



Product Data Sheet

G 'Gas-shielded metal-arc welding'

OK Autrod 12.64

| | | | | | | |
|------------------|---------------|-----------------|----------|------------|------------|-------|
| Prepared by | Qualified by | Approved by | Reg no | Cancelling | Reg date | Page |
| Magnus Johansson | P-O Oskarsson | Helene Rasmuson | EN010895 | EN010181 | 2023-10-23 | 1 (3) |

REASON FOR ISSUE

UKCA approval added.

GENERAL

A copper coated, G4Si1/ER70S-6 solid wire for GMAW of general structural and engineering unalloyed and low-alloyed carbon-manganese steels. Compared with OK Autrod 12.51, OK Autrod 12.64 has a slightly higher silicon and manganese content, which increases the weld metal strength. The high silicon content promotes low sensitivity to surface impurities and contributes to smooth, sound welds. The electrode may be welded with either a gas mixture or with pure CO₂ as the shielding gas.

OK Autrod 12.64 can even be delivered in the unique Esab Octagonal Marathon Pac, which is an excellent choice in mechanised welding applications.

Shielding Gas: M20, M21, C1 (EN ISO 14175) **Alloy Type:** Carbon-manganese steel (Mn/Si-alloyed)

CLASSIFICATIONS Weld Metal

| | |
|----------------|-----------------|
| EN ISO 636-A | W 46 3 4Si1 |
| EN ISO 14341-A | G 42 3 C1 4Si1 |
| EN ISO 14341-A | G 46 5 M21 4Si1 |

CLASSIFICATIONS Wire Electrode

| | |
|----------------|---------|
| EN ISO 636-A | W4Si1 |
| EN ISO 14341-A | G 4Si1 |
| SFA/AWS A5.18 | ER70S-6 |

APPROVALS

| | |
|-----------|-------------------|
| ABS | 3Y SA |
| BV | SA3YM (C1,M21) |
| CE | EN 13479 |
| CWB | B-G 49A 3 C1 S6 |
| DB | 42.039.11 |
| DNV-GL | III YMS (C1, M21) |
| LR | 3YS H15 (C1, M21) |
| NAKS/HAKC | 1.2-1.6 mm |
| UKCA | EN 13479 |
| VdTÜV | 04294 |

CHEMICAL COMPOSITION

| | All Weld Metal (%) | | Wire/Strip (%) | |
|----|--------------------|-----------|----------------|-------|
| | M21 Nom | C1 Nom | Min | Max |
| C | 0.10 | 0.09 | 0.06 | 0.14 |
| Si | 0.80 | 0.70 | 0.80 | 1.15 |
| Mn | 1.28 | 1.08 | 1.60 | 1.85 |
| P | 0.013 | 0.013 | | 0.025 |
| S | 0.013 | 0.013 | | 0.025 |



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|---------------------------------|-------------------------------|--------------------------------|--------------------|------------------------|------------------------|---------------|

MECHANICAL PROPERTIES OF WELD METAL

All Weld Metal

| Standard | Shielding Gas | Condition | Rp0.2 [MPa/ksi] | | ReL [MPa/ksi] | | Rm [MPa/ksi] | | | A4 [%] | | A5 [%] | |
|----------|---------------|------------------------------|-----------------|--------|---------------|--------|--------------|--------|--------|--------|-----|--------|-----|
| | | | Min | Typ | Min | Typ | Min | Max | Typ | Min | Typ | Min | Typ |
| AWS | C1 | As welded | 400/58 | 450/65 | | | 480/70 | | 550/80 | 22 | 30 | | |
| EN | M21 | As welded | | | 460/67 | 490/71 | 530/77 | 680/99 | 590/86 | | | 20 | 29 |
| EN | C1 | As welded | | | 420/61 | 460/67 | 500/73 | 640/93 | 570/83 | | | 20 | 28 |
| EN | M21 | Stress relieved 620°C 15h | | | | 385/56 | | | 520/75 | | | | |

Comments:

| Standard | Shielding Gas | Condition | Temp [°C/°F] | Charpy V [J/ft-lb] | |
|----------|---------------|------------------------------|--|--------------------|--|
| | | | | Min | Typ |
| AWS | C1 | As welded | 20/68 -20/-4 -30/-22 -40/-40 -50/-58 | 27/20 | 100/74 |
| EN | M21 | As welded | 20/68 -20/-4 -30/-22 -40/-40 -50/-58 | 47/35 | 130/96 120/89 100/74 90/67 80/59 |
| EN | C1 | As welded | 20/68 -20/-4 -30/-22 -40/-40 -50/-58 | 47/35 | 110/81 75/56 |
| EN | M21 | Stress relieved 620°C 15h | 20/68 -20/-4 -30/-22 -40/-40 -50/-58 | | 120/89 90/67 |

Comments:



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ECONOMICS & CURRENT DATA

| Dimension Ø | Current (A) | | W | η | | H | | | Feed | | | U | | |
|-----------------------|----------------|-----|----|-----|------------------------|--------------------------|-----|---------------------------|----------------------------|-----|-----|-----|-----|-----|
| | Min | Max | | Nom | Nom | Min | Max | Nom | Min | Max | Nom | Min | Max | Nom |
| 0.8 mm (0.030 in.) | 60 | 185 | 14 | 95 | 0.8 kg/h (1.8 lb/h) | 2.5 kg/h (5.5 lb/h) | | 3.2 m/min (126 in/min) | 10.0 m/min (394 in/min) | | 18 | 24 | | |
| 0.9 mm (0.035 in.) | 70 | 250 | 15 | 96 | 0.8 kg/h (1.8 lb/h) | 3.3 kg/h (7.3 lb/h) | | 3.0 m/min (118 in/min) | 12.0 m/min (472 in/min) | | 18 | 26 | | |
| 1.0 mm (0.040 in.) | 80 | 300 | 16 | 96 | 1.0 kg/h (2.2 lb/h) | 5.5 kg/h (12.1 lb/h) | | 2.7 m/min (106 in/min) | 15.0 m/min (591 in/min) | | 18 | 32 | | |
| 1.2 mm (0.047 in.) | 120 | 380 | 18 | 97 | 1.2 kg/h (2.6 lb/h) | 8.0 kg/h (17.6 lb/h) | | 2.3 m/min (91 in/min) | 15.0 m/min (591 in/min) | | 18 | 35 | | |
| 1.4 mm (0.055 in.) | 150 | 420 | 19 | 97 | 1.7 kg/h (3.7 lb/h) | 8.5 kg/h (18.7 lb/h) | | 2.5 m/min (98 in/min) | 12.0 m/min (472 in/min) | | 22 | 36 | | |
| 1.6 mm (1/16 in.) | 225 | 550 | 20 | 98 | 2.1 kg/h (4.6 lb/h) | 11.4 kg/h (25.1 lb/h) | | 2.3 m/min (91 in/min) | 12.0 m/min (472 in/min) | | 28 | 38 | | |
| 2.0 mm (5/64 in.) | 300 | 650 | 22 | 98 | 3.2 kg/h (7.1 lb/h) | 12.5 kg/h (27.6 lb/h) | | 4.0 m/min (157 in/min) | 15.0 m/min (591 in/min) | | 32 | 44 | | |

- W** = Gas consumption (l/min)
η = Filler metal efficiency (g weld metal x 100 / g wire)(%)
H = Deposition rate (kg weld metal/hour arc time)
Feed = Wire feed speed (m/min)
U = Arc voltage (V)