



PRODUCT CATALOGUE

شركة مصنع الزلفي لأسلاك اللحام المحدودة
Zulfi Welding Electrodes Factory Co. Ltd.

شركة مصنع الزلفي لاسلاك اللحام المحدودة
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• About us	4
Welding filler materials	
• Shielded Metal Arc Welding (SMAW)	9
• Gas Metal Arc Welding (GMAW)	149
• Gas Tungsten Arc Welding (GTAW)	153

[ZULFI], the leading manufacturers of a wide range of welding consumables in the Middle East. We have at our disposal the state-of-the-art plant, machinery, and technology with the best people for manufacturing code compliant welding consumables. Our product offering includes SMAW electrodes, GTAW filler rods, GMAW wires, FCAW wires, SAW wires and Fluxes (For Steels, SS, DSS, SDSS, Cast Iron, Hard Facing, Aluminum, Nickel & Nickel Alloy, Special Alloys, Cutting & Gouging etc.,). We also manufacture maintenance welding alloys to meet all industrial needs.

ZULFI an ISO 9001:2015 & ISO 14001:2015 company managed by professionals with extensive experience in the field of welding.

ZULFI has marketing and distribution network across Saudi Arabia, and has customer base in all the GCC countries, the continuous quest for world-class quality has enabled ZULFI to attain and sustain leadership in GCC.

ZULFI was established in the year 1996 at Al-Zulfi, Saudi Arabia. Current manufacturing capacity of 32,000MT/PA of welding consumables in SMAW, GTAW, GMAW, FCAW and SAW. ZULFI manufactures welding consumables in two brands namely "UNIQUE" & "ZULFI".

ZULFI made history in the year 2007 by achieving the world's first rare distinction of 5Y40H5 grade approval for its product, ZULFI E7018 and ZULFI E7018-1 SMAW electrodes by ABS and BV accreditation bureaus.

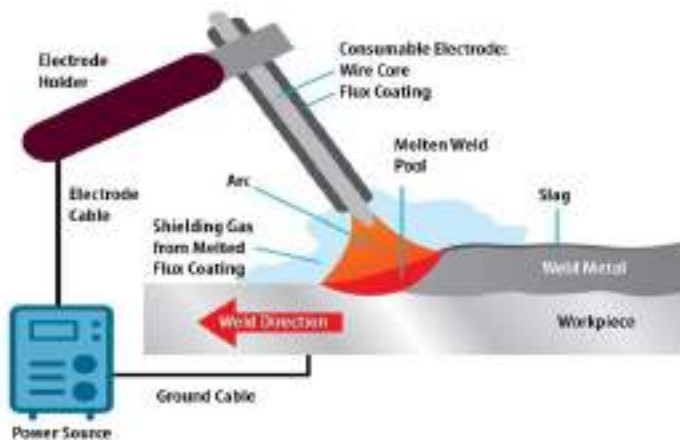
ZULFI has an in-house Research & Development Facility and functions in close liaison with international bodies focused on welding technologies. This has enabled ZULFI to quicken the turnaround time for development of new alloys. ZULFI is in a position to develop custom alloys and products in short notice meeting the stringent needs of the applicable codes and standards.

A team of highly skilled workforce, supported by industry standard quality control procedures cutting edge testing facilities ensures quality of products that meet international standards.

ZULFI has an international presence spread around 14 countries. ZULFI has obtained approved vendor status across its territories of operation from reputed customers which includes:

- Saudi Aramco
- Sabic
- Saline Water Conversion Corporation
- Saudi Electricity Company
- Qatar Petroleum (QP)
- Kuwait Oil Company (KOC)
- Petrojet (Egypt)
- Dubai Dry Docks (UAE)
- Arab Shipbuilding & Repair Yard (Bahrain)
- Petroleum Development Oman (PDO)
- Bahrain Petroleum Company (Bapco)

And many more project approvals from EPC Contractors, Equipment Fabricators of Pressure Vessel, Tanks, Heat Exchangers. Columns, Evaporators, Structural fabricators, Pipelines etc.



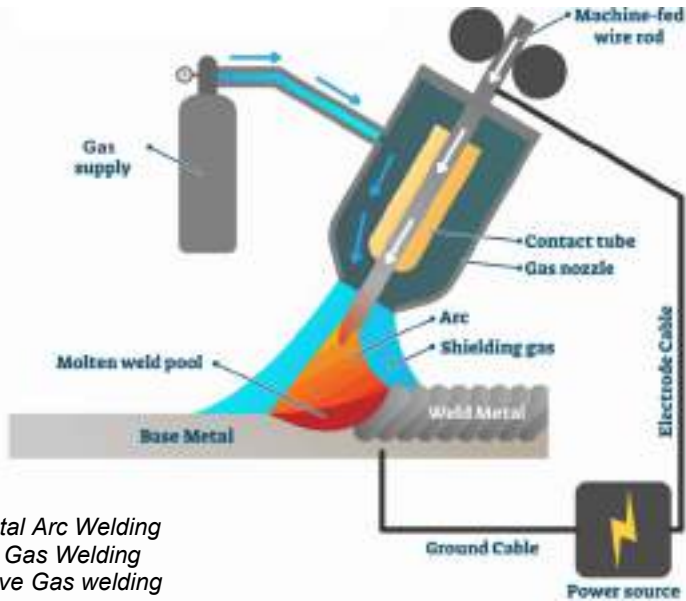
SMAW = Shielded Metal Arc Welding

Shielded metal-arc welding is one of the oldest and most versatile welding methods and considered to be both simple and reliable.

In this technique, an electric arc is struck between a covered electrode and the workpiece; the electrode acts both as the carrier of electric current and as the welding consumable that will be melted. The electrode is melted in the high temperature of the arc and transfers molten metal to the weld pool in the form of drops.

As this happens, gases that stabilise the arc and shield the weld pool from oxidation, and slag that floats on the weld pool as protective layer, are formed. This fulfils several functions; it protects both against the influence of the surrounding atmosphere (primarily oxidation), binds contamination, and reduces stresses by slowing the rate at which the weld pool cools down.

A wide range and different type electrodes for shielded metal-arc welding are available. Their alloying elements allow the strength and toughness of the weld seam to be accurately controlled. It is mainly used in steel construction and pipeline construction, as well as for work in the open air and on assembly jobs, since the necessary equipment is compact and can easily be transported.



GMAW = Gas Metal Arc Welding
MIG = Metal Inert Gas Welding
MAG = Metal Active Gas welding

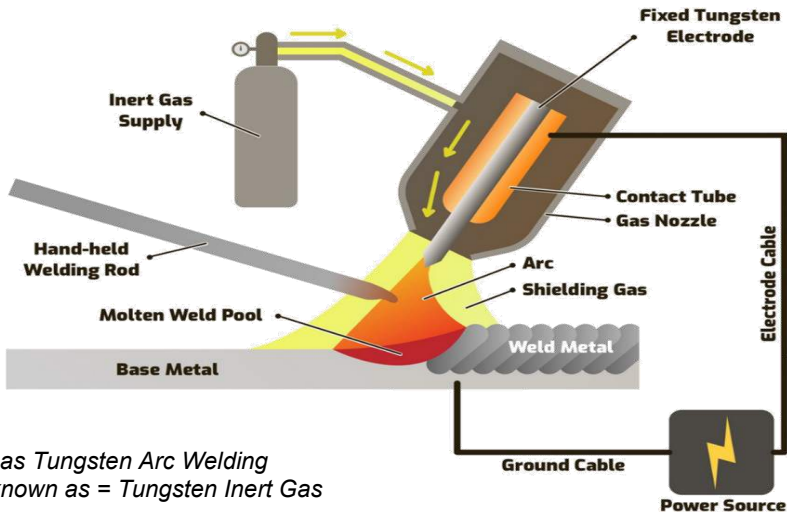
GMAW is an economic welding procedure which is well-suited to perform welding sequences.

The weld metal demonstrates good properties, and the method features high productivity, whether applied manually or automatically.

The arc burns between the welding wire and the workpiece in gas shielded atmosphere. The solid wire is automatically fed through the centre of the welding torch. The shielding gas is also passed through the welding torch and encloses the weld pool during the welding process. The weld puddle is therefore shielded from the surroundings. The gases used in MAG welding are active. Carbon dioxide, or a gas mixture, is used. In practice, MAG welding under a mixture of gases has prevailed, as it has a lower tendency to spatter and a higher deposition rate than welding using 100% carbon dioxide.

In MIG welding, inert gases such as argon, helium, and their mixtures are used. These shielding gases do not react with either the base materials or the welding consumables.

The MAG method can be used with a wide range of materials, welding position and degrees of mechanisation. It permits welding with a manually held torch as well as fully automated and robotic methods. The deposition rate is very high, and productivity is high too.



GTAW = Gas Tungsten Arc Welding
Popularly known as = Tungsten Inert Gas

In GTAW welding an electric arc is struck between a tungsten electrode, which does not melt away, and the workpiece (contact or high-frequency ignition).

When a welding consumable is needed, it is supplied as a cut wire, and is melted in the arc in front of the molten pool. The electrode, the arc and the molten pool are protected from the effects of the atmosphere by an inert shielding gas - argon is usually used, or the relatively expensive helium or a mixture of gases.

The welding equipment consists of a source of electrical current (DC or AC) and a welding torch connected through a hose assembly. This assembly contains the cable for the welding current, the supply of shielding gas, the control line and, in larger equipment, a feed and return line for cooling water.

The decoupling of the supply of electricity from the welding consumables, which is typical for GTAW welding, allows highly individual adjustment of the parameters, so leading to very clean, high-quality welded joints for root passes and position welding. There is hardly any spatter and only a little welding fume, in addition to which lack of fusion, undercuts and pores are easily avoided.

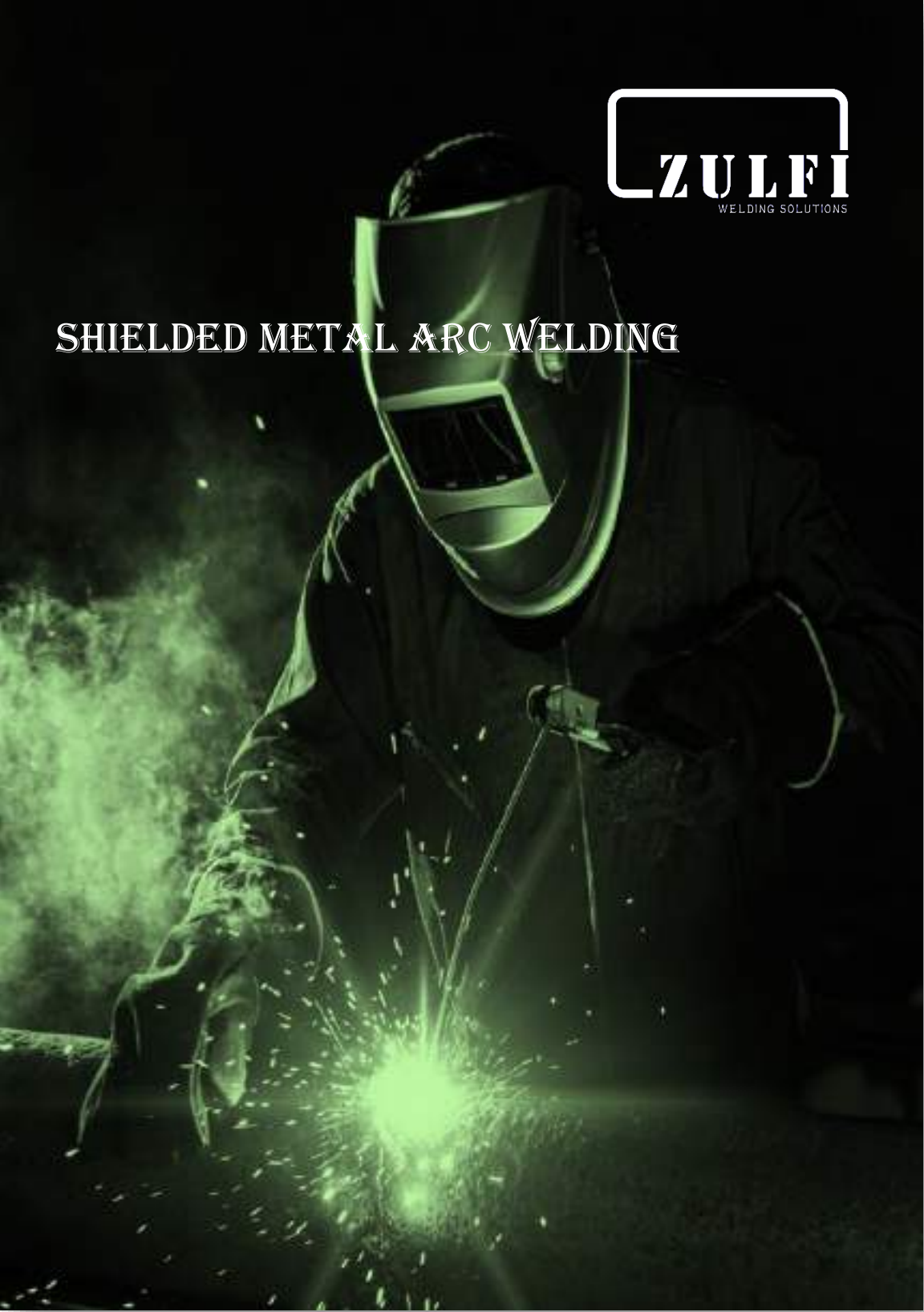
GTAW welding is preferred wherever weld seams of particularly high quality are needed, such as in the construction of pipelines and apparatus, power station building, aerospace engineering, and in the chemical and food industries. The GTAW process can be applied manually or mechanically (whether semi or fully automatic), and can be used to weld any metal that is suitable for welding.

شركة مصنع الزلفي لاسلاك اللحام المحدودة
Zulfi Welding Electrodes Factory Co. Ltd.





SHIELDED METAL ARC WELDING



شركة مصنع الزلفي لاسلاك اللحام المحدودة
Zulfi Welding Electrodes Factory Co. Ltd.



	EN/ISO	SFA/AWS	Page
For Mild Steels			
ZULFI E6010	E 38 3 C 21	E6010	17
ZULFI E6011	-	E6011	18
ZULFI E6013	E 38 0 RC 11	E6013	19
ZULFI E6019	-	E6019	20
ZULFI E7014	-	E7014	21
ZULFI E7015	E 42 4 B 12 H5	E7015	22
ZULFI E7016	E 42 4 B 12 H5	E7016	23
ZULFI E7016-1	E 42 4 B 12 H5	E7016-1	24
ZULFI E7018	E 42 6 B 42 H5	E7018	25
ZULFI E7018-1	E 42 6 B 42 H5	E7018-1	26
ZULFI E7024	E 42 0 RR 73	E7024	27
ZULFI E7048	E 42 2 B 15 H10	E7048	28

For Cellulosic Low Alloyed Steels

ZULFI E7010-G	E 42 3 C 21	E7010-G	29
ZULFI E7010-A1	E 42 3 Mo C 25	E7010-A1	30
ZULFI E7010-P1	E 42 3 C 25	E7010-P1	31
ZULFI E8010-G	-	E8010-G	32
ZULFI E8010-P1	E 46 2 Z C 25	E8010-P1	33
ZULFI E9010-G	-	E9010-G	34
ZULFI E9010-P1	-	E9010-P1	35

For Low-Temperature Service Steels

ZULFI E7018-C1L	-	E7018-C1L	36
ZULFI E7018-C2L	-	E7018-C2L	37
ZULFI E8015-C1	-	E8015-C1	38
ZULFI E8015-C2	-	E8015-C2	39
ZULFI E8016-C1	-	E8016-C1	40
ZULFI E8016-C2	-	E8016-C2	41
ZULFI E8018-C1	-	E8018-C1	42
ZULFI E8018-C2	-	E8018-C2	43
ZULFI E8018-C3	-	E8018-C3	44

For Weather Proof Steels

ZULFI E8018-W2	-	E8018-W2	45
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	EN/ISO	SFA/AWS	Page
For Heat-Resistance Steels			
ZULFI E7018-A1	-	E7018-A1	46
ZULFI E8015-B2L	-	E8015-B2L	47
ZULFI E8015-B6	-	E8015-B6	48
ZULFI E8015-B8	-	E8015-B8	49
ZULFI E8016-B2	-	E8016-B2	50
ZULFI E8016-B6	-	E8016-B6	51
ZULFI E8016-B8	-	E8016-B8	52
ZULFI E8018-B2	-	E8018-B2	53
ZULFI E8018-B6	-	E8018-B6	54
ZULFI E8018-B8	-	E8018-B8	55
ZULFI E9015-B3	-	E9015-B3	56
ZULFI E9015-B9	-	E9015-B9	57
ZULFI E9016-B3	-	E9016-B3	58
ZULFI E9018-B3	-	E9018-B3	59
ZULFI E9018-B3L	-	E9018-B3L	60
ZULFI E9018-B9	-	E9018-B9	61
For High Tensile Strength Steel			
ZULFI E7015-G	-	E7015-G	62
ZULFI E7018-G	-	E7018-G	63
ZULFI E8016-G	-	E8016-G	64
ZULFI E8018-G	-	E8018-G	65
ZULFI E9015-G	-	E9015-G	66
ZULFI E9016-G	-	E9016-G	67
ZULFI E9018-G	-	E9018-G	68
ZULFI E10018-G	-	E10018-G	69
ZULFI E11018-G	-	E11018-G	70
ZULFI E12018-G	-	E12018-G	71
ZULFI E9018-D1	-	E9018-D1	72
ZULFI E10018-D2	-	E10018-D2	73
ZULFI E9018-M	-	E9018-M	74
ZULFI E10018-M	-	E10018-M	75
ZULFI E11018-M	-	E11018-M	76
ZULFI E12018-M	-	E12018-M	77

	EN/ISO	SFA/AWS	Page
Stainless Steels			
ZULFI E307-15	-	E307-15	78
ZULFI E307-16	-	E307-16	79
ZULFI E307-17	-	E307-17	80
ZULFI E308-15	-	E308-15	81
ZULFI E308-16	-	E308-16	82
ZULFI E308H-15	-	E308H-15	83
ZULFI E308H-16	-	E308H-16	84
ZULFI E308H-17	-	E308H-17	85
ZULFI E308L-15	-	E308L-15	86
ZULFI E308L-16	-	E308L-16	87
ZULFI E308L-17	-	E308L-17	88
ZULFI E308Mo-15	-	E308Mo-15	89
ZULFI E308MoL-15	-	E308LMo-15	90
ZULFI E308Mo-16	-	E308Mo-15	91
ZULFI E308MoL-16	-	E308LMo-16	92
ZULFI E309-15	-	E309-15	93
ZULFI E309L-15	-	E309L-15	94
ZULFI E309MoL-15	-	E309LMo-15	95
ZULFI E309Cb-15	-	E309Cb-15	96
ZULFI E309-16	-	E309-16	97
ZULFI E309L-16	-	E309L-16	98
ZULFI E309H-16	-	E309H-16	99
ZULFI E309MoL-16	-	E309LMo-16	100
ZULFI E309Cb-16	-	E309Cb-16	101
ZULFI E309L-17	-	E309L-17	102
ZULFI E309MoL-17	-	E309LMo-17	103
ZULFI E310-15	-	E310-15	104
ZULFI E310-16	-	E310-16	105
ZULFI E310-17	-	E310-17	106
ZULFI E310Mo-16	-	E310Mo-16	107
ZULFI E312-16	-	E312-16	108
ZULFI E312-17	-	E312-17	109
ZULFI E316-15	-	E316-15	110
ZULFI E316-16	-	E316-16	111
ZULFI E316H-16	-	E316H-16	112
ZULFI E316L-15	-	E316L-15	113

	EN/DIN	SFA/AWS	Page
Stainless Steels			
ZULFI E316L-16	-	E316L-16	114
ZULFI E316L-17	-	E316L-17	115
ZULFI E347-15	-	E347-15	116
ZULFI E347-16	-	E347-16	117
ZULFI E347-17	-	E347-17	118
ZULFI E410-15	-	E410-15	119
ZULFI E410-16	-	E410-16	120
ZULFI E410NiMo-16	-	E410NiMo-16	121
ZULFI E2209-15	-	E2209-15	122
ZULFI E2209-16	-	E2209-16	123
ZULFI E2594-15	-	E2594-15	124
ZULFI E2594-16	-	E2594-16	125

Cast iron & Nickel-based alloys

ZULFI ENi-CI	DIN 8573 E Ni BG-22	ENi-CI	126
ZULFI ENiFe-CI	DIN 8573 E Ni Fe-1 BG-22	ENiFe-CI	127
ZULFI ENi-1	-	ENi-1	128
ZULFI ENiCrFe-2	-	ENiCrFe-2	129
ZULFI ENiCrFe-3	-	ENiCrFe-3	130
ZULFI ENiCrMo-3	-	ENiCrMo-3	131
ZULFI ENiCu-7	-	ENiCu-7	132
ZULFI ENiCu-B	DIN 8573 E Ni Cu BG-22	ENiCu-B	133

Aluminum alloys

ZULFI AI 99.5	EL-AI 99.5	E1100	134
ZULFI AI 5 Si	EL-AI Si 5	E4043	135
ZULFI AI 12 Si	EL-AI Si 12	-	136

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شركة مصنع الزلفي لاسلاك اللحام المحدودة
Zulfi Welding Electrodes Factory Co. Ltd.



Description & Applications

ZULFI E6010 is a cellulosic coated electrode with good freezing and better arc control characteristics. Electrode for welding pipelines (girth seams) using vertical down technique. It is also suitable for welding root passes. It is also suitable for root passes on high strength pipe steels.

It is used extensively in the welding of bridges, high pressure pipes, holding tanks, boilers, freight cars and truck chassis.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.1	E6010 [*]
EN ISO 2560-A	E 38 3 C 21

All weld metal typical composition, %

C	Si	Mn
0.12	0.10	0.40

All weld metal typical mechanical properties,

Yield strength, MPa	≥410
Tensile strength, MPa	410-560
Elongation, %	≥22

Charpy V

Test temperature, °C	-30
Impact values, J	50

Approvals

ABS, BV, DNV
Grade 2

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal pack & metal can pack.

Description & Applications

ZULFI E6011 is a cellulosic coated electrode with good freezing and better arc control characteristics. Electrode for welding pipelines (girth seams) using vertical down technique. It is also suitable for welding root passes. It is also suitable for root passes on high strength pipe steels. Can be used in both AC and DC polarity.

It is used extensively in the welding of bridges, high pressure pipes, holding tanks, boilers, freight cars and truck chassis. Sheet metal, In-plant pipe welding, Steel with moderate surface contaminants, Welding on galvanized and specially coated steels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.1 E6011

All weld metal typical composition, %

C	Si	Mn
0.10	0.30	0.60

All weld metal typical mechanical properties,

Yield strength, MPa	≥410
Tensile strength, MPa	450-560
Elongation, %	≥23

Charpy V

Test temperature, °C	+20	-30
Impact values, J	90	27

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	40-80	5	4
3.2	350	60-120	5	4
4.0	350	90-150	5	4
5.0	350	120-200	5	4

- Available in normal pack & metal can pack.

Description & Applications

Medium thick rutile-cellulosic coated MMA electrode for structural work, workshop, and maintenance applications. Excellent all positional operating characteristics, especially when vertically down welding and the arc characteristics ensures reliable penetration. Good gap bridging and easy striking and re-striking. Used on primer painted and slightly rusted parts, as there is a tolerance to impurities in the welding zone. The strong and stable arc makes ZULFI E6013 suitable for welding galvanized steel components.

General structural application where mild steel is used. Storage tanks, railway wagons, pipelines, sheet metal works, steel structures, truck frames and bodies, bridges etc. Suitable for joining steels like A, B, C, D grades of ASTM SA-283 (P.No.1).

Welding current

AC, DC±

Welding Positions



Classifications

SFA/AWS A5.1	E6013
EN ISO 2560-A	E 38 0 RC 11

All weld metal typical composition, %

C	Si	Mn
0.08	0.30	0.40

All weld metal typical mechanical properties,

Yield strength, MPa	≥390
Tensile strength, MPa	470-600
Elongation, %	≥22

Charpy V

Test temperature, °C	0	+20
Impact values, J	50	80

Approvals

ABS, BV, DNV
Grade 2

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	300,350	70-90	2/5	8/4
3.2	350	90-130	4/5	4
4.0	350	130-180	4/5	4
5.0	350	180-230	4/5	4

- Available in normal pack & metal can pack.

Description & Applications

Rutile-iron oxide coated MMA electrode for producing tough weld matrix compare with E6013. Smooth slightly concave welds blending into base metal without undercut, self-releasing slag, smooth and stable arc, less spatter. It can be used for fillet as well as butt welding even up to 1 inch plate without any problem. Weld metal having very good mechanical properties.

General structural application where mild steel is used. Storage tanks, railway wagons, pipelines, sheet metal works, steel structures, truck frames and bodies, bridges etc. Suitable for joining steels like A, B, C, D grades of ASTM SA-283 (P.No.1).

Welding current

AC, DC±

Welding Positions



Classifications

SFA/AWS A5.1 E6019

All weld metal typical composition, %

C	Si	Mn
0.08	0.30	0.70

All weld metal typical mechanical properties,

Yield strength, MPa	≥350
Tensile strength, MPa	≥450
Elongation, %	≥22

Charpy V

Test temperature, °C	-20
Impact values, J	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	300,350	70-90	2/5	8/4
3.2	350	90-130	4/5	4
4.0	350	130-180	4/5	4
5.0	350	180-230	4/5	4

- Available in normal pack & metal can pack.

Description & Applications

High efficiency electrode having a weld metal recovery approx. 120% preferably used for fillet welds. Smooth weldsblending into base metal without undercut. Slag self-releasing.

ZULFI E 7014 is an excellent choice for earthmoving equipment, railroad cars, mining machinery, structural, plate fabrication, shipbuilding, and mobile trailers.

Re-baking: 100°C /1hour, If necessary.

Welding current

AC, DC±

Welding Positions



Classifications

SFA/AWS A5.1 E7014

All weld metal typical composition, %

C	Si	Mn
0.08	0.40	0.90

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	500-640
Elongation, %	≥22

Charpy V

Test temperature, °C	+20
Impact values, J	80

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack & metal can pack.

Description & Applications

Multipurpose electrode suitable for assembly work, workshop, and repair welding. Smooth and Clean Welds, blending into the base metal without undercut. Excellent gap bridging properties. Welds are of X-ray quality. The root penetration is good, leaving a flat weld bead with easily removable slag.

Re-baking: 350 °C ± 20 °C for 2 hours.

Suitable for welding of transmission pipelines made from pipe steels up to API 5LX56. It is also suitable for welding the root in higher strength pipes, API 5LX60, 5LX65, 5LX70.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.1	E7015
EN ISO 2560-A	E 38 2 B 12 H5

All weld metal typical composition, %

C	Si	Mn
0.06	0.50	1.00

All weld metal typical mechanical properties,

Yield strength, MPa	≥380
Tensile strength, MPa	490-600
Elongation, %	≥22

Charpy V

Test temperature, °C	-30	+20
Impact values, J	90	150

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-130	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Multipurpose electrode suitable for assembly work, workshop, and repair welding. Smooth and Clean Welds, blending into the base metal without undercut. Excellent gap bridging properties. Welds are of X-ray quality. The root penetration is good, leaving a flat weld bead with easily removable slag.

Re-baking: 350 °C ± 20 °C for 2 hours

Suitable for welding of transmission pipelines made from pipe steels up to API 5LX56. It is also suitable for welding the root in higher strength pipes, API 5LX60, 5LX65, 5LX70.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.1	E7016
EN ISO 2560-A	E 42 4 B 12 H5

All weld metal typical composition, %

C	Si	Mn
0.06	0.50	0.90

All weld metal typical mechanical properties,

Yield strength, MPa	≥400
Tensile strength, MPa	490-600
Elongation, %	≥22

Charpy V

Test temperature, °C	-30
Impact values, J	80

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Multipurpose electrode suitable for assembly work, workshop, and repair welding. Smooth and Clean Welds, blending into the base metal without undercut. Excellent gap bridging properties. Welds are of X-ray quality. The root penetration is good, leaving a flat weld bead with easily removable slag.

Re-baking: 350 °C ± 20 °C for 2 hours

Suitable for welding of transmission pipelines made from pipe steels up to API 5LX56. It is also suitable for welding the root in higher strength pipes, API 5LX60, 5LX65, 5LX70.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.1	E7016-1
EN ISO 2560-A	E 42 4 B 12 H5

All weld metal typical composition, %

C	Si	Mn
0.06	0.30	1.30

All weld metal typical mechanical properties,

Yield strength, MPa	≥400
Tensile strength, MPa	490-600
Elongation, %	≥22

Charpy V

Test temperature, °C	-46
Impact values, J	50

Approvals

ABS	Grade 4Y400H5
BV, DNV, LRS	Grade 4Y40H5

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free welded joints with good toughness properties even on steels having a carbon content up to 0.4%. Weld metal recovery is approximately 120%. Good operating characteristics even in positional welding. Weld metal exhibits good toughness properties down to -60 °C. Electrodes is suitable for depositing buffer layers on steels having a higher carbon content.

Welding of storage tanks, pipes, pressure vessels, boilers, bridges, and heavy structures subject to dynamic loading and mechanical restraint. Suitable for joining steels like ASTM S-414M Gr C & D A414/SA. Gr 55 and Gr60 steels of S-516/516M.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.1	E7018-H4
EN ISO 2560-A	E 42 6 B 42 H5

All weld metal typical composition, %

C	Si	Mn
0.08	0.50	1.10

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	500-600
Elongation, %	≥26

Charpy V

Test temperature, °C	-30	-60
Impact values, J	120	50

Approvals

ABS	Grade 5Y400H5
BV	Grade 5Y40H5
DNV	Grade 4Y40H5

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	2.5	8
3.2	350,450	80-120	5	4
4.0	350,450	110-150	5	4
5.0	350,450	140-200	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free and tough welding steel having a carbon content up to 0.6 %. The Weld metal has very low hydrogen content and is resistance to ageing. Good gap bridging properties. Welds are of X-ray quality. Has good toughness properties up to -60 °C. It gives excellent arc stability, arc smoothness and easy slag removal properties in all position. CTOD tested at -10°C.

Welding of storage tanks, offshore platform construction, pipes, pressure vessels, boilers, bridges and heavy structures subject to dynamic loading and mechanical restraint. Suitable for joining steels like ASTM S-414M Gr C & D A414/SA. Gr 55 and Gr60 steels of S-516/516M.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.1	E7018-1
EN ISO 2560-A	E 42 6 B 42 H5

All weld metal typical composition, %

C	Si	Mn
0.06	0.30	1.40

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	500-640
Elongation, %	≥22

Charpy V

Test temperature, °C	-60
Impact values, J	50

Approvals

ABS	Grade 5Y400H5
BV	Grade 5Y40H5
DNV	Grade 4Y40H5

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.6	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	150-190	5	4
5.0	350,450	150-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

High efficiency electrode having a weld metal recovery approx. 170% preferably used for fillet welds. Smooth welds blending into base metal without undercut. Slag self-releasing.

ZULFI E 7024 is an excellent choice for earthmoving equipment, railroad cars, mining machinery, structural, plate fabrication, shipbuilding, and mobile trailers.

Re-baking: 350 °C ± 20 °C for 2 hours

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.1	E7024
EN ISO 2560-A	E 38 0 RR 73

All weld metal typical composition, %

C	Si	Mn
0.08	0.40	0.90

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	500-640
Elongation, %	≥22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack & metal can pack.

Description & Applications

Electrode particularly designed for vertical down welding in shipbuilding and steel constructions. Preferably for fillet welds. Suitable for welding primer painted components.

Welding of storage tanks, pipes, pressure vessels, boilers, bridges, heavy structures subject to dynamic loading and mechanical restraint. Suitable for joining steels like ASTM S-414M Gr C & D A414/SA. Gr 55 and Gr60 steels of S-516/516M.

Re-baking: 350 °C ± 20 °C for 2 hours

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.1	E7048
EN ISO 2560-A	E 42 2 B 15 H10

All weld metal typical composition, %

C	Si	Mn
0.06	0.60	1.10

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	500-640
Elongation, %	≥22

Charpy V

Test temperature, °C	-20	+20
Impact values, J	50	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding pipelines (girth seams) using vertical down technique. It is suitable for welding root passes, hot passes, filler, and cover passes. It is also suitable for root passes on high strength pipe steels.

Root pass welding of up to X80 grade pipe, Hot, fill and cap pass of up to X70 grade pipe.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5	E7010-G
EN ISO 2560-A	E 42 3 C 21

All weld metal typical composition, %

C	Si	Mn	Mo
0.10	0.20	0.40	0.20

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	520-580
Elongation, %	≥26

Charpy V

Test temperature, °C	-30	+20
Impact values, J	60	100

Approvals

BV, DNV Grade 2

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal & metal can pack.

Description & Applications

ZULFI E7010-A1 is a high cellulose coated electrode that produces weld deposits containing 0.5% Mo, allowing its use on high tensile, low alloy steels. It can be used in any position, but it is best suited for vertical up or vertical down applications.

The addition of Mo allows for its use on high tensile, low alloy steels.

It can be used on chrome-moly piping or casting where high tensile strength and creep resistance at high temperatures and high pressures are desired. Used in build-up and repair, gear teeth, boilers, oil well casting, and forging dies.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5	E7010-A1
EN ISO 2560-A	E 42 3 Mo C 25

All weld metal typical composition, %

C	Si	Mn	Mo
0.10	0.20	0.40	0.45

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	520-580
Elongation, %	≥26

Charpy

Test temperature, °C	0	+20
Impact values, J	50	90

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal & metal can pack.

Description & Applications

Electrode for welding pipelines (girth seams) using vertical down technique. It is suitable for welding root passes, hot passes, filler, and cover passes. It is also suitable for root passes on high strength pipe steels.

Root pass welding of up to X80 grade pipe, Hot, fill and cap pass of up to X70 grade pipe.

Welding current

DC+

Welding Positions**Classifications**

SFA/AWS A5.5	E7010-P1
EN ISO 2560-A	E 42 3 C 25

All weld metal typical composition, %

C	Si	Mn	Mo
0.10	0.20	0.40	0.20

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	520-580
Elongation, %	≥26

Charpy V

Test temperature, °C	-30	+20
Impact values, J	50	90

Approvals

BV, DNV Grade 3

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal & metal can pack.

Description & Applications

Electrode for welding pipelines (girth seams) using vertical down technique. It is suitable for welding root passes, hot passes, filler, and cover passes. It is also suitable for root passes on high strength pipe steels.

Re-baking: 350 °C ± 20 °C for 2 hours.

Root pass welding of up to X80 grade pipe, Hot, fill and cap pass of up to X70 grade pipe.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5	E8010-G
EN ISO 2560-A	E46 3 C 25

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.10	0.20	0.60	0.70	0.05

All weld metal typical mechanical properties,

Yield strength, MPa	≥490
Tensile strength, MPa	560-650
Elongation, %	≥26

Charpy V

Test temperature, °C	-30	+20
Impact values, J	50	90

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal & metal can pack.

Description & Applications

Electrode for welding pipelines (girth seams) using vertical down technique. It is suitable for welding root passes, hotpasses, filler, and cover passes. It is also suitable for root passes on high strength pipe steels.

Root pass welding of up to X80 grade pipe, Hot, fill and cap pass of up to X70 grade pipe.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5	E8010-P1
EN ISO 2560-A	E 46 2 C 25

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.10	0.20	0.40	0.70	0.20

All weld metal typical mechanical properties,

Yield strength, MPa	≥490
Tensile strength, MPa	560-650
Elongation, %	≥26

Charpy V

Test temperature, °C	+20	-20
Impact values, J	90	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal & metal can pack.

Description & Applications

Electrode for welding pipelines (girth seams) using vertical down technique. It is suitable for welding root passes, hot passes, filler, and cover passes.

Root and hot pass welding of up to X80 grade pipe can be welded with ZULFI E9010-G.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9010-G

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.15	0.15	0.90	0.80	0.05

All weld metal typical mechanical properties,

Yield strength, MPa	≥530
Tensile strength, MPa	620-720
Elongation, %	≥18

Charpy V

Test temperature, °C	-30
Impact values, J	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal & metal can pack.

Description & Applications

Electrode for welding pipelines (girth seams) using vertical down technique. It is suitable for welding root passes, hot passes, filler, and cover passes.

Root and hot pass welding of up to X80 grade pipe can be welded with ZULFI E9010-P1.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9010-P1

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.10	0.20	0.80	0.70	0.20

All weld metal typical mechanical properties,

Yield strength, MPa	≥530
Tensile strength, MPa	620-720
Elongation, %	≥18

Charpy V

Test temperature, °C	+20 -30
Impact values, J	100 50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	5	4
3.2	350	80-120	5	4
4.0	350	110-150	5	4
5.0	350	140-200	5	4

- Available in normal & metal can pack.

Description & Applications

Basic coated electrode for producing crack free and tough welded joints. Gives weld of X ray quality. Weld metal gives good impact values up to -75 °C due to its high metallurgical purity and low hydrogen content. Can be used in all position welding. This is especially used where weld metal carbon percentage needs low.

Re-baking: 350 °C ± 20 °C for 2 hours.

Cryogenic Steels: DIN 17 173/17 174: TT St35, TT St35 V, 10Ni 14. Used in construction of chemical storage tanks and for cryogenic application.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E7018-C1L

All weld metal typical composition, %

C	Si	Mn	Ni	Mo	Cr
0.04	0.30	1.10	2.25	0.01	0.015

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	500-640
Elongation, %	≥26

Charpy V

Test temperature, °C	+20	-75
Impact values, J	200	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for producing crack free and tough welded joints. Gives weld of X ray quality. Weld metal gives good impact values up to -101 °C due to its high metallurgical purity and low hydrogen content. Can be used in all position welding. This is especially used where weld metal carbon percentage needs low.

Re-baking: 350 °C ± 20 °C for 2 hours.

Cryogenic steels: DIN 17 173/17 174: TT St35, TT St35 V, 10Ni 14. Used in construction of chemical storage tanks and for cryogenic application.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E7018-C2L

All weld metal typical composition, %

C	Si	Mn	Ni	Mo	Cr
0.04	0.30	1.10	3.30	0.010	0.015

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	500-640
Elongation, %	≥26

Charpy V

Test temperature, °C	-60	-100
Impact values, J	100	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -60 °C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

ZULFI E8015-C1 is designed for use in the welding of nickel bearing steels for low temperature applications where toughness of the weld metal is important. Such applications include shipbuilding, storage, piping, and tanks used in the storage of gases.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8015-C1

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.40	1.10	2.30

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>24

Charpy V

Test temperature, °C	-60
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -100°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

Cryogenic Steels: DIN 17 173/17 174: TT St35, TT St35 V, 10Ni 14. Used in construction of chemical storage tanks and for cryogenic applications.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8015-C2

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.40	1.10	3.25

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>24

Charpy V

Test temperature, °C	-75
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -60°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

ZULFI E8016-C1 is designed for use in the welding of nickel bearing steels for low temperature applications where toughness of the weld metal is important. Such applications include shipbuilding, storage, piping, and tanks used in the storage of gases.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8016-C1

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.40	1.10	2.30

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>24

Charpy V

Test temperature, °C	-60
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -100°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

Cryogenic Steels: DIN 17 173/17 174: TT St35, TT St35 V, 10Ni 14. Used in construction of chemical storage tanks and for cryogenic applications.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8016-C2

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.40	1.10	3.25

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>24

Charpy V

Test temperature, °C	-75
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -60°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

ZULFI E8018-C1 is designed for use in the welding of nickel bearing steels for low temperature applications where toughness of the weld metal is important. Such applications include shipbuilding, storage, piping, and tanks used in the storage of gases.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-C1

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.40	1.10	2.30

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>24

Charpy V

Test temperature, °C	-60
Impact values, J	60

Approvals

ABS	Grade 5Y400H5
DNV, BV	Grade 4Y40H5

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -100°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

Cryogenic Steels: DIN 17 173/17 174: TT St35, TT St35 V, 10Ni 14. Used in construction of chemical storage tanks and for cryogenic applications.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-C2

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.40	1.10	3.25

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>24

Charpy V

Test temperature, °C	-75
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -60°C due to high metallurgical purity and low hydrogen content.

Re-baking: 350 °C ± 20 °C for 2 hours.

It is designed for use in the welding of nickel bearing steels for low temperature applications where toughness of the weld metal is important. Such applications include shipbuilding, storage, piping and tanks used in the storage of gases.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-C3

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.30	1.10	1.00

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>24

Charpy V

Test temperature, °C	-40
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding weathering steels. Weld metal with relatively high resistance to atmospheric corrosion. Very low level of diffusible hydrogen in welds. Welded metal gives radiographic quality. Easy slag removal, less spatter and very smooth and stable arc makes this electrode more user friendly.

Re-baking: 350 °C ± 20 °C for 2 hours.

ZULFI E8018-W2 is used for welding weathering steels type Cor-Ten A, Cor-Ten B or equivalent steels ASTM A 588, Grades A,B,C,K DIN 1.8960, 1.8961, 1.8963 Architectural structures, bridges, and exhaust gas fumes Chimneys, Welding micro alloyed steels and C-Mn steels

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-W2

All weld metal typical composition, %

C	Si	Mn	Ni	Cr	Cu
0.06	0.45	1.00	0.50	0.60	0.45

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	-20
Impact values, J	80

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant steels used in the construction of pressure vessels, boilers, and piping subject to operating temperatures up to +550 °C. Welds are X-ray quality. Preheating, interpass temperature and post weld heat treatment must be in accordance with the base metal to be welded.

It is typically used for the fabrication of carbon-molybdenum pipes, pressure vessels, boilers and tubing containing 0.5% Mo.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E7018-A1

All weld metal typical composition, %

C	Si	Mn	Mo
0.06	0.50	0.80	0.50

All weld metal typical mechanical properties,

Yield strength, MPa	≥470
Tensile strength, MPa	520-650
Elongation, %	≥22

Charpy V

Test temperature, °C	+20
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 500 °C. Welds are of X-ray quality. The mechanical properties stated here are after one hour of heat treatment at 700°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Root pass welding of up to X80 grade pipe, Hot, fill and cap pass of up to X70 grade pipe.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8015-B2L

All weld metal typical composition, %

C	Si	Mn	Cr	Mo
0.04	0.30	0.70	1.25	0.55

All weld metal typical mechanical properties,

Yield strength, MPa	≥490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 500 C. welds are X ray quality. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. The mechanical properties stated here are after one hour of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 5.0% Cr-0.5%Mo steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8015-B6

All weld metal typical composition, %

C	Si	Mn	Ni	Mo	Cr
0.06	0.30	0.65	0.05	0.50	5.0

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	80

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 500 °C. Welds are X ray quality. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. Preheating and interpass temperature controls between 200-250°C. The mechanical properties stated here are after one hour of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 9.0% Cr-1.0%Mo steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8015-B8

All weld metal typical composition, %

C	Si	Mn	Ni	Mo	Cr
0.065	0.30	0.60	0.05	1.00	8.50

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>20

Charpy V

Test temperature, °C	+20
Impact values, J	60

Approvals

BV, DNV Grade E8015-B8

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to +600 °C. Welds are of X-ray quality.

Re-baking: 350 °C ± 20 °C for 2 hours.

ZULFI E8016-B2 is used for fabrication and maintenance of boilers and associated piping. Such steels as 1 1/4 Cr-1/2 Mo, and 1/2 Cr-1/2 Mo, are properly welded with ZULFI E8016-B2.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8016-B2

All weld metal typical composition, %

C	Si	Mn	Mo	Cr
0.08	0.30	0.70	0.55	1.25

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	400,450	90-140	5	4
4.0	400,450	140-190	5	4
5.0	400,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 500 C. welds are X ray quality. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. The mechanical properties stated here are after one hour of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 5.0% Cr-0.5%Mo steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8016-B6

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.06	0.30	0.65	0.50	5.00	0.05

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	80

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 500 °C. Welds are X ray quality. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. Preheating and interpass temperature controls between 200-250°C. The mechanical properties stated here are after one hour of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 9.0% Cr-1.0%Mo steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8016-B8

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.065	0.30	0.60	1.00	8.50	0.05

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to +550 °C. Welds are of X-ray quality. The mechanical properties stated here are after one hour of heat treatment at 700°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 0.5 to 1.5 % Cr-0.5%Mo steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-B2

All weld metal typical composition, %

C	Si	Mn	Mo	Cr
0.08	0.30	0.70	0.55	1.25

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 500 °C. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. The mechanical properties stated here are after one hour of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 5.0% Cr-0.5%Mo steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-B6

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.06	0.30	0.65	0.50	5.00	0.05

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	80

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 500°C. Welds are X ray quality. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. Preheating and interpass temperature controls between 200-250°C. The mechanical properties stated here are after one hour of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 9.0% Cr-1.0%Mo steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-B8

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.065	0.30	0.60	1.00	8.50	0.05

All weld metal typical mechanical properties,

Yield strength, MPa	>490
Tensile strength, MPa	>550
Elongation, %	>20

Charpy V

Test temperature, °C	+20
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.6	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant and high-pressure hydrogen resistant steels used in the construction of pressure vessels, boilers and. Weld metal features high toughness properties and is largely insensitive to in service embrittlement. The mechanical properties stated here are after one hour of heat treatment at 700°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

For Cr/Mo steels of matching chemistry, primarily 2Cr and 1 Mo, principally used on pressure vessels, heat exchangers, and other related components.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9015-B3

All weld metal typical composition, %

C	Si	Mn	Cr	Mo
0.06	0.30	0.80	2.30	1.00

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 600 °C. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. Preheating and inter-pass temperature controls between 250-300 °C. The mechanical properties stated here are after two hours of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 9.0% Cr-1.0%Mo NbV steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9015-B9

All weld metal typical composition, %

C	Si	Mn	Cr	Mo	Ni	Nb	V
0.09	0.20	0.60	9.00	1.00	0.30	0.04	0.18

All weld metal typical mechanical properties,

Yield strength, MPa	>550
Tensile strength, MPa	>620
Elongation, %	>20

Charpy V

Test temperature, °C	+20
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant and high-pressure hydrogen resistant steels used in the construction of pressure vessels, boilers and. Weld metal features high toughness properties and is largely insensitive to in service embrittlement. The mechanical properties stated here are after one hour of heat treatment at 700°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

For Cr/Mo steels of matching chemistry, primarily 2Cr and 1 Mo, principally used on pressure vessels, heat exchangers, and other related components.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9015-B3

All weld metal typical composition, %

C	Si	Mn	Cr	Mo
0.06	0.50	0.80	2.50	1.00

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant and high-pressure hydrogen resistant steels used in the construction of pressure vessels, boilers, and piping subject to operating temperatures up to 600 °C. Weld metal features high toughness properties and is largely insensitive to in service embrittlement. The mechanical properties stated here are after one hour of heat treatment at 750°C. The mechanical properties stated here are after one hour of heat treatment at 700°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

For Cr/Mo steels of matching chemistry, primarily 2Cr and 1 Mo, principally used on pressure vessels, heat exchangers, and other related components.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9018-B3

All weld metal typical composition, %

C	Si	Mn	Cr	Mo
0.06	0.50	0.80	2.50	1.00

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for welding of creep resistant and high-pressure hydrogen resistant steels used in the construction of pressure vessels, boilers, and piping subject to operating temperatures up to 600 °C. Weld metal features high toughness properties and is largely insensitive to in service embrittlement. The maximum carbon of 0.05% will improve ductility and lower hardness. The mechanical properties stated here are after one hour of heat treatment at 700°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

For Cr/Mo steels of matching chemistry, primarily 2Cr and 1 Mo, principally used on pressure vessels, heat exchangers, and other related components.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9018-B3L

All weld metal typical composition, %

C	Si	Mn	Cr	Mo
0.04	0.30	0.70	2.25	1.0

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>22

Charpy V

Test temperature, °C	+20
Impact values, J	100

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for welding creep resistant steels used in the construction of pressure vessels, boilers and piping subjected to operating temperatures up to 600 °C. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity, provides a stable arc that is easy to control. Preheating and inter-pass temperature controls between 250-300 °C. The mechanical properties stated here are after two hours of heat treatment at 750°C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Especially suitable for welding 9.0% Cr-1.0%Mo NbV steel used in refineries, power plants, chemical plants, pressure vessels, boilers. Primarily used in the petrochemical and petroleum industries. Excellent for tubes, tube sheets, and plate steels for high pressure hydrogen service.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9018-B9

All weld metal typical composition, %

C	Si	Mn	Cr	Mo	Ni	Nb	V
0.09	0.20	0.60	9.00	1.0	0.30	0.04	0.18

All weld metal typical mechanical properties,

Yield strength, MPa	>550
Tensile strength, MPa	>620
Elongation, %	>20

Charpy V

Test temperature, °C	+20
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Multipurpose electrode suitable for pressure vessels, boilers, offshore drilling platforms and nuclear structure. Smooth and Clean Welds, blending into the base metal without undercut. Excellent gap bridging properties. Welds are of X-ray quality. The root penetration is good, leaving a flat weld bead with easily removable slag.

Used in pressure vessels, boilers, offshore drilling platforms and nuclear structures.

Welding current

DC+

Welding Positions



Classifications

SFA/AWS A5.5 E7015-G

All weld metal typical composition, %

C	Si	Mn	Ni
0.06	0.40	1.20	0.60

All weld metal typical mechanical properties,

Yield strength, MPa	≥420
Tensile strength, MPa	520-620
Elongation, %	≥25

Charpy V

Test temperature, °C	-20	+20
Impact values, J	80	150

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -60°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: $350^{\circ}\text{C} \pm 20^{\circ}\text{C}$ for 2 hours.

ZULFI E7018-G can be used for welding of high tensile of shipbuilding, buildings, bridges, and pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E7018-G

All weld metal typical composition, %

C	Si	Mn	Ni
0.065	0.30	0.90	0.70

All weld metal typical mechanical properties,

Yield strength, MPa	≥ 450
Tensile strength, MPa	520-620
Elongation, %	≥ 26

Charpy V

Test temperature, $^{\circ}\text{C}$	-60	+20
Impact values, J	60	150

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -40°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: $350^{\circ}\text{C} \pm 20^{\circ}\text{C}$ for 2 hours.

ZULFI E8016-G can be used for welding high tensile of shipbuilding, buildings, bridges, and pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8016-G

All weld metal typical composition, %

C	Si	Mn	Ni
0.08	0.40	0.90	0.90

All weld metal typical mechanical properties,

Yield strength, MPa	>510
Tensile strength, MPa	590-690
Elongation, %	>26

Charpy V

Test temperature, $^{\circ}\text{C}$	+20	-40
Impact values, J	150	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -40°C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

It should be stored at below 60% RH and above 25 °C.

ZULFI E8018-G can be used for welding high tensile of shipbuilding, buildings, bridges, and pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E8018-G

All weld metal typical composition, %

C	Si	Mn	Ni
0.08	0.40	0.90	0.90

All weld metal typical mechanical properties,

Yield strength, MPa	>510
Tensile strength, MPa	550-690
Elongation, %	>26

Charpy V

Test temperature, °C	+20	-40
Impact values, J	150	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free and tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -50 °C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9015-G

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.07	0.35	1.00	1.20	0.40

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>24

Charpy V

Test temperature, °C	-50
Impact values, J	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free and tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -50 °C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9016-G

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.07	0.35	1.00	1.20	0.40

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>24

Charpy V

Test temperature, °C	-40
Impact values, J	60

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free and tough welded joints. Gives weld of X-ray quality. Weld metal gives good impact values up to -40 °C due to high metallurgical purity and low hydrogen content. Well suited for positional welding.

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9018-G

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.07	0.35	1.10	1.20	0.50

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>24

Charpy V

Test temperature, °C	-20
Impact values, J	100

Approvals

BV, Grade E9018-G

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free and tough welded joints. The weld metal is of extremely high metallurgical purity with very low hydrogen content. Welds are of X-ray quality. Has good toughness properties up to -60 °C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E10018-G

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.06	0.50	1.50	0.40	0.40	2.10

All weld metal typical mechanical properties,

Yield strength, MPa	>600
Tensile strength, MPa	>700
Elongation, %	>17

Charpy V

Test temperature, °C	+20	-60
Impact values, J	120	55

Approvals

BV, Grade : E10018-G

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	2.5	8
3.2	350,450	80-120	5	4
4.0	350,450	110-150	5	4
5.0	350,450	140-200	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Electrode for producing crack free and tough welded joints. The weld metal is of extremely high metallurgical purity with very low hydrogen content. Welds are of X-ray quality. Has good toughness properties up to -50 °C.

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E11018-G

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.06	0.50	1.80	0.40	0.40	2.20

All weld metal typical mechanical properties,

Yield strength, MPa	>700
Tensile strength, MPa	800-960
Elongation, %	>17

Charpy V

Test temperature, °C	+20	-60
Impact values, J	120	55

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	2.5	8
3.2	350,450	80-120	5	4
4.0	350,450	110-150	5	4
5.0	350,450	140-200	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic all position extremely low hydrogen electrode (HDM < 2 ml/100g). For steels with a tensile strength UTS of max. 835 N/mm². For high strength steels such as T1, HY 100. Good impact values down to -50°C

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E12018-G

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.06	0.50	1.50	0.40	0.50	2.20

All weld metal typical mechanical properties,

Yield strength, MPa	>730
Tensile strength, MPa	830-960
Elongation, %	>17

Charpy V

Test temperature, °C	-50
Impact values, J	47

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	2.5	8
3.2	350,450	80-120	5	4
4.0	350,450	110-150	5	4
5.0	350,450	140-200	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

ZULFI E9018-D1 is a basic coated, AC/DC electrode for the welding of high tensile strength steels. It gives weld metal that has good notch toughness down to -50 °C. Grain boundary cracking risk is very low. Moisture resistant coating provides low amount of weld metal hydrogen levels for a superior weld.

Re-baking: 350 °C ± 20 °C for 2 hours.

It is especially used for materials with a minimum tensile strength requirement of 620MPa (90ksi); e.g., AISI 4130 (90ksi condition), ASTM A487 grades 2A, B & C (cast). Due to the weld metal's good notch toughness properties down to -50 °C, it is used for welding unalloyed and low alloyed steel structures exposing to low temperature like LPG holders. Welding of low alloyed high tensile steels when preheating cannot be applied and enclosed joint welding and cladding of rails when a hardness of about 250HV is required are among its application areas.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9018-D1

All weld metal typical composition, %

C	Si	Mn	Mo	Ni
0.06	0.35	1.50	0.35	0.65

All weld metal typical mechanical properties,

Yield strength, MPa	>550
Tensile strength, MPa	>620
Elongation, %	>24

Charpy V

Test temperature, °C	+20	-50
Impact values, J	180	27

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

Basic coated electrode for producing crack free and tough welded joints. Gives weld of X ray quality. Weld metal gives good impact values up to -50 °C due to its high metallurgical purity and low hydrogen content. Can be used in all position welding. This is especially used where weld metal carbon percentage needs low.

Re-baking: 350 °C ± 20 °C for 2 hours.

Chromium-molybdenum and other low alloy steels, including AISI 4130, 4140, 8630 and ASTM A182 and A336 Grades F22, Carbon-manganese and other low alloy steels, Offshore and subsea components, Process piping.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E10018-D2

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.09	0.35	1.85	0.35	0.015	0.65

All weld metal typical mechanical properties,

Yield strength, MPa	>600
Tensile strength, MPa	>690
Elongation, %	>22

Charpy V

Test temperature, °C	+20	-50
Impact values, J	200	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

ZULFI E9018-M is an outstanding welding electrode for welding higher strength steels with tensile strength more than 90,000 psi. The coating is specially formulated to resist moisture pick-up under conditions of high heat and humidity. The electrode resists moisture reabsorption, which helps prevent hydrogen cracking and aids in eliminating starting porosity.

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E9018-M

All weld metal typical composition, %

C	Si	Mn	Ni	Mo
0.07	0.35	1.00	1.60	0.25

All weld metal typical mechanical properties,

Yield strength, MPa	>530
Tensile strength, MPa	>620
Elongation, %	>24

Charpy V

Test temperature, °C	-50
Impact values, J	80

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	70-100	2.5	8
3.2	350,450	90-140	5	4
4.0	350,450	140-190	5	4
5.0	350,450	190-250	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

ZULFI E10018-M is an outstanding welding electrode for welding higher strength steels with tensile strength more than 100,000 psi. The coating is specially formulated to resist moisture pick-up under conditions of high heat and humidity. The electrode resists moisture reabsorption, which helps prevent hydrogen cracking and aids in eliminating starting porosity.

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels, rebars grade 80, Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E10018-M

All weld metal typical composition, %

C	Si	Mn	Mo	Ni
0.08	0.35	1.30	0.30	1.70

All weld metal typical mechanical properties,

Yield strength, MPa	610-690
Tensile strength, MPa	>740
Elongation, %	>22

Charpy V

Test temperature, °C	-50
Impact values, J	50

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	2.5	8
3.2	350,450	80-120	5	4
4.0	350,450	110-150	5	4
5.0	350,450	140-200	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

ZULFI E11018M is recommended for use in fabrication of low-alloy, high tensile steels where welds of 110 ksi (760 MPa) minimum tensile strength are required. It is typically used to weld forging, casting plate and pressure vessels. Good impact values down to -50°C

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Crane booms, trailer frames, Penstocks, Tanks, pressure vessels, automotive and mobile machinery.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E11018-M H4R

All weld metal typical composition, %

C	Si	Mn	Mo	Ni	Cr
0.06	0.30	1.60	0.40	2.00	0.20

All weld metal typical mechanical properties,

Yield strength, MPa	680-760
Tensile strength, MPa	760-860
Elongation, %	>20

Charpy V

Test temperature, °C	-50
Impact values, J	47

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	2.5	8
3.2	350,450	80-120	5	4
4.0	350,450	110-150	5	4
5.0	350,450	140-200	5	4

- Available in normal pack, Vacuum pack & metal can pack.

Description & Applications

ZULFI E12018M is recommended for use in fabrication of low-alloy, high tensile steels where welds of 120 ksi (830 MPa) minimum tensile strength are required. It is typically used to weld forging, casting plate and pressure vessels. Good impact values down to -50°C

Re-baking: 350 °C ± 20 °C for 2 hours.

Welding of grain refined steels. Q&T steel, HSLA steel, structural fabrication, Penstocks, Tanks, pressure vessels, automotive and mobile machinery.

Welding current

AC, DC+

Welding Positions



Classifications

SFA/AWS A5.5 E12018-M

All weld metal typical composition, %

C	Si	Mn	Mo	Cr	Ni
0.06	0.30	1.80	0.40	2.20	0.50

All weld metal typical mechanical properties,

Yield strength, MPa	745-830
Tensile strength, MPa	830-960
Elongation, %	>17

Charpy V

Test temperature, °C	-50
Impact values, J	47

Approvals

Welding parameters

Diameter, mm	Length, mm	Welding Current, A	Packet weight, kg	No. of Packet per Carton
2.5	350	60-80	2.5	8
3.2	350,450	80-120	5	4
4.0	350,450	110-150	5	4
5.0	350,450	140-200	5	4

- Available in normal pack, Vacuum pack & metal can pack.