

Strongweld®

Ultimate Welding Performance

Flux Cored Wires

FCAW-S / FCAW-G



Indura 71V (K-71TM)

Classification: AWS A5.20-07: E70T-1C/1M/T9 - E491T-1C/1M



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Indura 71V is a flux core welding wire designed for welding of 71,000PSI high tensile steel with outstanding mechanical properties. This premium dual shield wire works with both 100% CO₂ or Ar+20-25% CO₂ mix, providing a stable arc, low spatter, a smooth bead shape, easy slag removal and radiographic quality. INDURA 71-V is a titanium dioxide (titania type) flux cored wire for all-position welding, low fume generation and good impact strength at low temperatures. Polarity is DCEP (DC+)

Typical applications include: machinery, shipbuilding, offshore structures, bridges and general fabrication.

Typical Chemical composition of all-weld metal (100% CO₂):

C 0.04%; Mn 1.44%; Si 0.65%; P 0.016%; S 0.011%; Cr 0.03%; Ni 0.01%; Mo 0.01%

Typical characteristics of the weld metal (according to AWS standard: A5.20/A5.20M-05):

Results of tensile tests with specimens of weld metal	Requirements	Absorbed energy Ch-v	Requirements
Tensile resistance : 83K PSI Fluency limit : 78KPSI Elongation in 50 mm : 27%	71K PSI-97KPSI 56K PSI 22%	48J at -20 °C	27J at -20 °C

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	min	max
0.045" - 1.2	22-30	120	300
			0.90-1.60
1/16" - 1.61	22-30	180	400
			0.90-1.60

Indura 71T-8 232 (KX-71T8)

Classification: AWS A5.20-07: E71T-8 - E491T-8



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Indura 71T-8 is an all position self-shielding tubular wire designed for outdoor welding at high deposition rates, single or multi-pass in structural fabrication. This tubular wire is extremely versatile for use in many structural applications, providing good arc stability, high efficiency, low spatter and easy slag removal. Meets FEMA 353 and AWS D1.8 structural seismic supplement. High impact resistance at low temperatures plus a Low Hydrogen deposit. Polarity is DCEN (DC-)

Typical applications include: structural fabrication in seismic zones, general plate fabrication, hull plate and stiffener welding in shipbuilding, heavy machinery repairs, tanks, hoppers, scaffolding and bridges.

Typical Chemical composition of all-weld metal:

C 0.036%; Mn 0.812%; Si 0.165%; P 0.011%; S 0.006%; Al 0.68%; Cr 0.018%; Ni 0.459%

Typical characteristics of the weld metal (according to AWS standard: A5.20/A5.20M-05):

Results of tensile tests with specimens of weld metal	Requirements	Absorbed energy Ch-v	Requirements
Tensile resistance : 76K PSI Fluency limit : 61K PSI Elongation in 50 mm : 27%	71K to 97K PSI Min 56K PSI 22%	67J at -30 °C	27J at -30 °C

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	Min	Max
5/64" - 2.0	26-35	240	420
			45-56
3/32" - 2.4	29-37	320	500
			56-70
1/8" - 3.2	29-37	450	680
			72-75

INDURA 71T-11 (K-NGS11)

Classification: AWS A5.20-07 E71T-11 / E491T-11



Indura 71T-11 is an all position self-shielding tubular wire, designed for welding of 71K PSI high tensile strength steel on light gauge or thin plate. This tubular wire is extremely versatile for use in many applications in all positions. It has been designed for single or multi-pass welding on carbon or galvanized steel. Provides good arc stability, high efficiency, low spatter and easy slag removal. Polarity is DCEN (DC-)

Typical applications include general fabrication and structural work requiring no impact properties like sheet or thin gauge metal, light-weight structures, metal applications with copper back-up, horizontal welding positions, assembly and maintenance welding.

Typical characteristics of all-weld metal:

C 0.10%; Mn 0.55%; Si 0.10%; P 0.015%; S 0.006%; Al 1.21%

Typical characteristics of the weld metal (according to AWS standard: A5.20/A5.20M-05):

Results of tensile tests with specimens of weld metal	Requirements	Absorbed energy Ch-v	Requirements
Tensile resistance : 76K PSI Fluency limit : 72K PSI Elongation in 50 mm : 23%	71K to 97K PSI Min. 56K PSI Min. 20%	-	>27J at -Non specified

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	Min	Max
0.035" - 0.9	18-22	80	120
			7-19
0.045" - 1.2	21-23	120	180
			7-19
1/16" - 1.6	22-24	180	270
			13-25

INDURA 71T-GS (K-NGS)

Classification: AWS A5.20-07 E71T-GS



Indura 71T-GS is an all position self-shielding tubular wire for outdoor welding, designed to have 71K PSI high tensile strength. This tubular wire is extremely versatile for use in many applications in all positions, providing good arc stability, high efficiency, low spatter and easy slag removal.

Polarity is DCEN (DC-)

Typical applications include general fabrication and structural work requiring no impact properties like light-weight structures, pre-fabricated structures assembly and general repairs.

Typical characteristics of all-weld metal:

C 0.10%; Mn 0.55%; Si 0.10%; P 0.014%; S 0.006%; Al 1.21%

Typical characteristics of the weld metal (according to AWS standard: A5.20/A5.20M-05):

Results of tensile tests with specimens of weld metal	Requirements	Absorbed energy Ch-v	Requirements
Tensile resistance : 75K PSI Fluency limit : 72K PSI Elongation in 50 mm : 22%	Min. 71K PSI	-	Non specified

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	Min	Max
0.035" - 0.9	18-22	80	120
			7-19
0.045" - 1.2	21-23	120	180
			7-19
1/16" - 1.6	22-24	240	280
			13-25

Indura 70T-4 (K-NGS4)

Classification: AWS A5.20-07 E70T-4 / E490T-4



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Ultimate Welding Performance

Indura 70T-4 is a self-shielding tubular wire characterized by globular transfer for flat and horizontal position welding, with excellent weld ability and easy slag removal. It has been designed for welding of 71K PSI tensile strength, at high deposition rates and has an increased resistance to hydrogen cracking and porosity on steel containing sulfur or contaminants. Ideal for outdoor or in windy conditions where gas shielded electrodes may have problems. It is used in applications without impact strength requirements. Polarity is DCEP (DC+).

Typical applications include: open groove welds, machinery bases and heavy equipment repair, wear plates, multiple pass fillets and lap welds, outdoors and less than optimal welding conditions.

Typical Chemical composition of all-weld metal:

C 0.17%; Mn 0.80%; Si 0.22%; P 0.012%; S 0.007%; Al 1.32%

Typical characteristics of the weld metal (according to AWS standard: A5.20/A5.20M-05):

Results of tensile tests with specimens of weld metal	Requirements 71K to 91K PSI	Absorbed energy Ch-v	Requirements
Tensile resistance : 78K PSI	Min. 56K PSI	-	Non specified
Fluency limit : 66K PSI	22%		
Elongation in 50 mm : 23%			

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	Min	Max
5/64" - 2.0	29-31	200	3/70
3/32" - 2.4	29-34	320	500
1/8" - 3.2	29-37	450	680



Strongweld[®]

Ultimate Welding Performance

Indura 70C-6M (KX-706M)

Classification: AWS A5.18-07: E70C-6M

Indura 70C-6M is a metal cored wire designed for extreme arc performance in fast-follow, high travel speed, non slag applications up to 71K PSI high tensile steel, with outstanding mechanical properties. This metal cored wire is for flat and horizontal position welding, and provides good penetration, high resistance to porosity, low hydrogen to prevent cracking and optimal wetting action. Offers 20% more speed and slag-free finishing compared with standard solid wire. Polarity is DCEP (DC+). Shielding gas: Ar+20% CO₂ (15-25 L/min)

Typical applications include: single/multiple pass welds, robotic/hard automation, shipbuilding, offshore structures, bridges and general fabrication.

Typical Chemical composition of all-weld metal (Ar+20%CO₂):

C 0.04%; Mn 1.50%; Si 0.60%; P 0.014%; S 0.010%

Typical characteristics of all-weld metal:

Results of tensile tests with specimens of weld metal	Requirements Min. 69K PSI	Absorbed energy Ch-v	Requirements
Tensile resistance : 78K PSI	Min. 56K PSI	55J at -30°C	>27J at -30°C
Fluency limit : 69K PSI	22%		
Elongation in 50 mm : 27%			

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	Min	Max
0.045" - 1.2	24-32	160	340
1/16" - 1.6	28-35	240	420

Indura 81Ni-2V

Classification: AWS A5.29-07: E81T1-Ni2C/M - E551T1-Ni2C/M



Indura 81Ni-2V is a tubular wire designed for all position welding with good impact properties at very low temperatures. Weld deposits provide superior mechanical properties and impact toughness exceeding AWS requirements. Wire is a titania type of flux cored wire with 2.0% Ni component.

It is characterized for its excellent arc stability, low spatter using CO₂ or Ar+15-25% CO₂ shielding gas. This tubular wire offers premium performance, bead appearance and low Hydrogen deposit on single or multi-passes. Polarity is DCEP (DC+)

Typical applications include: extreme low temperature conditions, shipbuilding, HSLA Steel, off-shore and mining equipment, bridge fabrication, high strength fabrication and heavy machinery.

Typical Chemical composition of all-weld metal:

C 0.05%; Mn 1.10%; Si 0.28%; P 0.015%; S 0.014%; Cr 0.04%; Ni 2.24%; Mo 0.02%

Typical characteristics of the weld metal (according to AWS standard: A5.29/A5.29M-05):

Results of tensile tests with specimens of weld metal	Requirements	Absorbed energy Ch-v	Requirements
Tensile resistance : 99K PSI	79K-100K PSI	37J to -40 °C	27J to -40 °C
Fluency limit : 91K PSI	68K PSI		
Elongation in 50 mm : 20%	19%		

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	Min	Max
0.045" - 1.2	22-30	100	300
1/16" - 1.6	23-29	150	400



Indura 81Ni-1

Classification: AWS A5.29-07: E81T1-Ni1C - E551T1-Ni1C

Indura 81Ni-1 is a tubular wire designed for all-position welding of 81K PSI high tensile strength with outstanding mechanical properties and high impact values at very low temperatures (-40°C). It provides good weld ability, excellent arc stability and low spatter using CO₂ gas.

This wire is a titania type of flux cored wire with 1.0% Ni component. This tubular wire offers premium performance, bead appearance and a low Hydrogen deposit on single or multi-pass welding. Polarity is DCEP (DC+)

Typical applications include: shipbuilding, off-shore and mining equipment, bridge fabrication, high strength fabrication, heavy machinery and general fabrication.

Typical Chemical composition of all-weld metal:

C 0.02%; Mn 1.28%; Si 0.51%; P 0.014%; S 0.011%; Ni 1.04%; Mo 0.20%

Typical characteristics of the weld metal (according to AWS standard: A5.29/A5.29M-05):

Results of tensile tests with specimens of weld metal	Requirements	Absorbed energy Ch-v	Requirements
Tensile resistance : 91K PSI	79K-100K PSI	50J to -30 °C	>27J at -30 °C
Fluency limit : 84K PSI	Min. 68K PSI		
Elongation in 50 mm : 28%	Min. 19%		

Recommended amperages

Diameter	Voltage	Amperage	Stick out
Inch - mm	Volts	Min	Max
0.045" - 1.2	22-30	100	300
1/16" - 1.6	23-29	150	400

Note: In case of heavy plate welding, preheat and maintain inter pass temperature at 100°C - 200°C in order to prevent crack at low temperatures.



Strongweld



Flux Cored Arc Welding Wires

General information

1. Since flux cored wire is softer than solid MIG wire, be careful to not excessively tighten the drive rolls in the wire feeder.
2. In the flat position, butt welding is accomplished using the back-step process and produces the best penetration. In the horizontal and over head positions, straight sequence will produce a flat bead appearance.
3. In horizontal fillet welding on primer-coated plate, porosity defects are apt to occur. Therefore, appropriate selection of wire and parameter setting for welding primer-coated plates are necessary.
4. When welding is done in excess of the proper parameters, or pre-heat is excessive, lower mechanical properties of a welded metal will result.
5. As cold cracks are caused by diffusible hydrogen, it is necessary to remove it by selecting proper preheat and inter pass temperatures. Normally, as tensile strength becomes higher it is better to apply higher preheat and inter pass temperatures.
6. When heat input is excessive, the impact value tends to be reduced. Therefore, perform welding by selecting the proper heat input according to the required impact value.
7. Since rust, oil and dirt are apt to produce porosity, please remove them from the groove prior to welding.
8. In order to minimize cracking of hard surfacing, the following must be taken into account :
 - a. Preparation of base metal
 - b. Heat and temperature control
 - c. Penetration
 - d. Welding distortion
 - e. Undercut

Welding Power Source

Use a DC power source with constant voltage and the polarity DC-EP except on some of the self shielded items.

Shielding Gases

Use CO₂ for shielding gas for general applications. Ar+CO₂ mixtures with 20-50% CO₂ can also be used but, compared with CO₂, porosity is apt to occur. In welding with an Ar+CO₂ mixture tip to work distance should be 1/64" longer than is used when using CO₂.

Wire extension

Keep the wire extension at about 1/16" for .035 wires, and 1/16"-5/64" for .045 and .062 wire. The use of a shorter wire extension may cause porosity and worm tracks. The wire extension in welding with an Ar+CO₂ mixture should be 1/64" longer than in use of CO₂

Notes on usage

Protection against wind

When wind velocity at the vicinity of an arc is more than 2 1/2 MPH porosity is apt to occur and dissolution of nitrogen into the weld metal may deteriorate slag removal. This will also kill the ferrite content of the weld metal in the case of stainless flux cored wire, thereby causing hot cracking. To prevent these problems use an adequate shielding gas flow rate and a windscreen.

Welding fumes

Flux cored wires generate much more welding fumes in terms of the amount of fumes at unit time in comparison with that of covered electrodes. To protect welders from harmful welding fumes, be sure to use a local ventilator and an appropriate respirator.

Storage of wire

Once Flux cored wire picks up moisture, it cannot be dried at high temperature, like covered stick electrodes. High-temperature high-humidity atmospheres during summer seasons and wet environments during rainy seasons will cause deterioration of the wire. The wire should be kept in an area of low humidity, with temperatures below 86°F, and relative humidity below 60%

Wire classification system for MIG tubular process

The AWS classifies tubular wires using a series of numbers and letters. The classification is based on the mechanical properties of a weld deposit.

A typical classification tubular MIG for welding carbon steel is:

E71T-1C or E71T-1M (English system)

E491T-1C or E491T-1M (Metric system)

1. The letter E indicates electrode.
2. The first digit (for the English system) or the first two (for the metric system) indicate the minimum tensile strength of the weld metal when multiplied by 10,000 psi or 10 MPa depending on whether it is English or metric system respectively.
3. The digit that precedes the letter "T" indicates the welding position. It can be a "0" or "1". The "0" indicates suitable for flat and horizontal position, the "1" for all positions.
4. The letter "T" indicates that this is a flux cored tubular wire.
5. The digit after the hyphen indicates the proper use of the electrode, in terms of polarity and general operating characteristics. This may be a number from 1 to 14, or the letter "G" or "GS". The letter G indicates that the polarity and general operating characteristics are not specified. The letter "S" located after the "G" indicates that the electrode is for single pass only.
6. The final letter indicates the shielding gas required to achieve the classification of the electrode. The letter "C" indicates 100% CO₂ and "M" a mixed gas (i.e. 80% Argon + 20% CO₂ shielding gas). The absence of such letters indicates that this is Self-Shielding tubular cored wire, which by the decomposition of flux protects the weld.

661-274-0584

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