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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
## Packaging Weights/Dimensions

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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

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.

Go to TECHNICAL TABLES (p.27-30)
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 IS09001:2008 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

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 Sheilding 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.

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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

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-805-3
• 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 A336 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.

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Go to TECHNICAL TABLES (p.27-30)
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

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.

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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

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 Sheilding 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.

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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

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 Sheilding 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.

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**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

**SPECIFICATIONS**

Meets or exceeds:
- ER70S-6 (AWS A5.18, ASME SFA 5.18)
- ER49S-6 (CWB/CSA W48-14)

**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.

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**National Standard Customer Service:**
1-800-777-1618
405-372-7954 (fax)

**www.NationalStandard.com**
9/14/2017
**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

**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 Sheilding 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.

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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)

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**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

**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
- 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.

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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

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 Sheilding 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.

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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

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.

Go to TECHNICAL TABLES (p.35-38)
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)

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Tru-Core® FC 71T-12M

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

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 Sheilding 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.

Go to TECHNICAL TABLES (p.35-38)
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

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.

Go to TECHNICAL TABLES (p.35-38)

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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

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 Sheilding 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.

Go to TECHNICAL TABLES (p.35-38)

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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.

**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

**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.

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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

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.

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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

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.

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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

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.

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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

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.

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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

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.

Go to TECHNICAL TABLES (p.35-38)

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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

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.

Go to TECHNICAL TABLES (p.39-40)
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 1060-1175°F, 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

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.

Go to TECHNICAL TABLES (p.39-40)

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<th>TENSILE STRENGTH PSI</th>
<th>YIELD STRENGTH PSI</th>
<th>MINIMUM ELONGATION %</th>
<th>CVN IMPACT VALUES @ 0° F</th>
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<td>Typical conducted with CO₂ shielding gas. Wire performance data available upon request</td>
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<table>
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<td>Short Circuit</td>
<td>190 (4.8)</td>
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<td>Spray</td>
<td>200 (5.1)</td>
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<td>325</td>
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# TYPICAL WIRE CHEMISTRY PERCENTAGES (as required per AWS)

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# NS Plus® and NS CopperFree™ CARBON WELDING WIRES

## STANDARD DIAMETERS AND PACKAGING

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

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National Standard Customer Service:
1-800-777-1618
405-372-7954 (fax)

www.NationalStandard.com
9/14/2017
### TYPICAL MECHANICAL PROPERTIES (as welded)

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<th></th>
<th>TENSILE STRENGTH PSI</th>
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<th>MINIMUM ELONGATION</th>
<th>CVN IMPACT VALUES @ 20° F</th>
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<td>73,500</td>
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*Typical conducted with CO₂ shielding gas.

### APPROXIMATE WELDING PARAMETERS

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<th>DIA.</th>
<th>POLARITY</th>
<th>TRANSFER MODE</th>
<th>SHIELDING GAS</th>
<th>WIRE FEED SPEED in/min</th>
<th>VOLTAGE</th>
<th>AMPERAGE</th>
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<td>0.035</td>
<td>DC+</td>
<td>Short Circuit</td>
<td>100% CO₂</td>
<td>100-150-250</td>
<td>18-19-22</td>
<td>80-100-150</td>
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<td></td>
<td>0.035</td>
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<td>Spray</td>
<td>90% Argon/10% CO₂</td>
<td>375-500-600</td>
<td>27-30-30</td>
<td>195-210-250</td>
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<td>0.045</td>
<td></td>
<td>Short Circuit</td>
<td>100% CO₂</td>
<td>125-150-200</td>
<td>19-20-21</td>
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### TYPICAL WIRE CHEMISTRY PERCENTAGES (as required per AWS)

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### PACKAGING DIMENSIONS

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<th>PKG</th>
<th>LBS</th>
<th>PKG DIMENSIONS (inches)</th>
<th>PALLET LBS</th>
<th>PALLET DIMENSIONS (inches)</th>
<th>PALLET COUNT</th>
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<td>33</td>
<td>12 x 12 x 4</td>
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<td>42 x 36 x 21</td>
<td>2 drums/pallet</td>
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## TYPICAL WIRE CHEMISTRY PERCENTAGES (as required per AWS)

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<th>Cr</th>
<th>Ni</th>
<th>Mn</th>
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L = Low Carbon  LHS = Low Carbon, High Silicon  CB = Columbium

## APPROXIMATE WELDING PARAMETERS

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<th>DIA.</th>
<th>POLARITY</th>
<th>TRANSFER MODE</th>
<th>SHIELDING GAS</th>
<th>WIRE FEED SPEED in/min</th>
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<th>AMPERAGE</th>
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<td>DCEP</td>
<td>Short Circuit</td>
<td>90% Helium/ 7.5% Argon/Bal CO2</td>
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9/14/2017
## Satin Glide® STAINLESS WELDING WIRES

### STAINLESS STEEL FILLER METALS FOR WELDING DISSIMILAR METALS

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Satin Glide® STAINLESS WELDING WIRES

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

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## TYPICAL MECHANICAL PROPERTIES (as welded)

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<th>Wire Type</th>
<th>Tensile Strength (KSI)</th>
<th>Yield Strength (KSI)</th>
<th>Elongation (%)</th>
<th>CVN @ -20°F (-29°C)</th>
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<td>FC 71T</td>
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<td>75% Ar /25% CO₂</td>
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<td>75% Ar /25% CO₂</td>
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**CVN @ -50°F (-45°C)**

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<th>Elongation (%)</th>
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**CVN @ -60°F (-51°C)**

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<td>0.30 (max.)</td>
<td>0.08 (max.)</td>
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| **FC 71T**     |      |      |      |      |      |      |      |      |     |     |
| 100% CO₂       | 0.04 | 1.36 | 0.36 | 0.007| 0.009| 0.06 | 0.42 | 0.04 | 0.01 | 0.016 |
| 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-12C** |      |      |      |      |      |      |      |      |     |     |
| 100% CO₂       | 0.04 | 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-12M** |      |      |      |      |      |      |      |      |     |     |
| 100% CO₂       | 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-AG**  |      |      |      |      |      |      |      |      |     |     |
| 75% Ar/25% CO₂ | 0.04 | 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-CG**  |      |      |      |      |      |      |      |      |     |     |
| 100% CO₂       | 0.05 | 1.38 | 0.35 | 0.01 | 0.007| 0.06 | 0.48 | 0.05 | 0   | 0.05 |
| 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-N1**  |      |      |      |      |      |      |      |      |     |     |
| 100% CO₂       | 0.04 | 1.23 | 0.45 | 0.006| 0.007| 0.06 | 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-N1M** |      |      |      |      |      |      |      |      |     |     |
| 75% Ar/25% CO₂ | 0.04 | 1.38 | 0.54 | 0.009| 0.009| 0.97 | 0.03 | 0   | 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% CO₂ | 0.04 | 1.6  | 0.82 | 0.009| 0.01 | 0.06 | 0.02 | 0.05 | 0.01 | 0   |
| 90% Ar/10% CO₂ | 0.04 | 1.61 | 0.85 | 0.006| 0.009| 0.06 | 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-N1**  |      |      |      |      |      |      |      |      |     |     |
| 95% Ar /5% O₂  | 0.04 | 1.48 | 0.43 | 0.008| 0.009| 0.05 | 0.9  | 0.14 | 0   | 0   |
| 75% Ar/25% CO₂ | 0.04 | 1.41 | 0.4  | 0.008| 0.009| 0.05 | 0.94 | 0.14 | 0   | 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% O₂  | 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.) | 0.80-1.10 | 0.40-0.60 | 0.03 (max.) |

| **MC 110C-K4** |      |      |      |      |      |      |      |      |     |     |
| 95% Ar /5% O₂  | 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.) |
## TYPICAL DIFFUSIBLE HYDROGEN (ml/100g)

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## STANDARD DIAMETERS AND PACKAGING

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

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National Standard Customer Service:
1-800-777-1618
405-372-7954 (fax)

www.NationalStandard.com
### Tru-Core® CORED WELDING WIRES

#### APPROXIMATE WELDING PARAMETERS (ALL CORED WIRES)

<table>
<thead>
<tr>
<th>DIA. (in)</th>
<th>POLARITY</th>
<th>AMPERAGE</th>
<th>VOLTAGE</th>
<th>WIRE FEED SPEED in/min</th>
<th>CTWD (in)</th>
<th>SHIELDING GAS</th>
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<td>0.045</td>
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<td>200</td>
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<td>215</td>
<td>24</td>
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<td>200</td>
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<td>1/16 (.062)</td>
<td>DCEP</td>
<td>165</td>
<td>220</td>
<td>24</td>
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<td>130</td>
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### TYPICAL WELD METAL COMPOSITION (Weight %)

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<th>Al (Aluminum)</th>
<th>Mn (Manganese)</th>
<th>Fe (Iron)</th>
<th>Cu (Copper)</th>
<th>Be (Beryllium)</th>
<th>Si (Silicon)</th>
<th>Mg (Magnesium)</th>
<th>Cr (Chromium)</th>
<th>Ti (Titanium)</th>
<th>Zn (Zinc)</th>
<th>Other Elements</th>
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<td>0.05 Max</td>
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<td>0.30 Max</td>
<td>0.0003 Max</td>
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<td>5.0 – 6.0</td>
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### MIG WELDING PROCEDURES: DCEP

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<tr>
<th>DIA.</th>
<th>WFS (in/min.)</th>
<th>AMPERAGE</th>
<th>VOLTAGE</th>
<th>CONSUMPTION LB/100FT</th>
<th>ARGON (cfh)</th>
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<tbody>
<tr>
<td>0.030</td>
<td>480-625</td>
<td>60-175</td>
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<td>70-185</td>
<td>15-27</td>
<td>1.00-4.25</td>
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<tr>
<td>3/64”</td>
<td>330-500</td>
<td>125-260</td>
<td>20-29</td>
<td>1.00-4.25</td>
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<tr>
<td>1/16”</td>
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<td>3.8-66</td>
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<tr>
<td>3/32”</td>
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<td>275-400</td>
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<td>35-66</td>
<td>60-85</td>
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Alumi Glide® ALUMINUM WELDING WIRES

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

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<tr>
<th>BASE THICKNESS</th>
<th>FILLER WIRE SIZE</th>
<th>TUNGSTEN</th>
<th>AMPERAGE</th>
<th>CONSUMPTION LB/100FT</th>
<th>GAS CUP SIZE</th>
<th>ARGON (CFH)</th>
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<td>190-220</td>
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<tr>
<td>1/4”</td>
<td>5/32”</td>
<td>5/32”</td>
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<td>8-10</td>
<td>1/2”</td>
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<td>1/4”</td>
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STANDARD DIAMETERS AND PACKAGING
(Note: Contact NS Customer Service for wire diameter availability of each alloy.)

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National Standard Customer Service:
1-800-777-1618
405-372-7954 (fax)

www.NationalStandard.com
9/14/2017
# Deposition Rates

## 95% Deposition Efficiency (Pounds/Hour)

<table>
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**Deposition Rates**