

OK Autrod 12.51

A copper coated, G3Si1/ER70S-6 solid wire for GMAW of all general structural and engineering unalloyed and low-alloyed carbon-manganese steels. The electrode may be welded with either a gas mixture or with pure CO₂ as the shielding gas.

OK Autrod 12.51 delivered in the unique Esab Octagonal Marathon Pac is an excellent choice in mechanised welding applications

Classifications Weld Metal	EN ISO 14341 -A : G 38 3 C1 3Si1 EN ISO 14341 -A : G 42 4 M20 3Si1 EN ISO 14341 -A : G 42 4 M21 3Si1
Classifications Wire Electrode	SFA/AWS A5.18 : ER70S-6 EN ISO 14341-A : G 3Si1 CSA W48 : B-G 49A 3 C1 S6 JIS Z 3312 : YGW 12(C1)
Approvals	ABS 3YSA BV SA3YM (C1) CE EN 13479 DB 42.039.06 DNV-GL III YMS LR 3YS H15 (C1) LR 3YS H15 (M21) LR 3YS H15 (M21) LR 3YS H15 PRS 3YS (C1) PRS 3YS (C1) PRS 3YS (M21) PRS 3YS (M21) RINA 3YS (C1) RINA 3YS (M21) RINA 3YS (M21) RS 3YMS VdTUV 00899 CWB B-G 49A 3 C1 S6 JIS YGW12 NAKS/HAKC 0.8-2.0 mm NAKS/HAKC 1.2-1.6 mm

Approvals are based on factory location. Please contact ESAB for more information.

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

Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
AWS CO2 (C1)			
As Welded	430 MPa	530 MPa	30 %
EN 80Ar/20CO2 (M21)			
As Welded	460 MPa	560 MPa	26 %
Stress Relieved 15hr 620°C	370 MPa	495 MPa	28 %
EN CO2 (C1)			
As Welded	440 MPa	540 MPa	25 %

Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
AWS CO2 (C1)		
As Welded	-30 °C	75 J
EN 80Ar/20CO2 (M21)		
As Welded	20 °C	130 J
As Welded	-20 °C	120 J
As Welded	-30 °C	100 J
As Welded	-40 °C	90 J
Stress Relieved 15hr 620°C	20 °C	120 J
Stress Relieved 15hr 620°C	-20 °C	90 J
EN CO2 (C1)		
As Welded	20 °C	110 J
As Welded	-30 °C	75 J

Typical Weld Metal Analysis %

C	Mn	Si	S	P
0.10	1.11	0.72	0.012	0.013

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Typical Wire Composition %

C	Mn	Si
0.078	1.46	0.85

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate
0.6 mm	30-100 A	15-20 V	5.5-13.0 m/min	0.7-1.7 kg/h
0.8 mm	60-200 A	18-24 V	3.2-10.0 m/min	0.8-2.3 kg/h
0.9 mm	70-250 A	18-26 V	3.0-12.0 m/min	0.9-3.5 kg/h
1.0 mm	80-300 A	18-32 V	2.7-15.0 m/min	1.0-5.5 kg/h
1.14 mm	100-350 A	18-34 V	2.6-15.0 m/min	1.2-7.0 kg/h
1.2 mm	120-380 A	18-35 V	2.5-15.0 m/min	1.3-8.0 kg/h
1.32 mm	130-400 A	19-35 V	2.4-15.0 m/min	1.5-8.5 kg/h
1.4 mm	150-420 A	22-36 V	2.3-12.0 m/min	1.6-8.7 kg/h
1.6 mm	225-550 A	28-38 V	2.3-10.0 m/min	2.1-9.4 kg/h
2.0 mm	300-650 A	32-44 V	3.0-7.0 m/min	4.4-10.2 kg/h

*APPROVAL COMMENT

Approval valid for lot numbers with prefix in right column.