2×350		4.0×400		5.0×400	
Pieces (5kg)	≈298		≈160		≈90		≈59	
Current (A)	F,H	70-110	100-140		150-180		180-230	
	V,OH	50-80	80-110		130-170		—	
Approvals	CCS	LR	ABS	BV	GL	DNV	BKI	NK
Grade	3YH10	3,3Y,H15	3Y	3YHH	3YH10	3YH10	3YH10	KMW53H10



CHE58-1

High Toughness Welding Rod for High Tensile Steel

AWS A5.1 E7018-1/E7018
BS EN ISO 2560-B-E4918-1A
GB/T 5117 E5018-1/E5018
CSA W48-01 E4918-1H8
JIS Z3212 D5016

CHE58-1 is an outstanding quality all position welding electrode covered with extra low hydrogen potassium type coating for high tensile strength mild steels and low alloy steels. Its nominal welding efficiency is about 110% due to iron powder is contained. The weld metal shows an excellent low temperature toughness and high crack-resistance. It is widely used in important projects of ships, boilers, high pressure vessels, bridges, skyscrapers, offshore drilling platforms, nuclear power plants and so on. The groove of base metal should be cleared impurities away and the electrode must be baked at a temperature to 400°C then be held 1-2 hours before welding, 2.5mm or less one should be done by 350°C then be held 1 hour.

Chemical Composition of Deposited Metal (%)

	C	Mn*	Si	S	P	Cr*	Ni*	Mo*	V*
Standard	≤0.15	≤1.60	≤0.75	≤0.035	≤0.040	≤0.20	≤0.30	≤0.30	≤0.08
Typical	0.068	1.36	0.51	0.010	0.016	0.047	0.022	0.010	0.014

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

Mechanical Properties of Deposited Metal (AW)

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)		
				-20°C	-29°C	-45°C
Standard	≥375	490-660	≥22	≥47	≥27	≥27
Typical	440	540	30	170	150	130

The content of diffusion hydrogen of deposited metal <5ml/100g (ISO 3990) and a typical one is 2.6ml/100g

Sizes, Pieces & Recommended Current (DC or AC ≥70V)

Size (mm)	2.5×300	2.5×350	3.2×350	3.2×450	4.0×400	4.0×450	5.0×400	5.0×450
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
	V,OH	60-70	60-70	80-110	80-110	130-150	130-150	—
Approvals	CCS	LR	ABS	BV	GL	DNV	BKI	KR
Grade	3YH5	3,3Y,H15	3YH5	3YHHH	3YH10	3YH5	3YH10	3YH10
								E4918-1H8



CHN408

Heat-resisting Steel Welding Rod

AWS A5.5 E9018-B3
ISO 3580-B-E 6218-2G1M
EN 1599-E CrMo2 B
GB/T 5118 E6018-B3

CHN408 is potassium low hydrogen iron powder type, low alloy welding rods. With a trait of resistance of high temperature and oxidation, it is suitable for fabricating equipments of chemical and petroleum industries as well as high temperature, high press pipes, which made by Cr2.5Mo low alloy steel that working temperature lower than 550°C, e.g. Catalytic cracker. All position welding is obtained and short arc is recommended. It should be backed at a temperature of 350°C-380°C for 1 hour before welding. The welded piece should be preheated to 300°C before welding and it must be tempered at 660°C-690°C for 1 hour after welding.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Cr	Mo
Standard	0.05-0.12	≤0.90	≤0.80	≤0.03	≤0.03	2.00-2.50	0.90-1.20
Typical	0.08	0.75	0.24	0.010	0.012	2.34	1.14

Mechanical Properties of Deposited Metal (PWHT: 690°C x1h)

	Yield Point Ret.(MPa)	Tensile Strength Rm(MPa)	Elongation A4 (%)	Impact Value (J)
				25°C
Standard	≥530	≥620	≥17	—
Typical	580	680	20	180

X-ray defectoscopy: I

Moisture contained in coating flux: ≤0.15%

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)	2.5×300	3.2×350	4.0×400	5.0×400
Pieces (5kg)	~299	~160	~88	~57
Current (A)	60-90	90-120	140-180	170-210



CHN717

Heat-resisting Steel Welding Rod

AWS A5.5 E9018-B9
ISO 3580-B-E 6215-9C1MV
EN 1599-E CrMo91B

CHN717 is a sodium low hydrogen martensite heat resisting low alloy welding rods. It is suitable for fabricating supercritical steam turbines and boilers as well as its pipes, which made by martensite heat resisting low alloy steels of ZG1Cr10MoVNbN or T91/P91. Both preheating temperature and interpass temperature should be 232°C-288°C and the weld zone must be tempered at 730°C-760°C for 6 hours after welding.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Al	N	Nb	V
Standard	0.08-0.13	≤1.20	≤0.30	≤0.01	≤0.01	8.0-10.5	≤0.8	0.85-1.20	≤0.25	≤0.04	0.02-0.070	0.02-0.100	0.15-0.30
Typical	0.094	0.75	0.22	0.004	0.009	9.32	0.66	1.03	0.020	0.005	0.03	0.053	0.208

Mechanical Properties of Deposited Metal (PWHT: 760°C x6h)

	Yield Point Ret.(MPa)	Tensile Strength Rm(MPa)	Elongation A4 (%)	Impact Value (J)
				25°C
Standard	≥530	≥620	≥17	—
Typical	630	740	21	80

X-ray defectoscopy: I

Moisture contained in coating flux: ≤0.15%

Sizes, Pieces & Recommended Current (DC)

Size (mm)	2.5×300	3.2×350	4.0×400	5.0×400
Pieces (5kg)	~299	~160	~88	~57
Current (A)	70-90	80-110	140-160	160-200



CHS002

Welding Rod for Extra-low Carbon Stainless Steel

AWS A5.4 E308L-16
ISO 3581-A-E (1991) R32
ISO 3581-B-E308L-16
EN 1600 E199LR32
CSA W48-01 E308L-16
JIS Z3221 D308L-16
GB/T 983 E308L-16

CHS002 is a lime titanium type welding rod for extra-low carbon stainless steels. The weld metal shows very good resistance to inter-crystal corrosion for the carbon content in it is $\leq 0.04\%$. All positions welding are good. Welding of extra-low carbon stainless steel 00Cr19Ni10 (e.g. 304L). Also welding of 0Cr18Ni10Ti stainless steel structures, which working conditions need to be resistance corrosion and working temperature is below 300°C . Mainly be used in equipments of synthetic fibre, fertilizer, petroleum & chemical industry and so on. Before welding, the weld metal must be clear away impurities, such as oil, rust, moisture etc., and the rod should be baked at the temperature from 300°C to 350°C for 1 hour. Small current and short arc are recommended in welding and swaying broad less than 2.5 times of diameter of the core rod is better.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Cu	Mo	S	P
Standard	≤ 0.04	0.50-2.50	≤ 0.90	18.0-21.0	9.0-11.0	≤ 0.75	≤ 0.75	≤ 0.030	≤ 0.040
Typical	0.029	0.86	0.63	19.80	9.60	0.10	0.078	0.012	0.024

Mechanical Properties of Deposited Metal

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

Sizes, Pieces & Recommended Current (ACorDC)

Size (mm)		2.0×300	2.5×300	3.2×350	4.0×400	5.0×400
Pieces (2kg)		≈172	≈110	≈57	≈33	≈22
Current (A)	F	30-50	60-85	85-120	115-160	160-200
	V _{OH}	30-50	50-70	75-105	95-130	—
Approvals		CWB				
Grade		CAS W48 E308L-16				



CHS102

Welding Rod for General Stainless Steel

AWS A5.4 E308-16
EN 1600 E199R32
ISO 3581-A-E (1991) R32
ISO 3581-B-E308-16
CSA W48-01 E308-16
JIS Z3221 D308-16
GB/T 983 E308-16

CHS102 is a lime titanium type welding rod for general stainless steels with all positions welding. Widely be used for welding of 06Cr18Ni9 (e.g. 301, 302, 304, 308) and Cr18Ni9Ti stainless steel structures, which working temperature is below 300°C . Before welding the rod should be baked at the temperature from 300°C to 350°C for 1 hour. Small current and short arc are recommended in welding and swaying broad less than 2.5 times of diameter of the core rod is better.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Cu	Mo	S	P
Standard	≤ 0.08	0.50-2.50	≤ 0.90	18.0-21.0	9.0-11.0	≤ 0.75	≤ 0.75	≤ 0.030	≤ 0.040
Typical	0.048	0.86	0.66	19.88	9.70	0.23	0.14	0.012	0.028

Mechanical Properties of Deposited Metal

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

Sizes, Pieces & Recommended Current (ACorDC)

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



CHS022

Welding Rod for Extra-low Carbon Stainless Steel

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

CHS022 is a lime titanium type welding rod for extra-low carbon stainless steels. The weld metal shows very good resistance of heat, corrosion and cracking due to the carbon content in it is $\leq 0.04\%$. It is mainly used in equipments of synthetic fibre, fertilizer, petroleum & chemical industry and so on. Dissimilar steel welding could be operated. Before welding, the weld metal must be clear away impurities, such as oil, rust, moisture etc., and the rod should be baked at the temperature from 300°C to 350°C for 1 hour. Small current and short arc are recommended in welding and swaying broad less than 2.5 times of diameter of the core rod is better.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Standard	≤ 0.04	0.50-2.50	≤ 0.90	17.0-20.0	11.0-14.0	2.0-3.0	≤ 0.75	≤ 0.030	≤ 0.040
Typical	0.030	0.85	0.62	19.0	11.86	2.50	0.16	0.012	0.028

Mechanical Properties of Deposited Metal

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

Sizes, Pieces & Recommended Current (ACorDC)

Size (mm)	2.0×300	2.5×300	3.2×350	4.0×400	5.0×400
Pieces (2kg)	~171	~109	~57	~33	~22
Current (A)	F	30-50	60-85	85-120	115-160
	V,OH	30-50	50-70	75-105	95-130
Approvals	CWB				
Grade	CAS W48 E316L-16				



CHS29.9

Duplex Stainless Steel Welding Rod

AWS A5.4 E312-16
EN 1600 E 29 9 R 3 2
ISO 3581-A-E (29 9) R 3 2
ISO 3581-B-ES312-16
CSA W48-01 E312-16
JIS Z3221 D312-16
GB/T 983 E312-16

CHS29.9 is a lime titanium type duplex stainless steel welding rod. 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 dissimilar metals. Before welding, the weld metal must be clear away impurities, such as oil, rust, moisture etc., and the electrode should be baked at the temperature from 300°C to 350°C for 1 hour before welding.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Standard	≤ 0.15	0.5-2.5	≤ 0.90	28.0-32.0	8.0-10.5	≤ 0.75	≤ 0.75	≤ 0.030	≤ 0.040
Typical	0.085	1.11	0.78	29.39	9.97	0.16	0.20	0.011	0.028

Mechanical Properties of Deposited Metal

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

Sizes, Pieces & Recommended Current (ACorDC)

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



CHC308

Pure Nickel Welding Rod for Cast Iron

AWS A5.15 ENI-CI
ISO 1071-EC
JIS Z3252 DFCNi
GB/T 10044 EZNi-1

CHC308 is a covered welding rod with pure nickel core and graphitic coating for cast iron. It is the best 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. The rod must be baked at a temperature 80°C-120°C for 1 hour before welding. In welding, lower current is recommended, meanwhile, hammering the welded seam to dispel stress around the welding region and to avoid crack.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	Ni	Al	Cu	Fe	Others
Standard	≤2.00	≤2.50	≤4.00	≤0.03	≥90	≤1.00	≤2.50	≤8.0	≤1.00
Typical	0.59	0.07	1.50	0.004	95.10	0.032	0.002	0.021	0.14

Sizes, Pieces & Recommended Current (ACorDC)

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



CHC408

Nickel-Ferro Welding Rod for Cast Iron

AWS A5.15 ENiFe-CI
ISO 1071-EC NiFe-CI-A
JIS Z3252 DFCNiFe
GB/T 10044 EZNiFe-1

CHC408 is a graphitic type coating with Nickel/Ferro core welding rod and it is machinable one. The rod is suitable for repairing or surfacing cracked and worn parts made of gray iron or nodular iron, as well as joining cast iron with dissimilar metals. Lower current is recommended to obtain better welding operation. Before welding the rod should be baked 1 hour at a temperature around 150°C.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	Ni	Cu	Al	Fe	Others
Standard	≤2.00	≤2.50	≤4.00	≤0.03	45-60	≤2.50	≤1.00	Remain	≤1.00
Typical	0.71	0.24	1.00	0.007	55.16	0.055	0.054	42.70	0.23

Sizes, Pieces & Recommended Current (ACorDC)

Size (mm)	2.5×300	3.2×350	4.0×350	5.0×350
Pieces (2kg)	≈122	≈63	≈42	≈27
Current (A)	50-80	80-100	110-140	150-180



CHR266

Hardfacing Welding Rod

AWS A5.13 EFeMn-B
GB/T 984 EDMn-B-16

CHR266 is a potassium low hydrogen type hardfacing welding rod. The deposited metal shows a satisfactory capability of crack-resistance and abrasion-resistance due to it contains a few Mo. Hammering the welded metal when it is hot to avoid tendency of cracking when welding. It is suitable for hardfacing abraded parts of crusher machines, excavators, bulldozers, switches of railway, etc. The welding rods should be backed at a temperature around 250℃ for 1 hour before welding.

Chemical Composition & Hardness of Deposited Metal (%)

	C	Mn	Si	Mo	Others	Fe	HB
Standard	0.5-1.0	12.0-16.0	≤1.30	0.5-1.5	≤1.00	Remain	≥170
Typical	0.80	13.0	0.51	1.30	0.79	83.60	199

Sizes, Pieces & Recommended Current (AC or DC)

Size (mm)	2.5×300	3.2×350	4.0×400	5.0×400
Pieces (5kg)	≈248	≈143	≈82	≈54
Current (A)	60-90	70-90	100-140	150-180



CHT70C6

Metal Alloy Powder Cored Wire

AWS A5.18 E70C-6M
BS EN ISO 17632 T423MM3H5

CHT70C6 is a metal powder cored wire matching mixed gas in welding. The welding performance is excellent: stable arc, small spatter, very few slag, good appearance of weld, high deposition efficiency and the deposition rate is near 40% higher than solid wire. It is widely used for single pass or multiple pass welding structures fabricated by 490MPa tensile strength mild steels or low alloy steels such as automobile, ships, pipes, machinery 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	0.05	1.35	0.69	0.018	0.015

Mechanical Properties of Deposited Metal

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J) -30℃	Shield Gas
Standard	≥400	≥480	≥22	≥27	20%CO ₂ +80%Ar
Typical	450	550	27	70	

Recommended Current Range (DC)

Diameter of Wire	Welding Position	Current (A)	Voltage
1.2mm	F, HF, H	190-330	27-33
1.2mm	VD	140	17-18



CHT711

Flux Cored Wire for Mild Steel

AWS A5.20 E71T-1C
BS EN ISO 17632 T422PC1H10
JIS Z3313 YFW-C50DR
CSA W48-01 E491T-1-H8
GB 10045 E501T-1

CHT711 is a rutile type flux cored wire applicable for all-position welding with CO₂ gas shielding. It shows excellent welding performance and higher efficiency in welding. Vertical down welding could be processed. It is widely used in structures fabricated by mild steels and 490MPa grade tensile strength steels, such as ships, pressure vessels, machinery, 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

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)		Shield Gas
				0°C	-20°C	
Standard	≥390	490-670	≥22	≥47	≥27	CO ₂
Typical	440	535	32	87	110	

Recommended Current Range (DC)

Diameter (mm)		1.2			1.4			1.6		
Current (A)	F	120-300			150-380			180-430		
	HF	120-260			150-320			180-380		
	V, OH	120-280			150-270			180-280		
	H	120-280			150-320			180-330		
	VD	200-280			220-300			250-300		
Approvals		CCS	LR	ABS	GL	BV	DNV	NK	BKI	CWB
Grade		3YSMH10	3SMH10 3YSMH10	3YAH10 3YSAH10	3YH10S	SA3YMH10	IIYMSH10	KSW53G(C) H10 KAW53MG(C) H10	3YH10S	E491T-1-H8



CHT70BM

Flux Cored Wire for Mild Steel

AWS A5.20 E70T-5M
BS EN ISO 17632 T423DM3H5
GB 10045 E500T-5M

CHT70BM is one of basic type flux cored wire with mixture gas shielding and it is applicable for flat or horizontal filler of higher tensile, better crack resisting mild steel structures fabricated by 490MPa grade tensile strength steels, such as pressure vessels, machinery, bridges, H-beam and so on. Also it could be vertical up welding on which angle below 45°.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P
Standard	≤0.12	≤1.75	≤0.90	≤0.03	≤0.03
Typical	0.07	1.46	0.50	0.013	0.018

Mechanical Properties of Deposited Metal

	Yield Point ReH (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J) -30°C	Shield Gas
Standard	≥390	490-670	≥22	≥27	75-80%Ar + balance CO ₂
Typical	450	550	28	150	

Recommended Current Range (DC)

Diameter (mm)		1.2	1.4	1.6
Current (A)	F	120-320	150-380	180-430
	HF	120-320	150-380	180-430
	V, H	120-280	150-270	180-280



CHF101GX/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

Flux/Wire Combination for Submerged Arc Welding

CHF101GX/CHW-S9 flux/wire combination has excellent welding performance. The weld metal shows a fine appearance and the deposited metal has a satisfactory low temperature toughness and high crack resistance. Both AC and DC can be applied, when DC, the wire should be contacted straight polarity. It is used to weld 550MPa-700MPa tensile strength steel structures, especially for spiral or longitudinal welded huge diameter pipe made by X65 & X70 steels. It could be four wires welding at same time and the welding speed is 1.70m-2.00m per minute. Before welding, the base metal must clear away impurities and the flux must be baked in a temperature of 300℃-350℃ for 1-2 hours.

Chemical Composition (%)

		C	Mn	Si	S	P	Mo	Cu
Wire CHW-S9 (AWS A5.23 EA4)	Standard	0.05-0.17	1.20-1.70	≤0.20	≤0.025	≤0.025	0.45-0.65	0.35
	Typical	0.073	1.28	0.122	0.004	0.009	0.571	0.19
Deposited Metal	Typical	0.07	1.16	0.47	0.010	0.012	0.35	0.15

Mechanical Properties of Deposited Metal

	Yield Point ReL(MPa)	Tensile Strength Rm(MPa)	Elongation A4 (%)	Impact Value (J)	
				-30℃	
Standard	≥470	550-750	≥20	≥27	
Typical	540	630	24	80	

Mechanical Properties of Deposited Metal of Welded Joint (Base metal is X70 plate, Typical)

Tensile Strength Rm(MPa)	Impact Value(J)		Cut Acreage (SA, %)	Hardness(Hv)	
	-20℃			Weld Metal	HAZ
630	140		80	250	240



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

Flux/Wire Combination for Submerged Arc Welding

CHF101/CHW-S12 flux/wire combination has good performance in welding. The weld metal shows a fine appearance and the deposited metal has a satisfactory low temperature toughness and high crack resistance. Both AC and DC can be applied, when DC, the wire should be contacted straight polarity. It is suitable to weld 450MPa-500MPa tensile strength structures, such as boilers, ships, bridges, pressure vessels, as well as LPG cylinders. Before welding, the base metal must clear away impurities and the flux must be baked in a temperature of 300℃-350℃ for 1-2 hours.

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	0.014	0.016	0.025	0.026	0.010
Deposited Metal	Typical	0.056	1.30	0.30	0.010	0.020	0.020	0.010	0.050

Mechanical Properties of Deposited Metal

	Yield Point ReH(MPa)	Tensile Strength Rm(MPa)	Elongation A4 (%)	Impact Value (J)	
				-20℃	-40℃
Standard	≥400	480-660	≥22	≥34	≥27
Typical	420	510	31	145	110

Approvals	LR	ABS	GL	BV	DNV	NK
Grade	3M, 3YM	3YM	3YM	A3YM	IIIYM	KAW53M



CHW-50C

Solid Wire for MAG/MIG Welding

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
GB/T 8110 ER49-1

CHW-50C is a coppered low alloy steel wire with all position welding. The wire has a very good performance and has a large range of current for welding. The weld metal shows lower temperature impact toughness. It is suitable for butt and fillet structures made by mild steels and low alloy steels, such as vehicles, engineering & construction machinery, bridges, containers and so on.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu
Standard	0.07-0.15	1.5-2.0	0.5-0.8	≤0.035	≤0.025	≤0.15	≤0.15	≤0.15	≤0.03	≤0.50
Typical	0.08	1.97	0.72	0.015	0.020	0.021	0.019	0.004	0.02	0.20

Mechanical Properties of Deposited Metal

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value(J) -30℃	Shield Gas
Standard	≥400	≥480	≥22	≥27	CO ₂
Typical	425	545	30	75	

Recommended Current Range(DC)

Diameter(mm)	0.8	0.9	1.0	1.2	1.6
Current Range (A)	40-140	50-200	60-220	80-350	170-550



CHW-50C3

Solid Wire for MAG/MIG Welding

AWS 5.18 ER70S-3
BS EN ISO 14341-A-G 38 4 M G2Si1
BS EN ISO 14341-B-G 49A 2 C G3
CSA W48-01 ER49S-3
JIS Z3312 YGW16
GB/T 8110 ER50-3

CHW-50C3 is a coppered solid wire for welding with mixture gas Ar+CO₂. It shows a very good welding performance especially in the range of lower current in case spark is much lower than CHW-50C6SM (ER70S-6). Molten steel flows smoothly and weld seam has a high crack-resistance. It is suitable for butt or fillet structures made by mild steels and 500MPa tensile strength low alloy steels, in particular for high speed welding sheet-steel, e.g. automobiles, railway wagons, vehicles and locomotives.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu
Standard	0.06-0.15	0.90-1.40	0.45-0.75	≤0.035	≤0.025	≤0.15	≤0.15	≤0.15	≤0.03	≤0.50
Typical	0.074	1.01	0.62	0.011	0.015	0.021	0.020	0.007	0.010	0.11

Mechanical properties of Deposited Metal

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J) -20℃	Shield Gas
Standard	≥400	≥480	≥22	≥27	20%CO ₂ +80%Ar
Typical	435	540	30	120	

Recommended Current Range (DC)

Diameter (mm)	0.8	0.9	1.0	1.2	1.6
Current Range (A)	60-150	60-200	70-230	100-350	120-450

Approvals	CWB	CE	DB	TUV
Grade	ER49S-3	EN 13479 EN 440	G2Si1 DIN EN440	EN440-G38 4 M G2Si1



CHW-50C6SM

Solid Wire for MAG/MIG Welding

AWS A5.18 ER70S-6
BS EN ISO 14341-A-G 42 3 C G3S11
BS EN ISO 14341-B-G 49A 2 C G6
CSA W48-01 ER49S-6
JIS Z3312 YGW12
GB/T 8110 ER50-6

CHW-50C6SM is a coppered low alloy steel wire with all position welding. The wire has a 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, bridges and so on.

Chemical Composition of Deposited Metal (%)

	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

	Yield Point ReH(MPa)	Tensile Strength Rm(MPa)	Elongation A4(%)	Impact Value (J)			Shield Gas
				-20℃	-30℃	-40℃	
Standard	≥400	≥480	≥22	≥47	≥27	—	CO ₂
Typical	425	540	31	102	89	70	

Recommended Current Range(DC)

Diameter(mm)	0.6	0.8	0.9	1.0	1.2	1.6
Current Range (A)	50-100	40-140	50-200	50-230	80-350	120-550

Approvals	CCS	LR	ABS	GL	BV	DNV	NK	BKI	CWB	DB	CE	TUV
Grade	3YSM 3SM, 3YSM	3SA, 3YSA	3YS	SA3YM	IIIYMS	ASTM A5.18 ER70S-6	3YSM	ER49S-6	BS EN ISO 14341-A-G 42 3 C G3S11	BS EN ISO 14341-B-G 49A 2 C G6	JIS Z3312 YGW12	GB/T 8110 ER50-6



CHW-50C8

MAG/MIG Solid Wire for High Strength Steel

AWS A5.18 ER70S-6
BS EN ISO 14341-B-G 49A 3 C G11
JIS Z3312 YGW11
GB/T 8110 ER50-6

CHW-50C8 is a coppered solid wire for welding high strength low alloy steel. Excellent mechanical properties of deposited metal can be obtained due to strictly control the S, P and a few Ti is added into wire. It is suitable for welding 500MPa-550MPa grade steel structures such as ships, engineering & construction machineries, equipments for petrol chemical industry, pressure vessels, lifts, bridges, skyscrapers, etc. Especially for high speed hacking welding of huge pipe lines for gas & oil transmission, which fabricated by X60, X65, 18Nb as well as 12-16Mn steels.

Chemical Composition of Deposited Metal (%)

	C	Mn	Si	S	P	Cu	Ti
Standard	—	—	—	—	—	—	—
Typical	0.10	1.45	0.71	0.010	0.011	0.14	0.15

Remark: In AWS norm, chemical composition of deposited metal of ER70S-G is not specified and normally we supply CHW-50C8 conform to JIS Z3312 YGW11.

Mechanical properties of Deposited Metal (Typical)

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J) -30℃	Shield Gas
Standard	≥400	≥480	≥22	—	CO ₂ or 20%CO ₂ +80%Ar
Typical	440	560	30	75	

Recommended Current Range (DC)

Diameter (mm)	0.8	0.9	1.0	1.2	1.6
Current Range (A)	40-140	40-180	50-220	80-350	170-550

A Demonstration of Welding

Base Metal	Diameter of Wire	Shape of Groove	Temperature between passes	Shield Gas	Current (A)	Volt (V)
Q235 or 16Mn δ=20mm	1.2mm		12 passes welding	200℃	CO ₂	190-210 26-28



Welding Rods for Mild Steel

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)						
					C	Mn	Si	S	P	Cr	Ni
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
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
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
CHE421D	Rutile Cellulose	AWS A5.1 E6013 BS EN ISO 2560-B-E 43 19 A JIS Z3211 D4313	F.V.D. 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
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	—	—
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
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
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
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
CHE425G	High cellulose Sodium	AWS A5.1 E6010 BS EN ISO 2560-B-E 43 10 A	F.V.D. 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
CHE425GX	High cellulose Sodium	AWS A5.1 E6010 BS EN ISO 2560-B-E 43 10 A	F.V.D. OH,H	DC	≤0.20 0.085	≤1.20 0.56	≤1.00 0.19	≤0.035 0.007	≤0.040 0.011	≤0.20 0.026	≤0.30 0.015
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
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
CHE427SHA	Low hydrogen Sodium	BS EN ISO 2560-B-E 43 15 P	F.V. OH,H	DC	≤0.10 0.056	≤1.25 0.75	≤0.90 0.30	≤0.005 0.004	≤0.012 0.009	≤0.20 0.016	≤0.30 0.001
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
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



Welding Rods for High Tensile Strength Steel

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)						
					C	Mn	Si	S	P	Cr	Ni
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
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
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
CHE502	Lime Titania-oxide	JIS Z3212 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	—	—

		Standard & Typical Mechanical Properties of Deposited Metal (AW)				Applications	Approvals
Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
≤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 workpieces.	CCS,LR,ABS, BV,GL,DNV, BKI,NK,CWB
≤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.	—
— 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
≤0.30 0.003	≤0.08 0.02	≥330 420	≥430 500	≥17 27	0℃ ≥47 70	Vertical-down welding can perform for mild steel sheet structures, light structural frames, vehicles and so on.	—
—	—	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
≤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 well as structural fabrications.	CCS,LR,ABS, BV,GL,DNV,NK
≤0.30 0.002	≤0.08 0.02	≥330 370	≥430 470	≥22 26	0℃ ≥47 70	For welding general mild steel structures, such as heavy machinery and construction machinery and so on.	—
≤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.	—
≤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.	—
≤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.	—
≤0.30 0.005	≤0.08 0.03	≥330 390	≥430 520	≥24 30	-30℃ ≥27 80	Suitable for vertical down welding root passes, hot passes, filler and cover passes as well as for capping of pipelines and similar structures.	—
≤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.	—
≤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.	—
≤0.30 0.001	—	330-380 350	420-500 455	≥22 32	-30℃ ≥27 200 PWHT 625℃×1h	Suitable for welding structures made by anti hydrogen low alloy steels, such as 20#(HIC) or A106B(HIC).	—
— 0.002	— 0.010	ReH≥306 410	400-560 505	As(%)≥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
≤0.30 0.010	≤0.08 0.014	≥330 400	≥430 500	As(%)≥17 25	-30℃ ≥27 95	For welding important mild steel and low alloy steel structures.	—

		Standard & Typical Mechanical Properties of Deposited Metal (AW)				Applications	Approvals
Mo	V	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
— 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,KR
≤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.	—
≤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
—	—	≥400 440	≥490 530	≥20 27	0℃ ≥27 75	For welding structures fabricated by low alloy steels.	—



Welding Rods for High Tensile Strength Steel

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[Continued]

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)						
					C	Mn	Si	S	P	Cr	Ni
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
CHE506R	Low hydrogen Potassium	AWS A5.1 E7016 BS EN ISO 2560-B-E 49 16-1 A	F.V. OH,H	AC or DC ⁺	— 0.069	≤1.60 1.11	≤0.75 0.53	≤0.020 0.010	≤0.030 0.020	≤0.20 0.032	≤0.30 0.013
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
CHE507-1R	Low hydrogen Sodium Iron powder	ASME SFA-5.1 E7015-1 BS EN ISO 2560-B-E 49 15-1 A	F.V. OH,H	DC ⁺	— 0.075	≤1.60 1.28	≤0.75 0.46	≤0.015 0.010	≤0.025 0.020	≤0.20 0.031	≤0.30 0.010
CHE507GX	Low hydrogen Sodium	ASME SFA-5.1 E7015 BS EN ISO 2560-B-E 49 15-G A	F.V. OH,H	DC ⁺	— 0.075	≤1.60 1.37	≤0.75 0.27	≤0.020 0.004	≤0.030 0.016	≤0.20 0.025	≤0.30 0.054
CHE507R	Low hydrogen Sodium	ASME SFA-5.1 E7015 BS EN ISO 2560-B-E 49 15-1 A	F.V. OH,H	DC ⁺	— 0.082	≤1.60 1.05	≤0.75 0.54	≤0.020 0.010	≤0.030 0.020	≤0.20 0.05	≤0.30 0.02
CHE507Fe16	Low hydrogen Potassium Iron powder	AWS A5.1 E7028 BS EN ISO 2560-B-E 49 28-1 A	F. IIF	AC≥60V or DC ⁺	≤0.15 0.039	≤1.60 1.50	≤0.90 0.72	≤0.035 0.011	≤0.035 0.016	≤0.20 0.032	≤0.30 0.012
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
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
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



Welding Rods for Low Alloy Steel

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Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)							
				C	Mn	Si	S	P	Cr	Ni	Mo
CHE107	BS EN 757-E 89 2 Z B T ISO 18275-A-E 89 2 Z B T	F.V. OH,H	DC ⁺	≤0.20 0.068	≥1.00 1.92	≤0.80 0.31	≤0.015 0.009	≤0.020 0.015	≥0.30 0.98	≥1.00 2.19	≥0.30 0.845
CHE107Cr	BS EN 757-E 89 2 Z B T ISO 18275-A-E 89 2 Z B T	F.V. OH,H	DC ⁺	≤0.15 0.078	≥1.00 1.75	0.30-0.70 0.45	≤0.035 0.010	≤0.035 0.017	1.50-2.20 1.85	—	0.40-0.80 0.62
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
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
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
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
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
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
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
CHE507SH	ASME SFA-5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	VD,F. OH,H	DC ⁺	— 0.082	≥1.00 1.44	≥0.80 0.47	≤0.03 0.007	≤0.03 0.008	≥0.30 0.023	≥0.50 0.013	≥0.20 0.001

Standard & Typical Mechanical Properties of Deposited Metal (AW)							Applications	Approvals
Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	AkV Value (J)			
≤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.	—
≤0.30 0.011	≤0.08 0.008	≥400 430	490-590 540	≥22 30	-30℃	≥27 150	For welding high pressure vessels and high pressure pipes made by low alloy steels.	—
≤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.	—
≤0.30 0.001	≤0.08 0.002	≥400 440	490-590 540	≥22 30	-45℃	≥27 100	For welding high pressure vessels and high pressure pipes made by low alloy steels.	—
≤0.30 0.001	≤0.08 0.01	≥400 450	490-590 560	≥22 30	-30℃	≥27 110	For welding pipelines made of X60 steel and structures fabricated by low S & P and low temperature toughness steels.	—
≤0.30 0.032	≤0.08 0.01	≥400 435	490-590 530	≥22 31	-30℃	≥27 138	For welding high pressure vessels and high pressure pipes made by low alloy steel.	—
≤0.30 0.002	≤0.08 0.011	≥400 440	≥490 560	≥22 33	-20℃	≥27 120	For welding important structures made by low alloy steel with corresponding grade of tensile strength and the welding efficiency is about 160%.	—
≤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.	—
≤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, BK,INK
≤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, BK,CWB,KR

		Standard & Typical Mechanical Properties of Deposited Metal					Applications
V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
≥0.05 0.074	—	PWHT 520℃×1h	≥880 940	≥980 1,080	≥12 14	-20℃ ≥27 45	Suitable for welding structures fabricated by 980MPa grade low alloy,high tensile strength steels, e.g. 30CrMoSi,35CrMo, etc.
0.08-0.16 0.12	—	Quenching 880℃ tempering 520℃	≥890 960	≥980 1,080	≥12 14	—	Suitable for welding structures fabricated by 980MPa grade low alloy,high tensile strength steels, e.g. 30CrMoSi,35CrMo, etc.
≥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.
≥0.10 0.010	≥0.20 0.21	PWHT 620℃×1h	≥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.
≤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.
—	—	PWHT 620℃×1h	≥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.
≥0.10 0.012	≥0.20 0.22	PWHT 620℃×1h	≥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.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥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.
≥0.10 0.012	≥0.20 0.11	PWHT 620℃×1h	≥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.
≥0.10 0.010	≥0.20 0.016	PWHT 620℃×2h	≥390 380	≥490 510	≥22 32	— -30℃ 150	Suitable for fabricating special high pressure vessels that made by low alloy steels of 16MnR (HIC), such as high temperature separators, circulators of liquid hydrogen, oil & gas transmission pipe lines and so on.



Welding Rods for Low Alloy Steel [Continued]

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Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)							
				C	Mn	Si	S	P	Cr	Ni	Mo
CHE507SHA	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	VD,F, OH,H	DC ⁺	— 0.082	1.0-1.6 1.35	0.20-0.60 0.32	≤0.005 0.004	≤0.010 0.008	≥0.30 0.023	≥0.20 0.013	≥0.10 0.001
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
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
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
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
CHE557GX	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC ⁺	— 0.077	≥1.00 1.42	≥0.80 0.29	≤0.03 0.004	≤0.03 0.016	≥0.30 0.030	≥0.50 0.004	≥0.20 0.001
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
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
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
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
CHE558GX	AWS A5.5 E8018-P2 BS EN ISO 2560-B-E 55 18-G A	F,V, OH,H	AC≥70V or DC ⁺	≤0.12 0.079	0.90-1.70 1.43	≤0.80 0.34	≤0.03 0.003	≤0.03 0.016	≤0.20 0.030	≤1.00 0.023	≤0.50 0.001
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
CHE60	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 0.021	≤0.03 0.011	≥0.30 0.031	≥0.50 0.008	≥0.20 0.34
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
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
CHE607CG	AWS A5.5 E9015-G ISO 18275-B-E 59 15-N1M1 P	F,V, OH,H	DC ⁺	— 0.072	≥1.00 1.51	≥0.80 0.35	≤0.03 0.005	≤0.03 0.012	≥0.30 0.031	≥0.50 1.00	≥0.20 0.24
CHE607GX	AWS A5.5 E9015-G ISO 18275-B-E 62 15-3M2 A	F,V, OH,H	DC ⁺	— 0.079	≥1.00 1.38	≥0.80 0.30	≤0.03 0.004	≤0.03 0.014	≥0.30 0.028	≥0.50 0.08	≥0.20 0.010
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
CHE607NiR	ASME SFA-5.5 E9015-G ISO 18275-B-E 62 15-G P	F,V, OH,H	DC ⁺	≤0.12 0.075	≥1.00 1.58	≥0.80 0.43	≤0.015 0.010	≤0.020 0.010	—	≥0.50 0.94	≥0.20 0.32
CHE607RH	ASME SFA-5.5 E9015-G ISO 18275-B-E 62 15-G PH5	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
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
CHE62CFLH	AWS A5.5 E9015-G BS EN ISO 2560-B-E 62 15-G PH5	F,V, OH,H	DC ⁺	— 0.056	≥1.00 1.46	≥0.80 0.30	≤0.03 0.010	≤0.03 0.020	≥0.30 0.030	≥0.50 0.98	≥0.20 0.35
CHE657GX	AWS A5.5 E9015-G ISO 18275-B-E 62 15-G A	F,V, OH,H	DC ⁺	— 0.062	≥1.00 1.34	≥0.80 0.30	≤0.03 0.005	≤0.03 0.015	≥0.30 0.025	≥0.50 1.80	≥0.20 0.163
CHE657HTP	AWS A5.5 E9015-G ISO 18275-B-E 62 15-G A	F,V, OH,H	DC ⁺	≤0.08 0.055	0.80-1.80 1.25	≤0.60 0.34	≤0.006 0.005	≤0.020 0.016	≤0.25 0.08	≥0.30 1.40	Nb≤0.08 0.05
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

		Standard & Typical Mechanical Properties of Deposited Metal					Applications
V	Cu	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Kv Value (J)	
≥0.025 0.010	—	PWHT 620℃×2h	≥305 380	470-590 510	≥20 32	-30℃ ≥34 150	Suitable for fabricating special high pressure vessels that made by low alloy steels of 16MnR (HIC), such as high temperature separators, circulators of liquid hydrogen, oil & gas transmission pipe lines and so on.
≥0.10 0.010	≥0.20 0.015	PWHT 620℃×1h	≥390 470	≥490 580	≥22 28	— -40℃ 100	Welding low alloy steel structures with corresponding tensile strength.
≥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.
≥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.
≥0.10 0.010	≥0.20 0.016	PWHT 620℃×1h	≥460 480	≥550 590	≥19 24	— -40℃ 100	Welding medium carbon steel structures and low alloy steel structures.
≥0.10 0.010	≥0.20 0.026	AW	≥460 490	≥550 600	≥19 26	— -20℃ 175	For welding pipelines made of X65 steel and structures fabricated by low S & P and low temperature toughness steels.
≥0.10 0.037	≥0.20 0.030	PWHT 620℃×1h	≥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.
≥0.10 0.011	≥0.20 0.010	PWHT 620℃×1h	≥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.
≥0.10 0.018	≥0.20 0.020	PWHT 620℃×1h	≥460 500	≥550 590	≥19 26	— -40℃ 120	For welding structures of pressure vessels, bridges, water-guiding pipes of hydro-electric power station as well as steel structures of ocean project.
≥0.10 0.015	≥0.20 0.010	PWHT 620℃×1h	≥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 15MnTi, 15MnV, etc.
≤0.05 0.010	—	AW	≥460 520	≥550 620	≥19 21	-30℃ ≥27 130	For welding pipelines made of X65, X70 steel and structures fabricated by low S & P and low temperature toughness steels.
≤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.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥530 580	≥620 680	≥17 25	— -30℃ 90	Welding medium carbon steel and low alloy steel structures with corresponding tensile strength, e.g. ships.
≥0.10 0.016	≥0.20 0.012	PWHT 620℃×1h	≥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.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥530 580	≥620 680	≥17 25	— -30℃ 90	Welding medium carbon steel and low alloy steel structures with corresponding grade strength.
≥0.10 0.010	≥0.20 0.010	PWHT 580℃×2.5h	≥530 550	≥620 650	≥17 25	— -30℃ 90	It is suitable for welding 590MPa grade flawless steels especially widely be used on the huge petroleum storage tanks.
≥0.10 0.010	≥0.20 0.030	AW	≥530 510	≥620 630	≥17 24	— -20℃ 160	For welding pipelines made of X70 steel and structures fabricated by low S & P and low temperature toughness steels.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥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.
—	—	PWHT 620℃×1h	≥490 560	590-690 660	≥20 25	-50℃ ≥54 76	Suitable for high pressure vessels with equivalent tensile strength.
≥0.10 0.009	≥0.20 0.010	PWHT 620℃×1h	≥530 550	≥620 650	≥17 25	— -50℃ 80	For welding structures of pressure vessels, bridges, water-guiding pipes of hydro-electric power station as well as steel structures of ocean project, especially in good match with steel CF60 & CF62.
≥0.10 0.010	≥0.20 0.013	PWHT 620℃×1h	≥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.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥530 560	≥620 655	≥17 25	— -20℃ 119	Mainly for Fabricating of important structures made by medium thick 62CF steel plate.
≥0.10 0.011	Cu≤0.30 0.08	AW	≥530 535	≥620 650	≥17 30	— -20℃ 150	Suitable for fabricating huge diameter HTP pipelines made by X80 grade steels, which required extra low S & P as well as low temperature toughness. Also steel structures with requirement equivalently.
—	≤0.30 0.03	AW	≥500 545	≥590 640	≥15 22	-20℃ ≥90 150	Suitable for fabricating huge diameter HTP pipelines made by X80 grade steels, which required extra low S & P as well as low temperature toughness. Also steel structures with requirement equivalently.
≤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.



Welding Rods for Low Alloy Steel [Continued]

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Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)							
				C	Mn	Si	S	P	Cr	Ni	Mo
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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



Welding Rods for Corrosion Resisting Low Alloy Steel

耐腐蚀低合金钢焊条

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition					
					C	Mn	Si	S	P	Cr
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
CHW506NiCrCu	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
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
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

		Standard & Typical Mechanical Properties of Deposited Metal					Applications
V	Cu	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
—	—	PWHT 620℃×1h	≥600 670	≥690 760	≥16 23	-50℃ ≥27 69	Welding medium carbon steel and low alloy steel structures with corresponding grade strength.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥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).
≥0.10 0.012	≥0.20 0.010	PWHT 620℃×1h	≥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.
≤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.
≥0.10 0.07	≥0.20 0.015	PWHT 620℃×1h	≥670 680	≥760 780	≥15 18	— 25℃ 100	For welding important structures fabricated by 740MPa tensile strength or more low alloy steels.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥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.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥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.
≤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.
≥0.10 0.030	≥0.20 0.030	PWHT 620℃×1h	≥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.
≥0.10 0.020	≥0.20 0.013	PWHT 620℃×1h	≥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.
≥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-electric power station as well as steel structures of ocean project, especially in good match with steel CF80.
≥0.10 0.009	≥0.20 0.007	PWHT 620℃×1h	≥740 800	≥830 900	≥14 19	— 25℃ 80	For welding important structures made by 830MPa grade of tensile strength or more low alloy steels.
≥0.10 0.063	≥0.20 0.063	PWHT 620℃×1h	≥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.
≥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.
≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥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.
≥0.10 0.008	≥0.20 0.012	PWHT 620℃×1h	≥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.

of Deposited Metal(%)				Standard & Typical Mechanical Properties of Deposited Metal					Applications
Ni	Mo	V	Cu	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
W 0.20-0.50 0.35	— 0.006	—	0.20-0.50 0.30	PWHT 620℃×1h	≥390 450	≥490 540	≥22 27	-20℃ ≥27 50	Suitable for railway wagons, vehicles made by atmospheric corrosion and infection resistance steels.
≥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.
≥0.50 0.012	≥0.20 0.004	≥0.10 0.009	Cu≥0.20 0.21 W 0.28	PWHT 620℃×1h	≥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.
≥0.50 0.30	≥0.20 0.005	≥0.10 0.008	≥0.20 0.30	PWHT 620℃×1h	≥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.



Welding Rods for Corrosion Resisting Low Alloy Steel

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition					
					C	Mn	Si	S	P	Cr
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
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
CHE508W1	Iron powder Low hydrogen Potassium	AWS A5.5 E7018-W1 BS EN ISO 2560-B-E 49 18-NCC2 A	F.V. OH,H	AC≥70V or DC	≤0.12 0.068	0.40-0.70 0.64	0.40-0.70 0.53	≤0.025 0.003	≤0.025 0.023	0.15-0.30 0.267
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
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
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
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
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
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



Welding Rods for Heat-resisting Low Alloy Steel

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited							
					C	Mn	Si	S	P	Cr	Ni	Mo
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
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
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
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
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
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
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
CHH307A	Low hydrogen Sodium	ISO 3580-B-E 55 15-G EN 1599-E CrMo1 B	F.V. OH,H	DC	≤0.12 0.065	0.50-0.90 0.72	≤0.60 0.30	≤0.008 0.007	≤0.010 0.007	1.00-1.50 1.25	—	0.40-0.65 0.54
CHH307L	Low hydrogen Sodium	AWS A5.5 E7015-B2L ISO 3580-B-E 52 15-1CML EN 1599-E CrMo1L B	F.V. OH,H	DC	≤0.05 0.040	≤0.90 0.80	≤1.00 0.48	≤0.03 0.010	≤0.03 0.012	1.00-1.50 1.20	—	0.40-0.65 0.50
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
CHH312	Lime titania	ISO 3580-B-E 55 13-G EN 1599-E Z R	F.V. OH,H	AC or DC	0.05-0.12 0.085	≤0.90 0.56	≤0.60 0.26	≤0.035 0.015	≤0.035 0.028	0.80-1.50 1.10	—	0.40-0.65 0.48

of Deposited Metal(%)				Standard & Typical Mechanical Properties of Deposited Metal					Applications
Ni	Mo	V	Cu	Postweld Condition	Yield Point Rel. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
≥0.50 0.005	≥0.20 0.004	≥0.10 0.018	≥0.20 0.37	PWHT 620℃×1h	≥390 460	≥480 560	≥22 28	— 25℃ 70	For welding atmospheric corrosion and marine corrosion resisting low alloy steel structures.
≥0.50 0.005	≥0.20 0.35	≥0.10 0.007	≥0.20 0.17	PWHT 620℃×1h	≥390 440	≥490 550	≥22 28	— -20℃ 120	For welding of high pressure, high temperature H.S corrosion resisting steel structures.
0.20-0.40 0.308	—	≤0.08 0.010	0.30-0.60 0.44	AW	≥415 425	≥480 530	≥22 38	-20℃ ≥27 145	Suitable for railway wagons, vehicles, locomotives fabricated by atmospheric corrosion and infection resistance steels as well as structures made by low alloy steels, e.g. 16Mn.
≥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.
—	0.40-0.65 0.49	—	—	PWHT 620℃×1h	≥460 485	≥550 620	≥19 25	— -20℃ 90	Suitable for welding structures of skyscrapers and jumbo public buildings which fabricated by fire resisting and atmospheric corrosion and infection resistance steels.
0.40-0.80 0.65	—	—	0.30-0.75 0.48	PWHT 620℃×1h	≥460 500	≥550 610	≥19 23	-20℃ ≥27 82	Suitable for welding structures made by atmospheric corrosion and infection resistance steels, e.g. ASTM A424 & A588 steels.
≥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. Q500NQR1.
≥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.
≥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.

Metal(%)			Mechanical Properties of Deposited Metal (Typical)					Applications
V	Cu	Other	Postweld Condition	Yield Point Rel. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
—	—	—	PWHT 620℃×1h	≥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.
—	—	—	PWHT 620℃×1h	≥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.
≥0.10 0.15	≥0.20 0.30	—	PWHT 620℃×1h	≥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.
—	—	—	PWHT 620℃×1h	≥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.
—	—	—	PWHT 620℃×1h	≥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℃.
—	—	—	PWHT 620℃×1h	≥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℃.
—	—	—	PWHT 620℃×1h	≥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.
—	—	—	PWHT 675℃×5h	≥295 420	450-590 540	≥19 24	-30℃ ≥27 120	It is one kind of extra low S & low P low alloy steel welding rod. Suitable for welding important structures made by 15CrMoR(H) steel, which work temperature below 520℃, such as boiler pipes, high pressure vessels, petroleum thermal cracking equipment, etc. Also it could welding cast steel of 30CrMnSi.
—	—	—	PWHT 690℃×1h	≥390 480	≥520 580	≥19 25	— 25℃ 180	Suitable for welding important structures made by 15CrMo steel, which work temperature below 520℃, such as boiler pipes, high pressure vessels, petroleum thermal cracking equipment, etc. Also it could weld cast steel of 30CrMnSi.
—	—	—	PWHT 690℃×1h	≥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.
0.10-0.35 0.16	—	—	PWHT 730℃×2h	≥440 520	≥540 630	≥16 22	25℃ ≥27 60	Suitable for welding structures made by heat resisting low alloy pearlitic steel which work temperature is below 540℃, such as boiler pipes, high press vessels, petroleum thermal cracking equipment.



Welding Rods for Heat-resisting Low Alloy Steel

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[Continued]

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited							
					C	Mn	Si	S	P	Cr	Ni	Mo
CHH317	Low hydrogen Sodium	ISO 3580-B-E 55 15-G EN 1599-E Z B	F.V. OH,H	DC ⁺	0.05-0.12 0.066	≤0.90 0.70	≤0.60 0.37	≤0.035 0.012	≤0.035 0.015	0.80-1.50 1.12	—	0.40-0.65 0.52
CHH327	Low hydrogen Sodium	ISO 3580-B-E 55 15-G EN 1599-E Z B	F.V. OH,H	DC ⁺	0.05-0.12 0.073	0.70-1.10 0.74	≤0.60 0.43	≤0.035 0.011	≤0.035 0.016	0.80-1.50 1.10	—	0.70-1.00 0.77
CHH337	Low hydrogen Sodium	ISO 3580-B-E 55 15-G EN 1599-E Z B	F.V. OH,H	DC ⁺	0.05-0.12 0.063	≤0.90 0.70	≤0.60 0.31	≤0.035 0.010	≤0.035 0.013	0.80-1.50 1.22	—	0.70-1.00 0.86
CHH347	Low hydrogen Sodium	ISO 3580-B-E 55 15-G EN 1599-E Z B	F.V. OH,H	DC ⁺	0.05-0.12 0.062	≤1.00 0.90	≤0.60 0.13	≤0.035 0.009	≤0.035 0.017	1.50-2.50 1.95	—	0.30-0.80 0.61
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
CHH407A	Low hydrogen Sodium	AWS A5.5 E9015-B3 ISO 3580-B-E 55 15-2C1M EN 1599-E CrMo2 B	F.V. OH,H	DC ⁺	0.05-0.12 0.070	≤0.90 0.78	≤1.00 0.32	≤0.030 0.004	≤0.030 0.006	2.00-2.50 2.25	—	0.90-1.20 0.96
CHH407L	Low hydrogen Sodium	AWS A5.5 E8015-B3L ISO 3580-B-E 55 15-2C1ML EN 1599-E CrMo2L B	F.V. OH,H	DC ⁺	≤0.05 0.04	≤0.90 0.80	≤1.00 0.48	≤0.03 0.01	≤0.03 0.012	2.00-2.50 2.20	—	0.90-1.20 1.12
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
CHH417	Low hydrogen Sodium	ISO 3580-B-E 55 15-G EN 1599-E Z B	F.V. OH,H	DC ⁺	0.05-0.12 0.08	≤1.00 0.80	≤0.60 0.40	≤0.035 0.010	≤0.035 0.020	2.40-3.00 2.60	—	0.70-1.00 0.80
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
CHH437	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 0.55	≥0.80 0.25	≤0.03 0.008	≤0.03 0.009	≥0.30 2.10	≥0.50 0.55	≥0.20 1.00
CHH507R	Low hydrogen Sodium	ISO 3580-B-E 55 15-G EN 1599-E Z B	F.V. OH,H	DC ⁺	≤0.12 0.074	0.50-0.90 0.77	≤0.50 0.48	≤0.02 0.007	≤0.03 0.022	4.50-6.00 5.19	—	0.40-0.70 0.55
CHH517	Low hydrogen Sodium	AWS E8015-B6 EN 1599-E CrMo3 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
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
CHH727	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 ⁺	— 0.102	≥1.00 0.67	≥0.80 0.28	≤0.03 0.008	≤0.03 0.009	≥0.30 9.12	≥0.50 0.659	≥0.20 0.51
CHH737	Low hydrogen Sodium	AWS A5.5 E 80 15-B8 EN 1599-E CrMo9 B	F.V. OH,H	DC ⁺	0.05-0.10 0.07	≤1.00 0.75	≤0.90 0.30	≤0.03 0.012	≤0.03 0.015	8.00-10.50 9.00	≤0.40 0.20	0.85-1.20 0.95



Welding Rods for Low Temperature Service Steel

低温钢焊条

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited							
					C	Mn	Si	S	P	Cr	Ni	Mo
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
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
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	—
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 2.48	≥0.20 0.24

Metal(%)			Mechanical Properties of Deposited Metal (Typical)					Applications
V	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
0.10-0.35 0.18	—	—	PWHT 730℃×2h	≥440 540	≥540 640	≥17 23	25℃ ≥27 150	For welding low alloy CrMo pearlitic steels, such as high temperature, high pressure boiler pipeline, petroleum cracking equipment, working temperature of which is below 540℃.
0.20-0.35 0.24	—	W 0.25-0.50 0.35	PWHT 730℃×2h	≥440 540	≥540 640	≥17 23	25℃ ≥27 140	Suitable for welding low alloy 15CrMoV steels working temperature of which is below 570℃.
0.15-0.40 0.27	—	Nb 0.10-0.25 0.15	PWHT 730℃×2h	≥440 550	≥540 670	≥17 22	—	For welding low alloy CrMoV steels working temperature of which is below 570℃.
0.20-0.60 0.44	W 0.20-0.60 0.38	B 0.001-0.003 0.002	PWHT 760℃×2h	≥440 530	≥540 630	≥17 23	25℃ ≥27 140	Welding corresponding low alloy steel structures, such as high temperature, high pressure turbogenerator unit, boiler pipeline, working temperature of which is below 620℃.
—	—	—	PWHT 690℃×1h	≥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℃.
—	—	—	PWHT 690℃×8h	≥530 530	≥620 625	≥17 21	—30℃ 120	It is one kind of extra low S & low P low alloy steel welding rod. Suitable for welding important structures made by 2.25CrMo heat-resisting steel and which work temperature below 550℃, such as high pressure & high temperature pipes, chemical machinery, petroleum thermal cracking equipments, etc.
—	—	—	PWHT 690℃×1h	≥460 540	≥550 630	≥19 20	25℃ 170	It is suitable for welding important structures made by 2.25CrMo heat-resisting steel and which work temperature below 550℃, such as high pressure & high temperature pipes, chemical machinery, petroleum thermal cracking equipment, and so on.
—	—	—	PWHT 690℃×1h	≥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 pressure pipes.
0.25-0.50 0.30	—	Nb 0.35-0.65 0.40	PWHT 730℃×4h	≥440 500	≥540 670	≥17 22	—	Welding low alloy 12Cr3MoVSiTiB pearlitic steel structures, such as high temperature high pressure boiler pipeline, working temperature of which is below 620℃.
≥0.10 0.20	≥0.20 0.32	Nb 0.02 W 1.45	PWHT 750℃×2h	≥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.
≥0.10 0.19	—	Nb 0.003	PWHT 740℃×2h	≥530 540	≥620 650	≥17 18	25℃ 120	It is one kind of bainite heat resisting welding rods specialized for welding T/P23 pipes on cooling wall of industrial boilers.
0.10-0.35 0.25	≤0.50 0.52	—	PWHT 750℃×4h	—	≥540 645	≥20 22	25℃ ≥41 157	Suitable for welding high pressure vessels that fabricated by Cr5MoV pearlitic heat resisting steels.
—	—	—	PWHT 740℃×1h	≥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.
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℃×6h	≥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.
V 0.15-0.30 0.19 W 1.60	Cu ≥0.20 0.31 N 0.026	Nb 0.02-0.10 0.055 Al ≤0.04 0.004	PWHT 765℃×4h	≥530 600	≥620 700	≥17 18	25℃ 80	Suitable for welding CrMoNiWVNb alloy steel, especially for T92, P92, Nb16 heat-resisting steels. Weld piece should be pre-heated to 200℃-250℃ before welding and interpass temperature in welding should be 260℃-300℃.
—	—	—	PWHT 740℃×1h	≥460 560	≥550 650	≥19 22	25℃ 100	It is suitable for welding structures made by CrMo9 heat-resisting steels, e.g. steam pipes.

Metal(%)		Standard & Typical Mechanical Properties of Deposited Metal					Applications
V	Cu	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
≥0.10 0.11	≥0.20 0.30	PWHT 620℃×1h	≥390 430	≥490 530	≥22 30	—100℃ 80	For welding structures made by 3.5Ni low alloy steel, which work temperature is about -100℃.
≥0.10 0.13	≥0.20 0.23	PWHT 620℃×1h	≥390 430	≥490 540	≥22 30	—60℃ 110	For welding structures made by 09MnD low alloy steel, which work temperature is around -60℃.
—	—	PWHT 620℃×1h	≥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℃.
≥0.10 0.14	≥0.20 0.28	PWHT 620℃×1h	≥390 500	≥490 590	≥22 28	—70℃ 80	For welding structures made by 2.5Ni low alloy steel, which work temperature is around -70℃.



Welding Rods for Low Temperature Service Steel

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[Continued]

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited							
					C	Mn	Si	S	P	Cr	Ni	Mo
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
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



Welding Rods for Stainless Steel

不锈钢焊条

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition						
					C	Mn	Si	S	P	Cr	Ni
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
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
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
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
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
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 19.80	9.0-11.0 9.60
CHS002Nb	Extra low carbon Lime titania	AWS A5.4 E347-16 ISO 3581-B-ES347L-16 EN 1600 E 19 9Nb R32	F.V. OH,H	AC or DC	≤0.04 0.030	0.80-2.50 1.28	≤0.90 0.72	≤0.020 0.012	≤0.030 0.022	18.0-21.0 19.50	9.0-11.0 9.70
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
CHS012Si	Lime titania	DGS K 401.41-2004	F.V. OH,H	AC or DC	≤0.04 0.018	≤1.00 0.66	3.50-4.30 4.00	≤0.030 0.011	≤0.035 0.013	18.0-22.0 19.15	12.0-15.0 14.00
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
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
CHS022Si	Extra low carbon lime titania Duplex	DGS K 401.51-2004	F.V. OH,H	AC or DC	≤0.05 0.032	≤0.8 0.61	≥0.60 0.75	≤0.030 0.012	≤0.035 0.022	18.5-20.5 19.30	10.5-12.5 11.50
CHS027	Extra low carbon Low hydrogen Sodium	AWS A5.4 E316L-15 ISO 3581-B-ES316L-15 EN 1600 E 19 12 2 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 0.015	17.0-20.0 18.50	11.0-14.0 12.50
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
CHS041	Extra low carbon Silicon titania	AWS A5.4 E309L Mo-17 ISO 3581-B-ES309L Mo-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
CHS042	Extra low carbon Lime titania	AWS A5.4 E309L Mo-16 ISO 3581-B-ES309L Mo-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
CHS052	Extra low carbon Lime titania	DGS K 401.61-2004	F.V. OH,H	AC or DC	≤0.04	≤2.00	≤0.90	≤0.030	≤0.035	17.0-20.0	22.0-25.0
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

Metal(%)		Standard & Typical Mechanical Properties of Deposited Metal					Applications	
V	Cu	Postweld Condition	Yield Point Rel. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
≥0.10 0.11	≥0.20 0.27	PWHT 620℃×1h	≥390 435	≥490 525	≥22 25	— -70℃ 100	For welding structures made by 2.5Ni low alloy steel, which work temperature is around -70℃.	
≥0.10 0.10	≥0.20 0.23	PWHT 620℃×1h	≥390 445	≥490 530	≥22 30	— -80℃ 100	For welding structures made by 1.5Ni low alloy steel which work temperature is around -80℃.	

of Deposited Metal(%)			Mechanical Properties of Deposited Metal			Applications	Approvals
Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
≤0.75 0.016	≤0.75 0.033	—	PWHT 860℃×2h	≥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.	—
≤0.75 0.011	≤0.75 0.031	—	PWHT 860℃×2h	≥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.	—
0.40-0.70 0.55	≤0.75 0.027	—	PWHT 620℃×1h	≥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.	—
≤0.75 0.13	≤0.75 0.034	—	PWHT 790℃×2h	≥450 550	≥20 22	Welding Cr17 stainless steel structures, which working condition of resisting corrosion by nitric acid and heat resistance.	—
≤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℃.	—
≤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
≤0.50 0.03	≤0.20 0.10	Nb 8×C-1.00 0.48	AW	≥520 650	≥30 35	Especially for surfacing the inner chamber of hydrocracking reactor.	—
≤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℃.	—
0.20-0.50 0.35	—	—	AW	≥540 705	≥25 39	For welding extra-low carbon 00Cr17Ni15Si4Mo stainless steels structures, which working condition with resisting dense nitric acid corrosion.	—
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.	—
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
2.0-3.0 2.40	—	—	AW	≥540 580	≥25 42	It is suitable for welding facilities of smelting equipments fabricated by 3RE60 steel and it is similar like the stainless steel welding rod of 3RS61 of Sweden.	—
2.00-3.00 2.40	≤0.75 0.23	—	AW	≥490 540	≥30 40	It is 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.	—
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.	—
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.	—
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.	—
4.00-5.50	—	—	AW	≥540	≥25	For welding structures resisting marine corrosion or reactors of sulphuric acid, nitric acid, acetic acid. It could be used in dissimilar steel structures also.	—
≤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.	—



Welding Rods for Stainless Steel

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition						
					C	Mn	Si	S	P	Cr	Ni
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
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
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
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
CHS102H	Lime titania	AWS A5.4 E308H-16 ISO 3581-B-ES308H-16 EN 1600 E 19 9 H R 3 2	F.V. OH.H	AC or DC ⁺	0.04-0.08 0.058	0.50-2.50 0.68	≤0.90 0.69	≤0.030 0.007	≤0.040 0.021	18.0-21.0 19.20	9.0-11.0 9.79
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	9.0-10.0
CHS102SiN	Lime titania	DGS K 401.141-2007	F.V. OH.H	AC or DC ⁺	≤0.10 0.056	≤1.0 0.71	1.40-2.00 1.78	≤0.030 0.010	≤0.040 0.026	20.0-22.0 21.27	9.0-11.0 9.88
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
CHS122	Lime titania	DGS K 401.81-2004	F.V. OH.H	AC or DC ⁺	≤0.08	≤2.50	≤1.50	≤0.030	≤0.035	20.0-24.0	7.0-10.0
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
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
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
CHS147	Low hydrogen sodium	DGS K 401.151-2009	F.V. OH.H	DC ⁺	≤0.14 0.080	3.50-7.00 4.38	≤1.2 0.51	≤0.030 0.013	≤0.035 0.024	17.0-22.0 20.16	8.0-11.0 9.75
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
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
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
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
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
CHS222	Lime titania	GB E317MoCu-16	F.V. OH.H	AC or DC ⁺	≤0.08 0.035	0.50-2.50 0.77	≤0.90 0.58	≤0.030 0.012	≤0.035 0.022	18.0-21.0 19.28	12.0-14.0 12.60
CHS232	Lime titania	GB E318V-16	F.V. OH.H	AC or DC ⁺	≤0.08	0.50-2.50	≤0.90	≤0.030	≤0.035	17.0-20.0	11.0-14.0
CHS237	Low hydrogen Sodium	GB E318V-15	F.V. OH.H	DC ⁺	≤0.08 0.052	0.50-2.50 1.96	≤0.90 0.43	≤0.030 0.008	≤0.035 0.025	17.0-20.0 18.7	11.0-14.0 12.31
CHS301	Silicon titania	AWS A5.4 E309-17 ISO 3581-B-ES309-17 EN 1600 E 22 12 R 3 2	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
CHS302	Lime titania	AWS A5.4 E309-16 ISO 3581-B-ES309-16 EN 1600 E 22 12 R 3 2	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
CHS302Fe	Lime titania	AWS A5.4M E309-26 ISO 3581-B-ES309-26 EN 1600 E22 12 R 5 4	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
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

of Deposited Metal(%)			Mechanical Properties of Deposited Metal			Applications	Approvals
Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
≤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
≤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.	—
≤0.75 0.15	≤0.75 0.30	—	AW	≥550 590	≥35 45	For welding 06Cr19Ni10 or Cr18Ni9Ti stainless steel structures, which working temperature is below 300℃.	—
≤0.75 0.14	≤0.75 0.23	—	AW	≥550 595	≥35 44	For welding 06Cr19Ni10 or Cr18Ni9Ti stainless steel structures, which working temperature is below 300℃. It is popular for civil use, e.g family decorating.	—
≤0.75 0.087	≤0.75 0.108	—	AW	≥550 605	≥35 48	For welding 06Cr19Ni10 stainless steel structures, which working temperature is below 300℃.	—
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.	—
≤0.50 0.09	—	N 0.08-0.18 0.13	AW	≥620 685	≥35 41	Suitable for welding structures fabricated by 253MA, ZG40Cr24Ni9Si2NRe steels, e.g. inflamer of industry boilers.	—
≤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.	—
—	—	—	AW	≥540	≥25	For welding 0Cr18Ni9 crack resisting and corrosion resisting stainless steel structures, which working temperature is lower than 300℃.	—
≤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 Cr18Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g. 06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
≤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 Cr18Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g. 06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
≤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 Cr18Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g. 06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
—	—	—	AW	≥540 610	≥25 44	For welding structures made by 0Cr20Ni10Mn6. Also it could be used for welding dissimilar steels.	—
—	—	As Value of 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.	—
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.	—
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.	—
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.	—
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 06Cr17Ni12Mo2Ti, 06Cr17Ni12Mo2Nb and extra-low 022Cr17Ni12Mo2 stainless steels.	—
2.00-2.50 2.30	≤2.00 1.49	—	AW	≥540 580	≥25 35	For welding stainless steel structures within same system, which contains copper.	—
2.00-2.50	≤0.50	V 0.30-0.70	AW	≥540	≥25	Welding normal heat resisting and corrosion resisting structures made by 06Cr18Ni11Ti or 06Ni17Ni12Mo2Ti stainless steels.	—
2.00-2.50 2.24	≤0.50 0.18	V 0.30-0.70 0.44	AW	≥540 590	≥25 43	For multi-layer welding of normal heat resisting and corrosion resisting structures made by 06Cr18Ni11Ti or 06Ni17Ni12Mo2Ti stainless steels.	—
≤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.	—
≤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.	—
≤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.	—
≤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.	—



Welding Rods for Stainless Steel

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition						
					C	Mn	Si	S	P	Cr	Ni
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
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
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
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
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
CHS422	Lime titania	DGS K 301.131-2007	F.V. OH,H	AC or DC ⁺	≤0.20 0.09	5.00-10.00 6.80	≤1.20 0.50	≤0.030 0.012	≤0.030 0.020	23.0-27.0 25.0	16.0-20.0 17.50
CHS437	Low hydrogen Sodium	DGS K 401.101-2004	F.V. OH,H	DC ⁺	0.25-0.45 0.299	5.00-8.00 6.16	≤0.60 0.22	≤0.030 0.011	≤0.030 0.020	23.0-26.0 24.85	18.0-21.0 19.93
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 0.019	14.0-18.0 16.59	22.0-27.0 24.43
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
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
CHS29.9-17	Silicon titania Duplex	AWS A5.4 E312-17 ISO 3581-B-ES312-17 EN 1600 E 29 9 R 3 2	F.V. OH,H	AC or DC ⁺	≤0.15 0.092	0.50-2.50 0.99	≤0.90 0.72	≤0.030 0.009	≤0.040 0.025	28.0-32.0 29.73	8.0-10.5 10.24
CHS29.9Co	Lime titania Duplex	DGS K 401.211-2004	F.V. OH,H	AC or DC ⁺	≤0.15 0.10	0.50-2.50 0.94	≤1.30 0.84	≤0.030 0.012	≤0.040 0.027	26.0-29.0 27.81	8.0-12.0 10.21
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
CHS2209-17	Extra low carbon Silicon titania Duplex	AWS A5.4 E2209-17 EN 1600 E 22 9 3 N L R 3 2	F.V. OH,H	AC or DC ⁺	≤0.04 0.027	0.50-2.00 0.93	≤0.90 0.62	≤0.030 0.012	≤0.040 0.023	21.5-23.5 22.80	8.5-10.5 9.41
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
CHS2553-17	Silicon titania Duplex	AWS A5.4 E2553-17	F.V. OH,H	AC or DC ⁺	≤0.06 0.027	0.50-1.50 0.99	≤1.00 0.67	≤0.030 0.012	≤0.040 0.012	24.0-27.0 25.20	6.5-8.5 7.2



Welding Rods for Hardfacing

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of						
					C	Mn	Si	S	P	Cr	Ni
CHR107	Low hydrogen Sodium	GB/T 984 EDP Mn2-15	F.V. OH,H	DC ⁺	≤0.20 0.089	≤3.50 2.80	—	—	—	—	—
CHR112	Lime titania	GB/T 984 EDP CrMo-A1-03	F.V. OH,H	AC or DC ⁺	≤0.25 0.20	—	—	—	—	≤2.00 1.00	—
CHR127	Low hydrogen Sodium	GB/T 984 EDP Mn4-15	F.V. OH,H	DC ⁺	≤0.20 0.11	≤4.50 3.60	—	—	—	—	—
CHR132	Lime titania	GB/T 984 EDP CrMo-A2-03	F.V. OH,H	AC or DC ⁺	≤0.50 0.29	—	—	—	—	≤3.00 2.00	—

of Deposited Metal(%)			Mechanical Properties of Deposited Metal			Applications	Approvals
Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
2.00-3.00 2.44	≤0.75 0.20	—	AW	≥550 625	≥30 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.	—
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.	—
≤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.	—
≤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.	—
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.	—
—	—	—	AW	≥540 580	≥30 40	The weld with higher heat crack resistance since more Mn in it. It is suitable for welding austenitic stainless heat resistance steels as well as dissimilar steels.	—
—	—	—	AW	≥540 670	≥22 32	Suitable for welding HK40 pipes and bottom rollers of high temperature furnace.	—
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, dissimilar steels structures which are required for higer rigidity and similar heat-resisting high strength steels.	—
≥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.	—
≤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.	—
≤0.75 0.090	≤0.75 0.111	—	AW	≥660 765	≥22 27	For welding high carbon steels, tool steels, dissimilar steels, Cr29Ni9 cast steels, duplex stainless steels as well as problem steels.	—
—	—	Cu ≤0.50 0.31	AW	≥660 785	≥22 26	For welding high carbon steels, High alloy steels, spring steels, cemented steels, tool steels, cast steel, high speed steels and dissimilar steels of above. It is similar like the stainless steel welding rod of FONTARGENE106N of Sweden.	—
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 00Cr22Ni5Mo3N duplex stainless steel.	—
2.5-3.5 3.03	≤0.75 0.10	N 0.08-0.20 0.11	AW	≥690 780	≥20 30	For welding extra-low carbon stainless steel structures in petrochemical and hydraulic projects industries, e.g. structures fabricated by 00Cr22Ni5Mo3N duplex stainless steel.	—
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. 022Cr25Ni7Mo4N, 03Cr25Ni6Mo3Cu2N, UNS 32550(Alloy255) and so on.	—
2.9-3.9 3.1	1.5-2.5 1.9	—	AW	≥760 875	≥15 21	It is suitable for duplex stainless steels that contain 25% Cr, e.g. 022Cr25Ni7Mo4N, 03Cr25Ni6Mo3Cu2N, UNS 32550(Alloy255) and so on.	—

Deposited Metal (%)					Hardness of Deposited Metal HRC	Applications
Mo	V	W	Nb	Other Elements		
—	—	—	—	—	HB ≥220 300.6	Surfacing and repair welding of worn parts surface of low carbon, medium carbon and low alloy steel.
≤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.
—	—	—	—	≤2.00	≥30 41.1	Surfacing of worn surface of low and medium carbon steels or low alloy steels.
≤1.50 0.74	—	—	—	—	≥30 44.5	Surfacing and repair welding of worn surface of low and medium carbon steels or low alloy steels.



Welding Rods for Hardfacing | Continued |

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of						
					C	Mn	Si	S	P	Cr	Ni
CHR172	Lime titania	GB/T 984 EDP CrMo-A3-03	F.V. OH,H	AC or DC ⁺	≤0.50 0.34	—	—	—	—	≤2.50 2.30	—
CHR207	Low hydrogen Sodium	GB/T 984 EDP CrMnSi-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	—
CHR212	Lime titania	GB/T 984 EDP CrMo-A4-03	F.V. OH,H	AC or DC ⁺	0.30-0.60 0.45	—	—	—	—	≤5.00 4.00	—
CHR237	Low hydrogen Sodium	GB/T 984 EDP CrMoV-A1-15	F.V. OH,H	DC ⁺	0.30-0.60 0.50	—	—	—	—	8.00-10.00 9.40	—
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	—	—	—	—
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	—	—	—	—
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
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	—
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	—
CHR326Ni	Low hydrogen Potassium	DGS K 501.21-2004	VD,F. OH	AC or DC ⁺	≤0.50 0.36	—	—	—	—	≤5.50 3.56	1.30-2.80 1.72
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	—
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	—
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	—
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	—
CHR507	Low hydrogen Sodium	JIS Z3251 DF-4A GB 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	—
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
CHR507MoNb	Low hydrogen Sodium	DGS K 501.31-2004	F.V. OH,H	DC ⁺	≤0.15 0.13	—	—	≤0.030 0.005	≤0.040 0.019	10.00-16.00 12.60	—
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	—
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
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
CHR577	Low hydrogen Sodium	JIS Z3251 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
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	—
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	—
CHR646	Low hydrogen Potassium	GB/T 984 ED ZCr-B-16	F	AC or DC ⁺	1.50-3.50 2.20	≤1.00 0.12	—	—	—	22.00-32.00 29.00	—
CHR648	Graphite	GB/T 984 ED ZCr-B-08	F	AC or DC ⁺	1.50-3.50 2.20	≤1.00 0.15	—	—	—	22.00-32.00 28.00	—

Deposited Metal (%)					Hardness of Deposited Metal HRC	Applications
Mo	V	W	Nb	Other Elements		
≤2.50 1.90	—	—	—	—	≥40 50.4	Surfacing of worn parts of gear wheel, mining machinery etc.
—	—	—	—	≤1.00	≥50 55.2	Surfacing of worn parts of bulldozer blade propeller etc.
≤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.
≤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.
—	—	—	—	≤5.00	HB ≥170 193.8	Surfacing of easy-impacted, easy-worn parts of crushers, rails, bulldozers etc.
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.
≤2.00 1.00	—	—	—	≤4.00	HB ≥210 212.6	Surfacing of high manganese steel structures.
—	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.
≤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.
≤2.50 0.96	≤1.50 1.40	6.00-9.00 7.39	—	—	≥45 57.4	Surfacing and repair welding high wear resistance parts, such as, edges of cutting machines, models.
≤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.
—	—	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.
≤1.00 0.64	—	—	—	—	≥40 55.2	Surfacing of cast steels and heat forging model. Also repair welding of worn forging model.
—	—	—	—	—	≥40 55.5	It is widely for hardfacing carbon steel and low alloy steel axis, shafts and valves that working temperature is below 450 °C.
—	—	—	—	≤2.50	≥40 43.1	Surfacing of axles and valves made of carbon steel and alloy steel, working temperature of which is below 450 °C.
≤2.50 1.60	—	≤2.00 1.20	—	≤2.50	≥37 42.3	Surfacing of valves, which work temperature should be below 510 °C.
≤2.50 0.85	—	—	≤0.50 0.30	≤2.50	≥37 45.8	Surfacing of sealing surface for middle and low pressure valves working temperatures of which is below 450 °C.
—	—	—	—	≤5.00	≥45 51.0	Surfacing of axles made of carbon steel and low alloy steel valves, working temperatures of which is below 450 °C.
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 °C.
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 °C.
≤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 °C.
3.00-5.00 4.20	—	—	—	—	≥55 59.2	Surfacing parts of agricultural machinery and mining equipments worn and impacted by grits.
3.00-6.50	—	—	—	≤6.00	≥48	Surfacing parts worn by grit, air, water at normal and middle temperature.
—	—	—	—	≤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.
—	—	—	—	≤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.



Welding Rods for Hardfacing

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of						
					C	Mn	Si	S	P	Cr	Ni
CHR678	Graphite	GB/T 984 EDZ-B1-08	F	AC or DC ⁺	1.50-3.50 1.60	—	—	—	—	—	—
CHR698	Graphite	GB/T 984 EDZ-B2-08	F	AC or DC ⁺	≤3.00 1.70	—	—	—	—	4.00-6.00 5.13	—
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	—	—	—	—



Welding Rods for Cast Iron

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Item Code	Type of Electrode	Equivalent Norm	Welding Position	Type of Current	Standard & Typical			
					C	Mn	Si	S
CHC100	Oxide flux with carbon steel core	AWS A5.15 ESt GB/T 10044 EZFe-2	F.V. OH,H	ACor DC ⁺	≤0.15 0.050	≤0.60 0.30	≤0.15 0.15	≤0.040 0.013
CHC116	Low hydrogen, vanadium alloy with carbon steel core	DGS K 601.11-2004	F.V. OH,H	DC ⁺	—	—	—	—
CHC208	Graphite with carbon steel core	AWS A5.15 ECI GB/T 10044 EZC	F.V. OH,H	ACor DC ⁺	2.00-4.00 2.70	≤0.75 0.40	2.50-6.50 4.20	≤0.10 0.004
CHC308	Graphite with pure nickel core	AWS A5.15 ENi-CI ISO 1071-E C	F.V. OH,H	ACor DC ⁺	≤2.00 0.59	≤1.00 0.07	≤2.50 1.50	≤0.030 0.004
CHC408	Graphite with nickel-ferro core	AWS A5.15 ENiFe-CI ISO 1071-E C NiFe-CI-A	F.V. OH,H	ACor DC ⁺	≤2.00 0.71	≤2.50 0.24	≤4.00 1.00	≤0.030 0.007
CHC508	Graphite with monelmetal core	AWS A5.15 ENiCu-B ISO 1071-E C NiCu-B	F.V. OH,H	ACor DC ⁺	0.35-0.55	≤2.30	≤0.75	≤0.025



Welding Rods for Nickel or Nickel Based Alloy

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Item Code	Type of Electrode	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition							
					C	Mn	Si	Fe	S	P	Ni	Cu
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
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
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
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
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

Deposited Metal (%)					Hardness of Deposited Metal HRC	Applications
Mo	V	W	Nb	Other Elements		
—	—	8.00-10.00 8.60	—	≤1.00	≥50 54.0	Surfacing of parts for mining machinery and crusher machinery.
—	—	8.50-14.00 11.24	—	≤3.00	≥60 63.0	Surfacing of mining machinery and mud pump.
—	—	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, excavator vanes.

Chemical Composition of Deposited Metal (%)					Applications
P	V	Ni	Cu	Fe	
≤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.
—	8.0-13.0 11.0	—	—	Remain	Repair welding defects of cast iron such as cylinder body and gear box etc. Also repair welding of high strength cast iron and nodular cast iron. The machinable ability is so so.
≤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.
—	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.
—	Others ≤1.0 0.25	45-60 55.16	≤2.50 0.055	Remain 42.70	Suitable for repairing or surfacing cracked and worn parts made of gray cast iron or nodular iron, as well as joining cast iron with dissimilar metals. It is machinable.
—	Others ≤1.0	60-70	25-35	3.0-6.0	Repair welding grey iron casting strength of which is not so highly required.

of Deposited Metal (%)					Standard & Typical Mechanical Properties of Deposited Metal (AW)			Applications
Nb+Ta	Al	Ti	Cr	Other Elements	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
—	≤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.
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.
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.
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.
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.



Welding Rods for Nickel or Nickel Based Alloy

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Item Code	Type of Electrode	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition							
					C	Mn	Si	Fe	S	P	Ni	Cu
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
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



Welding Rods for Copper or Copper Alloy

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited						
					C	Mn	Fe	Si	S	P	Ni
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	—
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



Solid Wire for MAG / MIG Welding

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Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (% , typical)											Postweld Condition
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other		
CHW-40CNIH	TB/T 2374 H08MnSiCuCrNi- (Type I)	F.V. OH,H	DC ⁺	0.07	1.34	0.59	0.010	0.014	0.31	0.32	—	0.38	≤0.5	AW	
	JIS Z3315 YGA-50W (Type II)			0.07	1.15	0.47	0.010	0.015	0.30	0.31	—	0.35	≤0.5		
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	
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	
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	
CHW-50C4	AWS A5.18 ER70S-4 BS EN ISO 14341-A-G 38 2 M G2Si1 BS EN ISO 14341-B-G 49A 2 M G4	F.V. OH,H	DC ⁺	0.11	1.11	0.72	0.013	0.016	0.022	0.026	0.007	0.19	≤0.5	AW	
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 ≤0.3	AW	
	0.078			1.53	0.85	0.010	0.011	0.022	0.029	0.008	0.12	0.01			
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	
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℃×1h	
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℃×2h	
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℃×2h	
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	

of Deposited Metal (%)					Standard & Typical Mechanical Properties of Deposited Metal (AW)			Applications
Nb+Ta	Al	Ti	Cr	Other Elements	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
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 °C ≥ 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.
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 °C ≥ 30 130	Suitable for welding Ni9%(UNS K81340) alloy, dissimilar steels as well as welding problem metals.

Metal (%)			Mechanical Properties of Deposited Metal (AW)		Applications
Pb	Ti	Other Elements	Tensile Strength Rm (MPa)	Elongation A4 (%)	
≤ 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.
≤ 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.

Mechanical Properties of Deposited Metal (Typical)						Application	Approvals
Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(°C)	Joule	Shield Gas		
400	520	25	-40	90	CO ₂	Suitable for 450MPa tensile strength low alloy steel structures, which resist temperature infection as well as atmospheric corrosion and marine corrosion, such as marine containers, railway wagons, offshore drilling platforms, bridges, etc.	—
415	525	26		100	CO ₂ (20%)+Ar(80%)		
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.	—
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. Particularly for the welding environment with impurities.	—
465	550	27		80	CO ₂ (20%)+Ar(80%)		
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, CE, DB, TÜV
425	540	29	-20	75	CO ₂	Suitable for single-pass & multi-pass welding and butt or fillet structures made of 450MPa and 500MPa tensile strength steel, e.g. automobile, machinery	—
≥ 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, BV, GL, DNV, NK, BKL, CWB, CE, DB, TÜV
425	540	30		102			
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 strength carbon steels or low alloy steels, such as engineering machinery, bridges, high pressure vessels and so on.	—
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 °C.	—
545	645	23		130	CO ₂ (20%)+Ar(80%)		
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 °C.	—
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%)		
475	570	27	-45	70	CO ₂	It is suitable for important structures that fabricated by low alloy steels with low temperature (-45 °C) toughness.	—
485	580	30		110	CO ₂ (20%)+Ar(80%)		



Solid Wire for MAG / MIG Welding [Continued]

气体保护焊实芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (% , typical)										Postweld Condition
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	
CHW-55CNH	BS EN ISO 14341-B-G 55A 4 M GNCC JIS Z3315 YGA-58W	F.V, OH,H	DC ⁺	0.08	1.40	0.45	0.008	0.012	0.65	0.35	—	0.25	≤0.3	AW
CHW-55VW	AWS A5.28 ER80S-G	F.V, OH,H	DC ⁺	0.07	1.48	0.60	0.005	0.005	1.44	0.035	0.932	V 0.289	W0.24	PWHT 730℃×5h
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
CHW-60CG	AWS A5.28 ER80S-G	F.V, OH,H	DC ⁺	≤0.11 0.07	1.60-2.00 1.70	0.45-0.80 0.60	≤0.015 0.010	≤0.015 0.013	≤0.30 0.05	≤0.30 0.02	0.10-0.40 0.20	≤0.50 0.20	≤0.5 Ti 0.15	AW
CHW-60CS	AWS A5.28 ER80S-D2 BS EN ISO 14341-A-G 50 3 M G4M0 BS EN ISO 14341-B-G 55A 3 M G4M31 JIS Z3312 YGW21	F.V, OH,H	DC ⁺	0.081	1.91	0.74	0.007	0.013	—	Ti 0.024	0.28	0.12	≤0.5	AW
CHW-60GX	AWS A5.28 ER80S-G	F.V, OH,H	DC ⁺	0.086	1.45	0.53	0.004	0.008	0.33	0.056	0.21	0.20	Ti0.10	AW
CHW-62B3	AWS A5.28 ER90S-B3 BS EN ISO 21952-A-G C1M02S1 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	0.30	≤0.5	PWHT 690℃×1h
CHW-62GX	AWS A5.28 ER90S-G BS EN ISO 14341-B-G 57A 2 C GN1	F.V, OH,H	DC ⁺	0.096	1.55	0.42	0.004	0.010	0.18	0.81	0.26	0.11	Ti0.12	AW
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
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
CHW-65CG	AWS A5.28 ER80S-G	F.V, OH,H	DC ⁺	≤0.11 0.09	1.45-1.80 1.60	0.50-0.80 0.58	≤0.015 0.006	≤0.020 0.015	≤0.60 0.04	≤1.00 0.84	0.10-0.40 0.25	≤0.50 0.20	≤0.5 Ti 0.12	PWHT 580℃×2.5h
CHW-70C	AWS A5.28 ER100S-G BS EN ISO 14341-B-G 57A 2 M GN2M3T	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
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℃×1h
CHW-80C1	AWS A5.28 ER110S-G	F.V, OH,H	DC ⁺	0.076	1.72	0.45	0.006	0.007	0.32	2.15	0.53	0.21	≤0.5	AW



Flux Cored Wire

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Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal (%)							
				C	Mn	Si	S	P	Cr	Ni	Mo
CHT611	AWS A5.20 E61T-GC BS EN ISO 17632 T352PC1H10	F.VD, OH,H	DC ⁺	— 0.055	≤1.75 0.90	≤0.90 0.30	≤0.03 0.008	≤0.03 0.02	—	—	—
CHT701	AWS A5.20 E70T-1C BS EN ISO 17632 T422RC3H10	F,HF	DC ⁺	≤0.12 0.06	≤1.75 1.40	≤0.90 0.45	≤0.03 0.011	≤0.03 0.018	—	—	—
CHT70B	AWS A5.20 E70T-5C BS EN ISO 17632 T423BC3H5	F,H F,V	DC ⁺	≤0.12 0.07	≤1.75 1.50	≤0.90 0.50	≤0.03 0.013	≤0.03 0.018	—	—	—
CHT70BM	AWS A5.20 E70T-5M BS EN ISO 17632 T423BM3H5	F,H F,V	DC ⁺	≤0.12 0.07	≤1.75 1.46	≤0.90 0.50	≤0.03 0.013	≤0.03 0.018	—	—	—
CHT711	AWS A5.20 E71T-1C BS EN ISO 17632 T422PC1H10	F.VD, OH,H	DC ⁺	≤0.12 0.055	≤1.75 1.35	≤0.90 0.40	≤0.03 0.009	≤0.03 0.018	—	—	—
CHT711M	AWS A5.20 E71T-1M BS EN ISO 17632 T422PM1H10	F.VD, OH,H	DC ⁺	≤0.12 0.055	≤1.75 1.3	≤0.90 0.40	≤0.03 0.009	≤0.03 0.018	—	—	—

Mechanical Properties of Deposited Metal (Typical)						Shield Gas	Application	Approvals
Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(°C) Joule					
520	625	26	-40	80	CO ₂ (20%)+Ar(80%)	Suitable for railway wagons, vehicles, locomotives fabricated by atmospheric corrosion and infection resistance steels.	—	
550	655	21	25	85	CO ₂	It is suitable for important structures made by heat resisting low alloy steels, e.g. 15CrMoV and which working temperature is lower than 570°C.	—	
570	665	22		130	CO ₂ (20%)+Ar(80%)			
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, 35MnMo, etc. such as heavy machine equipments, bridges, vehicles, skyscrapers and so on, the welded piece should be tempered at 510°C, not shorter than 2 hour after welding.	—	
550	650	24		85	CO ₂ (20%)+Ar(80%)			
≥490	≥610	≥20	-30	≥47	CO ₂	It is suitable for welding 550MPa-600MPa high tensile strength flawless steels especially for the huge petroleum storage tanks. The welded piece should be tempered at 510°C, not shorter than 2 hour after welding.	—	
510	615	22		80				
560	670	24	-30	80	CO ₂ (20%)+Ar(80%)	It is used to butt or fillet welding structures by 550MPa-690MPa tensile strength steels such as bridges, pressure vessels, engineering & construction machinery and so on.	—	
525	620	27	-10	110	CO ₂ (20%)+Ar(80%)	Mainly for welding pipelines fabricated by X80 steel as well as for welding structures made by low alloy steels with equivalent grade tensile strength such as 62CF, BHW35.	—	
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°C.	—	
585	705	19		122	CO ₂ (20%)+Ar(80%)			
600	680	23	-10	150	CO ₂	Using big current for high speed welding pipelines fabricated by X80 steel as well as for welding structures made by low alloy steels with equivalent grade tensile strength such as 62CF, BHW35.	—	
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	—	
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	—	
≥490	≥610	≥20	-30	≥50	CO ₂	It is suitable for welding 550MPa-600MPa grade flawless steels especially widely be used on the huge petroleum storage tanks.	—	
530	630	22		60				
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.	LR, ABS	
650	750	23		95	CO ₂ (20%)+Ar(80%)			
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.	—	
700	820	18	-40	110	CO ₂ (20%)+Ar(80%)	Fabricating heavy structures made by 800MPa grade high tensile low alloy steels of CF80, WEL-TEN80C etc. such as bridges, marine engineering projects, heavy engineering machinery.	—	

Standard & Typical Mechanical Properties of Deposited Metal							Shield Gas	Applications	Approvals
V	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)				
					Temp.(°C)	Joule			
—	AW	≥330 430	430-600 505	≥22 29	0 -20	≥47 120 100	CO ₂	Suitable for all position as well as vertical down welding for mild steel structures.	—
—	AW	≥390 450	490-670 545	≥22 29	-20	≥27 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.	—
—	AW	≥390 435	490-670 545	≥22 28	-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°.	—
—	AW	≥390 450	490-670 550	≥22 28	-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°.	—
—	AW	≥390 440	490-670 535	≥22 32	0 -20	≥47 120 ≥27 100	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, NK,BKL,CWB
—	AW	≥390 440	490-670 540	≥22 30	-20	≥27 120	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.	—



Flux Cored Wire

[Continued]

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Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal (%)							
				C	Mn	Si	S	P	Cr	Ni	Mo
CHT71Ni	AWS A5.20 E71T-1C-J BS EN ISO 17632 T424PC1H10	F.V. OH,H	DC ⁺	≤0.12 0.04	≤1.75 1.30	≤0.90 0.35	≤0.03 0.015	≤0.03 0.02	—	≤0.5 0.45	—
CHT71Ni1	BS EN ISO 17632 T4231NiPC1H10	F.V. OH,H	DC ⁺	≤0.12 0.05	≤1.50 1.2	≤0.80 0.35	≤0.03 0.006	≤0.03 0.015	—	0.8-1.10 0.95	—
CHT80B	AWS A5.29 E80T5-GC BS EN ISO 17632 T463BC3H5	F.H F.V	DC ⁺	— 0.07	≥1.0 1.5	— 0.5	≤0.03 0.013	≤0.03 0.018	—	— 0.2	—
CHT80B2B	AWS A5.29 E80T5-B2C ISO 17634 T(CrMo)BC3H5	F.H F.V	DC ⁺	0.05-0.12 0.06	≤1.25 0.80	≤0.80 0.30	≤0.03 0.010	≤0.03 0.012	1.0-1.5 1.15	—	0.4-0.65 0.45
CHT81B2	AWS A5.29 E81T1-B2C ISO 17634 T(CrMo)PC1H10	F.V. OH,H	DC ⁺	0.05-0.12 0.058	≤1.25 0.80	≤0.80 0.25	≤0.03 0.01	≤0.03 0.011	1.0-1.5 1.15	—	0.4-0.65 0.45
CHT81B2M	AWS A5.29 E81T1-B2M ISO 17634 T(CrMo)PM1H10	F.V. OH,H	DC ⁺	0.05-0.12 0.06	≤1.25 0.80	≤0.80 0.25	≤0.03 0.01	≤0.03 0.011	1.0-1.5 1.15	—	0.4-0.65 0.45
CHT81B2V	DGS K1801.01-2006	F.V. OH,H	DC ⁺	≤0.12 0.055	≤1.50 0.80	≤0.90 0.25	≤0.03 0.01	≤0.03 0.011	1.0-1.5 1.15	—	0.4-0.65 0.45
CHT81B6	AWS A5.29 E81T1-B6C ISO 17634 T(CrMo5)PC1H10	F.V. OH,H	DC ⁺	0.05-0.12 0.06	≤1.25 0.75	≤1.0 0.25	≤0.03 0.01	≤0.04 0.011	4.0-6.0 4.2	≤0.40 0.015	0.4-0.65 0.52
CHT81K2	AWS A5.29 E81T1-K2C BS EN ISO 17632 T4631.5NiPC1H10	F.V. OH,H	DC ⁺	≤0.15 0.05	0.5-1.75 1.35	≤0.80 0.35	≤0.03 0.008	≤0.03 0.017	≤0.15 0.02	1.0-2.0 1.45	—
CHT81Ni1	AWS A5.29 E81T1-Ni1C BS EN ISO 17632 T4631NiPC1H10	F.V. OH,H	DC ⁺	≤0.12 0.055	≤1.50 1.35	≤0.80 0.35	≤0.03 0.005	≤0.03 0.015	—	0.80-1.10 0.95	≤0.35 0.10
CHT81Ni1M	AWS A5.29 E81T1-Ni1M BS EN ISO 17632 T4631NiPM1H10	F.V. OH,H	DC ⁺	≤0.12 0.053	≤1.50 1.37	≤0.80 0.40	≤0.03 0.006	≤0.03 0.013	—	0.80-1.10 0.99	≤0.35 0.11
CHT81Ni2	AWS A5.29 E81T1-Ni2C BS EN ISO 17632 T4642NiPC1H10	F.V. OH,H	DC ⁺	≤0.12 0.05	≤1.50 1.30	≤0.80 0.35	≤0.03 0.008	≤0.03 0.017	—	1.75-2.75 2.20	—
CHT90B3B	AWS A5.29 E91T5-B3C ISO 17634 T(CrMo2)BC3H5	F.H,F.V	DC ⁺	0.05-0.12 0.06	≤1.25 0.80	≤0.80 0.30	≤0.03 0.01	≤0.03 0.018	2.0-2.5 2.15	—	0.90-1.20 1.08
CHT91B3	AWS A5.29 E91T1-B3C ISO 17634 T(CrMo2)PC1H10	F.V. OH,H	DC ⁺	0.05-0.12 0.06	≤1.25 0.80	≤0.80 0.25	≤0.03 0.012	≤0.03 0.018	2.0-2.5 2.26	—	0.90-1.20 1.06
CHT91K2	AWS A5.29 E91T1-K2C BS EN ISO 17632 T5021.5NiPC1H10	F.V. OH,H	DC ⁺	≤0.15 0.05	0.5-1.75 1.45	≤0.80 0.40	≤0.03 0.013	≤0.03 0.018	≤0.15 0.022	1.0-2.0 1.55	≤0.35 0.13



Metal Powder Cored Wires

金属粉芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal (%)							
				C	Mn	Si	S	P	Cr	Ni	Mo
CHT70C6	AWS A5.18 E70C-6M BS EN ISO 17632 T423MM3H5	F.H, HF, VD	DC ⁺	≤0.12 0.05	≤1.75 1.45	≤0.90 0.76	≤0.03 0.018	≤0.03 0.015	—	—	—
CHT70C3	AWS A5.18 E70C-3M BS EN ISO 17632 T422MM3H5	F.H, HF, VD	DC ⁺	≤0.12 0.05	≤1.75 1.30	≤0.90 0.58	≤0.03 0.005	≤0.03 0.015	—	—	—

V	Standard & Typical Mechanical Properties of Deposited Metal							Applications	Approvals
	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	AkV Value (J)		Shield Gas		
					Temp.(℃)	Joule			
—	AW	≥390 425	490-670 520	≥22 30	-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.	—
—	AW	≥400 440	490-620 520	≥20 30	-30	≥27 110	CO ₂	Suitable for structures fabricated by mild steel or 490MPa grade tensile strength steels, such as pressure vessels, offshore drilling platforms, pipelines and so on.	—
—	AW	≥470 480	550-690 560	≥19 30	-30	≥27 150	CO ₂	It is suitable for flat, horizontal fillet 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.	—
—	PWHT 690℃×1h	≥470 510	550-690 600	≥19 24	25	≥47 180	CO ₂	It is suitable for flat, horizontal fillet 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.	—
—	PWHT 690℃×1h	≥470 550	550-690 630	≥19 23	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 preheated to 150-300℃ before welding.	—
—	PWHT 690℃×1h	≥470 555	550-690 635	≥19 24	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 preheated to 150-300℃ before welding.	—
0.1-0.35 0.15	PWHT 730℃×2h	≥470 540	≥550 640	≥19 22	25	≥27 70	CO ₂	Suitable for welding 550MPa grade heat resistant low alloy pearlitic steel structures, which work temperature below 540℃, e.g.12Cr1MoVR. Welded piece should be preheated to 150-300℃ before welding.	—
Cu≤0.50 0.02	PWHT 745℃×2h	≥470 530	550-690 640	≥19 20	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.	—
—	AW	≥470 495	550-690 580	≥19 28	-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.	—
—	AW	≥470 520	550-690 605	≥19 25	-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.	—
—	AW	≥470 530	550-690 610	≥19 27	-30	≥27 95	75-80%Ar+ balance 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.	—
—	AW	≥470 485	550-690 580	≥19 28	-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.	—
—	PWHT 690℃×1h	≥540 565	620-760 660	≥17 21	25	150	CO ₂	Suitable for welding 600MPa grade 25%Cr-1%Mo 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 preheated to 150-300℃ before welding.	—
—	PWHT 690℃×1h	≥540 600	620-760 730	≥17 20	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 preheated to 150-300℃ before welding.	—
≤0.05 0.012	AW	≥540 560	620-760 650	≥17 23	-20	≥27 70	CO ₂	Suitable for welding structures fabricated by 600MPa grade tensile strength steel, such as ships, pressure vessels, machineries, petroleum & chemical industries, bridges etc.	—

Standard & Typical Mechanical Properties of Deposited Metal (AW)							Applications
V	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	AkV Value (J)		Shield Gas	
				Temp.(℃)	Joule		
—	≥400 450	≥480 550	≥22 27	-30	≥27 70	75-80%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.
—	≥400 450	≥480 545	≥22 28	-20	≥22 75	75-80%Ar + balance CO ₂	Mainly for flat and horizontal fillet welding structures fabricated by mild steels or 490MPa tensile strength steels, e.g. automobiles, pipes, machinery and so on. Vertical down welding could be performed if take lower current.



Solid Wire for TIG Welding

钨极惰性气体保护焊实芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (% Typical)							
				C	Mn	Si	S	P	Cr	Ni	Mo
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
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
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
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
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
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
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
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
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
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
CHG-52	AWS A5.18 ER70S-2 BS EN 1668-W 38.3 W2Ti ISO 636-A-W 38.3 W2Ti ISO 636-B-W 49A.3 W2	F.V. OH,H	DC	0.035	1.14	0.53	0.004	0.011	—	Al 0.08	Zr 0.08
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	—	—	—
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
CHG-54	AWS A5.18 ER70S-4 BS EN 1668-W 38.2 W2Si ISO 636-A-W 38.2 W2Si ISO 636-B-W 49A.2 W4 JIS Z3316 YGT50	F.V. OH,H	DC	0.099	1.10	0.72	0.015	0.016	0.022	0.021	0.007
CHG-55B2	AWS A5.28 ER80S-B2 BS EN ISO 21952-A-W (CrMo15Si) 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
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
CHG-55B6	AWS A5.28 ER80S-B6 BS EN ISO 21952-A-W CrMo5Si BS EN ISO 21952-B-W 5CM1 JIS Z3316 YGT1CM	F.V. OH,H	DC	0.080	1.14	0.65	0.009	0.013	5.10	—	0.58
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 WNi2	F.V. OH,H	DC	0.084	1.06	0.53	0.010	0.010	0.070	0.93	0.001
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 YGT150	F.V. OH,H	DC	0.07	1.47	0.90	0.011	0.012	0.020	0.021	0.007
CHG-62B3	AWS A5.28 ER90S-B3 BS EN ISO 21952-A-W CrMo2Si BS EN ISO 21952-B-W 2CM3 JIS Z3316 YGT2CM	F.V. OH,H	DC	0.09	0.92	0.65	0.006	0.013	2.30	0.002	1.04
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
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
CHG-S5	AWS A5.18 ER70S-7 BS EN 1668-W 42.2 W4Si1 ISO 636-A-W 42.2 W4Si1 ISO 636-B-W 49A.2 W12	F.V. OH,H	DC	0.087	1.88	0.77	0.006	0.015	0.020	0.021	—
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
CHG-SH53	AWS A5.18 ER70S-G	F.V. OH,H	DC	0.11	1.17	0.66	0.005	0.012	0.028	0.020	0.008

		Mechanical Properties of Deposited Metal (Typical)							Application
Cu	Other	Postweld Condition	Yield Point Rel. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	AkV Value (J)		Shield Gas	
						Temp.(°C)	Joule		
0.06	—	AW	—	580	42	—	—	Ar	For Cr18Ni8, Cr18Ni12, Cr20Ni10 austenitic stainless steels, such as 301, 302 & 308, etc. especially 304.
0.06	—	AW	—	560	45	—	—	Ar	Suitable for extra-low carbon 00Cr19Ni10 structures. Also it could fabricate 0Cr18Ni10Ti structures, which working temperature lower than 300°C. E.g. synthetic fibre, fertilizer & chemical industrial equipment and so on.
0.06	—	AW	—	580	39	—	—	Ar	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.
0.07	—	AW	—	570	38	—	—	Ar	For welding extra low carbon stainless steel structures with similar chemical composition, such as synthetic fibre, petrochemical equipment as well as nuclear reactor. Also it could be used for dissimilar steel welding.
0.08	—	AW	—	610	38	—	—	Ar	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.
0.08	—	AW	—	600	31	—	—	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.
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.
0.08	Ti 0.34	AW	—	575	40	—	—	Ar	It is suitable for welding structures made by 1Cr18Ni11Nb austenitic stainless steel as well as the one with similar composition.
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.
0.17	—	AW	—	540	35	—	—	Ar	Suitable for Cr13 stainless steels. The base metal should be tempered at 850°C for 2 hours after welding.
0.20	Ti 0.13	AW	450	550	26	-30	85	Ar	Suitable for single-pass or multi-pass welding structures fabricated by 500MPa grade killed steels, balanced steels and boiling steels. No need to shield gas in another side of the seam.
0.14	Ti 0.17	AW	440	560	30	-30	75	Ar	Widely used for structures fabricated by 500-550MPa tensile strength low alloy steels of X60, X65, X70, 18Nb and 12-16Mn etc. such as bridges, heavy engineering machinery, vehicles, skyscrapers, petroleum & chemical industry equipment and so on.
0.18	V 0.08	AW	435	540	29	-40	120	Ar	For structures fabricated by 500MPa grade tensile strength mild steels or low alloy steels, e.g. bridges, vehicles and so on.
0.22	V 0.010	AW	410	530	29	-20	100	Ar	For structures fabricated by 500MPa grade tensile strength mild steels or low alloy steels, e.g. bridges, vehicles and so on.
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 temperature is lower than 510°C.
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, petrochemical equipments which work temperature is lower than 510°C.
0.12	—	PWHT 740°C×2h	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.
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°C.
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 tensile strength mild steels or low alloy steels, e.g. vehicles, containers, bridges, machinery and so on.
0.27	—	PWHT 690°C×1h	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°C.
0.020 N 0.063	V 0.23	PWHT 755°C×1h	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°C high temperature achieves 340MPa.
0.027 N 0.063	V 0.23 W 1.57	PWHT 760°C×4h	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°C.
0.14	—	AW	445	545	31	25	127	Ar	Suitable for single-pass or multi-pass welding for structures fabricated by 500MPa tensile strength mild steels or low alloy steels, e.g. vehicles, containers, bridges, machinery and so on.
0.16	—	PWHT 620°C×1h	390	510	32	-30	210	Ar	It is suitable for pressure vessels of high temperature separators and recycle hydrogen knockout drums that fabricated by 16MnR(HIC)steels.
0.20	V 0.009	AW	410	520	33	-30	290	Ar	It is suitable for pressure vessels of high temperature separators, recycle hydrogen knockout drums that fabricated by 16MnR(HIC)steels. Also it could be used for welding petroleum transmission pipe lines.



Solid Wire for TIG Welding [Continued]

钨极惰性气体保护焊实芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (% , Typical)							
				C	Mn	Si	S	P	Cr	Ni	Mo
CHG-SHA	AWS A5.18 ER70S-G	F.V. OH,H	DC	0.09	1.11	0.52	0.002	0.004	0.020	0.021	0.100
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



Solid Wire for MIG Welding

惰性气体保护焊实芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (% , Typical)							
				C	Mn	Si	S	P	Cr	Ni	Mo
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
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
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
CHM-308LG	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	0.020	1.89	0.75	0.021	0.010	19.98	9.75	0.006
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
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
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
CHM-309LG	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	0.017	1.93	0.68	0.009	0.020	23.14	12.40	0.005
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
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
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
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
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
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
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
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
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
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
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

		Mechanical Properties of Deposited Metal (Typical)							
Cu	Other	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Joule	Shield Gas	Application
0.20	Ti 0.020	AW	415	530	30	-30	280	Ar	It is suitable for pressure vessels of high temperature separators, recycle hydrogen knockout drums that fabricated by 16MnR(HIC)steels. Also it could be used for welding petroleum transmission pipe lines.
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.

Diameter of ATLANTIC TIG wires from 1.6mm to 3.0mm and the length are 1,000mm
Standard Packing: 5kg/hard plastic box, then 20kg (4 boxes)/carton, last 1,000kg (50 cartons)/wooden crate.

		Mechanical Properties of Deposited Metal (Typical)							
Cu	Others	Postweld Condition	Yield Point Rp0.2 (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		Shield Gas	Application
0.16	—	AW	—	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.
0.09	—	AW	—	580	42	—	—	98%Ar+2%O ₂	For Cr18Ni8, Cr18Ni12, Cr20Ni10 austenitic stainless steels, such as 301,302 & 308, etc. especially 304.
0.09	—	AW	—	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.
0.15	—	AW	415	605	41	-40℃	81	Ar+1-5%CO ₂	Specially for railway locomotives, coaches, wagons, vehicles made by atmospheric corrosion and infection resistance steels.
0.17	—	AW	—	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.
0.06	—	AW	—	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.
0.15	—	AW	—	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.
0.16	—	AW	415	580	39	-40℃	90	Ar+1-5%CO ₂	Specially for railway locomotives, coaches, wagons, vehicles made by atmospheric corrosion and infection resistance steels.
0.16	—	AW	—	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.
0.18	—	AW	—	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.
0.09	—	AW	—	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.
0.07	—	AW	—	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.
0.070	—	AW	—	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.
0.07	Ti 0.34	AW	—	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.
0.10	Nb0.59	AW	—	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.
0.061	Ti 0.06	AW	—	—	—	—	—	97%Ar+3%O ₂	Particularly for welding thin sheet in exhaust system of automobile.
0.17	—	PWHT 850℃×2h	—	540	35	—	—	98%Ar+2%O ₂	Suitable for welding Cr13 stainless steels.
0.021	—	PWHT 590℃×1h	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.
Cu 0.07 Nb 1.08	Fe 1.46 W 1.33	AW	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 Wire for Oxyfuel Gas Welding

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Item Code	Diameter (mm)	AWS A5.2	Chemical Composition of Wire (%)						
				C	Mn	Si	S	P	Cu
CHW-G1	2.0-5.0	R45	Standard	≤0.08	≤0.50	≤0.10	≤0.035	≤0.040	≤0.30
			Typical	0.07	0.4	0.018	0.011	0.014	0.04



Solid Wire for Submerged Arc Welding

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Item Code	Equivalent Norm	Chemical Composition of Wire (%)										
			C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Combined Flux
CHW-S1	AWS A5.17 E112 BS EN 756 S1 ISO 14171-A-S1 ISO 14171-B-SU11	Standard	0.04-0.14	0.25-0.60	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF43
		Typical	0.07	0.40	0.018	0.011	0.014	—	—	—	0.10	CHF501
CHW-S2	AWS A5.17 E112 BS EN 756 S2 ISO 14171-A-S2 ISO 14171-B-SU22	Standard	0.06-0.15	0.80-1.25	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF101
		Typical	0.066	0.88	0.022	0.013	0.010	0.020	0.021	—	0.075	CHF103
CHW-S3	AWS A5.17 E114 BS EN 756 S3 ISO 14171-A-S3 ISO 14171-B-SU33	Standard	0.10-0.20	1.70-2.20	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF101
		Typical	0.13	1.87	0.05	0.011	0.013	0.018	0.015	—	0.020	CHF105
CHW-S3A	AWS A5.17 E114 BS EN 756 S3 ISO 14171-A-S3 ISO 14171-B-SU33	Standard	0.10-0.20	1.70-2.20	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF102
		Typical	0.13	1.95	0.076	0.006	0.014	—	0.16	—	0.07	CHF102
CHW-S4	AWS A5.17 E113K BS EN 756 S2S2 ISO 14171-A-S2S2 ISO 14171-B-SU25	Standard	0.06-0.16	0.90-1.40	0.35-0.75	≤0.030	≤0.030	—	—	—	≤0.35	CHF101
		Typical	0.089	1.01	0.61	0.016	0.016	—	—	—	0.110	CHF101
CHW-S5	AWS A5.17 E112K ISO 14171-B-SU42	Standard	0.06-0.15	1.50-2.00	0.25-0.65	≤0.025	≤0.025	—	—	—	≤0.35	CHF101
		Typical	0.084	1.84	0.65	0.009	0.020	0.020	0.021	—	0.046	CHF101
CHW-S6	AWS A5.17 E111K BS ISO 14171-B-SU31	Standard	0.07-0.15	1.40-1.85	0.80-1.15	≤0.030	≤0.030	—	—	—	≤0.35	—
		Typical	0.08	1.49	0.84	0.009	0.014	—	—	—	0.18	—
CHW-S7	AWS A5.23M FA3 BS EN 756-S3Mo ISO 14171-A-S3Mo ISO 14171-B-SU4M3	Standard	0.05-0.17	1.65-2.20	≤0.20	≤0.025	≤0.025	—	—	0.45-0.65	≤0.35	CHF101
		Typical	0.070	1.70	0.18	0.007	0.010	0.020	—	0.52	0.11	CHF113
CHW-S7CG	AWS A5.23M FA3 BS EN 756-S3Mo ISO 14171-A-S3Mo ISO 14171-B-SU4M3	Standard	0.05-0.17	1.65-2.20	≤0.20	≤0.025	≤0.025	—	—	0.45-0.65	≤0.35	CHF26H
		Typical	0.070	1.70	0.18	0.008	0.008	—	—	0.55	0.18	CHF26H
CHW-S8	AWS A5.23M EB3	Standard	0.05-0.15	0.40-0.80	0.05-0.30	≤0.025	≤0.025	2.25-3.00	—	0.90-1.10	≤0.35	CHF603
		Typical	0.090	0.80	0.15	0.010	0.011	2.61	—	1.01	0.10	CHF603
CHW-S9	AWS A5.23M FA4 BS EN 756-S3Mo ISO 14171-A-S3Mo ISO 14171-B-SU3M3	Standard	0.05-0.17	1.20-1.70	≤0.20	≤0.025	≤0.025	—	—	0.45-0.65	≤0.35	CHF101GX
		Typical	0.080	1.30	0.20	0.008	0.011	—	—	0.47	0.20	CHF101GX
CHW-S9CG	AWS A5.23M FA4 BS EN 756-S3Mo ISO 14171-A-S3Mo ISO 14171-B-SU3M3	Standard	0.05-0.17	1.20-1.70	≤0.20	≤0.025	≤0.025	—	—	0.45-0.65	≤0.35	CHF101CG
		Typical	0.080	1.30	0.18	0.008	0.011	0.023	0.020	0.43	0.20	CHF101CG
CHW-S10	AWS A5.23M EF3 ISO 14171-A-S3NiMo ISO 14171-B-SUN2M31	Standard	0.10-0.18	1.70-2.40	≤0.30	≤0.025	≤0.025	—	0.70-1.10	0.40-0.65	≤0.35	CHF105
		Typical	0.105	1.80	0.18	0.006	0.012	0.020	0.83	0.62	0.15	CHF105
CHW-S11	AWS A5.23M EB2	Standard	0.07-0.15	0.45-1.00	0.05-0.30	≤0.025	≤0.025	1.00-1.75	—	0.40-0.65	≤0.35	CHF105
		Typical	0.095	0.73	0.15	0.007	0.011	1.36	—	0.48	0.22	CHF105
CHW-S12	AWS A5.17 E112K BS EN 756-S2S1 ISO 14171-A-S2S1 ISO 14171-B-SU21	Standard	0.05-0.15	0.80-1.25	0.10-0.35*	≤0.030	≤0.030	—	—	—	≤0.35	CHF101
		Typical	0.08	1.06	0.22	0.014	0.016	0.025	0.026	—	0.10	CHF301
CHW-S13	AWS A5.23M ENi3 BS EN 755 S2Ni3 ISO 14171-A-S2Ni3 ISO 14171-B-SUN7	Standard	≤0.13	0.60-1.20	0.05-0.30	≤0.020	≤0.020	≤0.15	3.10-3.80	—	≤0.35	CHF105DR
		Typical	0.09	1.00	0.15	0.009	0.011	0.03	3.45	—	0.12	CHF105DR
CHW-S14	AWS A5.17 E114 BS EN 756 S3 ISO 14171-A-S3 ISO 14171-B-SU33	Standard	0.10-0.20	1.70-2.20	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF101
		Typical	0.10	1.73	0.02	0.006	0.009	0.016	0.037	—	0.18	CHF101
CHW-S15	AWS A5.17 E112 BS EN 756-S2 ISO 14171-A-S2 ISO 14171-B-SU22	Standard	0.06-0.15	0.80-1.25	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF101
		Typical	0.080	0.91	0.02	0.005	0.008	0.020	0.021	—	0.056	CHF101
CHW-S16	AWS A5.23M FA2 BS EN 756-S2Mo ISO 14171-A-S2Mo ISO 14171-B-SU2M3	Standard	0.05-0.17	0.95-1.35	≤0.20	≤0.025	≤0.025	—	—	0.45-0.65	≤0.35	CHF101
		Typical	0.09	1.10	0.15	0.008	0.010	—	—	0.53	0.11	CHF101

Cr	Ni	Mo	Al	Application
≤0.20	≤0.30	≤0.20	≤0.02	Filler metal in oxygen gas welding for mild steels especially for steel sheets.
0.04	0.02	0.01	0.01	

Welding Position	Current	Mechanical Properties of Deposited Metal (Typical)						Application	Remark
		Equivalent Norm	Postweld Condition	Yield Point Rel. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp. (°C) Joule		
F	DC ⁺ or AC	AWS A5.17 F6A0/EL12	AW	360	450	29	-20 80	Suitable for welding structures fabricated by 450MPa tensile strength steel especially high speed welding for thin plate, e.g. LPG cylinder.	CCS, LR, ABS, GL, BV, DNV & NK
F	DC ⁺ or AC	AWS A5.17 F7AZ/EL12	AW	425	530	29	0 70		
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.	CCS, NK & CE
F	DC ⁺ or AC	AWS A5.17 F6A4/EM12	AW	360	480	31	-40 110		
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.	CCS, LR, ABS, GL, BV, DNV, NK, CWB, KR & CE
F	DC ⁺	AWS A5.17 F7A4/EH14	AW	430	510	28	-40 120		
F	DC ⁺	AWS A5.17M F48A4-EH14	AW	475	575	27	-40 119	Suitable for structures made by 550MPa tensile strength steels, such as bridges, cisterns, pressure vessels and H-beam structures. It is successful to use on the famous CCTV new mansion in Beijing.	LR
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.	—
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.	—
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.	—
F	DC ⁺	AWS A5.23M F62P2-EA3-A3	PWHT 620°C×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.	—
F	DC ⁺	AWS A5.23M F62P4-EA3-A3	PWHT 620°C×1h	600	690	24	-40 60	It is specially used to traverse butt welding with multi-layer & multi-pass welding for jumbo oil storage tanks, which fabricated by 610MPa tensile strength low alloy steels such as 12MnNiVR(WH610D2).	—
F	DC ⁺	AWS A5.23M F62P3-EA3-A3	PWHT 580°C×2.5h	550	650	26	-30 60	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.	—
F	DC ⁺	AWS A5.23M F55P2-EB3-B3	PWHT 690°C×4h	475	570	22	25 85		—
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.	—
F	DC ⁺	AWS A5.23M F62P3-EA4-A4	PWHT 580°C×2.5h	535	630	26	-30 85	It is suitable for welding 550MPa-600MPa tensile strength flawless steels especially widely be used on the huge petroleum storage tanks.	—
F	DC ⁺ or AC	AWS A5.23M F69P3-EF3-F3	PWHT 620°C×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.	LR, ABS
F	DC ⁺ or AC	AWS A5.23M F55P3-EB2-B2	PWHT 690°C×1h	490	570	25	-30 100	For welding structures fabricated by 1.2Cr0.5Mo pearlitic heat resistant steels e.g. equipments of petrochemical industry, thermal power plant and nuclear power plant made by 1.2CrMoA, 1.5CrMo, 1.2CrMo.	—
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.	—
F	DC ⁺ or AC	AWS A5.17 F7A0/EM12K	AW	430	540	28	-20 70		—
F	DC ⁺	AWS A5.23M F48P7-EN3-Ni3	PWHT 620°C×2h	480	560	28	-70 80	Suitable for welding structures made by low temperature service alloy steels, which contains 2.5Ni or 3.5Ni.	—
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.	—
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.	—
F	DC ⁺	AWS A5.23M F55P2-EA2-A4	PWHT 620°C×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 pressure vessels, etc.	—



Solid Wire for Submerged Arc Welding

[Continued]

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Item Code	Equivalent Norm	Chemical Composition of Wire (%)										
			C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Combined Flux
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
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
CHW-S30	AWS A5.23M EG	Standard Typical	— 0.088	— 1.79	— 0.030	— 0.008	— 0.012	—	0.26	0.24	0.13	CHF105Q
CHW-91	AWS A5.23M EB9	Standard Typical	C 0.07-0.13 0.09 Mn 0.03-0.07 0.06	≤1.25 1.25	≤0.30 0.20	≤0.010 0.006	≤0.010 0.010	C 0.00-0.00 0.18 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
CHW-SG	AWS A5.23M EG	Standard Typical	— 0.088	— 1.70	— 0.058	— 0.008	— 0.011	—	0.30	—	0.12	CHF101GX
CHW-SG4	AWS A5.23M EA4	Standard Typical	— 0.085	— 1.63	— 0.27	— 0.002	— 0.008	—	—	0.32	0.08	CHF102GX
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
CHW-STH550III	BS EN 756-S2Ni1Cu ISO 14171-B-SUNCC1	Standard Typical	— 0.070	— 1.40	— 0.100	— 0.009	— 0.010	— 0.42	0.61	—	0.29	CHF101NQ
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
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
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
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
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
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
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
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
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
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
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 1.50-1.50 1.25 Nb 0.08-0.20 0.09	≤0.75 0.10	CHF601A

REGISTERED TRADE MARKS OF ATLANTIC

The famous trademark "ATLANTIC" was registered in 1950 and it is awarded the "Well-known Trademarks in China".



Welding Position	Mechanical Properties of Deposited Metal (Typical)								Application	Remark
	Current	Equivalent Norm	Postweld Condition	Yield Point Rel. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	AkV Value (J)			
							Temp.(℃)	Joule		
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.	—
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.	—
F	DC ⁺	AWS A5.23M F55A4-EG	AW	550	640	26	-40	70	It is used for structures fabricated by 600MPa tensile strength low alloy steels, such as WDL610, W11590, CF-62 and HT60, etc.	—
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/P21 alloy steel.	—
F	DC ⁺	DGS K 1101.51-2004	AW	460	550	29	-20	160	Suitable for welding 550MPa tensile strength structures, which require extra lower S & P in weld metal, especially for spiral or longitudinal welded huge diameter pipe made by X65, X70 steels.	BV
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.	—
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.	—
F	DC ⁺ or AC	BS EN 756-S 46 4 FB S2Ni1Cu	AW	540	630	26	-40	120	For welding marine or railway containers, railway wagons, tank cars as well as locomotives, which fabricated by atmospheric corrosion and infection resistance low alloy steels.	—
F	DC ⁺	—	AW	—	580	40	—	—	For welding austenitic stainless steel structures that require acid proof and it be used for hardfacing rolls also.	—
F	DC ⁺	—	AW	—	530	42	—	—	For welding extra low carbon Cr18Ni8 stainless steel.	—
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.	—
F	DC ⁺	—	AW	—	530	39	—	—	For welding extra low carbon Cr24Ni13 stainless steel. It could be used for root welding also.	—
F	DC ⁺	—	AW	—	560	40	—	—	For welding Cr25Ni20 stainless steel. The weld metal shows a good heat resistance & oxidation resistance feature.	—
F	DC ⁺	—	AW	—	540	38	—	—	For welding Cr18Ni12Mo2 stainless steel. The weld metal has very good heat crack resistance character.	—
F	DC ⁺	—	AW	—	530	39	—	—	For welding extra low carbon Cr18Ni12Mo2 stainless steel. The weld metal has excellent heat crack resistance & corrosion resistance character.	—
F	DC ⁺	—	AW	—	550	38	—	—	Suitable for fabricating stainless steel containers that resisting corrosion of vitriol, ammonia, sulfurous acid or salt, etc.	—
F	DC ⁺	—	AW	—	550	39	—	—	For welding important resisting corrosion structures made by 1Cr18Ni9Ti stainless steels.	—
F	DC ⁺	—	AW	—	510	26	—	—	Hard facing surface of structures made of 0Cr13 or 1Cr13 stainless steels.	—
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 desalination, salt works, nuclear energy that fabricated by duplex stainless steels.	—

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Flux/Wire Combinations for Submerged Arc Welding

埋弧焊用焊剂/焊丝组合

Flux/Wire Combination	Equivalent Norm	Type of Flux	Current	Chemical Composition of Deposited Metal (% Standard or Typical)							
					C	Mn	Si	S	P	Cr	Ni
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	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—
CHF101/CHW-S3A	AWS A5.17 F7A4/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	—	—	—	—	—	—	—
CHF101/CHW-S4	AWS A5.17 F7A0/EM13K BS EN 756-S 38 2 FB S2S2 ISO 14171-A-S 38 2 FB S2S2 ISO 14171-B-S 49A 2 FB SU25	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF101/CHW-S5	AWS A5.17 F7A0/EH12K ISO 14171-B-S 49A 2 FB SU42	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—
CHF101/CHW-S11	AWS A5.23M F55P2/EB2-B2	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF101/CHW-S12	AWS A5.17 F7A4/EM12K BS EN 756-S 38 4 FB S2S1 ISO 14171-A-S 38 4 FB S2S1 ISO 14171-B-S 38 4 FB S2S1	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF101/CHW-S16	AWS A5.23M F55P2/EA2-A4 BS EN 756-S 46 2 FB S3Mo ISO 14171-A-S 46 2 FB S2Mo ISO 14171-B-S 55P 2 FB SU2M3	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF101CG/CHW-S9CG	AWS A5.23M F62P3/EA4-A4	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF101GX/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 ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF101GX/CHW-SG	DGS K 1101.51-2004	Sintered	DC ⁺ or AC	Standard Typical	≤0.09 0.062	≤1.65 1.36	≤0.40 0.34	≤0.007 0.006	≤0.020 0.013	≤0.25 0.02	≤0.40 0.27
CHF101NO / CHW-STH550III	DGS K 901.111-2009 BS EN 756-S 46 4 FB S2Ni1Cu ISO 14171-B-S 55A 4 FB SUNCC1	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—
CHF102/CHW-S3A	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	—	—	—	—	—	—	—
CHF102/CHW-S10	AWS A5.23M F69A4/EF3-F3	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF102A/CHW-SG	AWS A5.23 F7A4/EG	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
CHF102GX/CHW-SG4	DGS K 1101.71-2007 AWS A5.23M F62A2/EA4-A4	Sintered	DC ⁺ or AC	Standard Typical	≤0.09 0.056	≤1.80 1.66	≤0.60 0.43	≤0.007 0.005	≤0.020 0.016	≤0.25 0.05	≤0.40 0.02
CHF102SH/CHW-SH1	DGS K 901.91-2009 AWS A5.23 F7P2/EG	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—
CHF103B/CHW-S12	AWS A5.17 F7A4/EM12K ISO 14174-S A FB 1 EN 760-S A FB 1	Sintered	DC ⁺ or AC	Standard Typical	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—
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	—	—	—	—	—	—	—
CHF105/CHW-S10	AWS A5.23M F69P3/EF3-F3 ISO 14171-A-S3Ni1Mo ISO 14171-B-SUN2M31	Sintered	DC ⁺	Standard Typical	—	—	—	—	—	—	—

		Mechanical Properties of Deposited Metal (Standard & Typical)					Application	Approvals
Mo	Cu	Postweld Condition	Yield Point Rel. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
—	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
—	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, KR
—	0.055	AW	≥420 485	520-680 585	≥22 27	-40℃ ≥27 92	It is suitable for structures fabricated by 520MPa-680MPa tensile strength steels, such as ship hulls, bridges, pressure vessels, as well as H-beam structures. This combination was used on the new mansion of CCTV in Beijing successfully.	—
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.	—
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.	—
0.420	0.140	PWHT 620℃×1h	≥540 570	620-760 660	≥17 25	-20℃ ≥27 95	It is suitable for welding structures fabricated by 550MPa-650MPa tensile strength steels, such as facilities of chemical industry, bridges, pressure vessels, as well as H-beam structures.	—
0.350	0.220	PWHT 620℃×1h	≥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.	—
0.400	0.210	PWHT 690℃×1h	≥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 15CrMoA, 15CrMo, 12CrMo.	—
—	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
0.420	0.100	PWHT 620℃×1h	≥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.	—
0.350	0.220	PWHT 580℃×2.5h	≥490 535	≥610 630	≥20 26	-30℃ ≥50 85	Specially for fabricating jumbo oil reserving tanks and the welded seam has higher low temperature toughness.	—
0.350	0.150	AW	≥470 540	550-700 630	≥20 24	-30℃ ≥27 80	It is used to weld 550MPa-700MPa important tensile strength low alloy steel structures, especially for spiral or longitudinal welded huge diameter pipes made by X65, X70 & X80 steels.	—
≤0.40 0.06	≤0.30 0.08	AW	≥440 460	≥540 550	≥22 29	-20℃ ≥130 160	It is mainly for welding pipe lines fabricated by steels of X60, X65, X70.	—
—	0.240	AW	≥450 540	≥550 630	≥22 26	-40℃ ≥60 120	For welding marin or railway containers, railway wagons, tank cars as well as locomotives, which fabricated by atmospheric corrosion and infection resistance low alloy steels.	—
—	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.	—
—	0.050	AW	≥400 475	480-660 575	≥22 27	-40℃ ≥27 119	Suitable for structures made by 550MPa tensile strength steels, such as bridges, cisterns, pressure vessels and H-beam structures. It is successful to used on the famous CCTV new mansion in Beijing.	LR
—	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.	LR, ABS
—	0.100	AW	≥375 490	490-660 580	A5 ≥20 28	-40℃ ≥27 140	Suitable for welding important structures, e.g. offshore drilling platforms, which diffusion hydrogen required extra lower.	BV
≤0.50 0.25	≤0.30 0.15	AW	≥500 550	≥590 650	≥20 25	-20℃ ≥60 130	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.	—
—	0.070	PWHT 620℃×2h	≥340 410	485-590 520	≥22 32	-30℃ ≥80 150	It is suitable for pressure vessels of high temperature separators and recycle hydrogen knockout drums that fabricated by 16Mn(HIC)steels.	—
—	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.	—
—	0.20	AW	≥400 425	480-650 530	≥22 32	-40℃ ≥27 110	For welding structures made by 550MPa tensile strength steel, such as bridges, machinery, high pressure vessels, H-beams, etc.	—
—	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.	—
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.	—
0.490	0.190	PWHT 620℃×1h	≥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.	—



Flux/Wire Combinations for Submerged Arc Welding

埋弧焊用焊剂/焊丝组合

Flux/Wire Combination	Equivalent Norm	Type of Flux	Current	Chemical Composition of Deposited Metal (% Standard or Typical)							
					C	Mn	Si	S	P	Cr	Ni
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	—
CHF105DR/CHW-S13	AWS A5.23M F48P7/EN13-N13 BS EN 756-S 38 7 FB S2N13 ISO 14171-A-S 38 7 FB S2N13 ISO 14171-B-S 49P 7 FB SUN7	Sintered	DC	Standard Typical	0.050	1.00	0.30	0.006	0.013	—	2.800
CHF105Q/CHW-S30	DGS K 901.101-2009	Sintered	DC	Standard Typical	0.046	1.59	0.25	0.007	0.020	—	0.270
CHF113/CHW-S7	AWS A5.23M F62P4/EA3-A3 BS 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	—
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	—
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	—	—
CHF260/CHW-308L	GB/T 17854 F308L-H03Cr21Ni10Si	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	0.00-11.00 9.12
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	—	—
CHF301/CHW-S1	AWS A5.17 F6A2/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	—	—
CHF301/CHW-S12	AWS A5.17 F7A0/EM12K BS EN 756-S 38 2 CS S2 ISO 14171-A-S 38 2 CS S2 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
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
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
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	—	—
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
CHF43/CHW-S1	AWS A5.17 F6A0/EL12	Fused	DC or AC	Standard Typical	0.055	1.00	0.38	0.021	0.028	—	—
CHF43/CHW-S18	AWS A5.17 F6A2/EL8	Fused	DC or AC	Standard Typical	0.056	1.08	0.35	0.02	0.026	—	—
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	—	—
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
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
CHF601/CHW-316	—	Sintered	DC	Standard Typical	0.025	1.86	0.67	0.013	0.025	17.80	11.30
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
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	—
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	—	—
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	—	—

		Mechanical Properties of Deposited Metal (Standard & Typical)					Application	Approvals
Mo	Cu	Postweld Condition	Yield Point Ret. (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
—	—	PWHT 690°C × 1h	≥470 490	550-700 570	≥20 25	-30°C 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.	—
—	0.150	PWHT 620°C × 2h	≥400 480	480-620 560	≥22 28	-70°C 70	Suitable for fabricating special pressure vessels, which work temperature higher than -70°C, that made by 2.5Ni-3.5Ni low temperature alloy steels, such as low temperature storage tankers, oilcans as well as low temperature pressure vessels of composite chemical industry.	—
0.257	0.150	AW	≥500 550	610-770 640	≥18 27	-40°C 90	It is used for structures fabricated by 650MPa tensile strength low alloy steels, such as WDL610, WH590, CF-62 and HT60, etc.	—
—	0.110	PWHT 620°C × 1h	≥540 600	620-760 690	≥17 24	-40°C 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.	—
—	0.150	PWHT 620°C × 1h	≥610 630	690-830 735	≥16 23	-20°C 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.	—
—	0.190	AW	≥470 495	550-700 580	≥20 22	-20°C 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).	—
≤0.75 0.41	≤0.75 0.20	AW	— 396	≥480 622	≥25 36	25°C 90	For welding structures made by low carbon Cr18Ni8 stainless steels.	—
—	0.120	PWHT 580°C × 2.5h	≥490 550	≥610 650	≥20 26	-30°C 70	Suitable for multi-pass & multi-layer with horizontal butting welding of 610MPa tensile strength low alloy steels, particularly for jumbo oil reserving tanks.	—
—	0.060	AW	≥330 365	415-550 470	≥22 30	-20°C 60	For structures fabricated by 450MPa tensile strength mild steels or low alloy steels.	—
—	0.050	AW	≥400 430	480-650 540	≥22 28	-20°C 70	Suitable for structures fabricated by 500MPa tensile strength mild steels or low alloy steels, e.g. boilers, LPG cylinders, etc.	—
—	0.100	AW	≥400 415	480-650 510	≥22 28	-20°C 70	Suitable for structures fabricated by 500MPa tensile strength mild steels or low alloy steels, e.g. boilers, LPG cylinders, etc.	—
—	0.076	AW	≥330 380	415-550 490	≥22 31	0°C 70	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels, e.g. boilers, pressure vessels.	—
—	0.110	AW	≥400 415	480-650 525	≥22 27	-20°C 70	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels.	—
—	0.12	AW	≥330 500	415-550 480	≥22 28	-20°C 80	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels.	—
—	0.220	AW	≥330 360	415-550 450	A5 ≥22 29	-20°C 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, NK
—	0.2	AW	≥330 370	415-550 470	≥22 29	-20°C 85	Suitable for welding structures fabricated by 450MPa tensile strength steels, e.g. LPG cylinder as well as ship structures with same strength.	—
—	0.200	AW	≥400 425	480-650 530	≥22 29	0°C 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.	—
0.001	0.117	AW	≥400 450	480-650 550	≥22 30	0°C 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.	—
—	—	AW	—	≥520 590	≥30 42	—	For welding structures made by Cr18Ni8 stainless steels of facilities in petrochemical industry.	—
2.10	0.020	AW	—	≥520 600	≥25 30	—	For welding Cr18Ni12Mo2 stainless steel. The weld metal has very good heat crack resistance character.	—
3.49	0.021	AW	≥480 650	690-900 770	≥25 28	-30°C 70	It is used for welding structures of chemical carriers and facilities of petrochemical, sea water desalination, salt works, nuclear energy that fabricated by duplex stainless steels.	—
0.870	0.120	PWHT 690°C × 4h	≥314 518	520-650 600	≥19 22	25°C 160	Widely be used in welding important thick hull pressure vessels of nuclear reactors as well as important steam pipes of thermal power stations.	—
—	0.190	AW	≥400 560	480-650 620	≥22 30	0°C 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.	—
—	0.10	AW	≥400 420	480-650 535	≥22 27	-20°C 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.	—

● 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	Deutsche 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
CO₂ 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

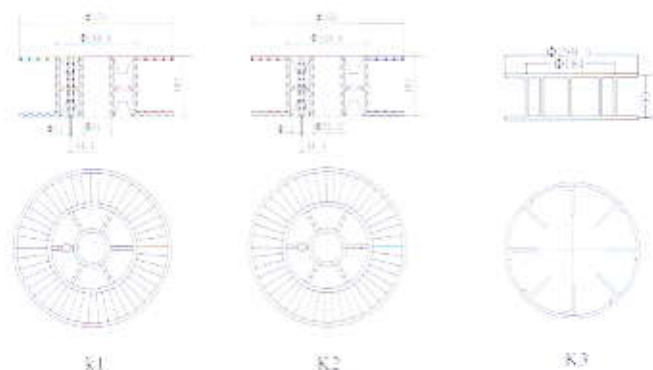


● DIMENSIONS OF PACKING FOR MAG/MIG WIRES

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)
15kgs/Spool	265×260×105	1,080kgs (72spools)
15kgs/Spool	265×260×105	900kgs (60spools)

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



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

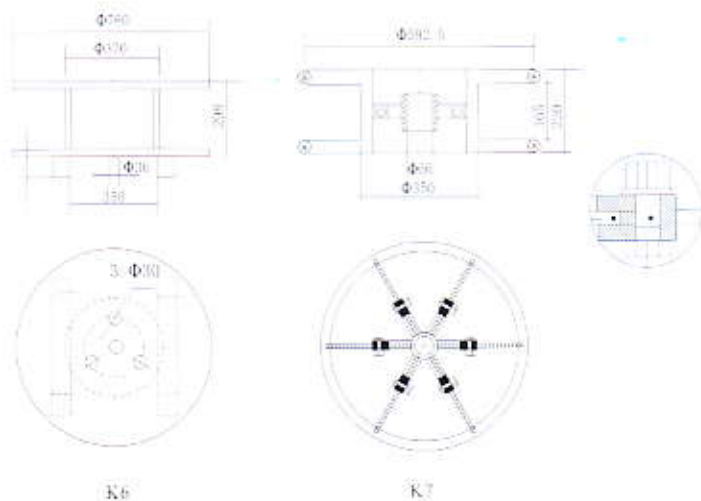
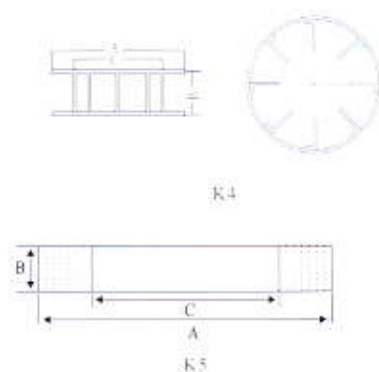
For Kraft Drum (Pail) Packing of MAG/MIG Wires (mm)

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

● 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
	B	90	90	180
	C	310	310	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

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