Aluminium electrode

Classification

AWS A5.3 : E1100*
ISO 18273 : Al 1080A (Al 99.8(A))

*: Deviation, see remarks

General description

Especially for welding pure aluminium
Good weldability, no porosity

Welding positions

ISO/ASME PA/1G PB/2F

Current type

DC +

Chemical composition (w%), typical, all weld metal

Al	Si	Fe	Cu	Mn	Zn	Others
99.8 min.	0.085 max.	0.13 max.	0.02 max.	0.02 max.	0.03 max.	0.02 max.

Mechanical properties, typical, all weld metal

	Condition	0.2% Proof strength (N/mm²)	Tensile Strength (N/mm²)	Elongation (%)
Typical values	AW	30	80	30

Packaging and available sizes

	Diameter (mm)	2.5	3.2	4.0
	Length (mm)	350	350	350
Unit: Can	Pieces / unit	217	143	98
	Net weight/unit (Kg)	2.0	2.0	2.0

Materials to be welded

Pure Aluminium like:
Al99.8 (Werkstoff-Nr. 3.0285)
Al99 (Werkstoff-Nr. 3.0205)

Calculation data

Sizes Diam. x length (mm)	Current range (A)	Current type	Arc time - per electrode at max. current - (s)*	Energy E(kJ)	Dep.rate H(kg/h)	Weight/ 1000 pcs. (kg)	Electrodes/ kg weldmetal B	kg Electrodes/ kg weldmetal 1/N
2.5x350	60-90	DC+				9.2		
3.2x350	80-110	DC+				14.0		
4.0x350	100-140	DC+				20.4		

Welding parameters, optimum fill passes

Welding positions Diameter (mm)	PA/1G	PB/2F
2.5	80A	80A
3.2	100A	100A
4.0	130A	130A

Remarks/ Application advice

Deviations: chemical composition
Cu = max. 0.02% AWS: Cu = 0.05 - 0.20%
If the thickness is more than 10 mm, it is advisable to preheat at 150 - 250°C

Aluminium electrode

Classification

AWS A5.3 : E3003*
ISO 18273 : Al 3103 (AlMn1)

*: Deviation, see remarks

General description

Especially for welding forged and cast aluminium-magnesium alloys and aluminium-manganese alloys
Good weldability, no porosity

Welding positions

ISO/ASME PA/1G PB/2F PF/3Gup

Current type

DC +

Chemical composition (w%), typical, all weld metal

Si	Mg	Fe	Cu	Mn	Zn	Others	Al
0.3 max.	0.15 max.	0.6 max.	0.02 max.	0.9-1.2	0.09 max.	0.15 max.	Bal.

Mechanical properties, typical, all weld metal

	Condition	0.2% Proof strength (N/mm^2)	Tensile Strength (N/mm^2)	Elongation (%)
Typical values	AW	40	110	20

Packaging and available sizes

	Diameter (mm)	2.5	3.2	4.0
	Length (mm)	350	350	350
Unit: Can	Pieces / unit	222	146	98
	Net weight/unit (Kg)	2.0	2.0	2.0

Materials to be welded

Aluminium manganese alloys and Aluminium magnesium alloys like:
AlMn1 (Werkstoff-Nr. 3.0515)
AlMn1Mg1 (Werkstoff-Nr. 3.0526)
AlMg1 (Werkstoff-Nr. 3.3315)

Calculation data

Sizes Diam. x length (mm)	Current range (A)	Current type	Arc time - per electrode at max. current - (s)*	Energy E(kJ)	Dep.rate H(kg/h)	Weight/ 1000 pcs. (kg)	Electrodes/ kg weldmetal B	kg Electrodes/ kg weldmetal 1/N
2.5x350	60-90	DC+				9.2		
3.2x350	80-110	DC+				14.0		
4.0x350	100-140	DC+				20.4		

Welding parameters, optimum fill passes

Welding positions Diameter (mm)	PA/1G	PB/2F	PF/3G up
2.5	80A	80A	75A
3.2	100A	100A	95A
4.0	130A	130A	125A

Remarks/ Application advice

Deviations: chemical composition
Cu = max. 0.02% AWS: Cu = 0.05 - 0.20%
Mn = 0.9 - 1.2% AWS: Mn = 1.0 - 1.5%
If the thickness is more than 10 mm, it is advisable to preheat at 150 - 250°C

Aluminium electrode

Classification

AWS A5.3 : E4043
ISO 18273 : Al 4043A* (AlSi5(A))

* Nearest classification

General description

Especially for welding forged and cast aluminium alloys containing less than 5% Si as main alloying element
Good weldability, no porosity

Welding positions

ISO/ASME PA/1G PB/2F PF/3Gup

Current type

DC +

Chemical composition (w%), typical, all weld metal

Si	Al
5	Bal.

Mechanical properties, typical, all weld metal

	Condition	0.2% Proof strength (N/mm²)	Tensile Strength (N/mm²)	Elongation (%)
Typical values	AW	90	160	15

Packaging and available sizes

	Diameter (mm)	2.5	3.2	4.0
	Length (mm)	350	350	350
Unit: Can	Pieces / unit	222	152	98
	Net weight/unit (Kg)	2.0	2.0	2.0

AlSi5: rev. EN 21

Materials to be welded

Aluminium-silicon alloys and dissimilar of several aluminium alloys. With restriction : precipitation hardening alloys such as :
AlCuMg1 (Werkstoff-Nr. 3.1325)
AlMgSi1 (Werkstoff-Nr. 3.2315)
AlZn4.5Mg1 (Werkstoff-Nr. 3.4335)

Calculation data

Sizes Diam. x length (mm)	Current range (A)	Current type	Arc time - per electrode at max. current - (s)*	Energy E(kJ)	Dep.rate H(kg/h)	Weight/ 1000 pcs. (kg)	Electrodes/ kg weldmetal B	kg Electrodes/ kg weldmetal 1/N
2.5x350	40-70	DC+				9.2		
3.2x350	60-90	DC+				14.0		
4.0x350	80-120	DC+				20.4		

Welding parameters, optimum fill passes

Welding positions Diameter (mm)	PA/1G	PB/2F	PF/3G up
2.5	80A	80A	75A
3.2	100A	100A	95A
4.0	130A	130A	125A

Remarks/ Application advice

If the thickness is more than 10 mm, it is advisable to preheat at 150 - 250°C
Welding with short arc preferable
Electrode with 90° angle on material

Aluminium electrode

Classification

ISO 18273 : Al 4047A (AlSi12(A))

General description

Especially for welding forged and cast aluminium alloys containing more than 7% Si as main alloying element
Also applicable as surfacing electrode
Good weldability, no porosity
Applicable when Al-properties are unknown

Welding positions

ISO/ASME PA/1G PB/2F PF/3Gup

Current type

DC +

Chemical composition (w%), typical, all weld metal

Si	Al
12	Bal.

Mechanical properties, typical, all weld metal

	Condition	0.2% Proof strength (N/mm²)	Tensile Strength (N/mm²)	Elongation (%)
Typical values	AW	80	180	5

Packaging and available sizes

	Diameter (mm)	2.5	3.2	4.0
	Length (mm)	350	350	350
Unit: Can	Pieces / unit	227	152	102
	Net weight/unit (Kg)	2.0	2.0	2.0

AlSi12: rev. EN 21

Materials to be welded

Aluminium cast alloys with silicon level up to approx. 12%, like:
G-AlSi 10Mg (Werkstoff-Nr. 3.2381)
G-AlSi 12 (Werkstoff-Nr. 3.2581)

Calculation data

Sizes Diam. x length (mm)	Current range (A)	Current type	Arc time - per electrode at max. current - (s)*	Energy E(kJ)	Dep.rate H(kg/h)	Weight/ 1000 pcs. (kg)	Electrodes/ kg weldmetal B	kg Electrodes/ kg weldmetal 1/N
2.5x350	40-70	DC+				8.8		
3.2x350	60-90	DC+				13.2	164	2.16
4.0x350	80-120	DC+				19.6		

Welding parameters, optimum fill passes

Welding positions Diameter (mm)	PA/1G	PB/2F	PF/3G up
2.5	80A	80A	75A
3.2	100A	100A	95A
4.0	130A	130A	125A

Remarks/ Application advice

If the thickness is more than 10 mm, it is advisable to preheat at 150 - 250°C
Welding with short arc preferable
Electrode with 90° angle on material