



# Product Data Sheet

G 'Gas-shielded metal-arc welding'

# OK Autrod 12.51

Prepared by Magnus Johansson	Qualified by P-O Oskarsson	Approved by Helene Rasmuson	Reg no EN008429	Cancelling EN008406	Reg date 2018-11-23	Page 1 (2)
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## REASON FOR ISSUE

Classification updated.

## GENERAL

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

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

### 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

EN ISO 14341-A	G 3Si1
SFA/AWS A5.18	ER70S-6
CSA W48	B-G 49A 3 C1 S6
JIS Z 3312	YGW 12(C1)

### APPROVALS

ABS	3YSA
BV	SA3YM
CE	EN 13479
DB	42.039.06
DNV-GL	III YMS
LR	3YS H15
PRS	3YS
RS	3YMS
VdTÜV	00899

### APPROVALS (SPECIFIC)

CWB	B-G 49A 3 C1 S6	PV,ZG
JIS	YGW12	ZG
NAKS/HAKC	0.8-2.0 mm	PV
NAKS/HAKC	1.2-1.6 mm	ZG
RINA	3YS	PV,ZG

### APPROVAL COMMENT

APPROVALS are valid for lot numbers with prefix PV, AE, ZG and UF. APPROVALS (SPECIFIC) are valid for lot numbers with prefix in the right column.

## CHEMICAL COMPOSITION

	All Weld Metal (%)		Wire/Strip (%)	
	CO2 (C1)	80Ar/20CO2 (M21)	Min	Max
C	0.08	0.10	0.06	0.14
Si	0.63	0.72	0.80	1.00
Mn	0.94	1.11	1.40	1.60
P	0.013	0.013		0.025
S	0.012	0.012		0.025



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## MECHANICAL PROPERTIES OF WELD METAL

### All Weld Metal

Properties	AWS CO <sub>2</sub> (C1) As welded		EN 80Ar/20CO <sub>2</sub> (M21) As welded			EN 80Ar/20CO <sub>2</sub> (M21) Stress relieved 620°C 15h		EN CO <sub>2</sub> (C1) As welded		
	Min	Typ	Min	Max	Typ	Typ	Min	Max	Typ	
Rp0.2 (MPa)	400	430	420		460	370	400		440	
ReL (MPa)			510	640	560	495	510	600	540	
Rm (MPa)	480	530								
A4 (%)	22	30								
A5 (%)			22		26	28	22		25	
Charpy V at 20°C (J)					130	120			110	
Charpy V at -20°C (J)					120	90				
Charpy V at -30°C (J)	27	75			100		47		75	
Charpy V at -40°C (J)			47		90					

## ECONOMICS & CURRENT DATA

Dimension (mm)	Current (A)		W	η	H		Feed		U	
	Min	Max			Min	Max	Min	Max	Min	Max
Ø			Nom	Nom						
0.6	30	100	12	95	0.7	1.7	5.5	13	15	20
0.8	60	200	14	95	0.8	2.3	3.2	10	18	24
0.9	70	250	15	96	0.9	3.5	3.0	12	18	26
1.0	80	300	16	96	1.0	5.5	2.7	15	18	32
1.14	100	350	17	96	1.2	7.0	2.6	15	18	34
1.2	120	380	18	97	1.3	8.0	2.5	15	18	35
1.32	130	400	18	97	1.5	8.5	2.4	15	19	35
1.4	150	420	19	97	1.6	8.7	2.3	12	22	36
1.6	225	550	20	98	2.1	9.4	2.3	10	28	38
2.0	300	650	22	98	4.4	10.2	3.0	7	32	44

**W** = Gas consumption (l / min)

**η** = Recovery, g weld metal / 100g wire (%)

**H** = Deposit rate (kg weld metal / hour arc time)

**Feed** = Feeding rate (m/min)

**U** = Arc voltage (V)