

Table of Contents - Welding Wire

PRODUCT SHEETS

- 1-2 [Packaging](#)
- 3 [NS Plus[®]-101](#)
- 4 [NS-101 CopperFree[™]](#)
- 5 [NS Plus[®]-102](#)
- 6 [NS-102 CopperFree[™]](#)
- 7 [NS Plus[®]-115](#)
- 8 [NS-115 CopperFree[™]](#)
- 9 [Viking](#)
- 10 [Standard Arc[®] S-3](#)
- 11 [Standard Arc[®] S-6](#)
- 12 [Satin Glide[®] Stainless](#)
- 13 [Tru-Core[®] FC 70T](#)
- 14 [Tru-Core[®] FC 71T](#)
- 15 [Tru-Core[®] FC 71T-12C](#)
- 16 [Tru-Core[®] FC 71T-12M](#)
- 17 [Tru-Core[®] FC 71T-AG](#)
- 18 [Tru-Core[®] FC 71T-CG](#)
- 19 [Tru-Core[®] FC 81T-Ni1](#)
- 20 [Tru-Core[®] FC 81T-Ni1M](#)
- 21 [Tru-Core[®] MC 70C](#)
- 22 [Tru-Core[®] MC 80C-Ni1](#)
- 23 [Tru-Core[®] MC 90C-D2](#)
- 24 [Tru-Core[®] MC 110C-K4](#)
- 25 [Alumi Glide[®] 4043](#)
- 26 [Alumi Glide[®] 5356](#)

TECHNICAL TABLES

- 27-30 [NS Plus[®] and NS CopperFree[™]](#)
- 31 [Viking](#)
- 32-34 [Satin Glide[®] Stainless](#)
- 35-38 [Tru-Core[®]](#)
- 39-40 [Alumi Glide[®]](#)
- 41 [Deposition Rates](#)



(This page is intentionally left blank.)

Packaging

Whether you're looking for individual spools or operating hundreds of robots in a production environment, National Standard has a package that will maximize your productivity, reduce downtimes associated with change-outs and provide pay-off systems that produce quality welds.

Drums

- Packaged in a loose coil form
- Wire takes on a large sine wave or "S" shape
- Wire let-off system provides smooth feeding

Smart Pak® 100% Recyclable Drum Pack

- Packaged in a loose coil form
- Wire takes on a large sine wave or "S" shape
- Wire let-off system provides smooth feeding
- Multiple engineered wire dispensing solutions
- 100% recyclable
- Lifting strap for easy transport

Spools/Baskets

- Fiber spools – random layer wound
- Wire Baskets – precision layer level wound
- ISO 9001:2008 quality standards

Tru-Trac® Wood Reels

- "Twist-free" wire let-off from stationary tight wound reel requires only a few ounces of drag from up to 150' from the wire feeder
- Maximizes productivity and lowers welding costs
- Snag-free operations without drive roll overload delivers precise joint tracking
- Wire maintains a 35" to 55" cast
- Smaller dispersion pattern than barrel drum packages

Because performance comes down to the wire.

Packaging Weights/Dimensions

Weight (LBS)	Package Type	Product Length (inches)	Product Width (inches)	Product Height (inches)	Arbor Hole (inches)	Pkgs per Pallet	Pallet Weight (LBS)
30	Spool	11.75	11.75	4.00	2-1/32	32	960
33	Spool	11.75	11.75	4.00	2-1/32	72	2376
33	Wire Basket	11.75	11.75	4.00	2-1/32	72	2376
33	Spool (Viking)	12.00	12.00	4.00		72	2376
44	Spool (Viking)	12.00	12.00	4.00		60	2640
45	Spool	11.75	11.75	4.00	2-1/32	72	3240
45	Wire Basket	11.75	11.75	4.00	2-1/32	72	3240
50	Spool	11.75	11.75	4.00	2-1/32	32	1600
60	Coil	0.00	0.00	0.00	0	0	0
60	Spool	13.88	13.88	4.00	2-1/32	54	3240
250	Drum	20.40	20.40	16.00		4	1000
250	Smart Pak® 100% Recyclable Drum Pack	21.00	21.00	16.00		4	1000
300	Tru-Trac® Wood Reel	24.00	24.00	21.00	5	2	600
500	Drum	20.40	20.40	31.25		4	2000
500	Smart Pak® 100% Recyclable Drum Pack	21.00	21.00	32.00		4	2000
500	Tru-Trac® Wood Reel	30.00	30.00	23.00	5	2	1000
550	Drum (Viking)	21.00	21.00	32.00		2	1100
600	Drum	23.40	23.40	31.25		1	600
600	Smart Pak® 100% Recyclable Drum Pack	24.00	24.00	32.00		1	600
600	Tru-Trac® Wood Reel	30.00	30.00	21.50	5	2	1200
600	Wood Reel	30.00	30.00	17.00		2	1200
900	Drum	23.40	23.40	31.25		1	900
900	Smart Pak® 100% Recyclable Drum Pack	24.00	24.00	32.00		1	900
1000	Coil	0.00	0.00	0.00	0	0	0
1000	Drum	23.40	23.40	31.25		1	1000
1000	Smart Pak® 100% Recyclable Drum Pack	24.00	24.00	32.00		1	1000
1000	Tru-Trac® Wood Reel	30.00	30.00	21.50	5	2	2000
1000	Wood Reel	30.00	30.00	17.00		2	2000

National Standard Customer Service:

1-800-777-1618
405-372-7954 (fax)

www.NationalStandard.com



NS Plus[®]-101 AWS ER70S-3, EM13K

DESCRIPTION

NS Plus™ 101 is a premium copper-coated mild steel solid filler metal designed to extract maximum weld quality and user appeal from ER70S-3 wire. Careful attention to the manganese and silicon contents assure maximum deoxidation, flat bead profiles and low-spatter welds.

CHARACTERISTICS

NS Plus™ Premium Copper-Coated Welding Wire sets the standard in quality to support your GMAW operations.

- Cast of 35" (.88m) to 55" (1.3m) and Helix below 1" (25.4mm) improve feedability and provide accurate wire positioning.
- Manufactured according to ISO9001:2008 quality standards
- Excellent arc starts, arc stability and feedability
- Minimal spatter and copper flaking
- Moderate de-oxidizers
- Excellent weld appearance and post weld cleaning

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.27-30\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.18: ER70S-3, AWS A5.18M: ER48S-3
- AWS A5.17: EM13K (1/16" dia. only)
- ASME SFA-5.18: ER70S-3
- MIL-E-23765/1: MIL-70S-3
- CWB W48-01: ER49S-3
- ABS

APPLICATIONS

Well-suited for these applications:

- Low carbon killed and semi killed steel
- All metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Welding steel with light mill scale, light rust or thin oil
- Used for single and multi-pass weldments
- Pipe welding, structural steel and steel buildings
- Applications requiring a minimum 70,000 psi tensile strength

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



NS-101 CopperFree™ AWS ER70S-3, EM13K

DESCRIPTION

NS-101 CopperFree™ is a premium copper-free mild steel solid filler metal designed to extract maximum weld quality and user appeal from ER70S-3 wire. Careful attention to the manganese and silicon contents assure maximum deoxidation, flat bead profiles and low-spatter welds.

CHARACTERISTICS

NS 101 CopperFree™ provides the ultimate in flexibility to support your GMAW welding operations.

- Cast of 35" (0.88 m) to 55" (1.3 m) and helix below 1" (25.4 mm) improve feedability and provide accurate wire positioning
- Manufactured according to ISO9001:2008 quality standards
- Excellent arc starts, arc stability and feedability
- Minimal spatter
- No copper flaking
- Moderate de-oxidizers
- Excellent weld appearance and post weld cleaning

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.27-30\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.18: ER70S-3, AWS A5.18M: ER48S-3
- AWS A5.17: EM13K (1/16" dia. only)
- ASME SFA-5.18: ER70S-3
- MIL-E-23765/1: MIL-70S-3
- CWB W48-01: ER49S-3
- ABS

APPLICATIONS

Well-suited for these applications:

- Low carbon killed and semi killed steel
- Well suited for all metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Welding steel with light mill scale, light rust or thin oil
- Single and multi-pass weldments
- Pipe welding, structural steel and steel buildings
- Applications requiring a minimum 70,000 psi tensile strength

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



NS Plus[®]-102 AWS ER80S-D2, ER90S-D2

DESCRIPTION

NS Plus™ 102 is a premium copper-coated low alloy, high-strength solid filler metal containing 0.5% molybdenum to maintain hardness and strength following post weld heat treatment. The manganese and silicon assist in producing a smooth, uniform weld bead and help minimize spatter.

CHARACTERISTICS

NS Plus™ Premium Copper-Coated Welding Wire sets the standard in quality to support your GMAW operations.

- Cast of 35" (.88m) to 55" (1.3m) and Helix below 1" (25.4mm) improve feedability and provide accurate wire positioning
- Excellent mechanical properties
- Manufactured according to ISO9001:2008 quality standards
- Excellent arc starts, arc stability and feedability
- Minimal spatter and copper flaking
- High level de-oxidizers
- Excellent weld appearance and post weld cleaning

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.27-30\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.28: ER80S-D2 (100% CO₂), ER90S-D2 (Mixed)
- AWS A5.28M: ER55S-D2 (100% CO₂), ER62S-D2 (Mixed)
- ASME SFA-5.28: ER80S-D2
- MIL-E-23765/2: MIL-80S-3
- CWB W48-01: ER55S-D2
- AWS A5.23/A5.23M: EA3K (1/16" dia. only)

APPLICATIONS

Well-suited for these applications:

- ASTM A182, A217, A234 and A335 high temperature pipe, fittings, flanges and valves and A336 pressure vessel forgings
- Excellent for applications needing strength after post weld heat treatment
- All metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂: ER80S-D2
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂ ER90S-D2
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



NS-102 CopperFree™ AWS ER80S-D2, ER90S-D2

DESCRIPTION

NS-102 CopperFree™ is a low alloy, high strength solid filler metal containing 0.5% molybdenum to maintain hardness and strength following post weld heat treatment. The manganese and silicon assist in producing a smooth, uniform weld bead and help minimize spatter.

CHARACTERISTICS

NS-102 CopperFree™ provides the ultimate in flexibility to support your GMAW operations.

- Cast of 35 in. (.88m) to 55 in. (1.3m) and Helix below 1 in. (25.4mm) improve feedability and provide accurate wire positioning.
- Excellent mechanical properties
- Manufactured according to ISO9001:2008 quality standards
- Excellent arc starts, arc stability and feedability
- Minimal spatter
- No copper flaking
- Moderate de-oxidizers
- Excellent weld appearance and post weld cleaning

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.27-30\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.28: ER80S-D2 (100% CO₂), ER90S-D2 (Mixed)
- AWS A5.28M: ER55S-D2 (100% CO₂), ER62S-D2 (Mixed)
- ASME SFA-5.28: ER80S-D2
- MIL-E-23765/2: MIL-80S-3
- CWB W48-01: ER55S-D2
- AWS A5.23/A5.23M: EA3K (1/16" dia. only)

APPLICATIONS

Well-suited for these applications:

- ASTM A182, A217, A234 and A335 high temperature pipe, fittings, flanges and valves and A336 pressure vessel forgings
- Applications needing strength after post weld heat treatment
- All metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Best results when using 95-98% Argon/Balance Oxygen shielding gas

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂: ER80S-D2
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂ ER90S-D2
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



NS Plus®-115 AWS ER70S-6

DESCRIPTION

NS Plus® 115 is a premium copper-coated mild steel solid filler metal containing a high combined total of manganese and silicon. The wire produces a smooth, uniform welding arc, which minimizes weld spatter and results in excellent bead appearance and high operator appeal. The excellent operating characteristics of NS Plus 115 appeal to users seeking better performance in their ER70S-6 applications.

CHARACTERISTICS

NS Plus® 115 Copper-Coated Welding Wire sets the standard in quality to support your GMAW operations.

- Cast of 35 in. (88m) to 55 in. (1.3m) and Helix below 1 in. (25.4mm) improve feedability and provide accurate wire positioning
- Higher Silicon content reduces the molten metal surface tension, resulting in flatter bead profiles
- Excellent arc starts, arc stability and feedability
- Minimal spatter and copper flaking
- High level de-oxidizers
- Excellent weld appearance and post weld cleaning

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.27-30\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.18: ER70S-6 H4, AWS A5.18M: ER48S-6
- ASME SFA-5.18: ER70S-6
- AWS A5.17: EH11K (1/16" dia. only)
- ABS

APPLICATIONS

Well-suited for these applications:

- All metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Welding steel with medium to heavy mill scale, light rust or thin oil
- Single and multi-pass weldments
- Applications requiring a minimum 70,000 psi tensile strength

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



NS-115 CopperFree™ AWS ER70S-6

DESCRIPTION

NS-115 CopperFree™ is a mild steel solid filler wire containing a high combined total of manganese and silicon. The wire produces a smooth, uniform welding arc, which minimizes weld spatter and results in excellent bead appearance and high operator appeal. The excellent operating characteristics of NS-115 appeal to users seeking better performance in their ER70S-6 applications.

CHARACTERISTICS

- NS-115 CopperFree™ provides the ultimate in flexibility to support your GMAW operations.
- Cast of 35" (.88m) to 55" (1.3m) and Helix below 1" (25.4mm) improve feedability and provide accurate wire positioning
 - Higher Silicon content reduces the molten metal surface tension, resulting in flatter bead profiles
 - Manufactured according to ISO9001:2008 quality standards
 - Excellent arc starts, arc stability and feedability
 - Minimal spatter
 - No copper flaking
 - High level de-oxidizers
 - Excellent weld appearance and post weld cleaning

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.27-30\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.18: ER70S-6 H4, AWS A5.18M: ER48S-6
- ASME SFA-5.18: ER70S-6
- AWS A5.17: EH11K (1/16" dia. only)
- ABS

APPLICATIONS

Well-suited for these applications:

- All metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Welding steel with medium to heavy mill scale, light rust or thin oil
- Single and multi-pass weldments
- Applications requiring a minimum 70,000 psi tensile strength

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Viking AWS ER70S-6

DESCRIPTION

Viking is a premium copper coated import MIG welding wire that is well-suited for general GMAW welding applications. (Sold only in pallet quantities.)

CHARACTERISTICS

Choose Viking for:

- Welding steel with mill scale, rust or oil
- Single to multi-pass welding applications

PRODUCED IN: China & Vietnam

SPECIFICATIONS

Meets or exceeds:

- ER70S-6 (AWS A5.18, ASME SFA 5.18)
- ER70S-6 (CWB/CSA W48-18)

APPLICATIONS

Well-suited for these applications:

- General GMAW applications
- Welding steel with mill scale, rust or oil
- Single to multi-pass welding applications
- MIG Metal Inert Gas
- MAG Metal Active Gas
- GMAW Gas Metal Arc Welding
- For DC+ CC/CV

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 SCFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

[Go to TECHNICAL TABLES \(p.31\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



(This page is intentionally left blank.)



Standard Arc[®] S-3 AWS ER70S-3, EM13K

DESCRIPTION

Standard Arc[®] S-3 is a copper-coated mild steel solid filler metal designed to extract maximum weld quality and user appeal from ER70S-3 wire. Careful attention to the manganese and silicon contents assure maximum deoxidation, flat bead profiles and low-spatter welds.

CHARACTERISTICS

Standard Arc[®] S-3 Copper-Coated Welding Wire supports your GMAW operations.

- Cast of 35" (.88m) to 55" (1.3m) and Helix below 1" (25.4mm) improve feedability and provide accurate wire positioning.
- Manufactured according to ISO9001:2008 quality standards
- Excellent arc starts, arc stability and feedability
- Minimal spatter and copper flaking
- Moderate de-oxidizers
- Excellent weld appearance and post weld cleaning

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.27-30\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.18: ER70S-3, AWS A5.18M: ER48S-3
- AWS A5.17: EM13K (1/16" dia. only)
- ASME SFA-5.18: ER70S-3
- MIL-E-23765/1: MIL-70S-3
- CWB W48-01: ER49S-3

APPLICATIONS

Well-suited for these applications:

- Low carbon killed and semi killed steel
- All metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Welding steel with light mill scale, light rust or thin oil
- Single and multi-pass weldments
- Pipe welding, structural steel and steel buildings
- Applications requiring a minimum 70,000 psi tensile strength

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Standard Arc[®] S-6 AWS ER70S-6

DESCRIPTION

Standard Arc[®] S-6 is a mild steel filler wire containing a high combined total of manganese and silicon. The wire produces a smooth, uniform welding arc, which minimizes weld spatter and results in excellent bead appearance and high operator appeal.

CHARACTERISTICS

Standard Arc[®] S-6 supports your GMAW welding operations.

- Cast of 35 in. (.88m) to 55 in. (1.3m) and Helix below 1 in. (25.4mm) improve feedability and provide accurate wire positioning
- High Silicon content reduces the molten metal surface tension, resulting in flatter bead profiles

PRODUCED IN: Stillwater, Oklahoma

SPECIFICATIONS

Meets or exceeds:

- AWS A5.18: ER70S-6
- ASME SFA-5.18:ER70S-6

APPLICATIONS

Well-suited for these applications:

- Short circuit, globular, spray transfer and pulse welding
- Automatic or semi-automatic welding
- Welding steel with mill scale, rust or oil
- Single to multi-pass weld applications
- Applications requiring up to 88, 800 psi tensile strength
- Welding rimmed steels
- High current welding with oxygen rich atmospheres
- Low welding heat applications
- Higher travel speed welding

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

[Go to TECHNICAL TABLES \(p.27-30\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Satin Glide[®] Stainless

DESCRIPTION

Satin Glide[®] stainless steel welding wires are designed for joining stainless steels, and stainless steels to carbon or low alloy steels. Satin Glide[®] is a solid stainless steel weld wire developed specifically for GMAW applications. Drawing, cleaning, and finishing processes produce a unique surface that will not work against you and creates a lustrous satin finish containing our proprietary lubricant.

CHARACTERISTICS

Satin Glide[®] stainless steel wires provide the ultimate in flexibility to support your GMAW operations.

- Cast of 30" (.75m) to 50" (1.2m) and Helix below 1" (25.4mm) improve feedability and provide accurate wire positioning
- NS unique wire cleaning process eliminates surface residuals
- Tight ferrite controls
- Superior corrosion resistance
- Manufactured according to ISO9001:2008 quality standards

PRODUCED IN: USA & CHINA

[Go to TECHNICAL TABLES \(p.32-34\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

SPECIFICATIONS

Meets or exceeds:

- AWS A5.9/A5.9M:2012
- ASME SFA 5.9
- ASME Section III Nuclear requirements

APPLICATIONS

Well-suited for these applications:

- All metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Single and multi-pass weldments
- Dissimilar base metal welding

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- Short Circuit Transfer: 90% Helium, 7-1/2% Argon, 2-1/2% CO₂
- Spray Transfer: 95-98% Argon, 2-5% CO₂
98-99% Argon, 1-2% O₂
- Flow Rate: 35-50 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.



(This page is intentionally left blank.)

Tru-Core® FC 70T AWS E70T-1C H8, E70T-9C H8

DESCRIPTION

Tru-Core® FC 70T is a flux cored, gas-shielded electrode, designed for single and multiple pass welding of carbon steels in the flat position and for horizontal fillets. FC 70T is suitable for welding most carbon steels requiring a minimum tensile strength of 70,000 psi. This electrode is designed to operate with 100% carbon dioxide shielding gas. The rutile-based slag system promotes a smooth arc transfer and extremely easy slag removal.

CHARACTERISTICS

PRODUCT FEATURES:

- Great choice for deep groove welds
- Flat bead geometry
- Easy slag removal
- Low spatter
- Excellent feedability
- Smooth arc transfer
- Excellent mechanical properties
- Stable current transfer at the contact tip

MANUFACTURING ADVANTAGES:

- Patented forming, feeding and drawing equipment
- Consistent strip-to-core ratio
- Precise thermal treatment that controls the type, amount and uniformity of surface oxides on the wire
- Consistent diffusible hydrogen levels
- Consistent distribution of core ingredients

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

SPECIFICATIONS

Meets or exceeds:

- AWS A5.20: E70T-1C H8, E70T-9C H8
- ASME SFA 5.20: E70T-1C H8, E70T-9C H8
- CWB W48-06: E492-T-1 H8, E492-T-9-H8

APPLICATIONS

Tru-Core® FC 70T is designed to weld structural steel when the work is positioned, where increased productivity and high deposition rates are a priority. Some examples are:

- Earth Moving Equipment
- Machine Tool Bases
- Structural Steel
- Heavy Equipment
- Railcar Construction
- Mining Machinery
- General Fabricating

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

Flat and horizontal position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.



Tru-Core® FC 71T AWS E71T-1C H8, E71T-1M H8, E71T-9C H8, E71T-9M H8

DESCRIPTION

Tru-Core® FC 71T is a flux cored, gas shielded, all-position electrode intended to weld carbon steel, as well as certain low alloy steels, where a minimum tensile strength of 70,000 psi is required. Tru-Core® FC 71T is intended for single and multiple pass welding using 100% CO₂ or 75-80% Argon/balance CO₂ mixtures, for welding in all positions. Major advantages of this electrode include deep penetration, smooth stable arc transfer, low spatter levels and a slag system specially formulated for a high melting point. This provides a very quick-freezing slag.

CHARACTERISTICS

PRODUCT FEATURES:

- Flat bead geometry
- Easy slag removal
- Excellent feedability
- Smooth arc transfer
- Excellent mechanical properties

MANUFACTURING ADVANTAGES:

- Patented forming, feeding and drawing equipment
- Consistent strip-to-core ratio
- Precise thermal treatment that controls the type, amount and uniformity of surface oxides on the wire
- Consistent diffusible hydrogen levels

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.20: E71T-1C H8, E71T-1M H8, E71T-9C H8, E71T-9M H8
- ASME SFA 5.20: E71T-1C H8, E71T-1M H8, E71T-9C H8, E71T-9M H8
- CWB W48-06: E491T-9-H8
- ABS

APPLICATIONS

Tru-Core® FC 71T can be used for welding most carbon steels and certain low alloy steels. It is ideal for welding gauges varying from 10-gauge sheet metal to heavy plate sections. Some examples are:

- Structural Steel
- Heavy Equipment
- Railcar Construction
- Mining Machinery
- General Fabrication

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 75% Argon/25% CO₂
- 100% CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Tru-Core® FC 71T-12C AWS E71T-1C H8, E71T-9C H8, E71T-12C H8

DESCRIPTION

Tru-Core® FC 71T-12C is a flux cored, gas shielded, all-position electrode, designed specifically for use with 100% CO₂ shielding gas. FC 71T-12C is intended for single and multiple pass applications, for both in-position and out-of-position welding. The metal transfer in the arc is small-droplet in nature, resulting in a smoother arc and lower spatter levels when compared with other E71T-9C, -12C electrodes. The slag characteristics allow for both fast freezing and good coverage of the weld, which produces a flatter, more uniform bead geometry in all position welds. Microalloying of the weld metal provides enhanced CVN impact values.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent bead appearance in all positions
- Designed for 100% CO₂ shielding gas
- Easy slag removal
- Smooth, spray-like arc transfer
- Excellent feedability
- Excellent mechanical properties
- Fast-freezing slag promotes excellent out-of-position results

MANUFACTURING ADVANTAGES:

- Patented forming, feeding and drawing equipment
- Consistent strip-to-core ratio
- Precise thermal treatment that controls the type, amount and uniformity of surface oxides on the wire
- Consistent diffusible hydrogen levels

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

SPECIFICATIONS

Meets or exceeds:

- AWS A5.20: E71T-1C H8, E71T-9C H8, E71T-12C H8
- ASME SFA 5.20: E71T-1C H8, E71T-9C H8, E71T-12C H8

APPLICATIONS

Tru-Core® FC 71T-12C can be used for welding most carbon steels and certain low alloy steels. It is ideal for welding thicknesses varying from 10 gauge sheet metal to heavy plate sections, where "all position" welding capability, stable arc characteristics and excellent mechanical properties are needed. Some examples are:

- Structural Steel
- Shipbuilding
- Railcar Construction
- General Fabrication

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

Tru-Core® FC 71T-12M

AWS E71T-1M H8, E71T-9M H8, E71T-12M H8

DESCRIPTION

Tru-Core® FC 71T-12M is a flux cored, gas shielded, all-position electrode, designed specifically for use with gas mixtures from 75% to 80% Argon/balance CO₂. Tru-Core® FC 71T-12M is intended for single and multiple pass applications, for both in-position and out-of-position welding. Up to 80% Argon can be used with no degradation in welding performance or mechanical properties. The arc transfer is small-droplet in nature, with no appreciable spatter. The slag is fluid enough to provide good flow and wetting but freezes quickly, promoting flat, uniform bead shapes in all positions. Microalloying of the weld metal enhances CVN impact values at lower temperatures.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent bead appearance in all positions
- Designed for Argon/carbon dioxide blends
- Easy slag removal
- Smooth, spray-like arc transfer
- Excellent feedability
- Excellent mechanical properties
- Fast-freezing slag promotes excellent out-of-position results

MANUFACTURING ADVANTAGES:

- Patented forming, feeding and drawing equipment
- Consistent strip-to-core ratio
- Precise thermal treatment that controls the type, amount and uniformity of surface oxides on the wire
- Consistent diffusible hydrogen levels

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

National Standard Customer Service:

1-800-777-1618
405-372-7954 (fax)

www.NationalStandard.com

9/14/2017

SPECIFICATIONS

Meets or exceeds:

- AWS A5.20: E71T-1M H8, E71T-9M H8, E71T-12M H8
- ASME SFA 5.20: E71T-1M H8, E71T-9M H8, E71T-12M H8

APPLICATIONS

Tru-Core® FC 71T-12M can be used for welding most carbon steels and certain low alloy steels. It is ideal for welding thicknesses varying from 10 gauge sheet metal to heavy plate sections, where "all position" welding capability, stable arc characteristics and excellent mechanical properties are needed. Some examples are:

- Structural Steel
- Shipbuilding
- Railcar Construction
- General Fabrication

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 75-80% Argon/Balance CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

Tru-Core® FC 71T-AG AWS E71T-1M H8, E71T-9M H8

DESCRIPTION

Tru-Core® FC 71T-AG is a flux cored, gas shielded, all-position electrode, designed specifically for use with gas mixtures of from 75% to 80% Argon/balance CO₂. Tru-Core FC 71T-AG is intended for single and multiple pass applications, for both in-position and out-of-position welding. Up to 80% Argon can be used with no degradation in welding performance or mechanical properties. The arc transfer is small-droplet in nature, with no appreciable spatter deposited. The slag is fluid enough to provide good flow and wetting, but freezes quickly, promoting flat, uniform bead shapes in all positions. Microalloying of the weld metal enhances CVN impact values at lower temperatures.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent bead appearance in all positions
- Designed for Argon/carbon dioxide blends
- Easy slag removal
- Smooth, spray-like arc transfer
- Excellent feedability
- Excellent mechanical properties
- Fast-freezing slag promotes excellent out-of-position results

MANUFACTURING ADVANTAGES:

- Patented forming, feeding and drawing equipment
- Consistent strip-to-core ratio
- Precise thermal treatment that controls the type, amount and uniformity of surface oxides on the wire
- Consistent diffusible hydrogen levels

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

National Standard Customer Service:

1-800-777-1618
405-372-7954 (fax)

www.NationalStandard.com

9/14/2017

SPECIFICATIONS

Meets or exceeds:

- AWS A5.20: E71T-1M H8, E71T-9M H8
- ASME SFA 5.20: E71T-1M H8, E71T-9M H8
- CWB W48-06: E491T-9M-H8

APPLICATIONS

Tru-Core® FC 71T-AG can be used for welding most carbon steels and certain low alloy steels. It is ideal for welding thicknesses varying from 10 gauge sheet metal to heavy plate sections, where "all position" welding capability, stable arc characteristics and excellent mechanical properties are needed. Some examples are:

- Structural Fabrication
- Shipbuilding
- Railcar Construction
- General Fabrication

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 75-80% Argon/Balance CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

Tru-Core® FC 71T-CG AWS E71T-1C H8, E71T-9C H8

DESCRIPTION

Tru-Core® FC 71T-CG is a flux cored, gas shielded, all-position electrode, designed specifically for use with 100% CO₂ shielding gas. Tru-Core FC 71T-CG is intended for single and multiple pass applications, for both in-position and out-of-position welding. The metal transfer in the arc is small-droplet in nature, resulting in a smoother arc and lower spatter levels when compared with other E71T-1C, -9C electrodes. The slag characteristics allow for better flow and wetting of the weld, which produces a flatter, more uniform bead geometry in all position welds. Microalloying of the weld metal provides enhanced CVN impact values.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent bead appearance in all positions
- Designed for 100% CO₂ shielding gas
- Easy slag removal
- Smooth, spray-like arc transfer
- Excellent feedability
- Excellent mechanical properties
- Fast-freezing slag promotes excellent out-of-position results

MANUFACTURING ADVANTAGES:

- Patented forming, feeding and drawing equipment
- Consistent strip-to-core ratio
- Precise thermal treatment that controls the type, amount and uniformity of surface oxides on the wire
- Consistent diffusible hydrogen levels

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

SPECIFICATIONS

Meets or exceeds:

- AWS A5.20: E71T-1C H8, E71T-9C H8
- ASME SFA 5.20: E71T-1C H8, E71T-9C H8
- CWB W48-06: E491T-9C-H8

APPLICATIONS

Tru-Core® FC 71T-CG can be used for welding most carbon steels and certain low alloy steels. It is ideal for welding thicknesses varying from 10 gauge sheet metal to heavy plate sections, where "all position" welding capability, stable arc characteristics and excellent mechanical properties are needed. Some examples are:

- Structural Fabrication
- Shipbuilding
- Railcar Construction
- General Fabrication

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.



Tru-Core[®] FC 81T-Ni1 AWS E81T1-Ni1C

DESCRIPTION

Tru-Core[®] FC 81T-Ni1 is a low alloy steel electrode for gas shielded, flux cored arc welding of those carbon and low alloy steels requiring a minimum tensile strength of 80 ksi and good CVN values at temperatures of -40°F and lower. This electrode is intended for welding in all positions, both single and multiple pass welds, using a shielding gas of 100% Carbon Dioxide. The arc transfer is a smooth, small droplet mode, with very little spatter residue. The slag freezes quickly enough to facilitate welding in all positions, but provides the type of flow and wetting properties to allow good bead geometry and tie in, even in horizontal fillets.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent mechanical properties
- Fast-freezing slag system
- Good bead geometry
- Smooth arc transfer
- Good low-temperature CVN properties
- Excellent feedability
- Better sidewall fusion than solid electrodes

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.29: E81T1-Ni1C
- ASME SFA 5.29: E81T1-Ni1C

APPLICATIONS

Tru-Core[®] FC 81T-Ni1 is well suited to those applications where any combination of all position welding, good welder appeal, a minimum tensile strength of 80 ksi, good CVN values at lower temperatures. Some examples are:

- Offshore oil structures
- Subsea components of oil and gas systems
- Earthmoving equipment
- Mining machinery
- Power generation equipment
- Shipbuilding

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 100% CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Tru-Core® FC 81T-Ni1M AWS E81T1-Ni1M H8

DESCRIPTION

Tru-Core® FC 81T-Ni1M is a low alloy steel electrode for gas shielded, flux cored arc welding of those carbon and low alloy steels requiring a minimum tensile strength of 80 ksi and good CVN values at temperatures of -40°F and lower. This electrode is intended for welding in all positions, both single and multiple pass welds, using a shielding gas blend of 75-80% Argon/Carbon Dioxide. The arc transfer is a smooth, small droplet mode, with very little spatter residue. The slag freezes quickly enough to facilitate welding in all positions, but provides the type of flow and wetting properties to allow good bead geometry and tie in, even in horizontal fillets.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent mechanical properties
- Fast-freezing slag system
- Good bead geometry
- Smooth arc transfer
- Good low-temperature CVN properties
- Virtually no spatter
- Excellent feedability
- Better sidewall fusion than solid electrodes

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.29: E81T1-Ni1M H8
- ASME SFA 5.29: E81T1-Ni1M H8

APPLICATIONS

Tru-Core® FC 81T-Ni1M is well suited to those applications where any combination of all position welding, good welder appeal, a minimum tensile strength of 80 ksi, good CVN values at lower temperatures, and the ability to weld on plate thicknesses from ¼” to heavy plate sections is required. Some examples are:

- Offshore oil structures
- Subsea components of oil and gas systems
- Earthmoving equipment
- Mining machinery
- Power generation equipment
- Shipbuilding

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 75-80% Argon/Balance CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in “typical” without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Tru-Core[®] MC 70C AWS E70C-6M H4, E70C-3M H4

DESCRIPTION

Tru-Core[®] MC 70C is a metal cored, gas shielded electrode intended for gas metal arc welding with shielding gas blends of 75-95% Argon, balance Carbon Dioxide. Designed to weld carbon steels and certain low alloy steels, in applications demanding higher productivity and requiring a minimum of 70,000 psi tensile strength. The core is comprised entirely of metallic powders, allowing the electrode to perform like a solid wire. MC 70C is recommended for use in single and multiple pass applications.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent mechanical properties
- Flat bead geometry
- Excellent feedability
- Easy slag removal
- Smooth arc transfer
- High deposition/automation friendly

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.18: E70C-6M H4, E70C-3M H4
- ASME SFA 5.18: E 70C-6M H4
- CWB W48-06: E 492C-6M-H4

APPLICATIONS

Tru-Core[®] MC 70C is an excellent choice for welding most carbon steels, such as ASTM A 36, A 285, A 515 Grade 70 and A 516 Grade 70, as well as certain low alloy steels. It is ideal for gauges ranging from heavier sheet metal to thick plate, where the weld is positioned for either manual, automatic or robotic applications. Some examples are:

- Hot Water Heaters
- Shipbuilding
- Structural Steel
- Agricultural Equipment
- Railcar Construction
- Truck Frames

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 75-95% Argon/Balance CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

Tru-Core[®] MC 80C-Ni1 AWS E80C-Ni1 H4

DESCRIPTION

Tru-Core[®] MC 80C-Ni1 is a low alloy steel, composite metal cored electrode for gas shielded arc welding low alloy, and certain carbon, steels requiring tensile strengths in excess of 80 ksi and good CVN values at temperatures as low as -50°F. This electrode is intended to be used with a shielding gas blend of 95-99% Argon/Balance Oxygen, but performs well with 75-95% Argon/Balance Carbon Dioxide as well. The MC 80C-Ni1 can be used in single and multiple pass applications, both in fillets and groove welds.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent mechanical properties
- Nearly slag free welds
- Flat bead geometry
- Smooth arc transfer
- Easy clean-up
- Excellent feedability
- Good low-temperature CVN properties
- Better sidewall fusion than solid electrodes

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.28: E80C-Ni1 H4
- ASME SFA 5.28: E80C-Ni1 H4

APPLICATIONS

Tru-Core[®] MC 80C-Ni1 is a good choice to weld steels from ¼" thickness up to heavy plates sections. Typical grades: ASTM A203 Grade A, ASTM A352 Grades LC1 and LC2, and Weathering steel such as ASTM A588. Some examples are:

- Power transmission poles
- Mining machinery
- Construction equipment
- Shipbuilding

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 95-99% Argon/Balance O₂
- 75-95% Argon/Balance CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

Tru-Core® MC 90C-D2 AWS E90C-D2 H4

DESCRIPTION

Tru-Core® MC 90C-D2 is a low alloy steel, composite metal cored electrode for gas shielded arc welding of low alloy, and certain carbon, steels requiring tensile strengths in excess of 90 ksi and good CVN values at temperatures as low as -20°F. This electrode is intended to be used with shielding gas blends of 75-95% Argon/Balance Carbon Dioxide, and up to 98% Argon/Balance Oxygen (the AWS Classification gas blend). As the core is comprised entirely of metallic powders, this electrode is used within the GMAW process. The MC 90C-D2 can be used in single and multiple pass applications, both in fillets and groove welds.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent mechanical properties
- Nearly slag free welds
- Flat bead geometry
- Smooth arc transfer
- Low fume emissions
- Excellent feedability
- Virtually no spatter
- Wide window of operating parameters
- Good low-temperature CVN properties
- Better sidewall fusion than solid electrodes

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

SPECIFICATIONS

Meets or Exceeds:

- AWS A5.28: E90C-D2 H4
- ASME SFA 5.28: E90C-D2 H4

APPLICATIONS

Tru-Core® MC 90C-D2 is a good choice to weld steels from ¼" thickness up to heavy plates sections, in grades matching the mechanical properties and corrosion resistance of high strength, low alloy pressure vessel steels, such as ASTM A302, and manganese molybdenum castings such as ASTM A49 , A291, and A735. Some typical applications are as follows:

- Pressure vessels
- Pressure piping systems
- Repair of manganese-molybdenum castings
- Crane frames and components

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 40-55 cfh

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.



Tru-Core® MC 110C-K4 AWS E110C-K4 H4

DESCRIPTION

Tru-Core® MC 110C-K4 is a low alloy steel, metal cored electrode for gas shielded arc welding of low alloy, and carbon steels requiring tensile strengths in excess of 110 ksi and good CVN values at temperatures as low as -60°F. This electrode is intended to be used with shielding gas blends of 75-95% Argon/Balance Carbon Dioxide. The MC 110C-K4 can be used in single and multiple pass applications, both in fillets and groove welds.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent mechanical properties
- Nearly slag free welds
- Flat bead geometry
- Smooth arc transfer
- Easy clean-up Excellent feedability
- Good low-temperature CVN properties
- Better sidewall fusion than solid electrodes

PRODUCED IN: Stillwater, Oklahoma

[Go to TECHNICAL TABLES \(p.35-38\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.28: E110C-K4 H4
- ASME SFA 5.28: E110C-K4 H4

APPLICATIONS

Tru-Core® MC 110C-K4 is a good choice to weld steels from ¼" thickness up to heavy plates sections. Typical grades: ASTM A514 Grades, HY-100, and armor plate. Some examples are:

- Crane frames and components
- Mining machinery frames
- Construction equipment frames
- Welding armor to carbon steel and itself

SHIELDING GAS BLENDS

Typical Application Shielding Gas Blends:

- 75-95% Argon/Balance CO₂
- Flow Rate: 35-45 CFH

WELDING POSITIONS

All position welding is possible when using the correct shielding gas blends, welding process and welding parameters.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Alumi Glide® 4043

DESCRIPTION

Alumi Glide® 4043 is a 5% Silicon aluminum filler metal that is one of the most widely used aluminum welding alloys for fabrication and general repair. Smooth-running, it is often preferred because of its flowing characteristics and its reduced crack sensitivity over other aluminum welding wires. It is available in spools and cut lengths for both MIG and TIG welding and is recommended for base metals 3003, 3004, 5052, 6061, 6063 and casting alloys 43, 355, 356 and 214. It has a melting range of 1065-1170 F and a density of .097 lbs/ci. Its post anodizing color is gray.

CHARACTERISTICS

PRODUCT FEATURES:

- Excellent wire surface finish ensures trouble-free welding
- Superior cleanliness ensures sound weldments
- Smooth-running
- Reduced crack sensitivity

TYPICAL PROPERTIES:

- Melting Range 1065 – 1170 F 574 – 632 C
- Density .097 lbs\cu in.
- Post Anodize Color Gray

PRODUCED IN: Canada

[Go to TECHNICAL TABLES \(p.39-40\)](#)

SPECIFICATIONS

Meets or exceeds:

- AWS A5.10 classification ER4043, R4043
- Canadian Bureau of Welding – CWB A5.10
- ISO 9001:2008

APPLICATIONS

Common welding applications include bicycles, trucks, trailers, automotive parts and equipment.

SHIELDING GAS BLENDS

(N/A)

WELDING POSITIONS

All-position MIG welding wire. Requires appropriate shielding gas usage, settings and arc transfer modes.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.



Alumi Glide® 5356

DESCRIPTION

Alumi Glide® 5356 is a 5% magnesium aluminum filler metal, available in spools and cut length for both MIG and TIG applications. It has increased levels of Mg, Ti and Mn along with the addition of chrome and a slight reduction in silicon. These changes work together to increase its corrosion resistance, making it the best aluminum for use in or near saltwater. It is commonly used on 5050, 5052, 5083, 5356, 5454 and 5456 and is the second most widely used aluminum filler metal. It has a melting range of 1060-1175F, a density of 0.96 lbs/ci and a typical tensile strength of 38,000 psi. Its post anodizing color is white.

CHARACTERISTICS

PRODUCT FEATURES:

- Superior wire surface finish ensures trouble free welding
- Exceptional cleanliness ensures sound weldments
- Unique diameter control for consistent feeding, robotic or manual

TYPICAL PROPERTIES:

- Melting Range 1060 – 1175 F 571 – 635 C
- Density .096 lbs\cu in.
- Post Anodize Color White

PRODUCED IN: Canada

[Go to TECHNICAL TABLES \(p.39-40\)](#)

The information contained or otherwise referenced herein is presented only in “typical” without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. Specification, other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by National Standard LLC.

SPECIFICATIONS

Meets or exceeds:

- AWS A5.10 classification ER5356, R5356
- Canadian Bureau of Welding – CWB A5.10
- ISO 9001:2008
- ABS

APPLICATIONS

Common welding applications include boats, ships, bicycles, trucks, pressure vessels, automotive parts and equipment.

SHIELDING GAS BLENDS

(N/A)

WELDING POSITIONS

All-position MIG welding wire. Requires appropriate shielding gas usage, settings and arc transfer modes.

STORAGE

Welding wire should be stored in a dry, enclosed environment and in its originally sealed package.

NS Plus[®] and NS CopperFree[™] CARBON WELDING WIRES

TYPICAL MECHANICAL PROPERTIES (as welded)

		TENSILE STRENGTH PSI	YIELD STRENGTH PSI	MINIMUM ELONGATION %	CVN IMPACT VALUES @ 0° F
101	NS Plus [®] -101	77,100	61,700	29	90 ft-lbf
	NS 101 CopperFree [™]	79,900	66,200	28	68 ft-lbf
	AWS MINIMUM	70,000	58,000	22	20 ft-lbf
	Typical conducted with CO ₂ shielding gas. Wire performance data available upon request				

		TENSILE STRENGTH PSI	YIELD STRENGTH PSI	MINIMUM ELONGATION %	CVN IMPACT VALUES @ - 20° F
102 (ER80S-D2)*	NS Plus [®] -102	95,700	80,800	24	34 ft-lbf
	NS 102 CopperFree [™]	95,700	80,800	24	34 ft-lbf
	AWS MINIMUM (ER80S-D2)	80,000	68,000	17	20 ft-lbf
	102 (ER90S-D2)*	NS Plus [®] -102	98,700	84,400	27
NS 102 CopperFree [™]		98,700	84,400	27	52 ft-lbf
AWS MINIMUM (ER90S-D2)		90,000	78,000	17	20 ft-lbf
*ER80S-D2 (100% CO ₂), ER90S-D2 (98% Ar/2% O ₂) Wire performance data available upon request					

115	NS Plus [®] -115	82,200	65,200	29	60 ft-lbf
	NS 115 CopperFree [™]	88,800	73,500	27	39 ft-lbf
	AWS MINIMU	70,000	58,000	22	20 ft-lbf

NS Plus[®] and NS CopperFree[™] CARBON WELDING WIRES

APPROXIMATE WELDING PARAMETERS

GRADE	DIA.	POLARITY	TRANSFER MODE	WIRE FEED SPEED in/min (m/min)		VOLTAGE		AMPERAGE	
				Min.	Max.	Min.	Max.	Min.	Max.
NS Plus [®] Copper-Coated	0.035	DCEP	Short Circuit	100 (2.5)	400 (10.1)	18	24	75	180
	0.035		Spray	375 (9.5)	625 (15.9)	24	30	180	280
	0.040		Short Circuit	115 (2.9)	425 (10.8)	17	24	100	205
	0.040		Spray	365 (9.3)	560 (14.2)	24	30	215	315
	0.045		Short Circuit	125 (3.2)	450 (11.4)	19	25	125	225
	0.045		Spray	350 (8.9)	500 (12.7)	27	31	250	350
	0.052		Short Circuit	200 (5.1)	325 (8.3)	23	27	200	300
	0.052		Spray	300 (7.6)	500 (12.7)	30	32	300	425
	0.062		Short Circuit	190 (4.8)	325 (8.3)	24	28	200	325
	0.062		Spray	200 (5.1)	375 (9.5)	28	32	325	420
NS CopperFree [™]	0.030	DCEP	Short Circuit	75 (1.9)	300 (7.6)	17	22	45	130
	0.035		Short Circuit	100 (2.5)	400 (10.1)	17	24	75	180
	0.035		Spray	375 (9.5)	625 (15.9)	23	29	180	280
	0.040		Short Circuit	115 (2.9)	425 (10.8)	17	24	100	205
	0.040		Spray	365 (9.3)	560 (14.2)	24	30	215	315
	0.045		Short Circuit	125 (3.2)	450 (11.4)	18	24	125	225
	0.045		Spray	350 (8.9)	500 (12.7)	26	30	250	350
	0.052		Short Circuit	200 (5.1)	325 (8.3)	22	26	200	300
	0.052		Spray	300 (7.6)	500 (12.7)	27	31	300	425
	0.062		Short Circuit	190 (4.8)	325 (8.3)	23	27	200	325
	0.062		Spray	200 (5.1)	375 (9.5)	27	31	325	425
	0.062		Spray	200 (5.1)	375 (9.5)	27	31	325	425

NS Plus[®] and NS CopperFree[™] CARBON WELDING WIRES

TYPICAL WIRE CHEMISTRY PERCENTAGES (as required per AWS)

		C	Mn	Si	P	S	Cu	Ni	Cr	Mo	V
101	NS Plus [®] -101 Typ.	0.09	1.17	0.59	0.009	0.009	0.16	0.04	0.04	0.012	0.005
	NS 101 CopperFree [™] Typ.	0.09	1.17	0.60	0.012	0.014	0.07	0.06	0.07	0.008	0.005
	AWS A5.18/A5.18M	0.06/0.15	0.90/1.40	0.45/0.70	0.025 (max.)	0.035 (max.)	0.50 (max.)	0.15 (max.)	0.15 (max.)	0.15 (max.)	0.03 (max.)
	AWS A5.17/A5.17M	0.06/0.16	0.90/1.40	0.35/0.75	0.030 (max.)	0.030 (max.)	0.35 (max.)	-	-	-	-
102	NS Plus [®] -102 Typ.	0.09	1.76	0.66	0.009	0.01	0.14	0.07		0.46	
	NS 102 CopperFree [™] Typ.	0.1	1.81	0.63	0.016	0.016	0.06	0.06		0.47	
	AWS A5.28/A5.28M	0.07/0.12	1.60/2.10	0.50/0.80	0.025 (max.)	0.025 (max.)	0.50 (max.)	0.15 (max.)		0.40/0.60	
	AWS A5.23/A5.23M	0.05/0.15	1.60/2.10	0.50/0.80	0.025 (max.)	0.025 (max.)	0.35 (max.)			0.40/0.60	
115	NS Plus [®] -115 Typ.	0.08	1.49	0.9	0.011	0.01	0.14	0.05	0.04	0.008	0.006
	NS 115 CopperFree [™] Typ.	0.09	1.52	0.91	0.012	0.011	0.07	0.06	0.06	0.01	0.01
	AWS A5.18/A5.18M	0.06/0.15	1.40/1.85	0.80/1.15	0.025 (max.)	0.035 (max.)	0.50 (max.)	0.15 (max.)	0.15 (max.)	0.15 (max.)	0.03 (max.)
	AWS A5.17/A5.17M	0.06/0.15	1.40/1.85	0.80/1.15	0.030 (max.)	0.030 (max.)	0.35 (max.)				

NS Plus[®] and NS CopperFree[™] CARBON WELDING WIRES

STANDARD DIAMETERS AND PACKAGING

(Note: Contact NS Customer Service for wire diameter availability of each alloy.)

Package	Package Size	.035	.040	.045	.052	.062
Coil	1000	x				
Drum	250	x		x		
Drum	500	x	x	x	x	x
Drum	900	x	x	x	x	x
Drum	1000			x		
Masonite Spool	33	x	x	x	x	x
Masonite Spool	45	x	x	x	x	x
Masonite Spool	60	x	x	x	x	x
Smart Pak Single Skid	250	x				
Smart Pak [®] 100% Recyclable	250	x	x	x	x	
Smart Pak [®] 100% Recyclable	500	x	x	x	x	
Smart Pak [®] 100% Recyclable	900	x	x	x	x	x
Smart Pak [®] 100% Recyclable	1000	x	x	x	x	x
Tru-Trac [®] Wood Reel	300	x	x	x	x	x
Tru-Trac [®] Wood Reel	500	x		x	x	
Tru-Trac [®] Wood Reel	600					x
Tru-Trac [®] Wood Reel	1000	x	x	x	x	x
Tru-Trac [®] Wood Reel	1500			x		
Wood Reel	1000	x	x	x	x	x
Wire Basket - Precision Layer Level Wound	33	x	x	x	x	x
Wire Basket - Precision Layer Level Wound	45	x	x	x	x	x



VIKING WELDING WIRES

TYPICAL MECHANICAL PROPERTIES (as welded)

	TENSILE STRENGTH PSI	YIELD STRENGTH PSI	MINIMUM ELONGATION %	CVN IMPACT VALUES @ 20° F
ER70S-6 Typical*	88,800	73,500	27	39 ft-lbf
AWS MINIMUM	70,000	58,000	22	20 ft-lbf

*Typical conducted with CO₂ shielding gas.

APPROXIMATE WELDING PARAMETERS

GRADE	DIA.	POLARITY	TRANSFER MODE	SHIELDING GAS	WIRE FEED SPEED in/min	VOLTAGE	AMPERAGE
ER70S-6	0.035	DC+	Short Circuit	100% CO ₂	100-150-250	18-19-22	80-100-150
	0.035		Spray	90% Argon/ 10% CO ₂	375-500-600	27-30-30	195-210-250
	0.045		Short Circuit	100% CO ₂	125-150-200	19-20-21	145-145-175
	0.045		Spray	90% Argon/ 10% CO ₂	350-475-500	27-30-30	285-315-315

TYPICAL WIRE CHEMISTRY PERCENTAGES (as required per AWS)

	C	Mn	Si	P	S	Cu	Ni	Cr	Mo	V
ER70S-6 Typical	0.07	1.45	0.85	0.020	0.025	0.07	0.06	0.06	0.01	0.01
AWS A5.18	0.06/0.15	1.40/1.85	0.80/1.15	0.025 (max.)	0.035 (max.)	0.50 (max.)	0.15 (max.)	0.15 (max.)	0.15 (max.)	0.03 (max.)

PACKAGING DIMENSIONS

DIAMETER	PART#	PKG	LBS	PKG DIMENSIONS (inches)	PALLET LBS	PALLET DIMENSIONS (inches)	PALLET COUNT
.035	1020534	Spool	33	12 x 12 x 4	2376	44 x 31 x 34	72 spools/pallet
.045	1020533	Spool	33	12 x 12 x 4	2376	44 x 31 x 34	72 spools/pallet
.035	1010914	Spool	44	12 x 12 x 4	2640	44 x 27 x 34	60 spools/pallet
.045	1010915	Spool	44	12 x 12 x 4	2640	44 x 27 x 34	60 spools/pallet
.035	1010916	Drum	550	21 dia. x 32 tall	1100	42 x 36 x 21	2 drums/pallet
.045	1010918	Drum	550	21 dia. x 32 tall	1100	42 x 36 x 21	2 drums/pallet

National Standard Customer Service:

1-800-777-1618
405-372-7954 (fax)



(This page is intentionally left blank.)

Satin Glide[®] STAINLESS WELDING WIRES

TYPICAL WIRE CHEMISTRY PERCENTAGES (as required per AWS)

TYPE	ASME SFA 5.9	AWS A5.9/ AWS A5.9M	Carbon	Cr	Ni	Mn	Si	Other
308L	Yes	Yes	.03 Max	20.00/22.00	9.50/11.00	1.60/2.00	.40/.65	
308LHS	Yes	Yes	.03 Max	20.00/22.00	9.50/11.00	1.60/2.00	.70/1.00	
309L	Yes	Yes	.03 Max	23.00/25.00	12.00/14.00	1.60/2.50	.45/.65	
309LHS	Yes	Yes	.07 Max	23.00/25.00	12.00/14.00	1.60/2.50	.70/1.00	
316L	Yes	Yes	.03 Max	18.00/20.00	12.00/14.00	1.60/2.50	.45/.75	Mo 2.00/2.50
316LHS	Yes	Yes	.03 Max	18.00/20.00	12.00/14.00	1.60/2.25	.70/1.00	Mo 2.00/2.50
409CB	Yes	Yes	.05 Max	11.00/12.00	.50 Max	.45/.75	.45/.75	Cb 10xC Min/.60
430L	Yes	Yes	.03 Max	16.00/17.00	.50 Max	.25/.60	.25/.50	
430LCB			.03 Max	16.50/19.50	.20/.60	.35/.60	.30/.60	Cb .30/.70 & Mo .20/.50

L = Low Carbon LHS = Low Carbon, High Silicon CB = Columbium

APPROXIMATE WELDING PARAMETERS

DIA.	POLARITY	TRANSFER MODE	SHIELDING GAS	WIRE FEED SPEED in/min	VOLTAGE	AMPERAGE
0.035	DCEP	Short Circuit	90% Helium/ 7.5% Argon/ Bal CO ₂	120-425	19-23	55-170
0.035		Axial Spray	90% Helium/ 7.5% Argon/ Bal CO ₂	400-475	22-23	180-210
0.045		Short Circuit	98% Argon/ 2% O ₂	100-275	19-23	10-185
0.045		Axial Spray	98% Argon/ 2% O ₂	240-360	23-25	195-260

Satin Glide[®] STAINLESS WELDING WIRES

STAINLESS STEEL FILLER METALS FOR WELDING DISSIMILAR METALS

BASE ALLOY	201, 202, 301, 302, 302B, 303, 304, 305, 308	304L	309, 309S	310, 310S, 314	316	316L	317	317L	321, 347, 348	330	403, 405, 410, 414, 416, 420	430, 430F, 431, 440A, 440B, 440C	448	501, 502	505	CARBON STEEL	CR-MO STEEL
201, 202, 301, 302, 302B, 303, 304, 305, 308	308	308	308	308	308	308	308	308	308	309	309	309	310	309	309	309	309
304L		308L	308	308	308	308	308	308	309	309	309	309	310	309	309	309	309
309, 309S			309	309	309	309	309	309	309	309	309	309	310	309	309	309	309
310, 310S, 314				310	316	316	317	317	309	309	309	309	310	310	310	310	309
316					316	316	316	316	308	309 Mo	309	309	310	309	309	309	309
316L						316L	316	316L	316L	309 Mo	309	309	310	309	309	309	309
317							317	317	308	309 Mo	309	309	310	309	309	309	309
317L								317L	308L	309 Mo	309	309	310	309	309	309	309
321, 347, 348									347	309	309	309	310	309	309	309	309
330										330	309	309	310	309	309	309	309
403, 405, 410, 414, 416, 420											410	430	410	502	505	410	410
430, 430F, 431, 440A, 440B, 440C												430	430	502	505	430	430
448													448	502	502	430	430
501, 502														502	502	502	502
505															505	505	505

Satin Glide® STAINLESS WELDING WIRES

STANDARD DIAMETERS AND PACKAGING

(Note: Contact NS Customer Service for wire diameter availability of each alloy.)

Package	Package LBS	.035	.040	.045	.052	.063	0.093	0.094
Carton	1	x		x				
Carton	10	x		x		x	x	x
Carton	40	x				x		x
Coil	60			x				x
Drum	250	x		x				
Drum	500	x		x	x	x		
Masonite Spool	30	x	x	x	x	x		
Masonite Spool	45	x		x				
Masonite Spool	60	x		x				
Tru-Trac® Wood Reel	300	x		x	x	x		
Tru-Trac® Wood Reel	500				x			
Tru-Trac® Wood Reel	600	x		x		x		
Tru-Trac® Wood Reel	1000			x				
Wood Reel	600	x						



(This page is intentionally left blank.)

Tru-Core[®] CORED WELDING WIRES

TYPICAL MECHANICAL PROPERTIES (as welded)

		TENSILE STRENGTH KSI	YIELD STRENGTH KSI	ELONGATION (% IN 2")	CVN @ -20°F (-29°C)
FC 70T	100% CO ₂	88.8	75.3	28	27.3 ft-lbf
	AWS/ASME	70-95	58 (min.)	22 (min.)	20 ft-lbf
FC 71T	100% CO ₂	83.6	72.7	29	54.3 ft-lbf
	75% Ar /25% CO ₂	80.8	68.4	29	41.6 ft-lbf
	AWS/ASME	70-95	58 (min.)	22 (min.)	20 ft-lbf
FC 71T-12C	100% CO ₂	84.3	75.8	30	71.3 ft-lbf
	AWS/ASME	70-90	58 (min.)	22 (min.)	20 ft-lbf
FC 71T-12M	75% Ar /25% CO ₂	83.5	72.6	29	79.6 ft-lbf
	AWS/ASME	70-90	58 (min.)	22 (min.)	20 ft-lbf
FC 71T-AG	75% Ar /25% CO ₂	84.2	74.1	28	62.6 ft-lbf
	AWS/ASME	70-95	58 (min.)	22 (min.)	20 ft-lbf
FC 71T-CG	100% CO ₂	80.5	69.1	33	59.6 ft-lbf
	AWS/ASME	70-95	58 (min.)	22 (min.)	20 ft-lbf
FC 81T-Ni1	100% CO ₂	85.9	76	29	77.7 ft-lbf
	AWS/ASME	80 – 100	68 (min.)	19 (min.)	20 ft-lbf
FC 81T-Ni1M	75% Ar /25% CO ₂	99.1	88.3	26	55.7 ft-lbf
	AWS/ASME	80 – 100	68 (min.)	19 (min.)	20 ft-lbf
MC 70C	75% Ar /25% CO ₂	81.5	66.9	32	46.7 ft-lbf
	90% Ar /10% CO ₂	83.9	70.8	30	32.6 ft-lbf
	AWS/ASME	70 (min.)	58 (min.)	22 (min.)	20 ft-lbf
MC 90C-D2	95% Ar /5% O ₂	97.4	83.7	26.5	29 ft-lbf
	AWS/ASME	90 (min.)	78 (min.)	17 (min.)	20 ft-lbf
					CVN @ -50°F (-45°C)
MC 80C-Ni1	95% Ar /5% O ₂	86	73.8	29	38.3 ft-lbf
	75% Ar /25% CO ₂	83.2	70.7	32	35.7 ft-lbf
	AWS/ASME	80 (min.)	68 (min.)	24 (min.)	20 (min.)
					CVN @ -60°F (-51°C)
MC 110C-K4	90% Ar /10% CO ₂	111.7	101	18	26.7 ft-lbf
	AWS/ASME	110 (min.)	98 (min.)	15 (min.)	20 (min.)

Tru-Core[®] CORED WELDING WIRES

TYPICAL WELD METAL COMPOSITION (as required per AWS)

		C	Mn	Si	P	S	Cu	Ni	Cr	Mo	V
FC 70T	100% CO ₂	0.06	1.6	0.67	0.013	0.01	0.09	0.35	0.05	0.01	0.012
	AWS/ASME	0.12 (max.)	1.75 (max.)	0.90 (max.)	0.03 (max.)	0.03 (max.)	0.35 (max.)	0.50 (max.)	0.20 (max.)	0.30 (max.)	0.08 (max.)
FC 71T	100% CO ₂	0.04	1.54	0.41	0.01	0.008	0.06	0.02	0.06	0.01	0.016
	75% Ar/25% CO ₂	0.05	1.41	0.45	0.009	0.01	0.06	0.02	0.03	0.002	0.017
	AWS/ASME	0.12 (max.)	1.75 (max.)	0.90 (max.)	0.03 (max.)	0.03 (max.)	0.35 (max.)	0.50 (max.)	0.20 (max.)	0.30 (max.)	0.08 (max.)
FC 71T-12C	100% CO ₂	0.04	1.36	0.36	0.007	0.009	0.06	0.42	0.04	0.001	0.02
	AWS/ASME	0.12 (max.)	1.6 (max.)	0.9 (max.)	0.03 (max.)	0.03 (max.)	0.35 (max.)	0.5 (max.)	0.2 (max.)	0.3 (max.)	0.08 (max.)
FC 71T-12M	75% Ar/25% CO ₂	0.05	1.35	0.32	0.011	0.007	0.06	0.39	0.05	0.01	0.019
	AWS/ASME	0.12 (max.)	1.6 (max.)	0.9 (max.)	0.03 (max.)	0.03 (max.)	0.35 (max.)	0.5 (max.)	0.2 (max.)	0.3 (max.)	0.08 (max.)
FC 71T-AG	75% Ar/25% CO ₂	0.04	1.38	0.43	0.009	0.007	0.06	0.02	0.06	0.01	0.016
	AWS/ASME	0.12 (max.)	1.75 (max.)	0.90 (max.)	0.03 (max.)	0.03 (max.)	0.35 (max.)	0.50 (max.)	0.20 (max.)	0.30 (max.)	0.08 (max.)
FC 71T-CG	100% CO ₂	0.05	1.38	0.35	0.01	0.007	0.06	0.48	0.05	0	0.014
	AWS/ASME	0.12 (max.)	1.75 (max.)	0.90 (max.)	0.03 (max.)	0.03 (max.)	0.35 (max.)	0.50 (max.)	0.20 (max.)	0.30 (max.)	0.08 (max.)
FC 81T-Ni1	100% CO ₂	0.04	1.23	0.45	0.006	0.007		0.99	0.05	0.001	0.02
	AWS/ASME	0.12 (max.)	1.50 (max.)	0.80 (max.)	0.030 (max.)	0.030 (max.)		0.80 – 1.10	0.15 (max.)	0.35 (max.)	0.05 (max.)
FC 81T-Ni1M	75% Ar/25% CO ₂	0.04	1.38	0.54	0.009	0.009		0.97	0.03	0	0.05
	AWS/ASME	0.12 (max.)	1.50 (max.)	0.80 (max.)	0.030 (max.)	0.030 (max.)		0.80 – 1.10	0.15 (max.)	0.35 (max.)	0.05 (max.)
MC 70C	75% Ar/25% CO ₂	0.04	1.6	0.82	0.009	0.01	0.06	0.02	0.05	0.01	0
	90% Ar/10% CO ₂	0.04	1.61	0.85	0.006	0.009	0.05	0.02	0.04	0.001	<0.001
	AWS/ASME	0.12 (max.)	1.75 (max.)	0.90 (max.)	0.03 (max.)	0.03 (max.)	0.50 (max.)	0.50 (max.)	0.20 (max.)	0.30 (max.)	0.08 (max.)
MC 80C-Ni1	95% Ar /5% O ₂	0.04	1.48	0.43	0.008	0.009	0.05	0.9		0.14	0
	75% Ar/25% CO ₂	0.04	1.41	0.4	0.008	0.009	0.05	0.94		0.14	0
	AWS/ASME	0.12 (max.)	1.50 (max.)	0.90 (max.)	0.025 (max.)	0.030 (max.)	0.35 (max.)	0.80-1.10		0.30 (max.)	0.03 (max.)
MC 90C-D2	95% Ar /5% O ₂	0.02	1.79	0.89	0.011	0.007	0.05	0.02	0.04	0.55	<0.01
	AWS/ASME	0.12 (max.)	1.00-1.90	0.90 (max.)	0.025 (max.)	0.030 (max.)	0.35 (max.)			0.40-0.60	0.03 (max.)
MC 110C-K4	95% Ar /5% O ₂	0.04	1.67	0.43	0.008	0.01	0.04	2.21	0.34	0.46	0
	AWS/ASME	0.15 (max.)	0.75 – 2.25	0.80 (max.)	0.025 (max.)	0.025 (max.)	0.35 (max.)	0.50 – 2.50	0.15-0.65	0.25 – 0.65	0.03 (max.)

National Standard Customer Service:

1-800-777-1618
405-372-7954 (fax)

Tru-Core[®] CORED WELDING WIRES

TYPICAL DIFFUSIBLE HYDROGEN (ml/100g)

FC 70T	100% CO ₂	7
	AWS A4.3	8.0 (max.)
FC 71T	100% CO ₂	2.2
	75% Ar /25% CO ₂	3.2
	AWS A4.3	4.0 (max.)
FC 71T-12C	100% CO ₂	3.4
	AWS A4.3	4.0 (max.)
FC 71T-12M	75% Ar /25% CO ₂	2.74
	AWS A4.3	4.0 (max.)
FC 71T-AG	75% Ar /25% CO ₂	2
	AWS A4.3	4.0 (max.)
FC 71T-CG	100% CO ₂	3.2
	AWS A4.3	4.0 (max.)
FC 81T-Ni1		
FC 81T-Ni1M	75% Ar /25% CO ₂	3.5
	AWS A4.3	4.0 (max.)
MC 70C	75% Ar /25% CO ₂	1.1
	90% Ar /10% CO ₂	2.06
	AWS/ASME	4.0 (max.)
MC 80C-Ni1	95% Ar /5% O ₂	1.6
	75% Ar /25% CO ₂	1.1
	AWS/ASME	4.0 (max.)
MC 90C-D2	95% Ar /5% O ₂	2.3
	AWS/ASME	4.0 (max.)
MC 110C-K4	90% Ar /10% CO ₂	1.78
	AWS/ASME	4.0 (max.)

STANDARD DIAMETERS AND PACKAGING

(Note: Contact NS Customer Service for wire diameter availability of each alloy.)

Package	Package LBS	.045	.052	.062	0625	.063	0.078	0.093
Coil	60	x	x	x			x	x
Drum	500	x	x	x			x	x
	600	x	x	x			x	x
Masonite Spool	33	x	x	x	x	x	x	
	50	x	x	x			x	x
Smart Pak [®] 100% Recyclable	250	x						
	500	x	x	x				
	600			x				
Wood Reel	300	x						
	500	x		x				
	600							x



Tru-Core[®] CORED WELDING WIRES

APPROXIMATE WELDING PARAMETERS (ALL CORED WIRES)

		DIA. (in)	POLARITY	AMPERAGE		VOLTAGE		WIRE FEED SPEED in/min		CTWD (in)	SHIELDING GAS
				Min.	Max.	Min.	Max.	Min.	Max.		
ALL FLUX CORED WIRES	ALL POSITIONS	0.045	DCEP	145	200	23	25	270	330	5/8	100% CO ₂ or 75-80% Argon/Balan ce CO ₂
		0.052		150	215	24	26	200	245	5/8	
		1/16 (.062)		165	220	24	26	130	160	3/4	
	FLAT AND HORIZ. POSITIONS	0.045		120	270	23	28	200	500	5/8	
		0.052		160	315	24	29	225	425	5/8	
		1/16 (.062)		260	360	25	30	250	325	3/4	
ALL METAL CORED WIRES	FLAT AND HORIZ. POSITIONS	0.045	DCEP	120	340	17	30	190	520	5/8	75-90% Argon/Balan ce CO ₂
		0.052		145	360	17	30	175	475	5/8	
		1/16 (.062)		190	485	17	30	150	450	3/4-1	
		1/16 (.062)		345	550	21	31	150	250	1-Jan	

Alumi Glide[®] ALUMINUM WELDING WIRES

TYPICAL WELD METAL COMPOSITION (Weight %)

	Al (Aluminum)	Mn (Manganese)	Fe (Iron)	Cu (Copper)	Be (Beryllium)	Si (Silicon)	Mg (Magnesium)	Cr (Chromium)	Ti (Titanium)	Zn (Zinc)	Other Elements
4043	Remainder	0.05 Max	0.80 Max	0.30 Max	0.0003 Max	4.5-6.0	0.05 Max		0.20 Max	0.10 Max	0.05 Max & Total 0.15 Max
4943	Remainder	0.05 (max.)	0.40 (max.)	0.10 (max.)	0.0003 (max.)	5.0 – 6.0	0.30 – 0.50		0.15 (max.)	0.10 (max.)	0.05 Max & Total 0.15 Max
5356	Remainder	0.05-0.20	0.40 (max.)	0.10 (max.)	0.0003 (max.)	0.25 (max.)	4.5-5.5	0.05-0.20	0.06-0.20	0.10 (max.)	0.05 Max & Total 0.15 Max

MIG WELDING PROCEDURES: DCEP

DIA.	WFS (in/min.)	AMPERAGE	VOLTAGE	CONSUMPTION LB/100FT	ARGON (cfh)
0.030	480-625	60-175	15-24	0.65-1.25	25-30
0.035	450-750	70-185	15-27	1.00-4.25	30-35
3/64"	330-500	125-260	20-29	1.00-4.25	35-45
1/16"	250-450	170-300	24-30	3.8-66	45-75
3/32"	160-200	275-400	26-31	35-66	60-85

Alumi Glide[®] ALUMINUM WELDING WIRES

TIG WELDING PROCEDURES: ACHF- with Pure or Ziconiated Hemisphere shape tungsten tip

BASE THICKNESS	FILLER WIRE SIZE	TUNGSTEN	AMPERAGE	CONSUMPTION LB/100FT	GAS CUP SIZE	ARGON (CFH)
1/16"	1/16"	1/16"	60-80	0.75	3/8"	20
3/32"	3/32"	3/32"	85-120	1.00	3/8"	20
1/8"	3/32"	3/32"	125-160	1.50	3/8"	20
3/16"	1/8"	1/8"	190-220	4.5-6.0	7/16"	25
1/4"	5/32"	5/32"	200-300	8-10	1/2"	30
3/8"	3/16"	3/16"	330-380	15-20	5/8"	35
1/2"	1/4"	1/4"	400-500	25-40	5/8"	40

STANDARD DIAMETERS AND PACKAGING

(Note: Contact NS Customer Service for wire diameter availability of each alloy.)

Package	Package LBS	.030	.035	.040	.047	0625	0.094	0.125
Bulk	360	x	x					
	2200						x	x
Carton	10				x	x	x	x
Drum	50		x		x			
	150		x		x			
	300		x		x	x		
Spool	1	x	x	x	x			
	16	x	x	x	x	x		
	20				x	x		
Reel	125					x		
Wood Reel	350				x	x		
Wire Basket - Precision Layer Level Wound	15		x					
	18				x			

Deposition Rates

95% DEPOSITION EFFICIENCY (POUNDS/HOUR)

WIRE FEED SPEED (inches/mi nute)	WIRE DIAMETERS					
	0.030	0.035	0.040	0.045	0.052	0.063
50	0.57	0.78	1.01	1.28	1.71	2.47
100	1.14	1.55	2.03	2.57	3.43	4.95
150	1.71	2.33	3.04	3.85	5.14	7.42
200	2.28	3.10	4.05	5.13	6.85	9.90
250	2.85	3.88	5.07	6.41	8.56	12.37
300	3.42	4.66	6.08	7.70	10.28	14.85
350	3.99	5.43	7.09	8.98	11.99	17.32
400	4.56	6.21	8.11	10.26	13.70	19.80
450	5.13	6.98	9.12	11.54	15.42	22.27
500	5.70	7.76	10.14	12.83	17.13	24.74
550	6.27	8.54	11.15	14.11	18.84	27.22
600	6.84	9.31	12.16	15.39	20.55	29.69
650	7.41	10.09	13.18	16.68	22.27	32.17
700	7.98	10.86	14.19	17.96	23.98	34.64
750	8.55	11.64	15.20	19.24	25.69	37.12
800	9.12	12.42	16.22	20.52	27.41	39.59
850	9.69	13.19	17.23	21.81	29.12	42.07
900	10.26	13.97	18.24	23.09	30.83	44.54
950	10.83	14.74	19.26	24.37	32.54	47.01
1,000	11.40	15.52	20.27	25.66	34.26	49.49