大西洋®

ATLANTIC

SINCE 1950


CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Atlantic China Welding Consumables Inc.
(China Welding Electrode Plant)
Zigong, Sichuan,
People's Republic of China

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

GB/T 19001-2000
ISO 9001:2000

The Quality Management System is applicable to:

Development, manufacture, and sales of welding electrodes, fluxes and wires.

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: GAC0556078 — Original Approval: 23 January 1998 — Current Certificate: 29 January 2007 — Certificate Expiry: 31 December 2009

Issued by: Lloyd's Register Quality Assurance (Shanghai)

The Certificate of ISO 9001 Quality Management System of ATLANTIC


China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L2975)

China National Accreditation Service for Conformity Assessment has accredited

Inspection Department of
Atlantic China Welding Consumables, Inc.
No.2, Machanglan Street, Daan District, Zigong, Sichuan, China

in ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing and calibration.

The scope of accreditation is detailed in the attached schedule bearing the same accreditation number as above. The schedule forms an integral part of this certificate.

Date of Issue: 2007-03-12
Date of Expiry: 2012-03-11
Date of Initial Accreditation: 2007-03-12

Signed on behalf of China National Accreditation Service for Conformity Assessment

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 美国验船协会 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

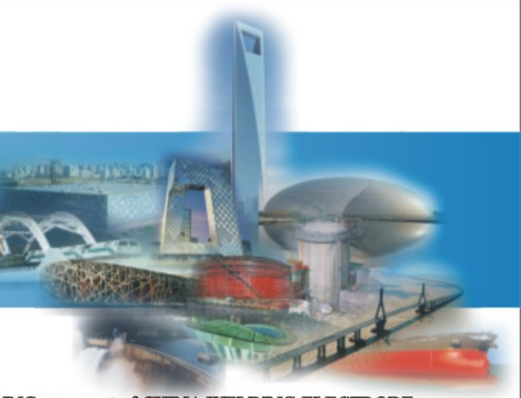
TUV 德国技术监督协会 Technischer Überwachungs-Verein

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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.

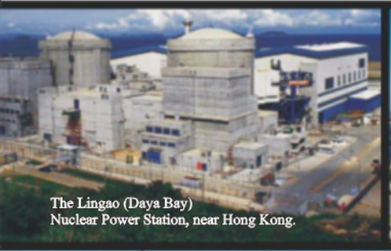
The "ATLANTIC" welding consumables have excellent quality and have been enjoyed a high reputation. They are widely used in power station boilers, pressure vessels, nuclear and space industries, bridges, ships, vehicles, petroleum and chemical industries, hydropower and thermal-power plants, metallurgical 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.

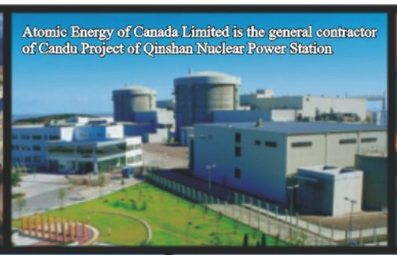
四川大西洋焊接材料股份有限公司是由国内第一家焊接材料制造厂“中国电焊条厂”改制设立的股份制上市公司，证券代码600558。著名商标“大西洋”注册于1950年并获“中国驰名商标”称号。“大西洋”焊接材料分电焊条、焊丝和焊剂三大类400多个品种。2008年产销量超35万吨。四川大西洋焊接材料股份有限公司目前有七个生产工厂，位于自贡的公司总部占地面积99,900余平方米。主要产品有碳钢电焊条、纤维素电焊条、低合金钢电焊条、不锈钢电焊条、低温钢电焊条、钼及铬钼耐热钢电焊条、镍及镍合金电焊条、堆焊电焊条、铸铁电焊条；MAG、MIG和TIG的气体保护焊丝、埋弧自动焊丝、药芯焊丝和金属粉芯焊丝；以及适用于埋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。

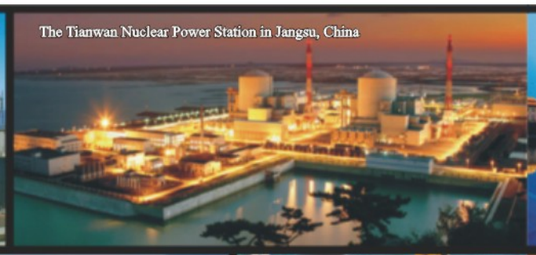
“大西洋”焊接材料质量优良，信誉卓著，被国内外用户广泛用于电站锅炉、压力容器、核工业、航天、桥梁、船舶、车辆、石油、化工、水电、火电、冶金、高层建筑、重型机械设备及海上钻井平台等重要工程，如举世闻名的长江三峡工程、黄河小浪底工程、大亚湾岭澳核电站、秦山核电站、田湾核电站、西气东输，北京奥运主场馆，国家大剧院，首都机场3号航站楼，中央电视台新大厦、国家石油战略储备工程以及目前世界第一长的杭州湾跨海大桥等。公司主要产品经中国船级社（CCS）、英国劳埃德船级社（LR）、美国验船协会（ABS）、法国船级社（BV）、德国劳埃德船级社（GL）、挪威船级社（DNV）、日本海事协会（NK）、印尼船级社（BKI）、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。

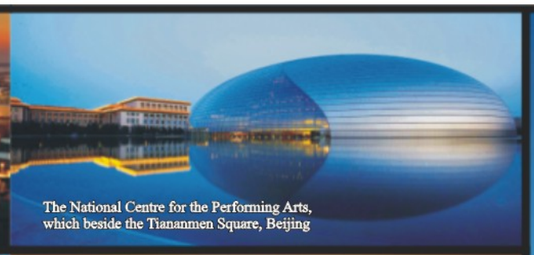


ACHIEVEMENTS OF "ATLANTIC"


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

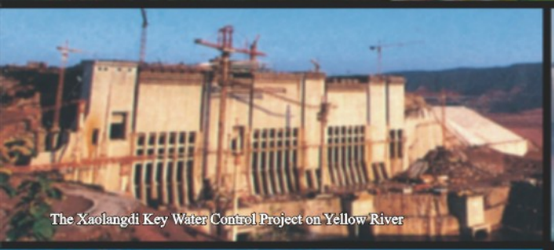

Atomic Energy of Canada Limited is the general contractor of Candu Project of Qinshan Nuclear Power Station


The Tianwan Nuclear Power Station in Jangsu, China

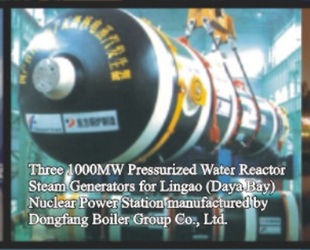

The National Centre for the Performing Arts,
which beside the Tiananmen Square, Beijing


The Shanghai World Financial Centre


A diesel locomotive is running on Qinghai-Tibet Rail Road.


The Xaolangdi Key Water Control Project on Yellow River


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


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


The National Stadium Beijing

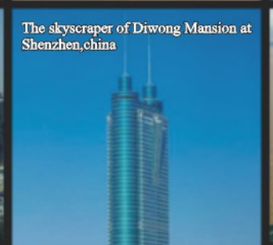

Ting Kau Bridge in Hong Kong (the front one)


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

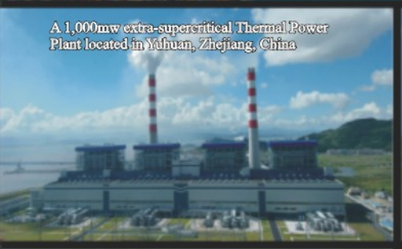

The grand sight of Ertan Hydropower Station, Sichuan Province

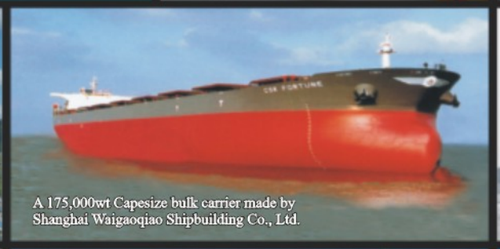

The wind power field at Dabancheng, Xinjiang, China


The National Aquatics Centre Beijing


The skyscraper of Diwong Mansion at Shenzhen,china

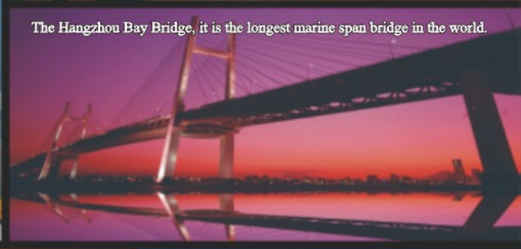

The Donghai Bridge near Shanghai


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

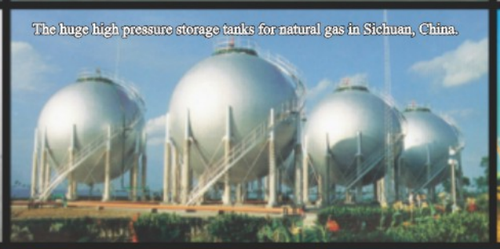

A 175,000wt Capesize bulk carrier made by Shanghai Waigaoqiao Shipbuilding Co., Ltd.

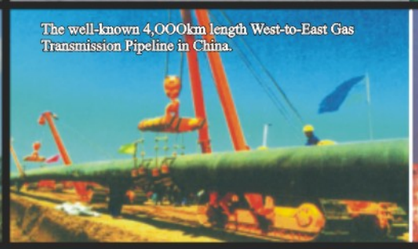

A 174,000wt multi-purpose bulk carrier fabricated by Bohai Shipbuilding Heavy Industry Co., Ltd.


The Shanghai Stadium


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

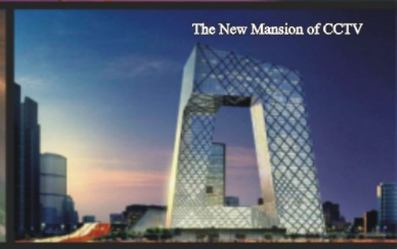

A 52,500wt oil tanker manufactured by Guangzhou Shipyard International Co., Ltd.


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

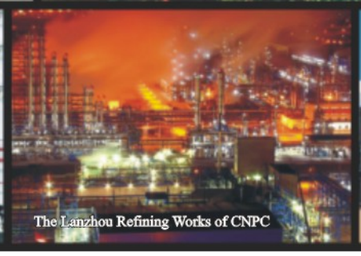

The well-known 4,000km length West-to-East Gas Transmission Pipeline in China.

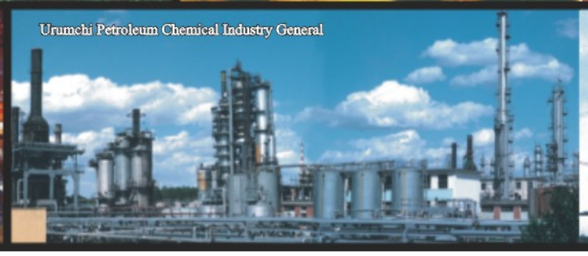

The W12-1 Platform constructed by United Offshore Construction Co.,Conhw,China


The 3T Terminal Building of Beijing International Airport


The New Mansion of CCTV

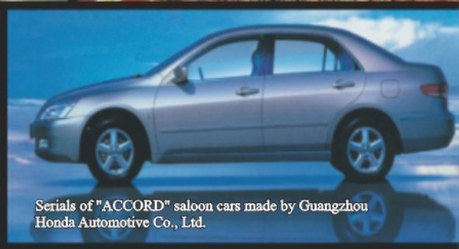

ATLANTIC products are widely used in jumbo oil tanks of the National Strategic Petroleum Reserves in China


The Lanzhou Refining Works of CNPC

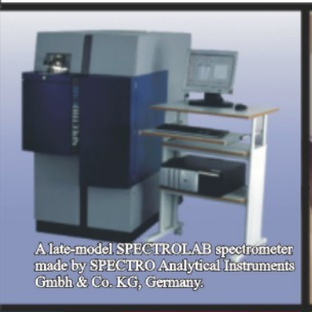

Urumchi Petroleum Chemical Industry General

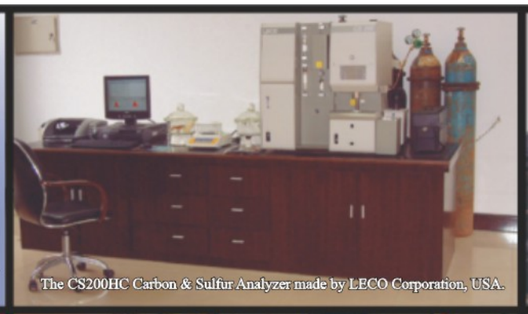

The four post-panamax quayside container cranes for the Port of Bremerhaven Germeny manufactured by Shanghai Zhenhua Port Machinery Co., Ltd.

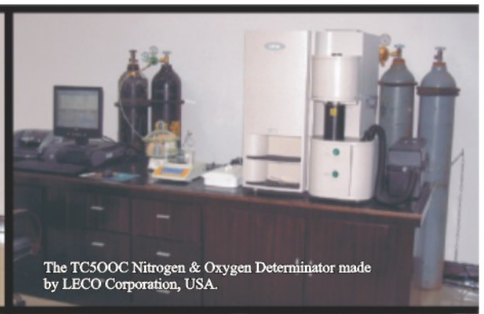

Serials of marine containers fabricated by China International Marine Containers (Group) Ltd. (CIMC),which is the biggest manufacturer of marine containers in the world.


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

THE EXCELLENT PRODUCTION & INSPECTION EQUIPMENTS


A late-model SPECTROLAB spectrometer made by SPECTRO Analytical Instruments Gmbh & Co. KG, Germany.


The CS200HC Carbon & Sulfur Analyzer made by LECO Corporation, USA.


The TC5OOC Nitrogen & Oxygen Determinator made by LECO Corporation, USA.


The SXF-1200BF Sequential X-ray Fluorescence Spectrometer made by Shimdau Co., Japan.


The hydraulic extrusion machines in the new factory of ATLANTIC


The ED 2/1000 continual bake oven for welding rods made by Nisterhammer Maschinenbau Gmbh, Germany.

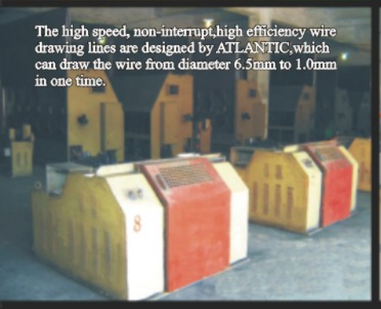

A High efficiency UP320 extrusion production line for welding rods made by Maschinenfabrid Berner Gmbh & Co. KG, Germany.


Drum (pail) packing machines for MAG / MIG wires, 250kg or 350kg per drum


Production lines for submerged arc welding (SAW) wire.


A corner of the automatic packing line for MAG / MIG wires.


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


The high speed, non-interrupt,high efficiency wire drawing lines are designed by ATLANTIC,which can draw the wire from diameter 6.5mm to 1.0mm in one time.


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


The advanced flux cored wire producing lines manufactured by ATLANTIC



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℃	0℃
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	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 ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				0℃
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	180-250
	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 with180% 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℃
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℃
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

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-E 43 11 A
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	≤.035	≤.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-E 43 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	150-200
	OH, VD	50-80	60-100	100-140	140-180



CHS002

Welding Rod for Extra-low Carbon Stainless Steel

AWS A5.4 E308L-16
ISO 3581-A-E（199L）R32
ISO 3581-B-ES308L-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 ⩽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℃. 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℃ to 350℃ 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(199)R32
ISO 3581-B-ES308-16
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℃. Before welding the rod should be baked at the temperature from 300℃ to 350℃ 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 E19123LR32
ISO 3581-A-E（19123L）R32
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 ⩽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℃ to 350℃ 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	160-200
	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 E2993R32
ISO 3581-A-E(2993)R32
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℃ to 350℃ 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	160-200
	V,OH	30-50	50-70	75-105	100-140	—

ATLANTIC RECOMMENDED PRODUCTS



CHE56

Low Hydrogen Welding Rod for High Tensile Steel

AWS A5.1 E7016
BS EN ISO 2560-B-E 49 16 -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℃ 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℃	-30℃	-45℃
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-E 49 18 -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℃ then be held 1-2 hours before welding, 2.5mm or less one should be done by 350℃ 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℃	-29℃	-45℃
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 3690) 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	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	CWB
Grade	3YH5	3,3Y,H15	3YH5	3YHHH	3YH10	3YH5	3YH10	3YH10	E4918-1H8



CHH408

Heat-resisting Steel Welding Rod

AWS A5.5 E9018-B3
ISO 3580-B-E 62 18-2C1M
EN 1599-E CrMo2 B
GB/T 5118 E6018-B3

CHH408 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℃, e.g. Catalytic cracker. All position welding is obtained and short arc is recommended. It is should be backed at a temperature of 350℃-380℃ for 1 hour before welding. The welded piece should be preheated to 300℃ before welding and it is must be tempered at 660℃-690℃ 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℃x1h)

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

X-ray defectoscopy: Ⅰ
Moisture contained in coating flux: ≤0.15%

Sizes, Pieces & Recommended Current (ACorDC⁺)

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



CHH717

Heat-resisting Steel Welding Rod

AWS A5.5 E9015-B9
ISO 3580-B-E 62 15-9C1MV
EN 1599-E CrMo91 B

CHH717 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℃-288℃ and the weld zone must be tempered at 730℃-760℃ 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	0.02-0.07	0.02-0.10	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℃x6h)

	Yield Point ReL(MPa)	Tensile Strength Rm(MPa)	Elongation A4 (%)	Impact Value (J)
				25℃
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



CHC308

Pure Nickel Welding Rod for Cast Iron

AWS A5.15 ENi-CI
ISO 1071-E C
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℃-120℃ 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-E C 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 wom 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℃.

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 contents 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 R_{eL} (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℃	-20℃	
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	ⅢYMSH10	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 T423BM3H5
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℃	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

Flux/Wire Combination for Submerged Arc Welding

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

CHF101GX/CHW-S9 flux/wire combination has excellence 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)	Standad	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	Hardness(Hv)	
	-20℃	(SA, %)	Weld Metal	HAZ
630	140	80	250	240



CHF101/CHW-S12

Flux/Wire Combination for Submerged Arc Welding

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

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

ATLANTIC RECOMMENDED PRODUCTS

CHW-50C

AWS A5.18 ER70S-7
BS EN ISO 14341-A-G 42 2 C G4Si1
BS EN ISO 14341-B-G 49A 2 C G7
GB/T 8110 ER49-1

Solid Wire for MAG/MIG Welding

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-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
GB/T 8110 ER50-6

Solid Wire for MAG/MIG Welding

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	III YMS	SW53G(C),SAW53MG(C)	3YSM	ER49S-6	G3Si1 DIN EN440	EN 13479,EN 440	EN440-GH2 4M G3Si1

CHW-50C3

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

Solid Wire for MAG/MIG Welding

CHW-50C3 is a coppered solid wire for welding with mixture gas Ar+CO_2. 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-50C8

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

MAG/MIG Solid Wire for High Strength Steel

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 backing 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.

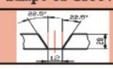
Mechanical properties of Deposited Metal (Typical)

	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



CHE501Fe18

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

Iron Powder Welding Rod for Mild Steel or High Tensile Steel

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℃ 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℃
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

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

Cellulose Welding Rod for Pipeline

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℃X1h)

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Impact Value (J)
				-30℃
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)	F, H	60-90	70-110	110-150	150-200
	OH, VD	50-80	60-100	100-140	140-180



CHE505Mo

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

Cellulose Welding Rod for Vertical-down Welding

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℃x1h)

	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)
				-20℃
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	150-200
	OH, VD	50-70	60-100	100-140	140-180



CHE555GX

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

Cellulose Welding Rod for High Press Pipeline

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℃
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	150-200
	OH, VD	50-80	60-100	100-140	140-180



Welding Rods for Mild Steel
软钢焊条

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)									Standard & Typical Mechanical Properties of Deposited Metal (AW)				Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE40	High titania Potassium	AWS A5.1 E6013 BS EN ISO 2560-B-E 43 13 A JIS Z3211 D4313	F,V, OH,H	AC or DC	≤0.20 0.070	≤1.20 0.41	≤1.00 0.26	≤0.035 0.021	≤0.040 0.023	≤0.20 0.027	≤0.30 0.018	≤0.30 0.002	≤0.08 0.01	ReH≥306 395	400-560 480	≥22 29	0℃ ≥47 80	Welding mild steel with normal tensile strength particularly suitable for intermittent welding to sheet and small workpoces.	CCS,LR,ABS, BV,GL,DNV, BKI,NK,CWB
CHE412	High titania Sodium	AWS A5.1 E6012 BS EN ISO 2560-B-E 43 12 A JIS Z3211 D4312	F,V, OH,H	AC or DC	≤0.20 0.08	≤1.20 0.50	≤1.00 0.35	≤0.035 0.020	≤0.040 0.026	≤0.20 0.03	≤0.30 0.017	≤0.30 0.003	≤0.08 0.01	≥330 400	≥430 490	≥17 28	0℃ ≥47 55	Suitable for welding sheet structures in all position.	—
CHE42	Lime titania	BS EN ISO 2560-B-E 43 03 A JIS Z3211 D4303	F,V, OH,H	AC or DC	≤0.20 0.067	≤1.20 0.40	≤1.00 0.18	≤0.035 0.019	≤0.040 0.022	— 0.015	— 0.006	— 0.012	— 0.012	ReH≥306 385	400-560 465	≥22 31	-20℃ ≥47 78	For welding structures with normal tensile strength such as ships, machineries and pipes etc.	CCS,LR,ABS, BV,GL,DNV,NK
CHE421D	Rutile Cellulose	AWS A5.1 E6013 BS EN ISO 2560-B-E 43 19 A JIS Z3211 D4313	F,VD, OH,H	AC or DC	≤0.20 0.068	≤1.20 0.39	≤1.00 0.28	≤0.035 0.017	≤0.040 0.023	≤0.20 0.027	≤0.30 0.02	≤0.30 0.003	≤0.08 0.02	≥330 420	≥430 500	≥17 27	0℃ 70	Vertical-down welding can perform for mild steel sheet structures, light structural frames, vehicles and so on.	—
CHE421Fe18	Iron powder Titanium	BS EN ISO 2560-B-E 43 14 A (Similar to E6024)	F, HF	AC or DC	≤0.12 0.063	≤1.25 0.56	≤0.90 0.45	≤0.035 0.015	≤0.040 0.024	—	—	—	—	ReH≥306 405	400-560 485	≥22 31	0℃ ≥47 87	Suitable for welding normal structures and ship structures made of mild steel, particularly suitable for flat and horizontal fillet and the welding efficiency is about 180%.	CCS,LR,ABS, BV,GL,DNV,NK
CHE43	Iron oxide Titania Potassium	AWS A5.1 E6019 BS EN ISO 2560-B-E 43 19 A JIS Z3211 D4301	F,V, OH,H	AC or DC	≤0.20 0.094	≤1.20 0.51	≤1.00 0.27	≤0.035 0.018	≤0.040 0.028	≤0.20 0.054	≤0.30 0.052	≤0.30 0.004	≤0.08 0.012	ReH≥306 385	400-560 480	≥22 29	0℃ ≥47 59	Suitable for welding ship hulls, pressure vessels, bridges as wll as structural fabrications.	CCS,LR,ABS, BV,GL,DNV,NK
CHE424	High iron oxide	AWS A5.1 E6020 BS EN ISO 2560-B-E 43 20 A	F, HF	AC or DC	≤0.20 0.075	≤1.20 0.63	≤1.00 0.10	≤0.035 0.018	≤0.040 0.027	≤0.20 0.029	≤0.30 0.017	≤0.30 0.002	≤0.08 0.02	≥330 370	≥430 470	≥22 26	0℃ 70	For welding general mild steel structures, such as heavy machinery and construction machinery and so on.	—
CHE424Fe16	High iron oxide Iron powder	AWS A5.1 E6027 BS EN ISO 2560-B-E 43 27 A	F, HF	AC or DC	≤0.20 0.070	≤1.20 0.67	≤1.00 0.27	≤0.035 0.015	≤0.040 0.022	≤0.20 0.025	≤0.30 0.02	≤0.30 0.003	≤0.08 0.02	≥330 345	≥430 440	≥22 32	-30℃ ≥27 75	Flat and horizontal fillet welding ship hulls, bridges,and general structures of building.	—
CHE425	High cellulose Potassium	AWS A5.1 E6011 BS EN ISO 2560-B-E 43 11 A	F,V, OH,H	AC or DC+	≤0.20 0.098	≤1.20 0.67	≤1.00 0.20	≤0.035 0.024	≤0.040 0.024	≤0.20 0.041	≤0.30 0.008	≤0.30 0.001	≤0.08 0.012	≥330 425	≥430 530	≥22 30	-30℃ ≥27 78	Suitable for vertical-down welding and lap welding for sheet structures.	—
CHE425G	High cellulose Sodium	AWS A5.1 E6010 BS EN ISO 2560-B-E 43 10 A	F,VD, OH,H	DC+	≤0.20 0.091	≤1.20 0.55	≤1.00 0.17	≤0.035 0.010	≤0.040 0.011	≤0.20 0.022	≤0.30 0.011	≤0.30 0.001	≤0.08 0.01	≥330 400	≥430 500	≥22 29	-30℃ ≥27 80	It is for all position welding general structures, including vertical down welding, especially pipelines, vessels.	—
CHE425GX	High cellulose Sodium	AWS A5.1 E6010 BS EN ISO 2560-B-E 43 10 A	F,VD, 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	≤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.	—
CHE426	Low hydrogen Potassium	BS EN ISO 2560-B-E 43 16 A (Similar to E6016)	F,V, OH,H	AC or DC+	— 0.067	≤1.25 1.04	≤0.90 0.60	≤0.035 0.007	≤0.040 0.019	≤0.20 0.036	≤0.30 0.013	≤0.30 0.002	≤0.08 0.010	≥330 440	≥420 550	≥22 31	-30℃ ≥27 155	For welding important mild steel and low alloy steel structures.	—
CHE427	Low hydrogen Sodium	BS EN ISO 2560-B-E 43 15 A (Similar to E6015)	F,V, OH,H	DC+	— 0.076	≤1.25 0.87	≤0.90 0.41	≤0.035 0.010	≤0.040 0.020	≤0.20 0.035	≤0.30 0.013	≤0.30 0.002	≤0.08 0.010	≥330 420	≥420 520	≥22 32	-30℃ ≥27 160	For welding important mild steel and low alloy steel structures.	—
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	≤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).	—
CHE47	Low hydrogen Sodium	BS EN ISO 2560-B-E 43 15 A (Similar to E6015)	F,V, OH,H	DC+	— 0.071	≤1.25 0.85	≤0.90 0.38	≤0.035 0.010	≤0.040 0.019	— 0.035	— 0.013	— 0.002	— 0.010	ReH≥306 410	400-560 505	A5(%)≥22 33	-20℃ ≥27 182	For welding important mild steel and low alloy steel structures, e.g. ships.	CCS,LR,ABS, BV,GL,DNV,NK
CHE48	Low hydrogen Potassium Iron powder	AWS A5.1 E6018 BS EN ISO 2560-B-E 43 18 A	F,V, OH,H	AC≥70V or DC+	≤0.03 0.028	≤0.60 0.56	≤0.40 0.33	≤0.015 0.010	≤0.025 0.016	≤0.20 0.047	≤0.30 0.022	≤0.30 0.010	≤0.08 0.014	≥330 400	≥430 500	A5(%)≥17 25	-30℃ ≥27 95	For welding important mild steel and low alloy steel structures.	—



Welding Rods for High Tensile Strength Steel
高强钢焊条

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)									Standard & Typical Mechanical Properties of Deposited Metal (AW)				Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE50	Low hydrogen Sodium	AWS A5.1 E7015 BS EN ISO 2560-B-E 49 15 -1 A	F,V, OH,H	DC+	— 0.078	≤1.60 1.21	≤0.75 0.51	≤0.035 0.010	≤0.040 0.020	— 0.037	— 0.014	— 0.002	— 0.010	ReH≥375 440	490-660 540	≥22 31	-20℃ ≥47 160	Suitable for welding important structures made of low alloy steel with corresponding grade of tensile strength, such as ships and heavy machinery.	CCS,LR,ABS, BV,GL,DNV, NK,CWB,KR
CHE501Fe	Iron powder Titania	AWS A5.1 E7014 BS EN ISO 2560-B-E 49 14 -1 A	F,V, OH,H	AC or DC	≤0.15 0.065	≤1.25 0.60	≤0.90 0.40	≤0.035 0.020	≤0.035 0.025	≤0.20 0.001	≤0.30 0.11	≤0.30 0.013	≤0.08 0.06	≥400 480	≥490 560	≥17 25	20℃ 0℃ 70 50	It is suitable for welding mild steel and low alloy steel structures, such as vehicles and machinery.	—
CHE501Fe18	Iron powder Titania	AWS A5.1 E7024 BS EN ISO 2560-B-E 49 24 -1 A	F, H,HF	AC or DC	≤0.15 0.068	≤1.25 0.74	≤0.90 0.44	≤0.035 0.015	≤0.035 0.024	≤0.20 0.027	≤0.30 0.006	≤0.30 0.003	≤0.08 0.016	ReH≥375 450	490-660 510	≥22 27	0℃ ≥47 72	Suitable for flat and horizontal fillet welding ship structures, H beams of bridges, as well as general steel structures.	CCS,LR,ABS, BV,GL,DNV, NK
CHE502	Lime Titania-oxide	JIS 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	—	—	—	—	≥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(%)									Standard & Typical Mechanical Properties of Deposited Metal (AW)				Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHE506	Low hydrogen Potassium	AWS A5.1 E7016 BS EN ISO 2560-B-E 49 16 -1 A	F,V, OH,H	AC or DC+	≤0.15 0.069	≤1.60 1.11	≤0.75 0.53	≤0.035 0.007	≤0.035 0.020	≤0.20 0.037	≤0.30 0.013	≤0.30 0.002	≤0.08 0.010	≥400 440	≥490 550	≥22 31	-30℃ ≥27 170	For welding important structures made by low alloy steels withcorresponding grade of tensile strength.	—
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	≤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.	—
CHE507	Low hydrogen Sodium	ASME SFA-5.1 E7015 BS EN ISO 2560-B-E 49 15 -1 A	F,V, OH,H	DC+	≤0.15 0.082	≤1.25 1.18	≤0.90 0.53	≤0.035 0.010	≤0.035 0.021	≤0.20 0.037	≤0.30 0.014	≤0.30 0.002	≤0.08 0.010	≥400 440	≥490 550	≥22 30	-30℃ ≥27 140	For welding important structures made by low alloy steel withcorresponding grade of tensile strength.	—
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	≤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.	—
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	≤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.	—
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	≤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.	—
CHE507Fe16	Low hydrogen Potassium Iron powder	AWS A5.1 E7028 BS EN ISO 2560-B-E 49 28 -1 A	F, HF	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	≤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%.	—
CHE508	Low hydrogen Potassium Iron powder	AWS A5.1 E7018 BS EN ISO 2560-B-E 49 18 -1 A	F,V, OH,H	AC≥70V or DC+	≤0.15 0.068	≤1.60 1.38	≤0.75 0.41	≤0.035 0.012	≤0.035 0.015	≤0.20 0.011	≤0.30 0.035	≤0.30 0.001	≤0.08 0.002	≥400 465	≥490 560	≥22 29	-30℃ ≥27 130	Suitable for welding important low alloy structures, which belong to the same grade of tensile strength such as boilers, pressure vessels, pipelines and so on.	—
CHE56	Low hydrogen Potassium	AWS A5.1 E7016 BS EN ISO 2560-B-E 49 16 -1 A	F,V, OH,H	AC≥70V or DC+	≤0.15 0.070	≤1.60 1.12	≤0.75 0.54	≤0.035 0.007	≤0.040 0.018	≤0.20 0.027	≤0.30 0.006	≤0.30 0.003	≤0.08 0.016	ReH≥375 450	490-660 550	≥22 30	-20℃ -29℃ 185 140	It is suitable for welding important structures made by low alloy steels with corresponding grade of tensile strength, e.g. ships.	CCS,LR,ABS, BV,GL,DNV, BKI,NK
CHE58-1	Low hydrogen Potassium Iron powder	AWS A5.1 E7018-1/E7018 BS EN ISO 2560-B-E 49 18 -1 A	F,V, OH,H	AC≥70V or DC+	≤0.15 0.068	≤1.60 1.36	≤0.75 0.51	≤0.035 0.010	≤0.040 0.016	≤0.20 0.028	≤0.30 0.010	≤0.30 0.005	≤0.08 0.014	ReH≥375 440	490-660 540	≥22 30	-20℃ -29℃ -46℃ 170 140 130	Suitable for welding important structures fabricated by low alloy steels, such as ships, high pressure vessels, bridges and offshore drilling platforms and so on. which welding efficiency is about 110%.	CCS,LR,ABS, BV,GL,DNV, BKI,CWB,KR



Welding Rods for Low Alloy Steel
低合金钢焊条

Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)										Standard & Typical Mechanical Properties of Deposited Metal					Applications
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
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	≥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.
CHE107Cr	BS EN 757-E 89 Z Z B T ISO 18275-A-E 89 Z 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	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.
CHE505	AWS A5.5 E7011-G BS EN ISO 2560-B-E 49 11-1 A	VD,F, OH,H	AC or DC	— 0.098	≥1.00 0.67	≥0.80 0.20	≤0.03 0.024	≤0.03 0.024	≥0.30 0.018	≥0.50 0.005	≥0.20 0.50	≥0.10 0.011	≥0.20 0.20	AW	≥390 425	≥490 530	≥22 30	— -30℃ 78	Suitable for vertical down welding structures made of carbon steels and low alloy steels, e.g. pipes.
CHE505G	AWS A5.5 E7010-G BS EN ISO 2560-B-E 49 10-1 A	VD,F, OH,H	DC+	— 0.098	≥1.00 0.40	≥0.80 0.11	≤0.03 0.016	≤0.03 0.017	≥0.30 0.018	≥0.50 0.004	≥0.20 0.49	≥0.10 0.010	≥0.20 0.21	PWHT 620℃X1h	≥390 420	≥490 535	≥22 28	— -30℃ 81	It is suitable for root passes, hot passes, filler and cover passes as well as for capping welding.
CHE505GX	AWS A5.5 E7010-P1 BS EN ISO 2560-B-E 49 10-G A	VD,F, OH,H	DC+	≤0.20 0.11	≤1.20 0.57	≤0.60 0.31	≤0.03 0.009	≤0.03 0.013	≤0.030 0.017	≤1.00 0.10	≤0.50 0.432	≤0.10 0.010	—	AW	≥415 470	≥490 540	≥22 22	-30℃ ≥27 50	It is suitable for vertical down welding and backing welding for root passes, hot passes, filler and cover passes as well as for capping of high press pipelines and similar structures.
CHE505Mo	AWS A5.5 E7010-A1 BS EN ISO 2560-B-E 49 10-1M3 P	VD,F, OH,H	DC+	≤0.12 0.074	≤0.60 0.33	≤0.40 0.11	≤0.03 0.010	≤0.03 0.009	—	—	0.40-0.65 0.48	—	—	PWHT 620℃×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.
CHE506NiLH	AWS A5.5 E7016-G BS EN ISO 2560-B-E 49 16-G P H5	F,V, OH,H	AC≥70V or DC+	— 0.070	≥1.00 1.12	≥0.80 0.54	≤0.03 0.007	≤0.03 0.018	≥0.30 0.014	≥0.50 0.50	≥0.20 0.004	≥0.10 0.012	≥0.20 0.22	PWHT 620℃×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.
CHE507NiLH	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P H5	F,V, OH,H	DC+	— 0.077	≥1.00 1.40	≥0.80 0.50	≤0.03 0.011	≤0.03 0.018	≥0.30 0.028	≥0.50 0.51	≥0.20 0.001	≥0.10 0.010	≥0.20 0.010	PWHT 620℃×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.
CHE507RH	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-Ni P H5	F,V, OH,H	DC+	— 0.080	≥1.00 1.36	≥0.80 0.47	≤0.03 0.010	≤0.03 0.010	≥0.30 0.025	≥0.50 0.50	≥0.20 0.001	≥0.10 0.012	≥0.20 0.11	PWHT 620℃×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.
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	≥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]

低合金钢焊条

Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)										Standard & Typical Mechanical Properties of Deposited Metal					Applications
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
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	≥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.
CHE508Ni	AWS A5.5 E7018-G ISO 2560-B-E 49 18-G P	F,V, OH,H	AC≥70V or DC+	— 0.067	≥1.00 1.30	≥0.80 0.50	≤0.03 0.008	≤0.03 0.012	≥0.30 0.012	≥0.50 1.20	≥0.20 0.003	≥0.10 0.010	≥0.20 0.015	PWHT 620℃×1h	≥390 470	≥490 580	≥22 28	— -40℃ 100	Welding low alloy steel structures with corresponding tensile strength.
CHE555G	AWS A5.5 E8010-G BS EN ISO 2560-B-E 55 10-G A	VD,F, OH,H	DC+	— 0.13	≥1.00 0.66	≥0.80 0.27	≤0.03 0.010	≤0.03 0.014	≤0.30 0.041	≥0.50 0.50	≥0.20 0.31	≥0.10 0.012	≥0.20 0.12	AW	≥460 470	≥550 580	≥19 25	— -30℃ 60	Suitable for fabricating huge diameter pipelines made by X70 or X75 grade steels.
CHE555GX	AWS A5.5 E8010-P1 BS EN ISO 2560-B-E 55 10-P1 A	VD,F, OH,H	DC+	≤0.20 0.099	≤1.20 0.60	≤0.60 0.18	≤0.030 0.012	≤0.030 0.011	≤0.30 0.013	≤1.00 0.642	≤0.50 0.43	≤0.10 0.010	—	AW	≥460 510	≥550 600	≥19 22	-30℃ ≥27 60	Suitable for fabricating huge diameter pipelines made by X70 or X80 grade steels.
CHE557	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.075	≥1.00 1.25	≥0.80 0.50	≤0.03 0.012	≤0.03 0.018	≥0.30 0.005	≥0.50 0.003	≥0.20 0.003	≥0.10 0.010	≥0.20 0.016	PWHT 620℃×1h	≥460 480	≥550 590	≥19 24	— -40℃ 100	Welding medium carbon steel structures and low alloy steel structures.
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	≥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.
CHE557MoV	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.075	≥1.00 1.60	≥0.80 0.22	≤0.03 0.012	≤0.03 0.014	≥0.30 0.033	≥0.50 0.005	≥0.20 0.30	≥0.10 0.037	≥0.20 0.030	PWHT 620℃×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.
CHE557Ni	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.069	≥1.00 1.25	≥0.80 0.25	≤0.03 0.013	≤0.03 0.018	≥0.30 0.007	≥0.50 0.90	≥0.20 0.002	≥0.10 0.011	≥0.20 0.010	PWHT 620℃×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.
CHE557RH	AWS A5.5 E8015-G BS EN ISO 2560-B-E 55 15-G P	F,V, OH,H	DC+	— 0.075	≥1.00 1.25	≥0.80 0.22	≤0.03 0.008	≤0.03 0.016	≥0.30 0.023	≥0.50 0.76	≤0.20 0.20	≥0.10 0.018	≥0.20 0.020	PWHT 620℃×1h	≥460 500	≥550 590	≥19 26	— -40℃ 120	For welding structures of pressure vessels, bridges, water-guiding pipes of hydro-electic power station as well as steel structures of ocean project.
CHE558	AWS A5.5 E8018-G BS EN ISO 2560-B-E 55 18-G P	F,V, OH,H	AC≥70V or DC+	— 0.080	≥1.00 1.12	≥0.80 0.30	≤0.03 0.012	≤0.03 0.030	≥0.30 0.010	≥0.50 0.09	≥0.20 0.003	≥0.10 0.015	≥0.20 0.010	PWHT 620℃×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 15MnT,15MnV, etc.
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	≤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.
CHE558Ni	AWS A5.5 E8018-C3 BS EN ISO 2560-B-E 55 18-N2 A	VD,F, OH,H	AC≥70V or DC+	≤0.12 0.069	0.40-1.25 1.05	≤0.80 0.63	≤0.03 0.010	≤0.03 0.015	≤0.15 0.029	0.80-1.10 0.96	≤0.35 0.22	≤0.05 0.010	—	AW	470-550 520	≥550 630	≥24 26	-40℃ ≥27 95	Suitable for welding structures made by same grade low alloy steels, such as 15MnTi,15MnV, etc.
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	≥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.
CHE606	AWS A5.5 E9016-G ISO 18275-B-E 59 16-3M2 P	F,V, OH,H	AC≥70V or DC+	— 0.072	≥1.00 1.58	≥0.80 0.47	≤0.03 0.009	≤0.03 0.018	≥0.30 0.013	≥0.50 0.08	≥0.20 0.34	≥0.10 0.016	≥0.20 0.012	PWHT 620℃×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.
CHE607	AWS A5.5 E9015-G ISO 18275-B-E 62 15-3M2 P	F,V, OH,H	DC+	— 0.084	≥1.00 1.55	≥0.80 0.50	≤0.03 0.011	≤0.03 0.021	≥0.30 0.031	≥0.50 0.008	≥0.20 0.34	≥0.10 0.010	≥0.20 0.010	PWHT 620℃×1h	≥530 580	≥620 680	≥17 25	— -30℃ 90	Welding medium carbon steel and low alloy steel structures with corresponding grade strength.
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	≥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.
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	≥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.
CHE607Ni	AWS A5.5 E9015-G ISO 18275-B-E 62 15-G P	F,V, OH,H	DC+	— 0.080	≥1.00 1.50	≥0.80 0.50	≤0.03 0.011	≤0.03 0.019	≥0.30 0.026	≥0.50 0.90	≥0.20 0.35	≥0.10 0.010	≥0.20 0.010	PWHT 620℃×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.
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	—	—	PWHT 620℃×1h	≥490 560	590-690 660	≥20 25	-50℃ ≥54 76	Suitable for high pressure vessels with equivalent tensile strength.
CHE607RH	ASME SFA-5.5 E9015-G ISO 18275-B-E 62 15-G P H5	F,V, OH,H	DC+	— 0.072	≥1.00 1.51	≥0.80 0.35	≤0.03 0.008	≤0.03 0.014	≥0.30 0.008	≥0.50 1.00	≥0.20 0.24	≥0.10 0.009	≥0.20 0.010	PWHT 620℃×1h	≥530 550	≥620 650	≥17 25	— -50℃ 80	For welding structures of pressure vessels, bridges, water-guiding pipes of hydro-electic power station as well as steel structures of ocean project, especially in good match with steel CF60 & CF62.
CHE608	AWS A5.5 E9018-G ISO 18275-B-E 62 18-G P	F,V, OH,H	AC≥70V or DC+	— 0.070	≥1.00 1.45	≥0.80 0.44	≤0.03 0.013	≤0.03 0.015	≥0.30 0.010	≥0.50 0.025	≥0.20 0.33	≥0.10 0.010	≥0.20 0.013	PWHT 620℃×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.
CHE62CFLH	AWS A5.5 E9015-G BS EN ISO 2560-B-E 62 15-G P H5	F,V, OH,H	DC+	— 0.056	≥1.00 1.46	≥0.80 0.30	≤0.03 0.010	≤0.03 0.020	≥0.30 0.030	≥0.50 0.98	≥0.20 0.35	≥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.
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	≥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.
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	—	≤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.
CHE658	AWS A5.5 E9018M ISO 18275-B-E 62 18-N3M1 A	F,V, OH,H	DC+	≤0.10 0.080	0.60-1.25 1.01	≤0.80 0.50	≤0.030 0.011	≤0.030 0.017	≤0.15 0.025	1.40-1.80 1.62	≤0.35 0.16	≤0.05 0.025	—	AW	540-620 590	≥620 680	≥24 27	-50℃ ≥27 75	Suitable for welding important structures such as hull of nuclear reactor, steam generator of boilers, chemical containers,etc. especially for military engineering structures.



Welding Rods for Low Alloy Steel [Continued]
低合金钢焊条

Item Code	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)										Standard & Typical Mechanical Properties of Deposited Metal					Applications
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHE707	AWS A5.5 E10015-D2 ISO 18275-B-E 69 15-4M2 P BS EN 757-E55 3 MnMo B T	F,V, OH,H	DC+	≤0.15 0.102	1.65-2.00 1.91	≤0.60 0.42	≤0.03 0.008	≤0.03 0.019	—	≤0.90 0.009	0.25-0.45 0.37	—	—	PWHT 620℃×1h	≥600 670	≥690 760	≥16 23	-50℃ ≥27 69	Welding medium carbon steel and low alloy steel structures with corresponding grade strength.
CHE707Ni	AWS A5.5 E10015-G ISO 18275-B-E 69 15-G P BS EN 757-E55 4 Z B T	F,V, OH,H	DC+	— 0.067	≥1.00 1.45	≥0.80 0.34	≤0.03 0.010	≤0.03 0.020	≥0.30 0.50	≥0.50 1.70	≥0.20 0.30	≥0.10 0.010	≥0.20 0.010	PWHT 620℃×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).
CHE707RH	AWS A5.5 E10015-G ISO 18275-B-E 69 15-N3M2 P H5	F,V, OH,H	DC+	— 0.072	≥1.00 1.50	≥0.80 0.40	≤0.03 0.010	≤0.03 0.012	≥0.30 0.005	≥0.50 1.50	≥0.20 0.40	≥0.10 0.012	≥0.20 0.010	PWHT 620℃×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.
CHE708	AWS A5.5 E10018M ISO 18275-B-E 69 18-4M2 P	F,V, OH,H	AC≥70V or DC+	≤0.10 0.065	0.75-1.70 1.04	≤0.60 0.34	≤0.030 0.010	≤0.030 0.020	≤0.35 0.052	1.40-2.10 1.71	0.25-0.50 0.33	≤0.05 0.025	—	AW	≥690 710	610-690 670	≥20 24	-50℃ ≥27 80	Welding low alloy steel structures with corresponding tensile strength, e.g. military engineering projects.
CHE757	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E62 A Z B T	F,V, OH,H	DC+	— 0.070	≥1.00 1.85	≥0.80 0.40	≤0.03 0.012	≤0.03 0.016	≥0.30 0.006	≥0.50 0.010	≥0.20 0.50	≥0.10 0.07	≥0.20 0.015	PWHT 620℃×1h	≥670 680	≥760 780	≥15 18	— 25℃ 100	For welding important structures fabricated by 740MPa tensile strength or more low alloy steels.
CHE757Ni	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E62 4 MnNiMo B T	F,V, OH,H	DC+	— 0.060	≥1.20 1.60	≥0.80 0.20	≤0.03 0.014	≤0.03 0.014	≥0.30 0.025	≥0.50 2.35	≥0.20 0.52	≥0.10 0.010	≥0.20 0.010	PWHT 620℃×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.
CHE758	AWS A5.5 E11018-G ISO 18275-B-E 76 18-G P BS EN 757-E62 5 Z B T	F,V, OH,H	AC≥70V or DC+	— 0.070	≥1.00 1.45	≥0.80 0.32	≤0.03 0.011	≤0.03 0.020	≥0.30 0.54	≥0.50 1.76	≥0.20 0.33	≥0.10 0.010	≥0.20 0.010	PWHT 620℃×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.
CHE758Ni	AWS A5.5 E11018M ISO 18275-B-E 76 18-G P	F,V, OH,H	AC≥70V or DC+	≤0.10 0.070	1.30-1.80 1.64	≤0.60 0.32	≤0.030 0.010	≤0.030 0.019	≤0.40 0.34	1.25-2.50 1.76	0.25-0.50 0.32	≤0.05 0.010	—	AW	680-760 700	≥760 775	≥20 23	-50℃ ≥27 50	For welding important structures fabricated by 740MPa tensile strength or more low alloy steels, especially for military engineering projects.
CHE80C	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.070	≥1.00 1.70	≥0.80 0.40	≤0.03 0.010	≤0.03 0.020	≥0.30 0.020	≥0.50 2.22	≥0.20 0.08	≥0.10 0.030	≥0.20 0.030	PWHT 620℃×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.
CHE807	AWS A5.5 E11015-G ISO 18275-B-E 76 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.060	≥1.00 1.50	≥0.80 0.33	≤0.03 0.013	≤0.03 0.014	≥0.30 0.005	≥0.50 1.60	≥0.20 0.50	≥0.10 0.020	≥0.20 0.013	PWHT 620℃×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.
CHE807RH	AWS A5.5 E11015-G ISO 18275-B-E 76 15-N4M2 A H5 BS EN 757-E69 4 Mn2NiCrMo H5	F,V, OH,H	DC+	— 0.050	1.30-1.80 1.50	≥0.80 0.32	≤0.03 0.010	≤0.03 0.016	≥0.30 0.38	≥0.50 1.60	≥0.20 0.48	≥0.10 0.007	≥0.20 0.010	AW	≥670 760	≥760 860	≥15 19	— -40℃ 70	For welding important structures of pressure vessels, bridges, water-guiding pipes of hydro-electic power station as well as steel structures of ocean project, especially in good match with steel CF80.
CHE857	AWS A5.5 E12015-G ISO 18275-B-E 83 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.065	≥1.00 1.80	≥0.80 0.35	≤0.03 0.009	≤0.03 0.016	≥0.30 0.004	≥0.50 0.011	≥0.20 0.70	≥0.10 0.009	≥0.20 0.007	PWHT 620℃×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.
CHE857Cr	AWS A5.5 E12015-G ISO 18275-B-E 83 15-G P BS EN 757-E69 A Z B T	F,V, OH,H	DC+	— 0.068	≥1.00 1.85	≥0.80 0.37	≤0.03 0.009	≤0.03 0.015	≥0.30 1.00	≥0.50 0.011	≥0.20 0.680	≥0.10 0.063	≥0.20 0.063	PWHT 620℃×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.
CHE857CrNi	AWS A5.5 E12015-G ISO 18275-B-E 83 15-G A BS EN 757-E69 5 Mn2NiCrMo B	F,V, OH,H	DC+	— 0.058	≥1.00 1.40	≥0.80 0.29	≤0.03 0.014	≤0.03 0.018	≥0.30 1.6	≥0.50 2.50	≥0.20 0.56	≥0.10 0.010	≥0.20 0.010	AW	≥740 850	≥830 960	≥14 15	— -50℃ 60	For welding important structures made by 830MPa grade of tensile strength or more low alloy steels, such as WEL-TEN80 and or WEL-TEN80C.
CHE858	AWS A5.5 E12018-G ISO 18275-B-E 83 18-G P BS EN 757-E69 5 Mn2NiCrMo B T	F,V, OH,H	AC≥70V or DC+	— 0.060	≥1.00 2.10	≥0.80 0.35	≤0.03 0.010	≤0.03 0.018	≥0.30 0.75	≥0.50 2.20	≥0.20 0.52	≥0.10 0.010	≥0.20 0.010	PWHT 620℃×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.
CHE907Cr	AWS A5.5 E12015-G BS EN 757-E79 Z Z B T	F,V, OH,H	DC+	— 0.083	≥1.00 2.04	≥0.80 0.35	≤0.03 0.004	≤0.03 0.012	≥0.30 1.09	≥0.50 0.010	≥0.20 0.71	≥0.10 0.008	≥0.20 0.012	PWHT 620℃×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.



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 of Deposited Metal(%)										Standard & Typical Mechanical Properties of Deposited Metal					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHE502WCu	Lime titania	GB E5003-G	F,V, OH,H	AC or DC+	≤0.12 0.076	0.30-0.90 0.54	≤0.40 0.24	≤0.030 0.018	≤0.035 0.025	— 0.309	W 0.20-0.50 0.35	— 0.006	—	0.20-0.50 0.30	PWHT 620℃×1h	≥390 450	≥490 540	≥22 27	-20℃ ≥27 50	Suitable for railway wagons, vehicles made by atmospheric corrosion and infection resistance steels.
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	≥0.50 0.38	≥0.20 0.004	≥0.10 0.010	≥0.20 0.30	AW	≥390 450	≥490 540	≥22 26	— -40℃ 120	Suitable for railway wagons, vehicles, locomotives fabricated by atmospheric corrosion and infection resistance steels.
CHE506WCu	Low hydrogen Potassium	AWS A5.5 E7016-G BS EN ISO 2560-B-E 49 16-G P	F,V, OH,H	AC or DC+	— 0.062	≥1.00 0.84	≥0.80 0.41	≤0.03 0.005	≤0.03 0.017	≥0.30 0.026	≥0.50 0.012	≥0.20 0.004	≥0.10 0.009	Cu≥0.20 0.23 W 0.28	PWHT 620℃×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.
CHE507CrNi	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.070	≥1.00 0.66	≥0.80 0.50	≤0.03 0.012	≤0.03 0.017	≥0.30 0.80	≥0.50 0.30	≥0.20 0.005	≥0.10 0.008	≥0.20 0.30	PWHT 620℃×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 [Continued]

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 of Deposited Metal(%)										Standard & Typical Mechanical Properties of Deposited Metal					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHE507CuP	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.066	≥1.00 1.44	≥0.80 0.46	≤0.03 0.011	≤0.03 0.010	≥0.30 0.025	≥0.50 0.005	≥0.20 0.004	≥0.10 0.018	≥0.20 0.37	PWHT 620℃×1h	≥390 460	≥480 560	≥22 28	— 25℃ 70	For welding atmospheric corrosion and marine corrosion resisting low alloy steel structures.
CHE507MnMo	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.070	≥1.00 0.50	≥0.80 0.30	≤0.03 0.015	≤0.03 0.020	≥0.30 0.020	≥0.50 0.005	≥0.20 0.35	≥0.10 0.007	≥0.20 0.17	PWHT 620℃×1h	≥390 440	≥490 550	≥22 28	— -20℃ 120	For welding of high pressue, high temperature H_2S corrosion resisting steel structures.
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	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.
CHE556NiCrCu	Low hydrogen Potassium	AWS A5.5 E8016-G BS EN ISO 2560-B-E 55 16-NCC A	F,V, OH,H	AC or DC+	— 0.053	≥1.00 1.53	≥0.80 0.33	≤0.03 0.012	≤0.03 0.015	≥0.30 0.70	≥0.50 0.45	≥0.20 0.007	≥0.10 0.010	≥0.20 0.29	AW	≥460 500	≥550 620	≥19 24	— -40℃ 90	Suitable for welding structures made by atmospheric corrosion and infection resistance steels, e.g. ASTM A424 & A588 steels.
CHE556H	Low hydrogen Potassium	AWS A5.5 E8016-B1 BS EN ISO 2560-B-E 55 16-G P	F,V, OH,H	AC or DC+	0.05-0.12 0.065	≤0.90 0.60	≤0.60 0.30	≤0.03 0.007	≤0.03 0.011	0.40-0.65 0.44	—	0.40-0.65 0.49	—	—	PWHT 620℃×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.
CHE558NiCrCu	Iron powder Low hydrogen Potassium	AWS A5.5 E8018-W2 BS EN ISO 2560-B-E 55 18-NCC1 A	F,V, OH,H	AC or DC+	≤0.12 0.055	0.50-1.30 1.00	0.35-0.80 0.55	≤0.03 0.013	≤0.03 0.018	0.45-0.70 0.60	0.40-0.80 0.65	—	—	0.30-0.75 0.48	PWHT 620℃×1h	≥460 500	≥550 610	≥19 23	-20℃ ≥27 82	Suitable for welding structrues made by atmospheric corrosion and infection resistance steels, e.g. ASTM A424 & A588 steels.
CHE606NiCrCu	Low hydrogen Potassium	AWS A5.5 E9016-G ISO 18275-B-E 59 16-NCC1 A	F,V, OH,H	AC or DC+	— 0.063	≥1.00 1.47	≥0.80 0.30	≤0.03 0.015	≤0.03 0.014	≥0.30 0.59	≥0.50 0.72	≥0.20 0.22	≥0.10 0.12	≥0.20 0.31	AW	≥530 550	≥620 650	≥17 23	— -40℃ 80	Suitable for welding structures fabricated by atmospheric corrosion & infection resisting alloy steels, e.g. Q500NQR1.
CHE607CrCu	Low hydrogen Sodium	AWS A5.5 E9015-G ISO 18275-B-E 62 15-G A	F,V, OH,H	DC+	— 0.023	≥1.00 1.27	≥0.80 0.45	≤0.03 0.016	≤0.03 0.019	≥0.30 0.52	≥0.50 0.69	≥0.20 0.24	≥0.10 0.14	≥0.20 0.30	AW	≥530 560	≥620 645	≥17 22	— -40℃ 80	Suitable for welding important structures made by atmospheric corrosion and marine water corrosion low alloy steels, e.g. WNQ570.
CHE707CrCu	Low hydrogen Sodium	AWS A5.5 E10015-G ISO 18275-B-E 69 15-G A	F,V, OH,H	DC+	— 0.042	≥1.00 1.49	≥0.80 0.30	≤0.03 0.007	≤0.03 0.012	≥0.30 1.05	≥0.50 1.25	≥0.20 0.22	≥0.10 0.13	≥0.20 0.23	AW	≥600 640	≥690 730	≥16 19	— -40℃ 105	Suitable for welding important structures made by atmospheric corrosion and marine water corrosion low alloy steels, e.g. WNQ690.



Welding Rods for Heat-resisting Low Alloy Steel

耐热钢焊条

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)											Mechanical Properties of Deposited Metal (Typical)					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHH107	Low hydrogen Sodium	AWS A5.5 E7015-A1 ISO 3580-B-E 49 15-1M3 EN 1599-E Mo B	F,V, OH,H	DC+	≤0.12 0.068	≤0.90 0.69	≤0.60 0.31	≤0.03 0.009	≤0.03 0.016	—	—	0.40-0.65 0.49	—	—	—	PWHT 620℃×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.
CHH108	Iron powder Low hydrogen Potassium	AWS A5.5 E7018-A1 ISO 3580-B-E 49 18-1M3 EN 1599-E Mo B	F,V, OH,H	AC≥70V or DC+	≤0.12 0.063	≤0.90 0.76	≤0.80 0.28	≤0.03 0.013	≤0.03 0.015	—	—	0.40-0.65 0.57	—	—	—	PWHT 620℃×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.
CHH127	Low hydrogen Sodium	AWS A5.5 E9015-G ISO 3580-B-E 62 15-G EN 1599-E Z B	F,V, OH,H	DC+	— 0.06	≥1.00 1.20	≥0.80 0.20	≤0.03 0.006	≤0.03 0.007	≥0.30 0.32	≥0.50 1.10	≥0.20 0.35	≥0.10 0.15	≥0.20 0.30	—	PWHT 620℃×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.
CHH202	Lime titania	ISO 3580-B-E 55 13-CM EN 1599-E CrMo0.5 R	F,V, OH,H	AC or DC+	0.05-0.12 0.077	≤0.90 0.60	≤0.60 0.16	≤0.035 0.017	≤0.035 0.024	0.40-0.65 0.53	—	0.40-0.65 0.51	—	—	—	PWHT 620℃×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.
CHH207	Low hydrogen Sodium	ISO 3580-B-E 55 15-CM EN 1599-E CrMo0.5 B	F,V, OH,H	DC+	0.05-0.12 0.070	≤0.90 0.70	≤0.60 0.53	≤0.035 0.015	≤0.035 0.015	0.40-0.65 0.50	—	0.40-0.65 0.54	—	—	—	PWHT 620℃×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℃.
CHH302	Lime titania	ISO 3580-B-E 55 13-1CM EN 1599-E CrMo1 R	F,V, OH,H	AC or DC+	0.05-0.12 0.073	≤0.90 0.57	≤0.60 0.37	≤0.035 0.016	≤0.035 0.023	0.80-1.50 1.07	—	0.40-0.65 0.63	—	—	—	PWHT 620℃×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℃.
CHH307	Low hydrogen Sodium	ISO 3580-B-E 55 15-1CM EN 1599-E CrMo1 B	F,V, OH,H	DC+	0.05-0.12 0.067	≤0.90 0.70	≤0.60 0.37	≤0.035 0.011	≤0.035 0.015	0.80-1.50 1.14	—	0.40-0.65 0.51	—	—	—	PWHT 620℃×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.
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	—	—	—	PWHT 675℃×5h	≥295 420	450-590 540	≥19 24	-30℃ ≥27 120	It is one knid 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 equirment, etc. Also it could welding cast steel of 30CrMnSi.
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	—	—	—	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 equirment, etc. Also it could weld cast steel of 30CrMnSi.
CHH308	Iron powder Low hydrogen Potassium	AWS A5.5 E8018-B2 ISO 3580-B-E 55 18-1CM EN 1599-E CrMo1 B	F,V, OH,H	AC≥70V or DC+	0.05-0.12 0.080	≤0.90 0.73	≤0.80 0.24	≤0.03 0.009	≤0.03 0.013	1.00-1.50 1.31	—	0.40-0.65 0.52	—	—	—	PWHT 690℃×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.
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	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

耐热钢焊条

[Continued]

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)											Mechanical Properties of Deposited Metal (Typical)					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
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	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 presure boiler pipeline, petroleum cracking equipment, working temperature of which is below 540 ℃.
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	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℃.
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	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℃.
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	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 ℃.
CHH407	Low hydrogen Sodium	AWS A5.5 E9015-B3 ISO 3580-B-E 62 15-2C1M EN 1599-E CrMo2 B	F,V, OH,H	DC+	0.05-0.12 0.067	≤0.90 0.65	≤1.00 0.38	≤0.030 0.012	≤0.030 0.016	2.00-2.50 2.23	—	0.90-1.20 1.02	—	—	—	PWHT 690℃×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 ℃.
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	—	—	—	PWHT 690℃×8h	≥530 530	≥620 625	≥17 21	— -30℃ 120	It is one knid 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 prssure & high temterature pipes, chemical machineary, petroleum thermal cracking equirments, etc.
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	—	—	—	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 prssure & high temterature pipes, chemical machineary, petroleum thermal cracking equirment, and so on.
CHH408	Iron powder Low hydrogen Potassium	AWS A5.5 E9018-B3 ISO 3580-B-E 62 18-2C1M EN 1599-E CrMo2 B	F,V, OH,H	AC≥70V or DC+	0.05-0.12 0.080	≤0.90 0.75	≤0.80 0.24	≤0.030 0.010	≤0.030 0.012	2.00-2.50 2.34	—	0.90-1.20 1.14	—	—	—	PWHT 690℃×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 press pipes.
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	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℃.
CHH427	Low hydrogen Sodium	AWS A5.5 E9015-G ISO 3580-B-E 62 15-G EN 1599-E Z B	F,V, OH,H	DC+	— 0.06	≥1.00 0.60	≥0.80 0.25	≤0.03 0.008	≤0.03 0.009	≥0.30 2.10	≥0.50 0.65	≥0.20 0.10	≥0.10 0.20	≥0.20 0.32	Nb 0.02 W 1.45	PWHT 750℃×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.
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	≥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.
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	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.
CHH517	Low hydrogen Sodium	AWS E8015-B6 EN 1599-E CrMo5 B ISO 3580-B-E 55 15-5CM B	F,V, OH,H	DC+	0.05-0.10 0.06	≤1.00 0.75	≤0.90 0.51	≤0.03 0.012	≤0.03 0.015	4.00-6.00 5.18	≤0.40 0.02	0.45-0.65 0.53	—	—	—	PWHT 740℃×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.
CHH717	Low hydrogen Sodium	AWS A5.5 E9015-B9 ISO 3580-B-E 62 15-9C1MV EN 1599-E CrMo91 B	F,V, OH,H	DC+	0.08-0.13 0.094	≤1.20 0.75	≤0.30 0.22	≤0.01 0.004	≤0.01 0.009	8.0-10.5 9.32	≤0.80 0.66	0.85-1.20 1.03	0.15-0.30 0.208	Cu ≤ 0.25 0.020 N 0.02-0.07 0.030	Nb 0.02-0.10 0.053 Al ≤0.04 0.005	PWHT 760℃×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.
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	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、Nf616 heat-resisting steels. Weld piece should be pre-heated to 200℃-250℃ before welding and interpass temperature in welding should be 260℃—300℃.
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	—	—	—	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.



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 Metal(%)										Standard & Typical Mechanical Properties of Deposited Metal					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHL107	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-N7 P	F,V, OH,H	DC+	— 0.04	≥1.00 0.45	≥0.80 0.18	≤0.03 0.003	≤0.03 0.012	≥0.30 0.20	≥0.50 3.20	≥0.20 0.21	≥0.10 0.11	≥0.20 0.30	PWHT 620℃×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℃.
CHL607	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.05	≥1.00 0.99	≥0.80 0.39	≤0.03 0.009	≤0.03 0.015	≥0.30 0.23	≥0.50 1.84	≥0.20 0.20	≥0.10 0.13	≥0.20 0.23	PWHT 620℃×1h	≥390 430	≥490 540	≥22 30	— -60℃ 110	For welding structures made by 09MnD low alloy steel, which work temperature is around -60℃.
CHL608	Iron powder Low hydrogen Potassium	AWS A5.5 E8018-C1 BS EN ISO 2560-B-E 55 18-N5 P	F,V, OH,H	AC≥70V or DC+	≤0.12 0.075	≤1.25 1.00	≤0.80 0.56	≤0.03 0.010	≤0.03 0.016	—	2.00-2.75 2.20	—	—	—	PWHT 620℃×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℃.
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	≥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

低温钢焊条

[Continued]

Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)										Standard & Typical Mechanical Properties of Deposited Metal					Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHL708	Iron powder Low hydrogen Potassium	AWS A5.5 E7018-G BS EN ISO 2560-B-E4918-N5 P	F,V, OH,H	AC≥70V or DC+	— 0.04	≥1.00 0.50	≥0.80 0.28	≤0.03 0.015	≤0.03 0.012	≥0.30 0.11	≥0.50 2.40	≥0.20 0.14	≥0.10 0.11	≥0.20 0.27	PWHT 620℃×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℃.
CHL807	Low hydrogen Sodium	AWS A5.5 E7015-G BS EN ISO 2560-B-E 49 15-G P	F,V, OH,H	DC+	— 0.045	≥1.00 0.60	≥0.80 0.27	≤0.03 0.010	≤0.03 0.015	≥0.30 0.24	≥0.50 1.80	≥0.20 0.22	≥0.10 0.10	≥0.20 0.23	PWHT 620℃×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℃.



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



Welding Rods for Stainless Steel [Continued]

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)										Mechanical Properties of Deposited Metal			Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
CHS062	Extra low carbon Lime titania	AWS A5.4 E309L-16 ISO 3581-B-ES309L-16 EN 1600 E 23 12 L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.027	0.50-2.50 0.85	≤0.90 0.67	≤0.030 0.009	≤0.040 0.020	22.0-25.0 24.20	12.0-14.0 13.09	≤0.75 0.090	≤0.75 0.092	—	AW	≥520 565	≥30 41	For welding stainless steel structures of synthetic fibre, petrochemical equipment and nuclear reactor and so on. Also it can be used in dissimilar steels of stainless steels with carbon or low alloy steels.	CWB
CHS067	Extra low carbon Low hydrogen	AWS A5.4 E309L-15 ISO 3581-B-ES309L-15 EN 1600 E 23 12 L B 4 2	F,V, OH,H	DC+	≤0.04 0.027	0.50-2.50 0.95	≤0.90 0.42	≤0.030 0.009	≤0.040 0.020	22.0-25.0 24.00	12.0-14.0 13.02	≤0.75 0.10	≤0.75 0.090	—	AW	≥520 560	≥30 41	For welding stainless steel structures of synthetic fibre, petrochemical equipment and nuclear reactor and so on. Also it can be used in dissimilar steels of stainless steels with carbon or low alloy steels.	—
CHS101	Silicon titania	AWS A5.4 E308-17 ISO 3581-B-ES308-17 EN 1600 E 19 9 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.047	0.50-2.50 0.80	≤0.90 0.75	≤0.030 0.010	≤0.040 0.028	18.0-21.0 19.80	9.0-11.0 9.90	≤0.75 0.15	≤0.75 0.30	—	AW	≥550 590	≥35 45	For welding 06Cr19Ni10 or Cr18Ni9Ti stainless steel structures, which working temperature is below 300℃.	—
CHS102	Lime titania	AWS A5.4 E308-16 ISO 3581-B-ES308-16 EN 1600 E 19 9 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.048	0.50-2.50 0.86	≤0.90 0.66	≤0.030 0.012	≤0.040 0.028	18.0-21.0 19.88	9.0-11.0 9.70	≤0.75 0.14	≤0.75 0.23	—	AW	≥550 595	≥35 44	For welding 06Cr19Ni10 or Cr18Ni9Ti stainless steel structures, which working temperature is below 300℃. It is popular for civil use, e.g.family decorating.	—
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	≤0.75 0.057	≤0.75 0.108	—	AW	≥550 605	≥35 48	For welding 06Cr19Ni10 stainless steel structures, which working temperature is below 300℃.	—
CHS102MnMo	Lime titania	AWS A5.4 E307-16 ISO 3581-B-ES307-16 EN 1600 E 18 9 Mn Mo R 3 2	F,V, OH,H	AC or DC+	0.04-0.14	3.30-4.75	≤0.90	≤0.030	≤0.040	18.0-21.5	9.0-10.7	0.5-1.5	≤0.75	—	AW	≥590	≥30	Suitable for welding structures made by ASTM307 stainless steel or dissimilar steels, also it can be used surfacing impingement & corrosion resisting steels and transition layers.	—
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	≤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.	—
CHS107	Low hydrogen sodium	AWS A5.4 E308-15 ISO 3581-B-ES308-15 EN 1600 E 19 9 B 4 2	F,V, OH,H	DC+	≤0.08 0.060	0.50-2.50 1.30	≤0.90 0.47	≤0.030 0.007	≤0.040 0.024	18.0-21.0 19.88	9.0-11.0 9.90	≤0.75 0.13	≤0.75 0.18	—	AW	≥550 600	≥35 44	For welding corrosion resisting structures made by 06Cr18Ni9 stainless steel, which working temperature is lower than 300℃. It could welding high Cr steels or surfacing also.	—
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	—	—	—	AW	≥540	≥25	For welding 0Cr18Ni9 crack resisting and corrosion resisting stainless steel structures, which working temperature is lower than 300℃.	—
CHS131	Silicon titania	AWS A5.4 E347-17 ISO 3581-B-ES347-17 EN 1600 E 19 9 Nb R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.044	0.50-2.50 0.90	≤0.90 0.80	≤0.030 0.010	≤0.040 0.028	18.0-21.0 19.80	9.0-11.0 9.80	≤0.75 0.20	≤0.75 0.30	Nb 8×C-1.00 0.60	AW	≥520 620	≥30 35	Suitable for welding important corrosion resisting structures made by Cr18Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g.06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
CHS132	Lime titania	AWS A5.4 E347-16 ISO 3581-B-ES347-16 EN 1600 E 19 9 Nb R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.047	0.50-2.50 0.95	≤0.90 0.76	≤0.030 0.012	≤0.040 0.027	18.0-21.0 19.84	9.0-11.0 9.70	≤0.75 0.11	≤0.75 0.19	Nb 8×C-1.00 0.58	AW	≥520 650	≥30 35	Suitable for welding important corrosion resisting structures made by Cr18Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g. 06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
CHS137	Low hydrogen sodium	AWS A5.4 E347-15 ISO 3581-B-ES347-15 EN 1600 E 19 9 Nb B 4 2	F,V, OH,H	DC+	≤0.08 0.063	0.50-2.50 1.51	≤0.90 0.46	≤0.030 0.007	≤0.040 0.023	18.0-21.0 19.80	9.0-11.0 9.78	≤0.75 0.11	≤0.75 0.19	Nb 8×C-1.00 0.66	AW	≥520 655	≥30 36	Suitable for welding important corrosion resisting structures made by Cr18Ni9Ti stainless steel that contents Ti & Nb stabilizing agent, e.g. 06Cr18Ni11Ti, 06Cr18Ni11Nb.	—
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	—	—	—	AW	≥540 610	≥25 44	For welding structures made by 0Cr20Ni10Mn6. Also it could be used for welding dissimilar steels.	—
CHS157Mn	Low hydrogen sodium	Similar to AWS A5.4 E307-15	F,V, OH,H	DC+	0.04-0.14 0.07	6.00-9.00 7.36	≤0.70 0.45	≤0.030 0.012	≤0.035 0.020	18.0-22.0 20.2	9.0-11.0 10.0	— 0.115	— 0.179	Akv Value (J) 25℃ ≥90 100	AW	≥540 635	≥30 38	Suitable for welding high strength, high toughness steels, e.g.H617. It could be used for welding dissimilar steels also. Mainly for military vehicles, such as panzers, tanks, etc.	—
CHS201	Silicon titania	AWS A5.4 E316-17 ISO 3581-B-ES316-17 EN 1600 E 19 12 2 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.036	0.50-2.50 0.81	≤0.90 0.630	≤0.030 0.013	≤0.040 0.028	17.0-20.0 18.88	11.0-14.0 11.92	2.00-3.00 2.49	≤0.75 0.21	—	AW	≥520 578	≥30 42	Suitable for 06Cr17Ni12Mo2 & Cr18Ni12Mo2 stainless steel structures for organic acid or inorganic acid mediums. Also it could be used in high Cr steel or dissimilar steels that cannot be PWHT.	—
CHS202	Lime titania	AWS A5.4 E316-16 ISO 3581-B-ES316-16 EN 1600 E 19 12 2 R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.037	0.50-2.50 0.82	≤0.90 0.64	≤0.030 0.013	≤0.040 0.028	17.0-20.0 18.81	11.0-14.0 12.00	2.00-3.00 2.50	≤0.75 0.19	—	AW	≥520 575	≥30 42	Suitable for 06Cr17Ni12Mo2 & Cr18Ni12Mo2 stainless steel structures for organic acid or inorganic acid mediums. Also it could be used in high Cr steel or dissimilar steels that cannot be PWHT.	—
CHS207	Low hydrogen Sodium	AWS A5.4 E316-15 ISO 3581-B-ES316-15 EN 1600 E 19 12 2 B 4 2	F,V, OH,H	DC+	≤0.08 0.051	0.50-2.50 1.22	≤0.90 0.49	≤0.030 0.008	≤0.040 0.022	17.0-20.0 18.78	11.0-14.0 12.2	2.0-3.0 2.40	≤0.75 0.14	—	AW	≥520 575	≥30 43	Suitable for 06Cr17Ni12Mo2 & Cr18Ni12Mo2 stainless steel structures for organic acid or inorganic acid mediums. Also it could be used in high Cr steel or dissimilar steels that cannot be PWHT.	—
CHS212	Lime titania	AWS A5.4 E318-16 EN 1600 E 19 12 3 Nb R 3 2	F,V, OH,H	AC or DC+	≤0.08 0.043	0.50-2.50 1.35	≤0.90 0.41	≤0.030 0.009	≤0.040 0.026	17.0-20.0 18.65	11.0-14.0 12.20	2.00-3.00 2.42	≤0.75 0.19	Nb 6×C-1.00 0.69	AW	≥520 610	≥30 38	For welding important structures of urea synthesizing or equipment of vinylon that get to corrosion medium, which fabricated by 06Cr17Ni12Mo2Ti, 06Cr17Ni12Mo2Nb and extra-low 022Cr17Ni12Mo2 stainless steels.	—
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	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.	—
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	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.	—
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	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.	—
CHS301	Silicon titania	AWS A5.4 E309-17 ISO 3581-B-ES309-17 EN 1600 E 22 12 R 32	F,V, OH,H	AC or DC+	≤0.15 0.066	0.50-2.50 1.01	≤0.90 0.63	≤0.030 0.011	≤0.040 0.029	22.0-25.0 24.30	12.0-14.0 12.84	≤0.75 0.30	≤0.75 0.20	—	AW	≥550 590	≥30 40	For welding stainless steels within same system as well as high chromium steels and high manganese steels. Also it could welding dissimilar steels, e.g. Cr19Ni10 with mild steel.	—
CHS302	Lime titania	AWS A5.4 E309-16 ISO 3581-B-ES309-16 EN 1600 E 22 12 R 32	F,V, OH,H	AC or DC+	≤0.15 0.064	0.50-2.50 0.98	≤0.90 0.64	≤0.030 0.012	≤0.040 0.027	22.0-25.0 24.34	12.0-14.0 12.85	≤0.75 0.29	≤0.75 0.20	—	AW	≥550 595	≥30 39	For welding stainless steels within same system as well as high chromium steels and high manganese steels. Also it could welding dissimilar steels, e.g. Cr19Ni10 with mild steel.	—
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	≤0.75 0.29	≤0.75 0.20	—	AW	≥550 595	≥30 39	For welding stainless steels within same system as well as high chromium steels and high manganese steels. Also it could welding dissimilar steels, e.g. Cr19Ni10 with mild steel.	—
CHS307	Low hydrogen Sodium	AWS A5.4 E309-15 ISO 3581-B-ES309-15 EN 1600 E 22 12 B 4 2	F,V, OH,H	DC+	≤0.15 0.077	0.50-2.50 1.46	≤0.90 0.58	≤0.030 0.009	≤0.040 0.025	22.0-25.0 23.80	12.0-14.0 12.80	≤0.75 0.13	≤0.75 0.21	—	AW	≥550 590	≥30 39	For welding stainless steels within same system as well as high chromium steels and high manganese steels. Also it could welding dissimilar steels.	—



Welding Rods for Stainless Steel [Continued]

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Item Code	Type of Covering	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal(%)										Mechanical Properties of Deposited Metal			Applications	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Tensile Strength Rm (MPa)	Elongation A4 (%)		
CHS312	Lime titania	AWS A5.4 E309Mo-16	F,V, OH,H	AC or DC+	≤0.12 0.057	0.50-2.50 0.92	≤0.90 0.63	≤0.030 0.016	≤0.040 0.028	22.0-25.0 23.23	12.0-14.0 13.16	2.00-3.00 2.44	≤0.75 0.20	—	AW	≥550 625	≥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.	—
CHS385	Extra low carbon Lime titania	AWS A5.4 E385-16 EN 1600 E20 25 5 Cu N L	F,V, OH,H	AC or DC+	≤0.03 0.021	1.0-2.50 1.81	≤0.75 0.29	≤0.020 0.005	≤0.030 0.016	19.5-21.5 20.60	24.0-26.0 24.97	4.2-5.2 4.79	1.2-2.0 1.71	—	AW	≥520 610	≥30 40	For welding structures get to sulphuric acid or chloride corrosin medium ordinarily. Also it could be used in welding 904L or 00Cr19Ni13M stainless steel.	—
CHS402	Lime titania	AWS A5.4 E310-16 ISO 3581-B-ES310-16 EN 1600 E 25 20 R 3 2	F,V, OH,H	AC or DC+	0.08-0.20 0.13	1.00-2.50 1.99	≤0.75 0.38	≤0.030 0.009	≤0.030 0.021	25.0-28.0 27.01	20.0-22.5 21.44	≤0.75 0.13	≤0.75 0.104	—	AW	≥550 655	≥30 39	Suitable for welding heat resisting stainless steel structures and high hardenability steels, such as Cr5Mo, Cr9Mo, Cr13 and Cr18. Also it could welding dissimilar steels.	—
CHS407	Low hydrogen Sodium	AWS A5.4 E310-15 ISO 3581-B-ES310-15 EN 1600 E 25 20 B 4 2	F,V, OH,H	DC+	0.08-0.20 0.133	1.00-2.50 1.74	≤0.75 0.45	≤0.030 0.008	≤0.030 0.018	25.0-28.0 26.60	20.0-22.5 21.30	≤0.75 0.11	≤0.75 0.087	—	AW	≥550 605	≥30 38	Suitable for welding heat resisting stainless steel structures and high hardenability steels, such as Cr5Mo, Cr9Mo, Cr13 and Cr18. Also it could welding dissimilar steels.	—
CHS412	Lime titania	AWS A5.4 E310Mo-16	F,V, OH,H	AC or DC+	≤0.12 0.083	1.00-2.50 1.92	≤0.75 0.37	≤0.030 0.012	≤0.030 0.021	25.0-28.0 26.71	20.0-22.0 21.09	2.00-3.00 2.50	≤0.75 0.10	—	AW	≥550 680	≥30 38	Suitable for welding heat resisting stainless steels or dissimilar steels. It shows excellent toughness for the carbon steel and low alloy steel that with hardenability.	—
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	—	—	—	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.	—
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	—	—	—	AW	≥540 670	≥22 32	Suitable for welding HK40 pipes and bottom rollers of high temperature furnace.	—
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	5.00-7.00 6.11	≤0.50 0.15	N ≥0.10 0.16	AW	≥610 675	≥30 41	Suitable for welding quenched low alloy steels, medium alloy steels, dissmilar steels structures which are required for higer rigidity and similar heat-resisting high strengh steels.	—
CHS517	Low hydrogen Sodium	DGS K 401.111-2004	F,V, OH,H	DC+	≤0.10 0.071	≤1.20 0.91	1.30-2.10 1.60	≤0.030 0.007	≤0.030 0.019	19.0-25.0 23.35	21.0-25.0 22.54	≥2.80 3.91	≥2.80 3.83	—	AW	≥540 655	≥30 33	Suitable for welding structures made by vitriol corrosion resisting steels that with similar chemical composition.	—
CHS29.9	Lime titania Duplex	AWS A5.4 E312-16 ISO 3581-B-ES312-16 EN 1600 E 29 9 R 3 2	F,V, OH,H	AC or DC+	≤0.15 0.085	0.50-2.50 1.11	≤0.90 0.78	≤0.030 0.011	≤0.040 0.028	28.0-32.0 29.39	8.0-10.5 9.97	≤0.75 0.16	≤0.75 0.20	—	AW	≥660 785	≥22 26	For welding high carbon steels, tool steels, dissimilar steels, Cr29Ni9 cast steels, duplex stainless steels as well as problem steels.	—
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	≤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.	—
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	—	—	Co ≤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.	—
CHS2209	Extra low carbon lime titania Duplex	AWS A5.4 E2209-16 EN 1600 E 22 9 3 N L R 3 2	F,V, OH,H	AC or DC+	≤0.04 0.026	0.50-2.00 0.90	≤0.90 0.61	≤0.030 0.013	≤0.040 0.023	21.5-23.5 22.84	8.5-10.5 9.45	2.5-3.5 3.05	≤0.75 0.097	N 0.08-0.20 0.12	AW	≥690 785	≥20 29	For welding extra-low carbon stainless steel structures in petrochemical and hydraulic projects industries, e.g. structures fabricated by 00Cr22Ni5Mo3N duplex stainless steel.	—
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	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.	—
CHS2553	Lime titania Duplex	AWS A5.4 E2553-16	F,V, OH,H	AC or DC+	≤0.06 0.025	0.50-1.50 1.00	≤1.00 0.68	≤0.030 0.012	≤0.040 0.013	24.0-27.0 25.00	6.5-8.5 7.3	2.9-3.9 3.3	1.5-2.5 1.8	—	AW	≥760 880	≥15 20	It is suitable for duplex stainless steels that contain 25% Cr, e.g. O22Cr25Ni7Mo4N, 03Cr25Ni6Mo3Cu2N, UNS 32550(Alloy255) and so on.	—
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	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. O22Cr25Ni7Mo4N, 03Cr25Ni6Mo3Cu2N, UNS 32550(Alloy255) and so on.	—



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 Deposited Metal (%)												Hardness of Deposited Metal HRC	Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	W	Nb	Other Elements		
CHR107	Low hydrogen Sodium	GB/T 984 EDPMn2-15	F,V, OH,H	DC+	≤0.20 0.089	≤3.50 2.80	—	—	—	—	—	—	—	—	—	—	HB≥220 300.6	Surfacing and repair welding of worn parts surface of low carbon, medium carbon and low alloy steel.
CHR112	Lime titania	GB/T 984 EDPCrMo-A1-03	F,V, OH,H	AC or DC+	≤0.25 0.20	—	—	—	—	≤2.00 1.00	—	≤1.50 0.52	—	—	—	≤2.00	HB≥220	Surfacing and repair welding of worn parts surface of low carbon, medium carbon and low alloy steel.
CHR127	Low hydrogen Sodium	GB/T 984 EDPMn4-15	F,V, OH,H	DC+	≤0.20 0.11	≤4.50 3.60	—	—	—	—	—	—	—	—	—	≤2.00	≥30 41.1	Surfacing of worn surface of low and medium carbon steels or low alloy steels.
CHR132	Lime titania	GB/T 984 EDPCrMo-A2-03	F,V, OH,H	AC or DC+	≤0.50 0.29	—	—	—	—	≤3.00 2.00	—	≤1.50 0.74	—	—	—	—	≥30 44.5	Surfacing and repair welding of worn surface of low and medium carbon steels or low alloy steels.



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 Deposited Metal (%)												Hardness of Deposited Metal HRC	Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	W	Nb	Other Elements		
CHR172	Lime titania	GB/T 984 EDPCrMo-A3-03	F,V, OH,H	AC or DC+	≤0.50 0.34	—	—	—	—	≤2.50 2.30	—	≤2.50 1.90	—	—	—	—	≥40 50.4	Surfacing of worn parts of gear wheel, mining machinery etc.
CHR207	Low hydrogen Sodium	GB/T 984 EDPCrMnSi-A1-15	F,V, OH,H	DC+	0.30-1.00 0.90	≤2.50 2.00	≤1.00 0.67	≤0.035 0.007	≤0.035 0.025	≤3.50 3.00	—	—	—	—	—	≤1.00	≥50 55.2	Surfacing of worn parts of bulldozer blade propeller etc.
CHR212	Lime titania	GB/T 984 EDPCrMo-A4-03	F,V, OH,H	AC or DC+	0.30-0.60 0.45	—	—	—	—	≤5.00 4.00	—	≤4.00 1.30	—	—	—	—	≥50 57.7	One layer and multi-layer surfacing of worn parts surface of gear wheel, excavator and mining machinery etc.
CHR237	Low hydrogen Sodium	GB/T 984 EDPCrMoV-A1-15	F,V, OH,H	DC+	0.30-0.60 0.50	—	—	—	—	8.00-10.00 9.40	—	≤3.00 2.40	0.50-1.00 0.67	—	—	≤4.00	≥50 57.2	Surfacing of silt worn and atmosphere corrosive hydraulic machinery, excavator and parts of mining machinery etc.
CHR256	Low hydrogen Potassium	AWS A5.13 EFeMn-A	F,V, OH,H	AC≥70V or DC+	≤1.10 0.80	11.00-16.00 13.30	≤1.30 0.50	—	—	—	—	—	—	—	—	≤5.00	HB≥170 193.8	Surfacing of easy-impacted, easy-worn parts of crushers, rails, bulldozers etc.
CHR266	Low hydrogen Potassium	AWS A5.13 EFeMn-B	F,V, OH,H	AC or DC+	0.5-1.0 0.80	12.00-16.00 13.00	≤1.30 0.51	—	—	—	—	0.50-1.50 1.30	—	—	—	≤1.00 0.78	HB≥170 199	It is suitable for hardfacing abraded parts of crusher machines, excavators, bulldozers, switches of railway and so on.
CHR276	Low hydrogen Potassium	GB/T 984 EDCrMn-B-16	F,HF	AC or DC+	≤0.80 0.65	11.00-18.00 12.58	≤1.30 0.72	—	—	13.00-17.00 14.30	≤2.00 0.052	≤2.00 1.00	—	—	—	≤4.00	HB≥210 212.6	Surfacing of high manganese steel structures.
CHR307	Low hydrogen Sodium	GB/T 984 EDD-D-15	F,V, OH,H	DC+	0.70-1.00 0.90	—	—	≤0.035 0.010	≤0.040 0.019	3.80-4.50 4.30	—	—	1.00-1.50 1.20	17.00-19.50 18.80	—	≤1.50	≥55 61.8	Surfacing of blade of semifinished cutting tool made of medium carbon steel, and repair welding worn cutting tool or other tool.
CHR322	Lime titania	GB/T 984 EDRCrMo WV-A1-03	F,V, OH,H	AC or DC+	≤0.50 0.42	—	—	≤0.035 0.011	≤0.040 0.026	≤5.00 4.30	—	≤2.50 2.00	≤1.00 0.60	7.00-10.00 8.60	—	—	≥55 60.3	Surfacing of blade of model and cutting, and repair welding of mechanical parts requiring high function for wear resistance.
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	≤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.
CHR327	Low hydrogen Sodium	GB/T 984 EDRCrMo WV-A1-15	F,V, OH,H	DC+	≤0.50 0.41	—	—	≤0.035 0.013	≤0.040 0.025	≤5.00 3.90	—	≤2.50 1.98	≤1.00 0.60	7.00-10.00 8.70	—	—	≥55	Surfacing of blade of model and cutting, and repair welding of mechanical parts requiring high function for wear resistance.
CHR337	Low hydrogen Sodium	GB/T 984 EDRCrW-15	F,V, OH,H	DC+	0.25-0.55 0.43	—	—	≤0.035 0.008	≤0.040 0.019	2.00-3.50 2.90	—	—	—	7.00-10.00 9.40	—	≤1.00	≥48 59.3	Surfacing of forging model for cast steel and forge steel. Also repair welding of forging model.
CHR397	Low hydrogen Sodium	GB/T 984 EDRCrMnMo-15	F,V, OH,H	DC+	≤0.60 0.46	≤2.50 1.00	≤1.00 0.62	≤0.035 0.006	≤0.040 0.019	≤2.00 1.20	—	≤1.00 0.64	—	—	—	—	≥40 55.2	Surfacing of cast steels and heat forging model. Also repair welding of worn forging model.
CHR502	Lime titania	GB/T 984 EDCr-A1-03	F,V, OH,H	AC or DC+	≤0.15 0.13	—	—	≤0.03 0.007	≤0.04 0.024	10.00-16.00 11.30	—	—	—	—	—	—	≥40 55.5	It is widely for hardfacing carbon steel and low alloy steel axis, shafts and valves that working temperature is below 450℃.
CHR507	Low hydrogen Sodium	JIS 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	—	—	—	—	—	≤2.50	≥40 43.1	Surfacing of axles and valves made of carbon steel and alloy steel, working temperature of which is below 450 ℃.
CHR507Mo	Low hydrogen Sodium	GB/T 984 EDCr-A2-15	F,V, OH,H	DC+	≤0.20 0.12	—	—	—	—	10.00-16.00 12.30	≤6.00 1.50	≤2.50 1.60	—	≤2.00 1.20	—	≤2.50	≥37 42.3	Surfacing of valves, which work temperature should be below 510 ℃.
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	—	≤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 ℃.
CHR517	Low hydrogen Sodium	GB/T 984 EDCr-B-15	F,V, OH,H	DC+	≤0.25 0.18	—	—	—	—	10.00-16.00 13.00	—	—	—	—	—	≤5.00	≥45 51.0	Surfacing of axles made of carbon steel and low alloy steel valves, working temperatures of which is below 450 ℃.
CHR547Mo	Low hydrogen Sodium	GB/T 984 EDCrNi-B-15	F	DC+	≤0.18 0.14	0.60-5.00 1.40	3.80-6.50 4.25	≤0.030 0.006	≤0.040 0.020	14.00-21.00 17.28	6.50-12.00 10.30	3.50-7.00 4.98	—	—	0.50-1.20 0.85	≤2.50	≥37 47.0	Surfacing and sealing surface for high pressure valves working temperature of which is below 600 ℃.
CHR547MoA	Low hydrogen Sodium	DGS K 501.41-2004	F	DC+	≤0.18 0.13	1.00-2.50 1.31	2.00-3.20 2.60	≤0.030 0.010	≤0.040 0.027	14.00-20.00 16.00	8.00-12.50 9.63	3.50-7.00 6.10	≤1.50 0.68	≤2.80 2.00	0.50-1.20 0.73	—	≥37 45.4	Surfacing and sealing surface for high pressure valves working temperature of which is below 600 ℃.
CHR577	Low hydrogen Sodium	JIS 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	≤4.00 3.30	—	—	—	≤3.00	≥28 32.2	Surfacing and sealing surface for middle temperature high pressure valves working temperature of which is below 510 ℃.
CHR608	Graphite	GB/T 984 ED Z-A1-08	F,V, OH,H	AC or DC+	2.50-4.50 2.80	—	—	—	—	3.00-5.00 4.80	—	3.00-5.00 4.20	—	—	—	—	≥55 59.2	Surfacing parts of agricultural machinery and mining equipments worn and inpacled by grits.
CHR618	Graphite	DGS K 501.51-2004	F,V, OH,H	AC or DC+	≤4.00	1.00-2.50	—	≤0.030	≤0.050	15.00-25.00	—	3.00-6.50	—	—	—	≤6.00	≥48	Surfacing parts worn by grit, air, water at normal and middle temperature.
CHR646	Low hydrogen Potassium	GB/T 984 ED ZCr-B-16	F	AC or DC+	1.50-3.50 2.20	≤1.00 0.12	—	—	—	22.00-32.00 29.00	—	—	—	—	—	≤7.00	≥45 51.2	Surfacing structures of high temperature and high temperature wear resistance corrosion resistance. Such as hydraulic turbine vanes, parts of high pressure pump, etc.
CHR648	Graphite	GB/T 984 ED ZCr-B-08	F	AC or DC+	1.50-3.50 2.20	≤1.00 0.15	—	—	—	22.00-32.00 28.00	—	—	—	—	—	≤7.00	≥45 53.0	Surfacing structures of high temperature and high temperature wear resistance corrosion resistance. Such as hydraulic turbine vanes, parts of high pressure pump, etc.



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 Deposited Metal (%)												Hardness of Deposited Metal HRC	Applications
					C	Mn	Si	S	P	Cr	Ni	Mo	V	W	Nb	Other Elements		
CHR678	Graphite	GB/T 984 EDZ-B1-08	F	AC or DC+	1.50-3.50 1.60	—	—	—	—	—	—	—	—	8.00-10.00 8.60	—	≤1.00	≥50 54.0	Surfacing of parts for mining machinery and crusher machinery.
CHR698	Graphite	GB/T 984 EDZ-B2-08	F	AC or DC+	≤3.00 1.70	—	—	—	—	4.00-6.00 5.13	—	—	—	8.50-14.00 11.24	—	≤3.00	≥60 63.0	Surfacing of mining machinery and mud pump.
CHR707	Low hydrogen Sodium	GB/T 984 EDW-A-15	F	DC+	1.50-3.00 2.70	≤2.00 1.33	≤4.0 0.51	—	—	—	—	—	—	40.00-50.00 43.00	—	Fe Rem.	≥60 64.6	Surfacing of rock strong wear resisting parts, such as concrete mixer vanes, bulldozer and vanes, excavater vanes.



Welding Rods for Cast Iron
铸铁焊条

Item Code	Type of Electrode	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Applications
					C	Mn	Si	S	P	V	Ni	Cu	Fe	
CHC100	Oxide flux with carbon steel core	AWS A5.15 ESt GB/T 10044 EZFe-2	F,V, OH,H	ACor DC+	≤0.15 0.050	≤0.60 0.30	≤0.15 0.15	≤0.040 0.013	≤0.040 0.014	—	—	—	Remain	Repair welding defects of normal cast iron and old steel ingot model used over a long period of time, non machinable.
CHC116	Low hydrogen,vanadium alloy with carbon steel core	DGS K 601.11-2004	F,V, OH,H	DC+	—	—	—	—	—	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.
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	≤0.15 0.016	— 0.005	— 0.005	— 0.027	Remain 73.900	For repair welding defects of gray cast iron, which is non machinable.
CHC308	Graphite with pure nickel core	AWS A5.15 ENi-CI ISO 1071-E C	F,V, OH,H	ACor DC+	≤2.00 0.59	≤1.00 0.07	≤2.50 1.50	≤0.030 0.004	—	Others ≤1.0 0.14	≥90.0 95.10	—	≤8.0 0.21	Suitable for repair cracked or worn castings and surfacing welding, as well as joining cast iron parts with dissimilar metals. The deposited metal is very good machinable and with a high toughness and excellent crack resistibility.
CHC408	Graphite with nickel-ferro core	AWS A5.15 ENiFe-CI ISO 1071-E C NiFe-CI-A	F,V, OH,H	ACor DC+	≤2.00 0.71	≤2.50 0.24	≤4.00 1.00	≤0.030 0.007	—	Others ≤1.0 0.25	45-60 55.16	≤2.50 0.055	Remain 42.70	Suitable for repairing or surfacing cracked and worm parts made of gray cast iron or ncdular iron, as well as joining cast iron with dissimilar metals. It is machinable.
CHC508	Graphite with monelmetal core	AWS A5.15 ENiCu-B ISO 1071-E C NiCu-B	F,V, OH,H	ACor DC+	0.35-0.55	≤2.30	≤0.75	≤0.025	—	Others ≤1.0	60-70	25-35	3.0-6.0	Repair welding grey iron casting strength of which is not so highly required.



Welding Rods for 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 of DepositedMetal(%)													Standard & Typical Mechanical Properties of Deposited Metal (AW)			Applications
					C	Mn	Si	Fe	S	P	Ni	Cu	Nb+Ta	Al	Ti	Cr	Other Elements	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHN102	Lime titania Pure nickel core	AWS A5.11 ENi-1 ISO 14172-ENi2061	F,V, OH,H	AC or DC+	≤0.10 0.054	≤0.75 0.20	≤1.25 0.80	≤0.75 0.24	≤0.02 0.004	≤0.03 0.009	≥92.0 94.0	≤0.25 0.054	—	≤1.0 0.17	1.0-4.0 1.42	—	≤0.50	≥410 470	≥20 37	—	It is suitable for welding forging parts of pure nickel (UNS N02200, UNS N02201) and cast iron parts. And it could weld composite NiFe or surfacing transition layer of steel parts. Also for dissimilar metals.
CHN317	Low hydrogen	AWS A5.11 ENiCrFe-1 ISO 14172-ENi6062	F,V, OH,H	DC+	≤0.08 0.015	≤3.50 2.65	≤0.75 0.39	≤11.0 5.37	≤0.015 0.008	≤0.030 0.005	≥62.0 72.1	≤0.50 0.012	1.5-4.0 2.88	—	—	13.0-17.0 15.76	≤0.50	≥550 640	≥30 43.5	—	It is suitable for welding NiCrFe alloys (UNS N06600, UNS N06601), composite NiCrFe alloys. Also for dissimilar metals.
CHN327	Low hydrogen	AWS A5.11 ENiCrFe-2 ISO 14172-ENi6133	F,V, OH,H	DC+	≤0.10 0.026	1.00-3.50 2.84	≤0.75 0.42	≤12.0 6.0	≤0.020 0.006	≤0.030 0.009	≥62.0 70.71	≤0.50 0.055	0.5-3.0 1.12	— 0.044	Mo 0.50-2.50 1.81	13.0-17.0 15.77	≤0.50	≥550 610	≥30 42	—	It is suitable for welding NiCrFe alloys (UNS N08800, UNS N06600) and for welding dissimilar metals.
CHN337	Low hydrogen	AWS A5.11 ENiCrFe-3 ISO 14172-ENi6182	F,V, OH,H	DC+	≤0.10 0.030	5.00-9.50 6.90	≤1.00 0.40	≤10.00 5.00	≤0.015 0.008	≤0.030 0.008	≥59.0 70.00	≤0.50 0.062	1.0-2.5 1.50	—	≤1.00 0.101	13.0-17.0 16.00	≤0.50	≥550 620	≥30 43	—	Suitable for welding structures made by UNS N06600 NiCrFe alloy, composite NiCrFe alloy and dissimilar metals of nickel alloy with steel. Also surfacing.
CHN347	Low hydrogen Sodium	AWS A5.11 ENiCrFe-4	F,V, OH,H	DC+	≤0.20	1.0-3.5	≤1.0	≤12.0	≤0.020	≤0.030	≤60	≤0.50	1.0-3.5	—	Mo 1.0-3.5	13.0-17.0	≤0.50	≥650	≥20	—	Suitable for welding 9%Ni alloy steel. It can be used for welding corrosion resisting & heat-resisting nickel alloy as well as dissimilar steel. Also hardfacing could be done.



Welding Rods for Nickel or Nickel Based Alloy
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[Continued]

Item Code	Type of Electrode	Equivalent Norm	Welding Position	Type of Current	Standard & Typical Chemical Composition of DepositedMetal(%)													Standard & Typical Mechanical Properties of Deposited Metal (AW)			Applications
					C	Mn	Si	Fe	S	P	Ni	Cu	Nb+Ta	Al	Ti	Cr	Other Elements	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	
CHN357	Low hydrogen Sodium	AWS A5.11 ENiCrMo-3 ISO 14172-ENi6182	F,V, OH,H	DC+	≤0.10 0.017	≤1.0 0.50	≤0.75 0.35	≤7.0 5.20	≤0.020 0.010	≤0.030 0.005	≥55 60	≤0.50 0.040	3.15-4.15 3.30	—	Mo 8.0-10.0 8.5	20.0-23.0 21.0	Co ≤0.12 0.050	≥760 790	≥30 35	-196℃ ≥30 50	Suitable for welding structures made by UNS N06625 NiCrMo alloy, composite NiCrMo alloy and for dissimilar metals of nickel alloy with steel. Also surfacing.
CHN367	Low hydrogen Sodium	AWS A5.11 ENiCrMo-6 ISO 14172-ENi6620	F,V, OH,H	DC+	≤0.10 0.017	2.00-4.00 3.20	≤1.00 0.18	≤10.0 5.5	≤0.020 0.010	≤0.030 0.005	≥55 60	≤0.50 0.10	0.5-2.0 0.86	—	Mo 5.0-9.0 7.00	12.0-17.0 13.80	W 1.0-2.0 1.30	≥620 680	≥35 40	-196℃ ≥30 130	Suitable for welding Ni9%(UNS K81340) alloy,dissimilar steels as well as welding problem metals.



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

Solid Wire for MAG / MIG Welding
气体保护焊实芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, typical)										Mechanical Properties of Deposited Metal (Typical)						Shield Gas	Application	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule			
CHW-40CNH	TB/T 2374 H08MnSiCuCrNi (Type I) JIS Z3315 YGA-50W (Type II)	F,V, OH,H	DC+	0.07 0.07	1.34 1.15	0.59 0.47	0.010 0.010	0.014 0.015	0.31 0.30	0.32 0.31	— —	0.38 0.35	≤0.5 ≤0.5	AW	400 415	520 525	25 26	-40	90 100	CO_2 CO_2(20%)+Ar(80%)	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.	—
CHW-50C	AWS A5.18 ER70S-7 BS EN ISO 14341-A-G 42 Z C G4Si1 BS EN ISO 14341-B-G 49A Z C G7	F,V, OH,H	DC+	0.08	1.97	0.72	0.019	0.020	0.020	0.021	—	0.20	≤0.5	AW	425	545	30	25	135	CO_2	Single-pass & multi-pass welding for structures fabricated by 500MPa tensile strength carbon steels or low alloy steels. Crack resistance of weld is satisfactory.	—
CHW-50C2	AWS A5.18 ER70S-2 BS EN ISO 14341-A-G 42 3 C G2Ti BS EN ISO 14341-B-G 49A 3 C G2	F,V, OH,H	DC+	0.05	1.20	0.60	0.010	0.016	Al 0.08	Ti 0.11	Zr 0.08	0.20	≤0.5	AW	445 465	540 550	25 27	-30	60 80	CO_2 CO_2(20%)+Ar(80%)	Single-pass & multi-pass welding and butt or fillet structures fabricated by 450MPa or 500MPa tensile strength mild steel or low alloy steels. Particularlly for the welding environment with impurities.	—
CHW-50C3	AWS A5.18 ER70S-3 BS EN ISO 14341-A-G 38 4 M G2Si1 BS EN ISO 14341-B-G 49A 4 M G3 CSA W48-01 ER49S-3 JIS Z3312 YGW16	F,V, OH,H	DC+	0.099	1.11	0.62	0.011	0.015	0.020	0.021	0.007	0.18	V 0.008	AW	435	540	29	-40	90	CO_2(20%)+Ar(80%)	Suitable for single-pass & multi-pass welding and butt or fillet structures made of 450MPa and 500MPa tensile strength steel, in particular for high speed welding sheet steel, e.g. automobile.	CWB, CE, DB, TUV
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	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	—
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 0.078	1.40-1.85 1.53	0.80-1.15 0.85	≤0.035 0.010	≤0.025 0.011	≤0.15 0.022	≤0.15 0.029	≤0.15 0.008	≤0.5 0.12	V ≤0.3 0.01	AW	≥375 425	490-660 540	≥22 30	-20	≥47 102	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, BKI, CWB, CE, DB, TUV
CHW-50C8	AWS A5.18 ER70S-G BS EN ISO 14341-B-G 49A 3 C G11 JIS Z3312 YGW11	F,V, OH,H	DC+	0.10	1.45	0.71	0.013	0.011	Ti 0.15	—	—	0.14	≤0.5	AW	440	560	30	-30	75	CO_2	Particularly for high speed backing welding for huge pipe lines that fabricated by X65 or X70 steels as well as other structures made by 450MPa or 500MPa tensile strnegth carbon steels or low alloy steels, such as engineering machinery, bridges, high pressure vessels and so on.	—
CHW-55B2	AWS A5.28 ER80S-B2 BS EN ISO 21952-A-G (CrMo1Si) BS EN ISO 21952-B-G 1CM3 JIS Z3317 YG1CM	F,V, OH,H	DC+	0.075	1.22	0.68	0.009	0.013	1.21	—	0.50	0.14	≤0.5	PWHT 690℃×1h	505 545	610 645	21 23	25	90 130	CO_2 CO_2(20%)+Ar(80%)	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℃.	—
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	640	720	20	25	70	CO_2(20%)+Ar(80%)	Suitable for structures fabricated by 1.25Cr-0.5Mo-0.25V series pearlitic heat-resisting low alloy steels such as heavy equipments of thermal power stations and nuclear power stations, petroleum & chemical industries which work temperature is lower than 550℃	—
CHW-55B6	AWS A5.28 ER80S-B6 JIS Z3317 YG5CM BS EN ISO 21952-A-G CrMo5Si BS EN ISO 21952-B-G (5CM)	F,V, OH,H	DC+	0.08	1.14	0.65	0.009	0.013	5.10	—	0.58	0.12	≤0.5	PWHT 745℃×2h	480 485	605 615	22 24	25	90 120	CO_2 CO_2(20%)+Ar(80%)	It is suitable for welding heat resisting structures, especially widely be used on the refining equipment of petroleum industry.	—
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	Ti0.01	AW	475 485	570 580	27 30	-45	70 110	CO_2 CO_2(20%)+Ar(80%)	It is suitable for important structures that fabricated by low alloy steels with low temperature (-45℃) toughness.	—



Solid Wire for MAG / MIG Welding [Continued]

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Item Code	Equivalent Norm	Welding Position	Current	Chemical Composition of Wire (%, typical)										Mechanical Properties of Deposited Metal (Typical)							Application	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule	Shield Gas		
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	520	625	26	-40	80	CO_2(20%)+Ar(80%)	Suitable for railway wagons, vehicles, locomotives fabricated by atmospheric corrosion and infection resistance steels.	—
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	550 570	655 665	21 22	25	85 130	CO_2 CO_2(20%)+Ar(80%)	It is suitable for important structures made by heat resisting low alloy steels, e.g. 15CrMoV and which working temperature is lower than 570℃.	—
CHW-60C	AWS A5.28 ER80S-G BS EN ISO 14341-B-G 55A 3 M G3M1T JIS Z3312 YGW19	F,V, OH,H	DC+	0.07	1.70	0.60	0.008	0.013	Ti 0.15	—	0.18	0.21	≤0.5	AW	510 550	610 650	27 24	-30	90 85	CO_2 CO_2(20%)+Ar(80%)	It is widely used in structures fabricated by 550MPa or 600MPa high tensile strength low alloy steels, e.g. X70, 62CF, 15MnMo, etc. such as heavy machine equipments, bridges, vehicles, skyscrapers and so on. the welded piece should be tempered at 310℃ not shorter than 2 hour after welding.	—
CHW-60CG	AWS A5.28 ER80S-G	F,V, OH,H	DC+	≤0.11 0.07	1.60-2.00 1.70	0.48-0.80 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	≥490 510	≥610 615	≥20 22	-30	≥47 80	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 310℃ not shorter than 2 hour after welding.	—
CHW-60CS	AWS A5.28 ER80S-D2 BS EN ISO 14341-A-G 50 3 M G4Mo 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	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.	—
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	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.	—
CHW-62B3	AWS A5.28 ER90S-B3 BS EN ISO 21952-A-G CrMo2Si BS EN ISO 21952-B-G (2C1M3) JIS Z3317 YG2CM	F,V, OH,H	DC+	0.092	0.92	0.64	0.006	0.015	2.31	—	1.04	0.30	≤0.5	PWHT 690℃×1h	550 585	680 705	20 19	25	80 122	CO_2 CO_2(20%)+Ar(80%)	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℃.	—
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	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.	—
CHW-65A	AWS A5.28 ER80S-G	F,V, OH,H	DC+	0.06	1.60	0.60	0.006	0.010	0.40	Ti & B Few	0.20	0.12	≤0.5	AW	515	615	28	-20	110	CO_2(20%)+Ar(80%)	For multi-pass welding of heavy structures made by 550MPa or 600MPa high tensile strength low alloy steels such as hydro-projects and thermal power projects, petroleum & chemical projects as well as heavy engineering machinery	—
CHW-65C	AWS A5.28 ER80S-G BS EN ISO 14341-B-G 55A 3 C GN1	F,V, OH,H	DC+	0.06	1.64	0.61	0.006	0.011	Ti & B Few	0.70	0.19	0.11	≤0.5	AW	510	605	27	-20	120	CO_2	For multi-pass welding of heavy structures made by 550MPa or 600MPa high tensile strength low alloy steels such as hydro-projects and thermal power projects, petroleum & chemical projects as well as heavy engineering machinery	—
CHW-65CG	AWS A5.28 ER80S-G	F,V, OH,H	DC+	≤0.11 0.09	1.40-1.80 1.60	0.30-0.80 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	≥490 530	≥610 630	≥20 22	-30	≥50 60	CO_2	It is suitable for welding 550MPa-600MPa grade flawless ste els especially widely be used on the huge petroleum storage tanks.	—
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	630 650	720 750	21 23	-20	70 95	CO_2 CO_2(20%)+Ar(80%)	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
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	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.	—
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	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.	—



Flux Cored Wire

药芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Standard & Typical Mechanical Properties of Deposited Metal							Applications	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule	Shield Gas		
CHT611	AWS A5.20 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	—	—	—	—	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.	—
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	—	—	—	—	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.	—
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	—	—	—	—	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°.	—
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	—	—	—	—	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°.	—
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	—	—	—	—	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,BKI,CWB
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	—	—	—	—	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]
药芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal (%)									Standard & Typical Mechanical Properties of Deposited Metal							Applications	Approvals
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule	Shield Gas		
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	—	—	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.	—
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	—	—	AW	≥400 440	490-620 520	≥20 30	-30	≥27 110	CO_2	Suitable for structures fabricated by mild steel or 490MPa grade tensile strngth steels, such as pressure vessels, offshore drilling platforms, pipelines and so on.	—
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	—	—	AW	≥470 480	550-690 560	≥19 30	-30	≥27 150	CO_2	It is suitable for flat, horizontal filler or vertical up welding on which angle below 45°, higher tensile, better crack-resisting structures that fabricated by 550MPa grade tensile strength, heat resistanf low alloy steels, such as ships, pressure vessels of petroleum chemical, bridges, etc.	—
CHT80B2B	AWS A5.29 E80T5-B2C ISO 17634 T(CrMo1)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	—	PWHT 690℃×1h	≥470 510	550-690 600	≥19 24	25	≥47 180	CO_2	It is suitable for flat, horizontal filler or vertical up welding on which angle below 45°, higher tensile strength, better crack-resisting structures that fabricated by 550MPa grade heat resistant low alloy steels, which work temperature lower than 520℃.Welded piece should be preheated to 150-300℃ before welding.	—
CHT81B2	AWS A5.29 E81T1-B2C ISO 17634 T(CrMo1)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	—	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.	—
CHT81B2M	AWS A5.29 E81T1-B2M ISO 17634 T(CrMo1)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	—	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.	—
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	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.	—
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	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.	—
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	—	—	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.	—
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	—	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.	—
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	—	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.	—
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	—	—	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.	—
CHT90B3B	AWS A5.29 E91T5-B3C ISO 17634 T(CrMo2)BC3H5	F,HF,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	—	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.	—
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	—	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.	—
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	≤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.	—



Metal Powder Cored Wires
金属粉芯焊丝

Item Code	Equivalent Norm	Welding Position	Current	Standard & Typical Chemical Composition of Deposited Metal(%)									Standard & Typical Mechanical Properties of Deposited Metal (AW)						Applications
				C	Mn	Si	S	P	Cr	Ni	Mo	V	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule	Shield Gas	
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	—	—	—	—	≥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.
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	—	—	—	—	≥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)										Mechanical Properties of Deposited Metal (Typical)							Application
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule	Shield Gas	
CHG-308	AWS A5.9 ER308 BS EN ISO 14343-B-SS308 JIS Z3321 Y308	F,V, OH,H	DC	0.05	1.79	0.48	0.013	0.022	19.72	9.40	0.005	0.06	—	AW	—	580	42	—	—	Ar	For Cr18Ni8, Cr18Ni12, Cr20Ni10 austenitic stainless steels, such as 301 ,302 & 308, etc. especially 304.
CHG-308L	AWS A5.9 ER308L BS EN ISO 14343-A-W(19 9 L) BS EN ISO 14343-B-SS308L JIS Z3321 Y308L	F,V, OH,H	DC	0.024	1.72	0.48	0.010	0.018	19.76	9.83	0.006	0.06	—	AW	—	560	45	—	—	Ar	Suitable for extra-low carbon 00Cr19Ni10 structures. Also it could fabricat 0Cr18Ni10Ti structures, which working temperature lower than 300℃. E.g. synthetic fibre, fertilizer & chemical industrial equipment and so on.
CHG-309	AWS A5.9 ER309 BS EN ISO 14343-A-W(22 12 H) BS EN ISO 14343-B-SS309 JIS Z3321 Y309	F,V, OH,H	DC	0.06	2.05	0.34	0.011	0.020	23.83	13.26	0.008	0.06	—	AW	—	580	39	—	—	Ar	Suitable for welding similar chemical composition stainless steel structures and dissimilar steel, e.g. Cr19Ni10 with mild steel, as well as for welding high Mn and High Cr steels.
CHG-309L	AWS A5.9 ER309L BS EN ISO 14343-A-W(23 12 L) BS EN ISO 14343-B-SS309L JIS Z3321 Y309L	F,V, OH,H	DC	0.026	2.11	0.38	0.008	0.017	23.56	12.31	0.006	0.07	—	AW	—	570	38	—	—	Ar	For welding extra low carbon stainless steel structures with sililar chemical composition, such as synthetic fibre, petrochemical equipment as well as nuclear reactor. Also it could be used for dissimilar steel welding.
CHG-310	AWS A5.9 ER310 BS EN ISO 14343-A-W(25 20) BS EN ISO 14343-B-SS310 JIS Z3321 Y310	F,V, OH,H	DC	0.09	1.65	0.53	0.015	0.021	25.81	20.34	0.020	0.08	—	AW	—	610	38	—	—	Ar	For welding Cr25Ni20 stainless steels structures, which provide good oxidation corrosion resistance and heat resistance. Also it could be used for dissimilar steel welding and for welding high Cr, high Mn steels.
CHG-316	AWS A5.9 ER316 BS EN ISO 14343-B-SS316 JIS Z3321 Y316	F,V, OH,H	DC	0.04	1.71	0.52	0.009	0.018	18.54	11.50	2.18	0.08	—	AW	—	600	31	—	—	Ar	Mainly for welding structures in chemical industry and power engineering that made by 00Cr19Ni12Mo2 stainless steels such as AISI316L,SUS316L. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHG-316L	AWS A5.9 ER316L BS EN ISO 14343-A-W(19 12 3 L) BS EN ISO 14343-B-SS316L JIS Z3321 Y316L	F,V, OH,H	DC	0.025	1.71	0.48	0.009	0.018	18.54	11.50	2.18	0.09	—	AW	—	580	32	—	—	Ar	Mainly for welding structures in chemical industry and power engineering that made by 00Cr19Ni12Mo2 stainless steels such as AISI316L,SUS316L. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHG-321	AWS A5.9 ER321 BS EN ISO 14343-B-SS321 JIS Z3321 Y321	F,V, OH,H	DC	0.028	1.85	0.45	0.010	0.021	18.92	9.25	0.007	0.08	Ti 0.34	AW	—	575	40	—	—	Ar	It is suitable for welding structures made by 1Cr18Ni11Nb austenitic stainless steel as well as the one with similar composition.
CHG-347	AWS A5.9 ER347 BS EN ISO 14343-A-W(19 9 Nb) BS EN ISO 14343-B-SS347 JIS Z3321 Y347	F,V, OH,H	DC	0.05	1.81	0.51	0.008	0.021	20.01	10.10	0.009	0.12	Nb 0.59	AW	—	585	39	—	—	Ar	It is suitable for welding structures made by 1Cr18Ni11Nb austenitic stainless steel as well as the one with similar composition.
CHG-410	AWS A5.9 ER410 BS EN ISO 14343-A-G(13) BS EN ISO 14343-B-SS410 JIS Z3321 Y410	F,V, OH,H	DC	0.06	0.47	0.38	0.012	0.011	12.90	0.20	Nb0.81	0.17	—	AW	—	540	35	—	—	Ar	Suitable for Cr13 stainless steels. The base metal should be tempered at 850℃ for 2 hours after welding.
CHG-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	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 meed to shield gas in another side of the seam.
CHG-52T	AWS A5.18 ER70S-G JIS Z3316 YGT50	F,V, OH,H	DC	0.090	1.45	0.78	0.012	0.014	—	□□	□□	0.14	Ti 0.17	AW	440	560	30	-30	75	Ar	Widely used for structures fabricated by 500-550MPa tensil strength low alloy steels of X60,X65,X70,18Nb and 12～16Mn etc. such as bridges,heavy engineering machinary, vehicles, skyscrapers, petroleum & chemical industry equipment and so on.
CHG-53	AWS A5.18 ER70S-3 BS EN 1668-W 38 4 W2Si ISO 636-A-W 38 4 W2Si ISO 636-B-W 49A 4 W3 JIS Z3316 YGT50	F,V, OH,H	DC	0.099	1.11	0.62	0.011	0.015	0.020	0.021	0.007	0.18	V 0.08	AW	435	540	29	-40	120	Ar	For structures fabricated by 500MPa grade tensil strength mild steels or low alloy steels, e.g. bridges, vehicles and so on.
CHG-54	AWS A5.18 ER70S-4 BS EN 1668-W 382 W2Si ISO 636-A-W 382 W2Si ISO 636-B-W 49A2 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	0.22	V 0.010	AW	410	530	29	-20	100	Ar	For structures fabricated by 500MPa grade tensil strength mild steels or low alloy steels, e.g. bridges, vehicles and so on.
CHG-55B2	AWS A5.28 ER80S-B2 BS EN ISO 21952-A-W (CrMo1Si) BS EN ISO 21952-B-W 1CM3 JIS Z3316 YGT1CM	F,V, OH,H	DC	0.076	1.15	0.67	0.007	0.015	1.25	—	0.50	0.20	—	AW	505	620	23	25	80	Ar	Suitable for structures fabricated by 1.25Cr-0.5Mo series pearlitic heat-resisting low alloy steels such as high press steam pipes of boiler or steam turbine which work temperature is lower than 510℃.
CHG-55B2V	AWS A5.28 ER80S-G	F,V, OH,H	DC	0.080	1.35	0.70	0.010	0.012	1.25	—	0.58	0.20	V 0.27	AW	515	640	22	25	85	Ar	Suitable for structures fabricated by 1.25Cr-0.5Mo-0.2%V series pearlitic heat-resisting low alloy steels such as high press steam pipes of boilers, nuclear reactors, petrochemical equipments which work temperature is lower than 510℃.
CHG-55B6	AWS A5.28 ER80S-B6 BS EN ISO 21952-A-W CrMo5Si BS EN ISO 21952-B-W (5CM) JIS Z3316 YGT5CM	F,V, OH,H	DC	0.080	1.14	0.65	0.009	0.013	5.10	—	0.58	0.12	—	PWHT 740℃×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.
CHG-55C1	AWS A5.28 ER80S-Ni1 BS EN 1668-W 46 5 W3Ni1 ISO 636-A-W 46 5 W3Ni1 ISO 636-B-W 55A 5 WN2	F,V, OH,H	DC	0.084	1.06	0.53	0.010	0.010	0.070	0.93	0.001	0.21	Ti 0.010	AW	430	520	30	-45	200	Ar	Suitable for structures fabricated by low alloys steels, which has low temperature toughness and the working temperature of it around -45℃.
CHG-56	AWS A5.18 ER70S-6 BS EN 1668-W 42 3 W3Si1 ISO 636-A-W 42 3 W3Si1 ISO 636-B-W 49A 3 W6 JIS Z3316 YGT50	F,V, OH,H	DC	0.07	1.47	0.90	0.011	0.012	0.020	0.021	0.007	0.18	V 0.008	AW	430	530	29	-30	90	Ar	Suitable for single-pass or multi-pass welding for structures fabricated by 500MPa tensil strength mild steels or low alloy steels, e.g. vehicles, containers, bridges, machinary and so on.
CHG-62B3	AWS A5.28 ER90S-B3 BS EN ISO 21952-A-W CrMo2Si BS EN ISO 21952-B-W (2C1M3) JIS Z3316 YGT2CM	F,V, OH,H	DC	0.09	0.92	0.65	0.006	0.013	2.30	0.002	1.04	0.27	—	PWHT 690℃×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℃.
CHG-91	AWS A5.28 ER90S-B9 BS EN ISO 21952-B-W 9C1MV	F,V, OH,H	DC	0.084	0.92	0.18	0.006	0.006	9.09	Ni 0.70 Nb 0.07	Mo 1.06 Al 0.024	Cu 0.020 N 0.063	V 0.23	PWHT 755℃×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℃ high temperature achieves 340MPa.
CHG-92	AWS A5.28 ER90S-G BS EN ISO 21952-A-W CrMoWV12Si	F,V, OH,H	DC	0.12	0.84	0.29	0.006	0.007	Cr 9.56 Co 0.88	Ni 0.62 Nb 0.067	Mo 0.64 Al 0.020	Cu 0.027 N 0.063	V 0.23 W 1.57	PWHT 760℃×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℃.
CHG-S5	AWS A5.18 ER70S-7 BS EN 1668-W 42 Z W4Si1 ISO 636-A-W 42 Z W4Si1 ISO 636-B-W 49A Z W12	F,V, OH,H	DC	0.087	1.88	0.77	0.006	0.015	0.020	0.021	—	0.14	—	AW	445	545	31	25	127	Ar	Suitable for single-pass or multi-pass welding for structures fabricated by 500MPa tensil strength mild steels or low alloy steels, e.g. vehicles, containers, bridges, machinary and so on.
CHG-SH	AWS A5.18 ER70S-G	F,V, OH,H	DC	0.10	1.45	0.89	0.005	0.011	0.020	0.048	0.002	0.16	—	PWHT 620℃×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 16Mn(HIC)steels.
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	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.

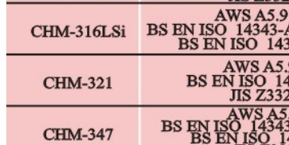


Solid Wire for TIG Welding [Continued]

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)										Mechanical Properties of Deposited Metal (Typical)							Application
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule	Shield Gas	
CHG-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	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.
CHG-NiCrMo-6	AWS A5.14 ERNiCrMo-6 JIS Z3334 YNiCrMo-6	F,V, OH,H	DC	0.006	2.60	0.37	0.002	0.015	15.12	Balance	5.80	Cu 0.07 Nb 1.08	Fe 1.46 W 1.33	AW	440	640	40	-196	180	Ar	Mainly for welding Nickel base alloys. Also it could be used for problem alloys, copious cooling steels and dissimilar metals.

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.



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)										Mechanical Properties of Deposited Metal (Typical)						Application
				C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Others	Postweld Condition	Yield Point Rp0.2 (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)	Shield Gas	
CHM-307Si	AWS A5.9 ER307Si BS EN ISO 14343-A-G 18 8 Mn	F,V, OH,H	DC	0.077	6.88	0.77	0.009	0.02	19.12	8.57	0.04	0.16	—	AW	—	605	42.5	25℃ 100	97Ar+3%O2	Suitable for welding structures fabricated by high tensile strength steels and dissimilar steels, e.g.armor plate, H617 steel, etc.
CHM-308	AWS A5.9 ER308 BS EN ISO 14343-B-SS308 JIS Z3321 Y308	F,V, OH,H	DC	0.05	1.79	0.48	0.013	0.022	19.72	9.40	0.008	0.09	—	AW	—	580	42	—	98%Ar+2%O2	For Cr18Ni8, Cr18Ni12, Cr20Ni10 austenitic stainless steels, such as 301 ,302 & 308, etc. especially 304.
CHM-308L	AWS A5.9 ER308L BS EN ISO 14343-A-G（19 9 L） BS EN ISO 14343-B-SS308L JIS Z3321 Y308L	F,V, OH,H	DC	0.024	1.72	0.48	0.010	0.018	19.76	9.83	0.007	0.09	—	AW	—	560	45	—	98%Ar+2%O2	Suitable for extra-low carbon 00Cr19Ni10 structures. Also it could fabricat 0Cr18Ni10Ti structures, which working temperature lower than 300℃. E.g. synthetic fibre, fertilizer & chemical industrial equipment and so on.
CHM-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	0.15	—	AW	415	605	41	-40℃ 81	Ar+1-5%CO2	Specially for railway locomotives, coachs, wagons, vehicles made by atmospheric corrosion and infection resistance steels.
CHM-308LSi	AWS A5.9 ER308LSi BS EN ISO 14343-A-G（19 9 L Si） BS EN ISO 14343-B-SS308LSi	F,V, OH,H	DC	0.021	1.77	0.79	0.010	0.018	19.70	9.85	0.005	0.17	—	AW	—	575	43	—	98%Ar+2%O2	Suitable for extra-low carbon 00Cr19Ni10 stainless steels structures, which need better resistance to inter-crystal corrosion, e.g. synthetic fibre, petrochemical chemical industrial equipments.
CHM-309	AWS A5.9 ER309 BS EN ISO 14343-A-G（22 12 H） BS EN ISO 14343-B-SS309 JIS Z3321 Y309	F,V, OH,H	DC	0.06	2.05	0.40	0.011	0.020	23.83	13.26	0.007	0.06	—	AW	—	580	39	—	98%Ar+2%O2	Suitable for welding similar chemical composition stainless steel structures and dissimilar steel, e.g. Cr19Ni10 with mild steel, as well as for welding high Mn and High Cr steels.
CHM-309L	AWS A5.9 ER309L BS EN ISO 14343-A-G（23 12 L） BS EN ISO 14343-B-SS309L JIS Z3321 Y309L	F,V, OH,H	DC	0.026	2.11	0.38	0.008	0.017	23.56	12.30	0.006	0.15	—	AW	—	570	38	—	98%Ar+2%O2	For welding extra low carbon stainless steel structures with sililar chemical composition, such as synthetic fibre, petrochemical equipment as well as nuclear reactor. Also it could be used for dissimilar steel welding.
CHM-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	0.16	—	AW	415	580	39	-40℃ 90	Ar+1-5%CO2	Specially for railway locomotives, coachs, wagons, vehicles made by atmospheric corrosion and infection resistance steels.
CHM-309LSi	AWS A5.9 ER309LSi BS EN ISO 14343-A-G（23 12 L Si） BS EN ISO 14343-B-SS309LSi	F,V, OH,H	DC	0.024	2.11	0.68	0.011	0.015	23.56	12.31	0.004	0.16	—	AW	—	560	40	—	98%Ar+2%O2	For welding extra low carbon 00Cr22Ni12 stainless steel structures, such as synthetic fibre, petrochemical equipment as well as nuclear reactor. Also it could be used for dissimilar steel welding.
CHM-310	AWS A5.9 ER310 BS EN ISO 14343-A-G（25 20） BS EN ISO 14343-B-SS310 JIS Z3321 Y310	F,V, OH,H	DC	0.09	1.65	0.53	0.020	0.014	26.80	21.40	0.006	0.18	—	AW	—	605	37	—	98%Ar+2%O2	For welding Cr25Ni20 stainless steels structures, which provide good oxidation corrosion resistance and heat resistance. Also it could be used for dissimilar steel welding and for welding high Cr, high Mn steels.
CHM-316	AWS A5.9 ER316 BS EN ISO 14343-B-SS316 JIS Z3321 Y316	F,V, OH,H	DC	0.052	2.08	0.52	0.012	0.019	18.74	11.30	2.18	0.09	—	AW	—	580	33	—	98%Ar+2%O2	Mainly for welding structures in chemical industry and power engineering that made by Cr19Ni12Mo2 stainless steels such as AISI316,SUS316. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHM-316L	AWS A5.9 ER316L BS EN ISO 14343-A-G（19 12 3 L） BS EN ISO 14343-B-SS316L JIS Z3321 Y316L	F,V, OH,H	DC	0.025	2.05	0.48	0.009	0.018	18.54	11.50	2.18	0.07	—	AW	—	570	34	—	98%Ar+2%O2	Mainly for welding structures in chemical industry and power engineering that made by 00Cr19Ni12Mo2 stainless steels such as AISI316L,SUS316L. Also it could be used for structures made by high Cr steel and dissimilar steels, which do not need to PWHT.
CHM-316LSi	AWS A5.9 ER316LSi BS EN ISO 14343-A-G（19 12 3 L Si） BS EN ISO 14343-B-SS316LSi	F,V, OH,H	DC	0.025	2.10	0.85	0.006	0.015	18.50	11.50	2.18	0.070	—	AW	—	580	35	—	98%Ar+2%O2	Suitable for welding extra-low carbon 00Cr19Ni12Mo2 austenitic stainless steel structures and it shows a excellent corrosion resistance. Mainly for chemical industrial equipments.
CHM-321	AWS A5.9 ER321 BS EN ISO 14343-B-SS321 JIS Z3321 Y321	F,V, OH,H	DC	0.028	1.85	0.45	0.010	0.019	18.92	9.25	0.007	0.07	Ti 0.34	AW	—	575	40	—	98%Ar+2%O2	It is suitable for welding structures made by 1Cr18Ni9Ti austenitic stainless steel as well as the one with similar composition.
CHM-347	AWS A5.9 ER347 BS EN ISO 14343-A-G（19 9 Nb） BS EN ISO 14343-B-SS347 JIS Z3321 Y347	F,V, OH,H	DC	0.52	1.81	0.51	0.008	0.021	20.01	10.01	0.006	0.10	Nb0.59	AW	—	585	39	—	98%Ar+2%O2	It is suitable for welding structures made by 1Cr18Ni11Nb austenitic stainless steel as well as the one with similar composition.
CHM-409	AWS A5.9 ER409 BS EN ISO 14343-B-SS409	F,V, OH,H	DC	0.034	0.29	0.23	0.003	0.021	12.32	0.26	0.04	0.061	Ti 0.06	AW	—	—	—	—	97%Ar+3%O2	Particularly for welding thin sheet in exhaust system of automobile.
CHM-410	AWS A5.9 ER410 BS EN ISO 14343-A-G（13） BS EN ISO 14343-B-SS410 JIS Z3321 Y410	F,V, OH,H	DC	0.06	0.47	0.38	0.012	0.011	12.90	0.20	0.03	0.17	—	PWHT 850℃×2h	—	540	35	—	98%Ar+2%O2	Suitable for welding Cr13 stainless steels.
CHM-410NiMo	AWS A5.9 ER410NiMo BS EN ISO 14343-A-G 13 4 BS EN ISO 14343-B-SS（410NiMo）	F,V, OH,H	DC	0.013	0.66	0.50	0.008	0.011	12.85	4.79	0.630	0.021	—	PWHT 590℃×1h	735	850	17.5	0℃ 80	98%Ar+2%O2	Mainly for welding structures made by martensitic stainless steels, such as 0Cr13Ni5Mo, 15Cr13, 08Cr13 and 08Cr13Al, e.g. the rotating wheel of hydraulic turbine, valves or pumps.
CHM-NiCrMo-6	AWS A5.14 ERNiCrMo-6 JIS Z3334 YNiCrMo-6	F,V, OH,H	DC	0.006	2.60	0.37	0.002	0.015	15.12	Balance	5.80	Cu 0.07 Nb 1.08	Fe 1.46 W 1.33	AW	410	675	37	-196℃ 150	Ar+30%He +0.5%CO2	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
氧焊丝

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



Solid Wire for Submerged Arc Welding
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Item Code	Equivalent Norm	Chemical Composition of Wire (%)										Combined Flux	Welding Position	Mechanical Properties of Deposited Metal (Typical)							Application	Remark
			C	Mn	Si	S	P	Cr	Ni	Mo	Cu			Current	Equivalent Norm	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Joule	
CHW-S1	AWS A5.17 EL12 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	F	DC⁺ or AC	AWS A5.17 F6A0/EL12	AW	360	450	29	-20	80	Suitable for welding structures fabricated by 450MPa tensil strength steel especially high speed welding for thin plate, e.g. LPG cylinder.	CCS, LR, ABS, GL, BV, DNV & NK
		Typical	0.07	0.40	0.018	0.011	0.014				0.10	CHF501	F	DC⁺ or AC	AWS A5.17 F7AZ/EL12	AW	425	530	29	0	70		
CHW-S2	AWS A5.17 EM12 BS EN 756-S2 ISO 14171-A-S2 ISO 14171-B-SU22	Standard	0.06-0.15	0.80-1.25	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF101	F	DC⁺ or AC	AWS A5.17 F6A0/EM12	AW	370	470	30	-20	120	For welding structures made by 450MPa-500MPa tensile strength steels, such as boiler, bridges, pressure vessels as well as LPG cylinders.	CCS, NK & CE
		Typical	0.066	0.88	0.022	0.013	0.010	0.020	0.021		0.075	CHF103	F	DC⁺ or AC	AWS A5.17 F6A4/EM12	AW	360	480	31	-40	110		
CHW-S3	AWS A5.17 EH14 BS EN 756 S3 ISO 14171-A- S3 ISO 14171-B- SU33	Standard	0.10-0.20	1.70-2.20	≤0.10	≤0.030	≤0.030	—	—	—	≤0.35	CHF101	F	DC⁺ or AC	AWS A5.17 F7A0/EH14	AW	440	530	30	-20	150	Suitable for structures made by 500MPa-550MPa tensile strength steels, such as ship hulls, bridges, pressure vessels and H-beam structures.	CCS,LR,ABS, GL,BV,DNV, NK,CWB, KR & CE
		Typical	0.13	1.87	0.05	0.011	0.013	0.018	0.015		0.020	CHF105	F	DC⁺	AWS A5.17 F7A4/EH14	AW	430	510	28	-40	120		
CHW-S3A	AWS A5.17 EH14 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	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 used on the famous CCTV new mansion in Beijing.	LR
		Typical	0.13	1.95	0.076	0.006	0.014		0.16		0.07												
CHW-S4	AWS A5.17 EM13K BS EN 756-S2Si2 ISO 14171-A-S2Si2 ISO 14171-B- SU25	Standard	0.06-0.16	0.90-1.40	0.35-0.75	≤0.030	≤0.030	—	—	—	≤0.35	CHF101	F	DC⁺ or AC	AWS A5.17 F7A0/EM13K	AW	425	535	32	-20	110	Suitable for structures fabricated by 500MPa-550MPa tensile strength steels, such as ship hulls, bridges, pressure vessels and H-beam structures.	—
		Typical	0.089	1.01	0.61	0.016	0.016				0.110												
CHW-S5	AWS A5.17 EH12K ISO 14171-B-SU42	Standard	0.06-0.15	1.50-2.00	0.25-0.65	≤0.025	≤0.025	—	—	—	≤0.35	CHF101	F	DC⁺ or AC	AWS A5.17 F7A0/EH12K	AW	450	590	26	-20	85	For welding structures made by 450MPa-500MPa tensile strength carbon steel or low alloy steels , such as boiler, bridges, pressuré vessels and so on.	—
		Typical	0.084	1.84	0.65	0.009	0.020	0.020	0.021		0.046												
CHW-S6	AWS A5.17 EH11K BS ISO 14171-B-SU31	Standard	0.07-0.15	1.40-1.85	0.80-1.15	≤0.030	≤0.030	—	—	—	≤0.35	—	F	DC⁺	—	—	—	—	—	—	—	For welding structures made by 450MPa-500MPa tensile strength carbon steel or low alloy steels , such as boiler, bridges, pressuré vessels and so on.	—
		Typical	0.08	1.49	0.84	0.009	0.014				0.18												
CHW-S7	AWS A5.23M EA3 BE 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	F	DC⁺	AWS A5.23M F62P2-EA3-A3	PWHT 620℃×1h	570	660	25	-20	95	Suitable for fabricating important structures made by 690MPa tensile strength low alloy steels that need high toughness, e.g. BHW35, WEL-TEN70, HW56, SM570, etc.	—
		Typical	0.070	1.70	0.18	0.007	0.010	0.020		0.52	0.11	CHF113	F	DC⁺	AWS A5.23M F62P4-EA3-A3	PWHT 620℃×1h	600	690	24	-40	60		
CHW-S7CG	AWS A5.23M EA3 BE 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	F	DC⁺	AWS A5.23M F62P3-EA3-A3	PWHT 580℃×2.5h	550	650	26	-30	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).	—
		Typical	0.070	1.70	0.18	0.008	0.008			0.55	0.18												
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	F	DC⁺	AWS A5.23M F55PZ-EB3-B3	PWHT 690℃×4h	475	570	22	25	85	Widely be used in important structures of thick hull pressure vessels of niclear reactors, equipment of petro-refining, hydrocracking, aerospace engineering, steam pipes of thermal power station and so on.	—
		Typical	0.090	0.80	0.15	0.010	0.011	2.61		1.01	0.10												
CHW-S9	AWS A5.23M EA4 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	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.	—
		Typical	0.080	1.30	0.20	0.008	0.011			0.47	0.20												
CHW-S9CG	AWS A5.23M EA4 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	F	DC⁺	AWS A5.23M F62P3-EA4-A4	PWHT 580℃×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.	—
		Typical	0.080	1.30	0.18	0.008	0.011	0.023	0.020	0.43	0.20												
CHW-S10	AWS A5.23M EF3 ISO 14171-A-S3Ni1Mo 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	F	DC⁺ or AC	AWS A5.23M F69P3-EF3-F3	PWHT 620℃×1h	660	735	24	-30	70	It is used to important structures made by 650MPa-800MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	LR, ABS
		Typical	0.105	1.80	0.18	0.006	0.012	0.020	0.83	0.62	0.15												
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	F	DC⁺ or AC	AWS A5.23M F55P3-EB2-B2	PWHT 690℃×1h	490	570	25	-30	100	For welding structures fabricated by 1.2Cr-0.5Mo pearlitic heat resistant steels e.g. equipments of petrochemical industry, thermal power plant and nuclear power plant made by 13CrMoA, 15CrMo, 12CrMo.	—
		Typical	0.095	0.73	0.15	0.007	0.011	1.36		0.48	0.22												
CHW-S12	AWS A5.17 EM12K BS EN 756-S2Si ISO 14171-A-S2Si ISO 14171-B-SU21	Standard	0.05-0.15	0.80-1.25	0.10-0.35	≤0.030	≤0.030	—	—	—	≤0.35	CHF101	F	DC⁺ or AC	AWS A5.17 F7A4/EM12K	AW	420	510	31	-40	110	Suitable for fabricating normal strength structures made by 450MPa-500MPa tensile strength mild steels, e.g. LPG cylinder.	—
		Typical	0.08	1.06	0.22	0.014	0.016	0.025	0.026		0.10	CHF301	F	DC⁺ or AC	AWS A5.17 F7A0/EM12K	AW	430	540	28	-20	70		
CHW-S13	AWS A5.23M ENi3 BS EN 755 S2Ni3 ISO 14171-A-S2Ni3 ISO 14171-B-SUN7	Standard	≤0.13	0.60-1.20	0.05-0.30	≤0.020	≤0.020	≤0.15	3.10-3.80	—	≤0.35	CHF105DR	F	DC⁺	AWS A5.23M F48P7-ENi3-Ni3	PWHT 620℃×2h	480	560	28	-70	80	Suitable for welding structures made by low temperature service alloy steels, which contains 2.5Ni or 3.5Ni.	—
		Typical	0.09	1.00	0.15	0.009	0.011	0.03	3.45		0.12												
CHW-S14	AWS A5.17 EH14 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	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.	—
		Typical	0.10	1.73	0.02	0.006	0.009	0.016	0.037		0.18												
CHW-S15	AWS A5.17 EM12 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	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.	—
		Typical	0.080	0.91	0.02	0.005	0.008	0.020	0.021		0.056												
CHW-S16	AWS A5.23M EA2 BE 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	F	DC⁺	AWS A5.23M F55P2-EA2-A4	PWHT 620℃×1h	560	660	26	-20	100	Suitable for fabricating important structures made by 650MPa tensile strength low alloy steels, such as cranes, heavy trucks & engineering machinery,bridges and high pressure vessels, etc.	—
		Typical	0.09	1.10	0.15	0.008	0.010		0.53		0.11												



Solid Wire for Submerged Arc Welding [Continued]

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Item Code	Equivalent Norm		Chemical Composition of Wire (%)											Mechanical Properties of Deposited Metal (Typical)							Application	Remark
			C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Combined Flux	Welding Position	Current	Equivalent Norm	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J) Temp.(℃)	Akv Value (J) Joule		
CHW-S18	AWS A5.17 EL8 BS EN 756-S1 ISO 14171-A-S1 ISO 14171-B-SU11	Standard Typical	≤0.10 0.07	0.25-0.60 0.40	≤0.07 0.018	≤0.030 0.011	≤0.030 0.014	—	—	—	≤0.35 0.10	CHF43	F	DC+	AWS A5.17 F6A0-EL8	AW	360	455	30	-20	75	Suitable for welding structures fabricated by 450MPa tensile strength steel, e.g. LPG cylinder or ship structures as same strength.	—
CHW-S19	AWS A5.23M EG	Typical	0.139	0.57	0.260	0.004	0.012	0.950	0.040	0.49	0.16	CHF101	F	DC+	AWS A5.23M F55P2-EG-B2	PWHT 620℃×1h	535	620	25	-20	150	For welding structures made by 1Cr-0.5Mo pearlitic heat resistant steels that working temperature is lower than 520℃, e.g. pipes of industry boiler, facilities of petroleum refining plant and so on.	—
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	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,WH590,CF-62 and HT60, etc.	—
CHW-91	AWS A5.23M EB9	Standard Typical	C 0.07-0.13 0.09 N 0.03-0.07 0.06	Mn ≤1.25 1.25	≤0.30 0.20	≤0.010 0.006	≤0.010 0.010	Cr 8.00-10.00 9.18 V 0.15-0.25 0.23	≤1.00 0.73	Mo 0.80-1.10 0.98 Nb 0.02-0.10 0.07	Cu ≤0.10 0.12 Al ≤0.04 0.024	CHF91	F	DC+	AWS A5.23M F62PZ-EB9-B9	PWHT 760℃×4h	575	685	21	20	90	Specially for welding superheaters and re-superheaters belong to subcritical, critical or supercritical boilers of thermal power plants, which fabricated by martensite heat-resisting T/P91 alloy steel.	—
CHW-SG	AWS A5.23M EG	Standard Typical	— 0.088	— 1.70	— 0.058	— 0.008	— 0.011	—	— 0.30	—	— 0.12	CHF101GX	F	DC+	DGS K 1101.51-2004	AW	460	550	29	-20	160	Suitable for welding 550MPa tensile strength tructures, which require extra lower S & P in weld metal, especially for spiral or longitudinal welded huge diameter pipe made by X65, X70 steels.	BV
CHW-SG4	AWS A5.23M EA4	Standard Typical	— 0.085	— 1.63	— 0.27	— 0.002	— 0.008	—	—	— 0.32	— 0.08	CHF102GX	F	DC+	AWS A5.23M F62A2-EA4-A4	AW	550	650	25	-10	160	It is mainly for welding pipe lines fabricated by X80 steel. Also it could be used for other structures made by high strength, high toughness low alloy steels, e.g. WPHY80.	—
CHW-SH	AWS A5.23M EG	Standard Typical	— 0.080	— 1.58	— 0.100	— 0.002	— 0.005	— 0.170	— 0.182	—	— 0.13	CHF102SH	F	DC+	AWS A5.17 F7P2-EG	PWHT 620℃×2h	410	520	32	-30	150	It is suitable for pressure vessels of high temperature separators and recycle hydrogen knockout drums that fabricated by 16Mn（HIC）steels.	—
CHW-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	F	DC+ or AC	BS EN 756-S 46 4 FB S2Ni1Cu	AW	540	630	26	-40	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.	—
CHW-308	AWS A5.9 ER308 JIS Z3324 YS308 BS EN ISO 14343-B-SS308	Standard Typical	≤0.08 0.056	1.00-2.50 1.43	0.30-0.65 0.32	≤0.030 0.006	≤0.030 0.021	19.50-22.00 19.81	9.00-11.00 9.45	≤0.75 0.10	≤0.75 0.11	CHF260	F	DC+	—	AW	—	580	40	—	—	For welding austenitic stainless steel structures that require acid proof and it be used for hardfacing rolls also.	—
CHW-308L	AWS A5.9 ER308L JIS Z3324 YS308L BS EN ISO 14343-A-G(19 9 L) BS EN ISO 14343-B-SS308L	Standard Typical	≤0.03 0.023	1.00-2.50 1.68	0.30-0.65 0.59	≤0.030 0.011	≤0.030 0.019	19.50-22.00 20.88	9.00-11.00 9.12	≤0.75 0.41	≤0.75 0.20	CHF601	F	DC+	—	AW	—	530	42	—	—	For welding extra low carbon Cr18Ni8 stainless steel.	—
CHW-309	AWS A5.9 ER309 JIS Z3324 YS309 BS EN ISO 14343-A-G(22 12 H) BS EN ISO 14343-B-SS309	Standard Typical	≤0.12 0.06	1.00-2.50 2.05	0.30-0.65 0.34	≤0.030 0.010	≤0.030 0.018	23.00-25.00 23.83	12.00-14.00 13.26	—	≤0.75 0.10	CHF601	F	DC+	—	AW	—	540	38	—	—	For welding Cr22Ni12 stainless steel. The weld metal shows a good heat resistance & corrosion resistance feature. Also it could be used in dissimilar steels.	—
CHW-309L	AWS A5.9 ER309L JIS Z3324 YS309L BS EN ISO 14343-A-G(23 12 L) BS EN ISO 14343-B-SS309L	Standard Typical	≤0.03 0.026	1.00-2.50 2.11	0.30-0.65 0.38	≤0.030 0.016	≤0.030 0.014	23.00-25.00 23.56	12.00-14.00 12.31	—	≤0.75 0.13	CHF601	F	DC+	—	AW	—	530	39	—	—	For welding extra low carbon Cr24Ni13 stainless steel. It could be used for root welding also.	—
CHW-310	AWS A5.9 ER310 JIS Z3324 YS310 BS EN ISO 14343-A-G(25 20) BS EN ISO 14343-B-SS310	Standard Typical	0.08-0.15 0.09	1.00-2.50 1.90	0.30-0.65 0.35	≤0.030 0.015	≤0.030 0.014	25.00-28.00 26.80	20.00-22.50 21.40	—	≤0.75 0.12	CHF601	F	DC+	—	AW	—	560	40	—	—	For welding Cr25Ni20 stainless steel. The weld metal shows a good heat resistance & oxidation resistance feature.	—
CHW-316	AWS A5.9 ER316 JIS Z3324 YS316 BS EN ISO 14343-B-SS316	Standard Typical	≤0.08 0.04	1.00-2.50 1.88	0.30-0.65 0.33	≤0.030 0.013	≤0.030 0.018	18.00-20.00 19.27	11.00-14.00 12.70	2.00-3.00 2.26	≤0.75 0.11	CHF601	F	DC+	—	AW	—	540	38	—	—	For welding Cr18Ni12Mo2 stainless steel. The weld metal has very good heat crack resistance character.	—
CHW-316L	AWS A5.9 ER316L JIS Z3324 YS316L BS EN ISO 14343-A-G(19 12 3 L) BS EN ISO 14343-B-SS316L	Standard Typical	≤0.03 0.020	1.00-2.50 1.85	0.30-0.65 0.38	≤0.030 0.010	≤0.030 0.015	18.00-20.00 18.73	11.00-14.00 12.50	2.00-3.00 2.36	≤0.75 0.10	CHF601	F	DC+	—	AW	—	530	39	—	—	For welding extra low carbon Cr18Ni12Mo2 stainless steel. The weld metal has excellet heat crack resistance & corrosion resistance character.	—
CHW-317	AWS A5.9 ER317 JIS Z3324 YS317 BS EN ISO 14343-B-SS317	Standard Typical	≤0.08 0.04	1.00-2.50 1.86	0.30-0.65 0.46	≤0.030 0.012	≤0.030 0.017	18.50-20.50 19.30	13.00-15.00 14.20	3.00-4.00 3.50	≤0.75 0.11	CHF601	F	DC+	—	AW	—	550	38	—	—	Suitable for fabricating stainless steel containers that resisting corrosion of vitriol,ammonia, sulfurous acid or salt, etc.	—
CHW-347	AWS A5.9 ER347 JIS Z3324 YS347 BS EN ISO 14343-A-G(19 9 Nb) BS EN ISO 14343-B-SS347	Standard Typical	≤0.08 0.06	1.00-2.50 1.84	0.30-0.65 0.41	≤0.030 0.018	≤0.030 0.020	19.00-21.50 19.40	9.00-11.00 9.50	— Nb 0.89	≤0.75 0.12	CHF601	F	DC+	—	AW	—	550	39	—	—	For welding important resisting corrosion structures made by 1Cr18Ni9Ti stainless steels.	—
CHW-410	AWS A5.9 ER410 JIS Z3324 YS410 BS EN ISO 14343-A-G(13) BS EN ISO 14343-B-SS410	Standard Typical	≤0.12 0.10	≤0.60 0.47	≤0.50 0.42	≤0.030 0.011	≤0.030 0.016	11.50-13.50 11.80	≤0.60 0.20	—	≤0.75 0.14	CHF601	F	DC+	—	AW	—	510	26	—	—	Hard facing surface of structures made of 0Cr13 or 1Cr13 stainless steels.	—
CHW-2209	AWS A5.9 ER2209	Standard Typical	≤0.03 0.01	0.50-2.00 1.52	≤0.90 0.60	≤0.030 0.007	≤0.030 0.011	21.50-23.50 22.90	7.50-9.50 9.27	Mo 2.50-3.50 3.23 N 0.08-0.20 0.09	≤0.75 0.10	CHF601A	F	DC+	DGS K 901.71-2007	AW	650	770	28	-30	70	It is used for welding structures of chemical carriers and facilities of petrochemical, sea water desalinization, salt works, nuclear energy that fabricated by duplex stainless steels.	—

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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)										Mechanical Properties of Deposited Metal (Standard & Typical)					Application	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHF101/CHW-S2	AWS A5.17 F6A0/EM12 BS EN 756-S 35 2 FB S2 ISO 14171-A-S 35 2 FB S2 ISO 14171-B-S 43A 2 FB SU22	Sintered	DC+ or AC	Standard Typical	— 0.046	— 1.14	— 0.18	— 0.014	— 0.018	— 0.040	— 0.011	— —	— 0.070	AW	⩾330 370	415-550 470	⩾22 30	-20℃ ⩾27 120	Suitable for welding 450MPa tensile strength mild steels or low alloy steels such as 16Mn,16MnCu, etc. Widely for manufacturing LPG cylinders.	CCS, NK
CHF101/CHW-S3	AWS A5.17 F7A0/EH14 BS EN 756-S 38 2 FB S3 ISO 14171-A-S 38 2 FB S3 ISO 14171-B-S 49A 2 FB SU33	Sintered	DC+ or AC	Standard Typical	— 0.052	— 1.60	— 0.32	— 0.010	— 0.020	— 0.015	— 0.004	— —	— 0.040	AW	⩾400 430	480-650 525	⩾22 30	-20℃ ⩾27 150	It is applied to structures fabricated by 550MPa tensile strength steels, such as ship hulls, bridges, pressure vessels, as well as H-beam structures.	CCS, LR, ABS, GL, BV, DNV, NK, CWB, KR
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	— 0.067	— 1.80	— 0.25	— 0.008	— 0.020	— 0.002	— 0.15	— —	— 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.	—
CHF101/CHW-S4	AWS A5.17 F7A0/EM13K BS EN 756-S 38 2 FB S2Si2 ISO 14171-A-S 38 2 FB S2Si2 ISO 14171-B-S 49A 2 FB SU25	Sintered	DC+ or AC	Standard Typical	— 0.050	— 1.26	— 0.77	— 0.015	— 0.024	— 0.002	— 0.004	— 0.001	— 0.110	AW	⩾400 425	480-650 535	⩾22 32	-20℃ ⩾27 110	It is applied to weld 500MPa tensile strength structures, such as bridges, pressure vessels, as well as H-beam structures.	—
CHF101/CHW-S5	AWS A5.17 F7A0/EH12K ISO 14171-B-S 49A 2 FB SU42	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.95	— 0.85	— 0.011	— 0.024	— 0.020	— 0.13	— 0.001	— 0.090	AW	⩾400 450	480-650 590	⩾22 26	-20℃ ⩾27 85	Suitable for weld 550MPa tensile strength structures, such as bridges, pressure vessels, as well as H-beam structures.	—
CHF101/CHW-S7	AWS A5.23M F62P2/EA3-A3 BS EN 756-S 50 2 FB S3Mo ISO 14171-A-S 50 2 FB S3Mo ISO 14171-B-S 57P 2 FB SU4M3	Sintered	DC+ or AC	Standard Typical	— 0.055	— 1.75	— 0.37	— 0.008	— 0.014	— 0.020	— 0.001	— 0.420	— 0.140	PWHT 620℃×1h	⩾540 570	620-760 660	⩾17 25	-20℃ ⩾27 95	It is suitable for welding structures fabricated by 550MPa-650MPa tensile strength structures, such as facilities of chemical industry, bridges, pressure vessels, as well as H-beam structures.	—
CHF101/CHW-S9	AWS A5.23M F55P2/EA4-A4 BS EN 756-S 46 2 FB S3Mo ISO 14171-A-S 46 2 FB S3Mo ISO 14171-B-S 55P 2 FB SU3M3	Sintered	DC+ or AC	Standard Typical	— 0.060	— 1.52	— 0.40	— 0.006	— 0.017	— 0.060	— 0.080	— 0.350	— 0.220	PWHT 620℃×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.	—
CHF101/CHW-S11	AWS A5.23M F55P2/EB2-B2	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.07	— 0.30	— 0.006	— 0.012	— 1.100	— —	— 0.400	— 0.210	PWHT 690℃×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 13CrMoA, 15CrMo, 12CrMo.	—
CHF101/CHW-S12	AWS A5.17 F7A4/EM12K BS EN 756-S 38 4 FB S2Si ISO 14171-A-S 38 4 FB S2Si ISO 14171-A-S 38 4 FB S2Si	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.30	— 0.30	— 0.011	— 0.020	— 0.020	— 0.010	— —	— 0.044	AW	⩾400 420	480-650 510	⩾22 30	-40℃ ⩾27 110	Widely used in structures fabricated by mild steel and low alloy steels, e.g. ships, H-beams, etc.	LR, ABS, GL, BV, DNV, NK
CHF101/CHW-S16	AWS A5.23M F55P2/EA2-A4 BE EN 756-S 46 2 FB S2Mo ISO 14171-A-S 46 2 FB S2Mo ISO 14171-B-S 55P 2 FB SU2M3	Sintered	DC+ or AC	Standard Typical	— 0.065	— 1.31	— 0.40	— 0.006	— 0.017	— —	— —	— 0.420	— 0.100	PWHT 620℃×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.	—
CHF101CG/CHW-S9CG	AWS A5.23M F62P3/EA4-A4	Sintered	DC+ or AC	Standard Typical	— 0.060	— 1.52	— 0.38	— 0.006	— 0.012	— 0.060	— 0.080	— 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.	—
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	— 0.070	— 1.16	— 0.47	— 0.010	— 0.012	— 0.020	— 0.060	— 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.	—
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	⩽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.	—
CHF101NQ / 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	— 0.065	— 1.35	— 0.35	— 0.009	— 0.010	— 0.450	— 0.500	— —	— 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.	—
CHF102/CHW-S3	AWS A5.17 F7A4/EH14 BS EN 756-S 38 4 FB S3 ISO 14171-A-S 38 4 FB S3 ISO 14171-B-S 49A 4 FB SU33	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.72	— 0.37	— 0.011	— 0.020	— 0.012	— 0.006	— —	— 0.045	AW	⩾400 435	480-650 550	⩾22 30	-40℃ ⩾27 100	Suitable for welding structures made by 550MPa tensile strength carbon steels or low alloy steels such as press vessels, boilers,equipment of petrochemical industry, etc.	—
CHF102/CHW-S3A	AWS A5.17M F48A4/EH14 BS EN 756-S 38 4 FB S3 ISO 14171-A-S 38 4 FB S3 ISO 14171-B-S 49A 4 FB SU33	Sintered	DC+ or AC	Standard Typical	— 0.066	— 1.90	— 0.32	— 0.007	— 0.018	— —	— 0.150	— —	— 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
CHF102/CHW-S10	AWS A5.23M F69A4/EF3-F3	Sintered	DC+ or AC	Standard Typical	— 0.068	— 1.85	— 0.53	— 0.007	— 0.015	— 0.076	— 1.21	— —	— 0.151	AW	⩾610 614	690-830 806	⩾16 23.4	-40℃ ⩾27 105	It is used to important structures made by 650MPa-800MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	LR, ABS
CHF102A/CHW-SG	AWS A5.23 F7A4/EG	Sintered	DC+ or AC	Standard Typical	— 0.067	— 1.55	— 0.45	— 0.006	— 0.015	— —	— 0.255	— —	— 0.100	AW	⩾375 490	490-660 580	A5 ⩾20 28	-40℃ ⩾27 140	Suitable for welding important structures, e.g. offshore drilling platforms, which diffusion hydrogen required extra lower.	BV
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	⩽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.	—
CHF102SH/CHW-SH	DGS K 901.91-2009 AWS A5.23 F7P2/EG	Sintered	DC+ or AC	Standard Typical	— 0.056	— 1.35	— 0.35	— 0.005	— 0.010	— 0.220	— 0.150	— —	— 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.	—
CHF103/CHW-S2	AWS A5.17 F6A4/EM12 BS EN 756-S 35 4 FB S2 ISO 14171-A-S 35 4 FB S2 ISO 14171-B-S 43A 4 FB SU22	Sintered	DC+ or AC	Standard Typical	— 0.070	— 0.95	— 0.20	— 0.014	— 0.017	— 0.040	— 0.010	— —	— 0.210	AW	⩾330 360	415-550 480	⩾22 31	-40℃ ⩾27 110	It is suitable for weld 450MPa-500MPa tensile strength structures, such as boilers, bridges, pressure vessels, as well as LPG cylinders.	—
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	— 0.058	— 1.62	— 0.33	— 0.013	— 0.013	— —	— —	— —	— 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.	—
CHF105/CHW-S3	AWS A5.17 F7A4/EH14 BS EN 756-S 38 4 FB S3 ISO 14171-A-S 38 4 FB S3 ISO 14171-B-S 49A 4 FB SU33	Sintered	DC+	Standard Typical	— 0.065	— 1.25	— 0.35	— 0.009	— 0.015	— 0.010	— 0.034	— —	— 0.044	AW	⩾400 430	480-650 510	⩾22 28	-40℃ ⩾27 120	Suitable for welding structures fabricated by 500MPa-550MPa tensile strength carbon steel or low alloy steels.	—
CHF105/CHW-S9	AWS A5.23M F55A3/EA4-A2 BS EN 756-S 46 3 FB S3Mo ISO 14171-A-S 46 3 FB S3Mo ISO 14171-B-S 55A 3 FB SU3M3	Sintered	DC+	Standard Typical	— 0.065	— 1.12	— 0.54	— 0.005	— 0.014	— 0.080	— 0.060	— 0.340	— 0.150	AW	⩾470 530	550-700 625	⩾20 23	-30℃ ⩾27 70	It is used to weld structures made by 550MPa-650MPa tensile strength steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—
CHF105/CHW-S10	AWS A5.23M F69P3/EF3-F3 ISO 14171-A-S3Ni1Mo ISO 14171-B-SUN2M31	Sintered	DC+	Standard Typical	— 0.070	— 1.42	— 0.45	— 0.008	— 0.017	— 0.060	— 0.710	— 0.490	— 0.190	PWHT 620℃×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 [Continued]

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)										Mechanical Properties of Deposited Metal (Standard & Typical)					Application	Approvals
					C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Postweld Condition	Yield Point ReL (MPa)	Tensile Strength Rm (MPa)	Elongation A4 (%)	Akv Value (J)		
CHF105/CHW-S11	AWS A5.23M F55P3/EB2-B2	Sintered	DC+	Standard Typical	— 0.070	— 0.63	— 0.39	— 0.006	— 0.016	— 1.120	— —	— 0.400	— 0.200	PWHT 690℃×1h	⩾470 490	550-700 570	⩾20 25	-30℃ ⩾27 100	Suitable for welding structures fabricated by 1.2Cr-0.5Mo pearlitic heat resistant steels, such as facilities of thermal power plant, nuclear power plant and petrochemical industry that made by steels of 13CrMoA, 15CrMo, 12CrMo.	—
CHF105DR/CHW-S13	AWS A5.23M F48P7/ENi3-Ni3 BS EN 756-S 38 7 FB S2Ni3 ISO 14171-A-S 38 7 FB S2Ni3 ISO 14171-B-S 49P 7 FB SUN7	Sintered	DC+	Standard Typical	— 0.050	— 1.00	— 0.30	— 0.006	— 0.013	— —	— 2.800	— —	— 0.150	PWHT 620℃×2h	⩾400 480	480-620 560	⩾22 28	-70℃ ⩾27 70	Suitable for fabricating special pressure vessels, which work temperature higher than -70℃, that made by 2.5Ni-3.5Ni low tempreature alloy steels, such as low tempreature storage bunkers, oilcans as well as low tempreature pressure vessels of composite chemical industry.	—
CHF105Q/CHW-S30	DGS K 901.101-2009	Sintered	DC+	Standard Typical	— 0.046	— 1.59	— 0.25	— 0.007	— 0.020	— —	— 0.270	— 0.257	— 0.150	AW	⩾500 550	610-770 640	⩾18 27	-40℃ ⩾50 90	It is used for structures fabricated by 650MPa tensile strength low alloy steels, such as WDL610,WH590,CF-62 and HT60, etc.	—
CHF113/CHW-S7	AWS A5.23M F62P4/EA3-A3 BE EN 756-S 50 4 FB S3Mo ISO 14171-A-S 50 4 FB S3Mo ISO 14171-B-S 57P 4 FB SU4M3	Sintered	DC+	Standard Typical	— 0.060	— 1.79	— 0.29	— 0.010	— 0.018	— 0.50	— —	— 0.420	— 0.110	PWHT 620℃×1h	⩾540 600	620-760 690	⩾17 24	-40℃ ⩾27 60	it is suitable for structures made by 650MPa tensile strength low alloy steel, which need high toughness, e.g. bridges, heavy machinery, facilities of chemical industry.	—
CHF115/CHW-S7	AWS A5.23M F69P2/EA3-A3 BS EN 756-S 50 2 FB S3Mo ISO 14171-A-S 50 2 FB S3Mo ISO 14171-B-S 57P 2 FB SU4M3	Sintered	DC+	Standard Typical	— 0.060	— 1.80	— 0.25	— 0.008	— 0.015	— 0.50	— —	— 0.450	— 0.150	PWHT 620℃×1h	⩾610 630	690-830 735	⩾16 23	-20℃ ⩾27 100	it is suitable for structures made by 700MPa tensile strength low alloy steel, which need high toughness, e.g. bridges, heavy machinery, facilities of chemical industry.	—
CHF250G/CHW-S9	AWS A5.23M F55A2/EA4-A2 BS EN 756-S 46 2 AS S3Mo ISO 14171-A-S 46 2 AS S3Mo ISO 14171-B-S 55A 2 AS SU3M3	Fused	DC+	Standard Typical	— 0.060	— 1.16	— 0.45	— 0.008	— 0.013	— —	— —	— 0.330	— 0.190	AW	⩾470 495	550-700 580	⩾20 22	-20℃ ⩾27 70	It is suitable for welding structures made by 550MPa tensile strength low alloy steels,e.g. pressure vessels in petrochemical industry and nuclear industry. Also the flux could be used in electroslag welding (ESW).	—
CHF260/CHW-308L	GB/T 17854 F308L-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	9.00-11.00 9.12	⩽0.75 0.41	⩽0.75 0.20	AW	— 396	⩾480 622	⩾25 36	25℃ ⩾60 90	For welding structures made by low carbon Cr18Ni8 stainless steels.	—
CHF26H/CHW-S7CG	AWS A5.23M F62P3/EA3-A4	Sintered	DC+ or AC	Standard Typical	— 0.051	— 1.41	— 0.37	— 0.007	— 0.012	— —	— —	— 0.490	— 0.120	PWHT 580℃×2.5h	⩾490 550	⩾610 650	⩾20 26	-30℃ ⩾47 70	Suitable for multi-pass & multi-layer with horizontal butting welding of 610MPa tensile strength low alloy steels, particularlly for jumbo oil reserving tanks.	—
CHF301/CHW-S1	AWS A5.17 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	— —	— —	— —	— 0.060	AW	⩾330 365	415-550 470	⩾22 30	-20℃ ⩾27 60	For structures fabricated by 450MPa tensile strength mild steels or low alloy steels.	—
CHF301/CHW-S12	AWS A5.17 F7A0/EM12K BS EN 756-S 38 2 CS S2Si ISO 14171-A-S 38 2 CS S2S ISO 14171-B-S 49A 2 CS SU21	Sintered	DC+ or AC	Standard Typical	— 0.060	— 1.30	— 0.75	— 0.010	— 0.025	— 0.020	— 0.010	— —	— 0.050	AW	⩾400 430	480-650 540	⩾22 28	-20℃ ⩾27 70	Suitable for structures fabricated by 500MPa tensile strength mild steels or low alloy steels, e.g. boilers, LPG cylinders, etc.	—
CHF302/CHW-S2	AWS A5.17 F7A0/EM12 BS EN 756-S 38 2 CS S2 ISO 14171-A-S 38 2 CS S2 ISO 14171-B-S 49A 2 CS SU22	Sintered	DC+ or AC	Standard Typical	— 0.059	— 1.13	— 0.57	— 0.012	— 0.020	— 0.022	— 0.004	— —	— 0.100	AW	⩾400 415	480-650 510	⩾22 28	-20℃ ⩾27 70	Suitable for structures fabricated by 500MPa tensile strength mild steels or low alloy steels, e.g. boilers, LPG cylinders, etc.	—
CHF330/CHW-S3	AWS A5.17 F6AZ/EH14 ISO 14174-S F MS 1 EN 760-S F MS 1	Fused	DC+ or AC	Standard Typical	— 0.055	— 1.39	— 0.43	— 0.011	— 0.036	— 0.017	— 0.010	— —	— 0.076	AW	⩾330 380	415-550 490	⩾22 31	0℃ ⩾27 70	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels, e.g. boilers, pressure vessels.	—
CHF331/CHW-S3	AWS A5.17 F7A0/EH14 BS EN 756-S 38 2 MS S3 ISO 14171-A-S 38 2 MS S3 ISO 14171-B-S 49A 2 MS SU33	Fused	DC+ or AC	Standard Typical	— 0.070	— 1.40	— 0.38	— 0.013	— 0.020	— —	— —	— —	— 0.110	AW	⩾400 415	480-650 525	⩾22 27	-20℃ ⩾27 70	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels.	—
CHF350/CHW-S3	AWS A5.17 F6A0/EH14 ISO 14174-S F MS 1 EN 760-S F MS 1	Fused	DC+ or AC	Standard Typical	— 0.044	— 1.31	— 0.33	— 0.008	— 0.037	— 0.034	— 0.030	— —	— 0.12	AW	⩾330 500	415-550 480	⩾22 28	-20℃ ⩾27 80	It is used for structures made by 450MPa tensile strength mild steels or low alloy steels.	—
CHF43/CHW-S1	AWS A5.17 F6A0/EL12	Fused	DC+ or AC	Standard Typical	— 0.055	— 1.00	— 0.38	— 0.021	— 0.028	— —	— —	— —	— 0.220	AW	⩾330 360	415-550 450	A5 ⩾22 29	-20℃ ⩾34 80	Suitable for welding structures fabricated by 450MPa tensile strength steels, e.g. LPG cylinder as well as ship structures with same strength.	CCS, LR, ABS, GL, BV, DNV, NK
CHF43/CHW-S18	AWS A5.17 F6A2/EL8	Fused	DC+ or AC	Standard Typical	0.056	1.08	0.35	0.02	0.026	—	—	—	0.2	AW	⩾330 370	415-550 470	⩾22 29	-20℃ ⩾34 85	Suitable for welding structures fabricated by 450MPa tensile strength steels, e.g. LPG cylinder as well as ship structures with same strength.	—
CHF501/CHW-S1	AWS A5.17 F7AZ/EL12 BS EN 756-S 38 0 AR S1 ISO 14171-A-S 38 0 AR S1 ISO 14171-B-S 49A 0 AR SU11	Sintered	DC+ or AC	Standard Typical	— 0.069	— 1.06	— 0.56	— 0.014	— 0.028	— —	— —	— —	— 0.200	AW	⩾400 425	480-650 530	⩾22 29	0℃ ⩾27 70	It is used for welding structures around 500MPa tensile strength of boilers, ships, pressure vessels. Particularly it is suitable for high speed welding thin steel plate.	—
CHF501/CHW-S2	AWS A5.17 F7AZ/EM12	Sintered	DC+ or AC	Standard Typical	— 0.062	— 1.30	— 0.58	— 0.009	— 0.039	— 0.028	— 0.015	— 0.001	— 0.117	AW	⩾400 450	480-650 550	⩾22 30	0℃ ⩾27 60	It is used for welding structures made by 550MPa mild steels or low alloy steels, e.g. boilers, pressure vessels and bridges. It is suitable for high speed welding thin steel plate.	—
CHF601/CHW-308	GB/T 17854 F308/H0Cr21Ni10	Sintered	DC+	Standard Typical	— 0.030	— 1.23	— 0.47	— 0.013	— 0.025	— 19.20	— 9.42	— —	— —	AW	—	⩾520 590	⩾30 42	—	For welding structures made by Cr18Ni8 stainless steels of facilities in petrochemicl industry.	—
CHF601/CHW-316	—	Sintered	DC+	Standard Typical	— 0.025	— 1.86	— 0.67	— 0.013	— 0.025	— 17.80	— 11.30	— 2.10	— 0.020	AW	—	⩾520 600	⩾25 30	—	For welding Cr18Ni12Mo2 stainless steel. The weld metal has very good heat crack resistance character.	—
CHF601A/CHW-2209	DGS K 901.71-2007	Sintered	DC+	Standard Typical	— 0.018	— 1.16	— 0.62	— 0.015	— 0.010	— 23.60	— 8.47	— 3.49	— 0.021	AW	⩾480 650	690-900 770	⩾25 28	-30℃ ⩾35 70	It is used for welding structures of chemical carriers and facilities of petrochemical, sea water desalinization, salt works, nuclear energy that fabricated by duplex stainless steels.	—
CHF603/CHW-S8	AWS A5.23M F48PZ/EB3-B3	Sintered	DC+	Standard Typical	— 0.070	— 0.72	— 0.10	— 0.004	— 0.011	— 2.030	— —	— 0.870	— 0.120	PWHT 690℃×4h	⩾314 518	520-650 600	⩾19 22	25℃ ⩾61 160	Widely be used in welding important thick hull pressure vessels of nuclear reactors as well as important steam pipes of thermal power stations.	—
CHF611/CHW-S4	AWS A5.17 F7AZ/EM13K ISO 14171-A-S 38 0 Z S2Si2 ISO 14171-B-S 49A 0 Z SU25	Sintered	DC+ or AC	Standard Typical	— 0.061	— 1.76	— 0.95	— 0.016	— 0.018	— —	— —	— —	— 0.190	AW	⩾400 560	480-650 620	⩾22 30	0℃ ⩾27 55	Suitable for high speed welding with both single wire or twin wires. Application for structures fabricated by mild steel or low grade low alloy steels.	—
CHF71H/CHW-S3	AWS A5.17 F7A0-EH14 BS EN 756-S 38 2 MS S3 ISO 14171-A-S 38 2 MS S3 ISO 14171-B-S 49A 2 MS SU33	Sintered	DC+ or AC	Standard Typical	— 0.067	— 1.58	— 0.51	— 0.012	— 0.015	— —	— —	— —	— 0.10	AW	⩾400 420	480-650 535	⩾22 27	-20℃ ⩾27 65	It is used to multipass & multilayer with horizontal butting welding structures made by 600MPa-650MPa tensile strength low alloy steels, such as high pressure vessels, heavy machinery, bridges, petrochemical industry equipment, engineering machines, cranes, heavy trucks and so on.	—

● ABBREVIATIONS

ABBREVIATION OF STANDARDS 采用标准代号

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

ABBREVIATION OF WELDING 焊接名词符号

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

NOTATION OF WELDING POSITIONS 焊接位置标示

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

POSTWELD CONDITION 焊接试样(状态)条件

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

● DIMENSIONS OF STANDARD PACKING FOR WELDING RODS

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

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



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

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

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



● DIMENSIONS OF PACKING FOR MAG/MIG WIRES

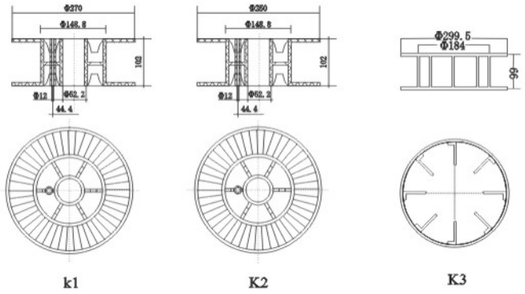
For Spool Packing of MAG/MIG Wires (mm)

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

Remark: Wires are precision layer wound on spool



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



k1 K2 K3

Specification of Spools for MAG/MIG Wires (mm)

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

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

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

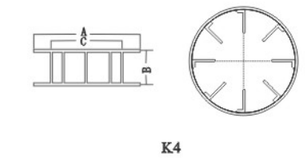


MAG / MIG wires in drum (pail)
250kg / drum, then 1,000kg (4 drums) / pallet
350kg / drum, then 700kg (2 drums) / pallet

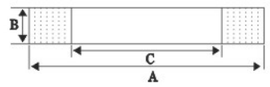
● DIMENSIONS OF PACKING FOR SAW WIRES

Packing for SAW Wires (mm)

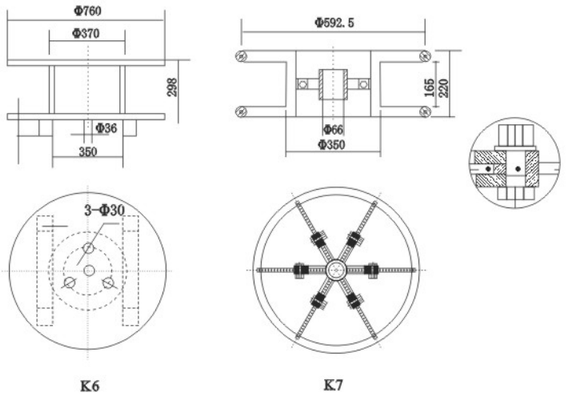
Weight of Wire		25kgs/ Spool (K4)	25kgs/Coill (K5)	250kgs/Coill (K5)	350kgs/Coill (K5)
Dimensions	A	420	400	840	890
	B	90	90	180	180
	C	310	310	640	640
Dimensions of Carton		435×435×100	410×410×100		
Dimensions of Pallet (Crate)		950×950×1100	880×880×850	850×850×500	880×880×500



K4



K5



K6 K7



Specification of Reels for SAW Wires (mm)

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