# Select 820-Ni1

*Low Alloy / Gas Shielded / Flux Cored*

**PRODUCT DATA SHEET**

## FEATURES

- Intended for use with 100% CO2 or blends of 75-80% Ar/balance CO2 shielding gases.
- Designed with 1% nickel and microalloying to produce welds with enhanced CVN toughness.
- The arc transfer is soft; it melts onto the puddle in a small to medium droplet mode.
- Typically used to weld steels such as ASTM A203, Gr A, and A352, Gr LC1 and LC2.
- This product is used in offshore platform construction, welding mining machinery, and bridge construction.

## DIAMETERS [in (mm)]

0.045 (1.2), 0.052 (1.3), 1/16 (1.6), 5/64 (2.0)

## POSITIONS

## SHIELDING GAS

75-80%Ar/Balance CO2, 100% CO2
Flow Rate: 40 - 50 CFM

## POLARITY

Direct Current Electrode Positive (DCEP)

## CONFORMANCES

| | |
|---|---|
| **AWS A5.29** | E81T1-Ni1C-JH4 |
| | E81T1-Ni1M-JH4 |
| **AWS A5.36** | E81T1-C1A4-Ni1-H4 |
| | E81T1-M21A4-Ni1-H4 |
| **ASME SFA 5.29** | E81T1-Ni1C-JH4 |
| | E81T1-Ni1M-JH4 |
| **AWS D1.8** | 0.052 in (1.3 mm), (75% Ar/25% CO2) |
| | 1/16 in (1.6 mm), (100% CO2) |
| | 1/16 in (1.6 mm), (75% Ar/25% CO2) |

## TYPICAL WELD DEPOSIT CHEMISTRY [WT%]

| Shielding Gas | C | Cr | Mn | Mo | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|
| 100%CO2 | 0.03 | 0.06 | 1.15 | 0.00 | 0.91 | 0.008 | 0.008 | 0.41 | 0.02 |
| 75%Ar / 25%CO2 | 0.03 | 0.08 | 1.29 | 0.01 | 0.90 | 0.009 | 0.009 | 0.50 | 0.03 |

## TYPICAL MECHANICAL PROPERTIES

| Shielding Gas | Tensile Strength ksi (MPa) | Yield Strength ksi (MPa) | Elongation (%) | Weld Condition | PWHT Temp | CVN @ -40°F (-40°C) ft-lb (J) | CVN @ -50°F (-46°C) ft-lb (J) |
|---|---|---|---|---|---|---|---|
| 100%CO2 | 86 (596) | 74 (508) | 27 | As-Welded | - | 90 (122) | 50 (68) |
| 75%Ar / 25%CO2 | 89 (614) | 80 (552) | 24 | As-Welded | - | 94 (127) | 46 (62) |



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## RECOMMENDED WELDING PARAMETERS

| Diameter in (mm) | Shielding Gas | Position | WFS* in/min (m/min) | Amps | Volts | CTWD* in (mm) |
|---|---|---|---|---|---|---|
| 0.045 (1.2 mm) | 100% CO2 | All Positions | 200 (5.1) | 145 | 23 | 1/2 - 5/8 (13 - 16) |
| | | All Positions | 235 (6.0) | 160 | 24 | 1/2 - 5/8 (13 - 16) |
| | | All Positions | 300 (7.6) | 185 | 26 | 1/2 - 5/8 (13 - 16) |
| | | Flat & Horizontal | 375 (9.5) | 215 | 27 | 5/8 - 3/4 (16 - 19) |
| | | Flat & Horizontal | 440 (11.2) | 235 | 29 | 5/8 - 3/4 (16 - 19) |
| 0.052 (1.3 mm) | 100% CO2 | All Positions | 170 (4.3) | 155 | 23 | 5/8 - 3/4 (16 - 19) |
| | | All Positions | 200 (5.1) | 175 | 24 | 5/8 - 3/4 (16 - 19) |
| | | All Positions | 250 (6.4) | 225 | 26 | 5/8 - 3/4 (16 - 19) |
| | | Flat & Horizontal | 310 (7.9) | 250 | 27 | 3/4 - 1 (19 - 25) |
| | | Flat & Horizontal | 395 (10.0) | 280 | 29 | 3/4 - 1 (19 - 25) |
| 1/16 (1.6 mm) | 100% CO2 | All Positions | 125 (3.2) | 165 | 23 | 5/8 - 3/4 (16 - 19) |
| | | All Positions | 150 (3.8) | 195 | 24 | 5/8 - 3/4 (16 - 19) |
| | | All Positions | 185 (4.7) | 225 | 26 | 5/8 - 3/4 (16 - 19) |
| | | Flat & Horizontal | 265 (6.7) | 280 | 27 | 3/4 - 1 (19 - 25) |
| | | Flat & Horizontal | 325 (8.3) | 320 | 29 | 3/4 - 1 (19 - 25) |
| 5/64 (2.0 mm) | 100% CO2 | All Positions | 100 (2.5) | 195 | 23 | 3/4 (19) |
| | | All Positions | 110 (2.8) | 210 | 24 | 3/4 (19) |
| | | All Positions | 130 (3.3) | 240 | 26 | 3/4 (19) |
| | | Flat & Horizontal | 200 (5.1) | 310 | 27 | 1 - 1 1/4 (25 - 32) |
| | | Flat & Horizontal | 225 (5.7) | 350 | 29 | 1 - 1 1/4 (25 - 32) |

** WFS = Wire Feed Speed, CTWD = Contact Tip To Work Distance*

*For 75Ar/25CO2, decrease voltage by 1 to 1.5 volts.*

## APPROVALS

| Agency | Approval | Shielding Gas | Diameter(s) in (mm) |
|---|---|---|---|
| ABS | 4YSA | C1 (100%CO2) | 0.035 (0.9) - 1/16 (1.6) |
| | | M21 (75%Ar / 25%CO2) | 0.035 (0.9) - 1/16 (1.6) |
| CWB CSA W48-23 | E551T1-C1A4-Ni1-H4 (E551T1-Ni1C-JH4) | C1 (100%CO2) | 0.045 (1.2) - 1/16 (1.6) |
| | E551T1-M21A4-Ni1-H4 (E551T1-Ni1M-JH4) | M21 (75%Ar / 25%CO2) | 0.045 (1.2) - 1/16 (1.6) |
| DNV | IV YMS (H5) | C1 (100%CO2) | 0.045 (1.2) - 5/64 (2.0) |
| | III YMS | M21 (75%Ar / 25%CO2) | 0.045 (1.2) - 5/64 (2.0) |
| LLOYDS | 3YS (H5) | C1 (100%CO2) | 0.035 (0.9) - 1/16 (1.6) |
| | 3YS | M21 (75%Ar / 25%CO2) | 0.035 (0.9) - 1/16 (1.6) |
| MILITARY | MIL-81T1-Ni1C | C1 (100%CO2) | () |
| | MIL-81T1-Ni1M | M21 (75%Ar / 25%CO2) | () |

## PACKAGING [lbs [kgs]]

33 (15) Spools, 60 (27.2) Coils, 500 (226.8) Round Drum, 800 (362.9) Hex Drum, 900 (408.2) Hex Drum

**Some packaging options may not be available depending on diameter and product. Special package options may be available upon request.*

SELECT SAI INC.®



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## STORAGE AND HANDLING

All products should be stored in original packaging, in dry conditions and handled with care. For more information refer to our website.



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