



Product Data Sheet

G 'Gas-shielded metal-arc welding'

OK Autrod 12.51

Signed by Mats Linde	Approved by M Bergenstråhle/Christos Skodras	Reg no EN004851	Cancelling EN004647	Reg date 2009-06-24	Page 1 (2)
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REASON FOR ISSUE

Shielding gas 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: M21, C1 (EN ISO 14175)

Alloy Type: Carbon-manganese steel (Mn/Si-alloyed)

CLASSIFICATIONS Weld Metal

EN ISO 14341-A G 38 2 C G3Si1
EN ISO 14341-A G 42 3 M G3Si1

CLASSIFICATIONS Wire Electrode

EN ISO 14341-A G3Si1
SFA/AWS A5.18 ER70S-6
CAN/CSA-ISO B-G 49A 3 C G6
14341

APPROVALS

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

CHEMICAL COMPOSITION

	All Weld Metal (%)		Wire/Strip (%)	
	CO ₂ (C1)	80Ar/20CO ₂ (M21)	Min	Max
C	Nom 0.08	Nom 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 CO2 (C1)	EN 80Ar/20CO2 (M21)			EN 80Ar/20CO2 (M21)	EN 80Ar/20CO2 (M21)	EN CO2 (C1)		
	As welded	As welded			Normalized 920°C 0.5h	Stress relieved 620°C 15h	As welded		
	Min	Min	Max	Typ	Typ	Typ	Min	Max	Typ
Rp0.2 (MPa)	400								
ReL (MPa)		420		470	310	370	380		440
ReH (MPa)				480	320	380			450
Rm (MPa)	480	500	640	560	455	495	470	600	540
A4-A5 (%)	22	20		26	32	28	20		25
Z (%)				68	71	73			70
Charpy V at 20°C (J)				130	100	120			110
Charpy V at -20°C (J)				90	75	90	47		70
Charpy V at -29°C (J)	27								
Charpy V at -30°C (J)		47		70					

ECONOMICS & CURRENT DATA

Dimension (mm)	Current (A)		W	η	H		Feed			U
	Min	Max			Nom	Nom	Min	Max	Min	
\emptyset			Nom	Nom	Min	Max	Min	Max	Min	Max
0.6	30	100	12	95	0,7	1,7	5,5	13	15	20
0.8	60	200	14	95	0,8	3,0	3,2	13	18	24
0.9	70	250	15	96	0,9	3,6	3,0	12	18	26
1.0	80	300	16	96	1,0	5,6	2,7	15	18	32
1.2	120	380	18	97	1,3	8,0	2,5	15	18	34
1.4	150	420	19	97	1,6	8,7	2,3	12	22	36
1.6	225	550	20	98	2,1	11,4	2,3	12	28	38
2.0	300	650	22	98	3,2	12,5	4	15	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)