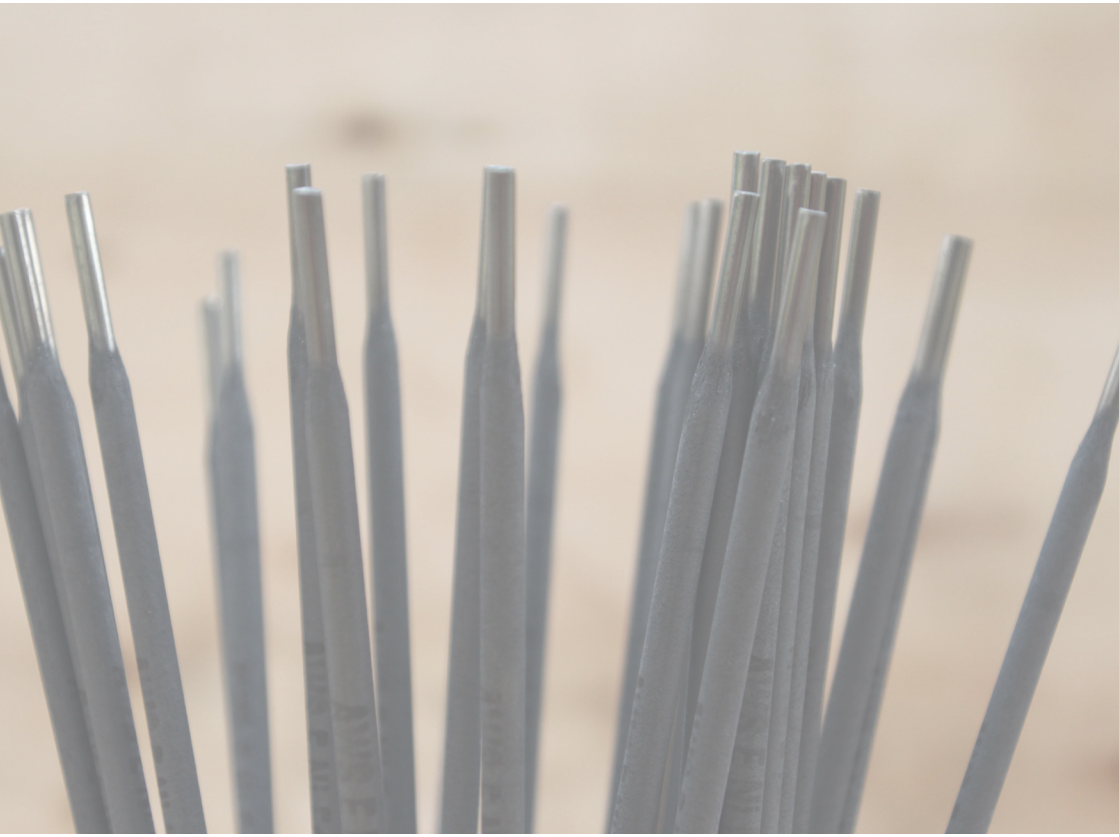

MWA
Product Guide
2nd Edition

CONTENTS

MAC STAIN E100

High quality rutile type niobium stabilised stainless steel electrode for welding 19/12/3 chrome, nickel, molybdenum stainless steels, subject to heat and to resist certain acids and corrosive liquids. Suitable for applications where good resistance to general corrosion and pitting is required. Due to niobium stabilisation the weld deposit has good resistance to intergranular corrosion, and is suitable for applications involving high temperatures up to 600°C. Extensive applications are found in chemical and drug processing plants, food, petroleum, and allied industries.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Nb	Mo	Ni	Si
0.06	18.5	1.1	0.7	3.1	12.5	0.65

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	680 N/mm²
Elongation	30-35%
Yield Stress	370 N/mm²

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm	5.0mm
25-35	30-45	45-70	70-110	110-140	140-180

Related Specification:
AWS E318 -17 I 19.12.3.R.
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E100 ELC

High quality rutile low carbon stainless steel electrode depositing weld metal of the 19% Cr, 12% Ni, 3% Mo type for corrosion resistance. Suitable for use in all positions except vertical down, high acid resistance. Extra low carbon. Wide usage in textile, pulp and paper, rayon and chemical industries. May be used for overlaying carbon and low alloy steels to provide corrosion and acid resistance. Suitable for general service at temperatures up to 500°C and for acid resistance up to 350°C. The electrode is suitable for welding steels of AISI 316L, 316 and 317 types. Weld Metal Micro-Structure: Austenite with 5–11% ferrite.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	Ni	Si
0.03	18.4	1.1	2.8	12.4	0.64

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	620 N/mm²
Elongation	30-45%
0.2% Proof Stress	370 N/mm²
Reduction of Area	40-45%
Hardness	150-160 Brinell
Charpy Vee Notch @ 20°C	85J
Charpy Vee Notch @ -196°C	48J

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm	5.0mm
25-35	30-45	45-70	70-110	110-140	140-180

Related Specification:
AWS E316L – 17 I 19.12.3.L.R.
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 150°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E100 H

A manual metal arc electrode manufactured on an austenitic core with a fully chemically extruded basic flux. The electrodes are suited for all positional welding and have great resistance to porosity, even for site welding. Mac Stain E100H is intended for welding 316 stainless steels, used for elevated strength and oxidation resistance for typical applications arising in the power generator industry. Such steels and electrodes have a controlled carbon content of 0.04 to 0.08%

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	Ni	Si
0.06	18.0	1.3	2.5	12.0	0.4

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	580 N/mm²
Elongation	36%
0.2% Proof Stress	460 N/mm²
Reduction of Area	52%
Hardness	150-160 Brinell

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm	5.0mm
25-35	30-45	45-70	70-110	110-140	140-180

Related Specification:
AWS A5 E316H-15
Current:
DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 150°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E100 UREA

A nil ferrite, non magnetic fully austenitic E316L alloy used in the marine and offshore industry. Also withstands attack by nitric acid. Basic coating gives ability for positional welding giving high strength and corrosion resistance at cryogenic temperatures.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	N	Ni	P	S	Si
0.04	18.5	3.5	3.0	0.15	16.0	0.02	0.015	0.64

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	580 N/mm²
Elongation	36%
0.2% Proof Stress	420 N/mm²
Impact Energy @ -196°C	50J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
60-90	80-120	100-150	150-200

Related Specification:
Known as E 18:15:3 LB
Current:
DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 150°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E101

High quality rutile type, niobium stabilised stainless steel electrode for welding and overlaying 19% Cr, 9% Ni austenitic stainless steels subject to temperatures up to 600°C. Ideal for use on pressure vessels, food and process plant, domestic stainless steel equipment etc.

Steels for which the electrode is recommended are as follows:

AISI Type 321 (EN58 B and C) titanium stabilised
AISI Type 347 (EN58 F and G) niobium stabilised
AISI Type 302 (EN58 A) unstabilised
AISI Type 304 (EN58 E) unstabilised
Weld Metal Micro-Structure: Austenite with 3-10% ferrite.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Ni	Nb	P	S	Si
0.03	19.9	1.2	9.4	0.8	0.023	0.017	0.6

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	650 N/mm²
Elongation	30-35%
Reduction of Area	40-50%
Hardness	160-180 Brinell

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm	5.0mm	6.0mm
25-35	30-45	45-70	70-110	110-140	140-180	180-210

Related Specification:
AWS E347-17
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E101 CF

Manufactured on a matching alloyed core wire with a high rutile based flux coating. The electrode has a stable but soft arc and fluid slag ensures short arc welding characteristics used for all positional pipework welding which ensures weld metal integrity and smooth weld beads. It is not recommended for contact welding as slag is fluid and the soft arc does not lend itself to long arc lengths. The electrode is designed for welding controlled carbon 18% Cr 10% Ni stainless steels, particularly pipework operating between 400-815°C, such applications arise in the petrochemical industries.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	Ni	P	S	Si
0.063	19.5	1.3	0.08	9.94	0.023	0.009	0.37

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	610 N/mm²
Elongation	45%
0.2% Proof Stress	435 N/mm²
Reduction of Area	48%
Hardness	190 HV
Charpy Vee Notch @ 20°C	80J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
60-90	70-120	100-160	130-210

Related Specification:
AWS A5.4 E308H-16
Current:
DC (+/-) AC (OCV 70) MIN
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E101 ELC

High quality rutile type stainless steel electrode for welding low carbon 19% Cr, 9% Ni stainless steel. The extra low carbon content provides improved corrosion resistance and notch toughness at low temperatures. Wide usage in the pressure vessel, process plant, dairy and food industries, also suitable for cryogenic applications where high notch toughness at sub-zero temperatures is required. Although the electrode is primarily for welding steels of the AISI 304L and 308L types, it may also be used for welding the higher carbon types 304 and 308. In applications where the operating temperature does not exceed 400°C the electrode may also be used for welding type 347 steels.

Weld Metal Micro-Structure: Austenite with 3-10% ferrite.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Ni	Si
0.03	18.5	1.1	10.1	0.62

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	585 N/mm²
Elongation	30-45%
0.2% Proof Stress	340 N/mm²
Reduction of Area	40-55%
Hardness	140-170 Brinell
Charpy Vee Notch @ 20°C	80J
Charpy Vee Notch @ -196°C	48J

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm	5.0mm
25-35	30-45	45-70	70-110	110-140	140-180

Related Specification:
AWS E308L-17
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E101 H

A rutile flux coated 347 stainless steel all positional electrode with a controlled carbon content 0.04-0.08% and controlled ferrite level of 3-7%, manufactured on a low carbon 308L stainless steel core wire. Designed for welding 347H and 321H stainless steels, subjected to elevated temperatures. This electrode is all positional with smaller diameters ideally suitable to root runs on pipework.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Nb	Ni	P	S	Si
0.07	18.9	1.4	0.7	10.5	0.021	0.011	0.5

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	660 N/mm²
Elongation	30-40%
0.2% Proof Stress	490 N/mm²
Reduction of Area	54%

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
60-90	70-120	100-160	130-210

Related Specification:
AWS A5.4 E347H-16
Current:
DC (+) (OCV 70 amps)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E101 Mo

High quality lime rutile low silica stainless steel welding electrode for welding 19% Cr, 9% Ni 3% Mo stainless steels. The electrode has good strike and restrike characteristics and is suitable in all positions. Designed for welding hardenable high strength ferritics such as armour plate and ferritic materials in Q and T condition containing 0.4°C and alloyed with Ni Cr Mo & V steels for which the electrode is recommended for welding ferritics.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	Ni	P	S	Si
0.11	19.6	1.0	2.69	9.0	0.026	0.024	0.48

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	780 N/mm²
Elongation	> 45%
0.2% Proof Stress	> 540 N/mm²
Reduction of Area	> 40%
Impact Energy @ 0°C	45J

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm	5.0mm	6.0mm
25-35	30-45	45-70	70-110	110-140	140-180	180-210

Related Specification:
AWS A5.4 E308 Mo-17
Current:
DC (+/-) AC (OCV 70) min
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E102

Fully austenitic stainless steel electrode with a rutile coating designed to weld 25/20 chromium, nickel heat-resisting steels. Specially designed for welding austenitic heat resistant stainless steels such as AISI Type 310 and Firth Vickers Immaculate 5. The weld deposit provides good heat resistance up to 1400°C in air, up to approx. 650°C in oxidising sulphurous atmospheres. The electrodes are also suitable for welding stainless to carbon or low alloy steels, and recommended for foundry heat treatment trays and bins, foundry thermocouple units and many furnace elements.
Weld Metal Micro-Structure: Fully austenitic.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Ni	Si
0.08	25.6	2.39	20.64	0.68

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	695 N/mm²
Elongation	35-40%
Hardness	210 Brinell

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm
50-70	70-110	110-140

Related Specification:
AWS E310-17
Current:
AC/DC. DC electrode positive (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E102 EHC

Manufactured on a high purity, fully alloyed core wire with a chemically basic flux coating. The purity of the weld deposit is further enhanced by incorporating with the flux ultra fine metal alloys in the same ratio as they are present in the core wire, this ensures low levels of residuals; tin (Sn<0.01) and lead (Pb<0.01). Recovery is approximately 120% in respect to core wire. This electrode is designed to weld similar alloyed castings that are covered by the following specifications; BS 3100 and BS 1504 grade 310C40, BS 4534 grade 6, ASTM A297 HK, A351 and A608 HK 40. DIN 1.4848 and 1.4847. Proprietary alloys include Paramount H20, Thermoalloy 47 and Cronite HR6.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Cu	Mn	Mo	Ni	Si
0.40	26	0.01	1.8	0.1	21	0.4

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	760 N/mm²
Elongation	21%
0.2% Proof Stress	570 N/mm²
Reduction of Area	26%
Hardness	225-235 Brinell
Charpy Vee Notch @ 20°C	70J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
60-95	75-125	100-160	135-215

Related Specification:
AWS A5.5 E310H-15
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E103 CF

High quality rutile type stainless steel electrode for welding steels of a similar composition. The deposited weld metal has a controlled carbon content of about 0.08% and a low ferrite level, therefore increasing the high temperature strength and stability of the weld microstructure in service conditions above 400°C. Normally used in furnace and flue gas systems.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Cu	Mn	Mo	Ni	P	S	Si
0.08	22.8	0.1	1.5	0.1	12.9	0.02	0.01	0.3

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	600 N/mm²
Elongation	40%
0.2% Proof Stress	480 N/mm²
Reduction of Area	50%
Hardness	210 HV

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm
60-80	70-110	90-150

Related Specification:
AWS E309H-16
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E103 L

General purpose stainless steel electrode of 23/12 type designed for joining dissimilar stainless steels, of the most common types, to one another. Primarily designed for fabrication applications where tolerance to dilution is exploited in joining 410, 304, 321, 316 to mild and low alloy steels for brackets, stiffeners etc. Also employed as a buffer layer on mild steels and used on clad plate applications extensively. Similar cast and wrought steels can also be welded if the service conditions are below 400°C

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Ni	P	S	Si
0.03	23.2	0.76	12.7	0.016	0.008	0.55

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	600 N/mm²
Elongation	35%
Hardness	210 Brinell

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm	5.0mm	6.0mm
40-60	40-60	50-60	70-100	110-140	140-180	180-220

Related Specification:
AWS E309L-17
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E103 Mo

General purpose stainless steel electrode of 23/12/3 type designed for joining dissimilar stainless steels, of the most common types, to one another. Primarily designed for maintenance applications where various types of stainless steels intermediate in composition between 18/8 and 23/12 chrome nickel, are used and where the need for one electrode, to accommodate all applications on a general basis, is required. Most of the common types of stainless steel can be welded with this electrode, without the loss of properties.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	Ni	P	S	Si
0.035	23.0	1.4	2.5	13.0	0.03	0.03	0.6

Typical All Weld Metal Mechanical Properties

As Welded	
Ultimate Tensile Strength	620 N/mm²
Elongation	35%
Hardness	210 Brinell

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
50-60	70-100	110-140	150-190

Related Specification:
AWS E309L Mo -17
Current:
AC/DC (+)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E104

High recovery alloyed rutile flux coated electrode that deposits a duplex stainless steel weld deposit. The moisture resistant coating ensures freedom from porosity. Welds with a stable arc and may be used slag over slag. The quick freezing slag allows greater control over the molten weld metal. This electrode may be used on thick sections of problem steels but specifically designed for welding galvanised steel. Such welds are free from porosity and of excellent appearance and positive resistance to atmospheric corrosion similar to the base material itself.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	Ni	P	S	Si
0.03	23.0	0.60	2.8	12.0	0.010	0.010	0.80

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	660 N/mm²
Elongation	40%
0.2% Proof Stress	475 N/mm²
Reduction of Area	55%
Impact Energy @ 20°C	60J

Sizes Available and Recommended Amperages

1.5mm	2.0mm	2.5mm	3.2mm	4.0mm
40-60	45-70	70-115	90-150	130-210

Related Specification:
AWS E309Mo-26 (Nearest)
Current:
AC/DC (+/-)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E105

Manufactured using a high purity ferritic core wire with an alloyed flux whose slag and de-oxidation system ensures full alloying with no trace segregation of any one element. Ideal electrode for contact welding and mitred fillets joints and deposits smooth even weld appearance for extra efficiency and deposits a weld metal recovery rate of 180%. The electrode is designed to weld ASTM 317 and similar austenitic alloys in which the high Mo content provides extra resistance to pitting in high chloride environments. This electrode may be used in cast or wrought form eg. BS 317S16 – 317S12 – 317C16 – 317C12 – ASTM 317 and CG 8M. May also be used for mixed welds between 317 – 316 – 304 – 321 – 347 etc.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	Ni	P	S	Si
0.06	19.0	0.7	3.5	13.0	0.018	0.021	0.5

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	630 N/mm²
Elongation	35%
0.2% Proof Stress	450 N/mm²
Reduction of Area	41%
Impact Energy @ 20°C	110J

Sizes Available and Recommended Amperages

3.2mm	4.0mm	5.0mm
90-120	110-140	140-200

Related Specification:
AWS E317-17
Current:
DC +/- AC (OCV 80 min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E107

An extruded flux coated Manual Metal Arc electrode manufactured on an alloyed core wire giving a nominal 22Cr. 10Ni deposit micro alloyed with rare earth minerals. Special rutile – alumina – silicate fluxes formulation that ensures ease of welding with easy arc strike and re-striking and smooth weld seams and readily detachable slag. Designed for applications and alloys that need good resistance to oxidation up to 1100°C. e.g. furnace parts – flues – exhausts combustion nozzles. Materials to be welded include: ASTM/UNS S30815 Avesta 253 (Proprietary) EN 10095 – 1.4835 and 1.4893 plus 1.4891.

Typical All Weld Metal Chemical Analysis (%)

C	Ce	Cr	Mn	N	Ni	P	S	Si
0.06	0.003	22.0	0.70	0.05	10.0	0.025	0.011	1.60

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	710 N/mm²
Elongation	40%
0.2% Proof Stress	560 N/mm²
Reduction of Area	50%

Sizes Available and Recommended Amperages

3.2mm	4.0mm	5.0mm
90-120	110-140	140-200

Related Specification:
Avesta 253 MA Type
Current:
DC +/- AC (OCV 80 min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E108

A specially designed composition where Molybdenum % is reduced to form a hybrid alloy between 308H and 316H, operates in temperatures up to 800C. Gives a very high resistance to thermal embrittlement. Creep ductility is enhanced at temperatures above 650C. Used mainly in power generation and chemical process industries on applications such as, steam turbines, catalytic crackers, transfer piping and furnace accessories.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Cu	Mn	Mo	Ni	P	S	Si
0.05	16.0	0.3	1.25	1.25	8.25	0.015	0.01	0.45

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	620 MPa
Elongation	38%
0.2% Proof Stress	400 MPa
Reduction of Area	45%

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
60-80	80-100	90-140	130-200

Related Specification:
AWS E 16.8.2-17 Type
Current:
DC (+ve) AC (OCV 55v min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 200°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E120

Designed on a highly alloyed core wire with a high purity lime rutile flux coating that deposits high chromium duplex weld metal with excellent resistance to corrosion and erosion. After water quenching from 1100°C the microstructure is 30 to 40 % delta ferrite – balance austenite. Mac Stain E120 is designed to weld alloys in cast condition which are then solution heat treated at 1100°C and then air or water quenched. These alloys include AISI 329, DIN 1.4460 and 1.4582 and proprietary alloys such as Firth Vickers FMN, Weir Materials Zeron 25, Sandvik 10RE51 and 3RE60.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	N2	Ni	P	S	Si
0.02	25.0	1.1	3.5	0.18	7.0	0.019	0.02	0.4

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	800 N/mm²
Elongation	38%
Reduction of Area	45%
Impact Energy @ -50°C	35J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
45-70	70-110	110-140	140-180

Related Specification:
AWS E2553-16
Current:
AC/DC (AC OCV 70 min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E120 Cu

Designed on a highly alloyed core wire with a high purity lime/rutile flux coating that deposits high chromium duplex weld metal with excellent resistance to corrosion and erosion. Designed to weld alloys in cast condition such as ASTM A351, A744, CD4MCu, UNS 93370, ASTM A240, BS3146 ANE 21. Proprietary alloys include Uranus 55 and Ferralium. After welding, the weldment is water or air quenched from 1100°C and this solution heat treatment ensures both weld and casting have similar microstructures e.g. austenite with 30 to 40 % delta ferrite.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Cu	Mn	Mo	N2	Ni	P	S	Si
0.03	26.0	2.0	1.2	3.5	0.16	7.5	0.02	0.02	0.4

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	960 N/mm²
Elongation	22%
0.2% Proof Stress	750 N/mm²
Reduction of Area	48%
Impact Energy @ -50°C	50J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
45-70	70-110	110-140	140-180

Related Specification:
AWS E2553-Cu-16
Current:
AC/DC (AC OCV 70 min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Email: sales@mwa-international.com Website: www.mwa-international.com

MAC STAIN E122

Designed on a highly alloyed core wire with a high purity lime/ rutile flux coating that deposits high chromium duplex weld metal with excellent resistance to corrosion and erosion. The weld metal microstructure contains 30 to 50 % delta ferrite – balance austenite. This electrode has a very stable arc, low spatter, easy strike and restrike, good slag detachability and porosity free smooth welds. Mac Stain E122 is designed to weld the following alloys when no subsequent solution heat treatment is applied to the weldment. ASTM A182 Grade F51, UNS 53 1803, DIN 1.4462, BSC Hyresist 22/5, Sandvik SAF 2205, Avesta 2205, Valourec VS22. Additional Data : PRE N = %Cr + 3.3 x %Mo + 16 x %N2 = 38

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	N2	Ni	P	S	Si
0.02	25.0	1.0	3.5	0.18	9.0	0.011	0.01	0.4

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	760 N/mm²
Elongation	24%
0.2% Proof Stress	630 N/mm²
Impact Energy @ -50°C	85J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
45-70	70-110	110-140	140-180

Related Specification:
AWS E2209-16
Current:
AC/DC (AC OCV 70 min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E122 B

Designed on a highly alloyed core wire with a high purity chemically basic flux to facilitate all positional welding including on site welding. The weld metal as deposited has a duplex microstructure of the deposited weld contains 30 to 50 % delta ferrite – balance austenite which provides excellent resistance to corrosion and erosion. Mac Stain E122B is designed to weld the following alloys when no subsequent solution heat treatment is applied to the weldment, ASTM A182 Grade F51, UNS 53 1803, DIN 1.4462, BSC Hyresist 22/5, Sandvik SAF 2205, Avesta 2205, Valourec VS22. Additional Data : PRE N = %Cr + 3.3 x %Mo + 16 x %N2 = 38

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Mn	Mo	N2	Ni	P	S	Si
0.02	25.0	1.0	3.5	0.18	9.0	0.011	0.01	0.4

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	760 N/mm²
Elongation	24%
0.2% Proof Stress	630 N/mm²
Reduction of Area	44%
Impact Energy @ -50°C	85J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
45-70	70-110	110-140	140-180

Related Specification:
AWS E2209-15
Current:
AC/DC (AC OCV 70 amps)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

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MAC STAIN E124

Designed on a highly alloyed core wire with a high purity lime/ rutile flux coating that deposits high chromium duplex weld metal with excellent resistance to corrosion and erosion. The microstructure of the as deposited weld contains 30 to 50 % delta ferrite – balance austenite. Mac Stain E124 is designed to weld the following alloys when no subsequent solution heat treatment is applied to the weldment. UNS S32760 (wrought) and UNS J99380 (cast) and Weir Materials Zeron 100 (proprietary brand). Weir metals main areas of application for these materials is when a good combination of high strength and resistance to seawater corrosion is needed.

Additional Data : PRE N = %Cr + 3.3 x %Mo + 16 x %N2 = 40

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Cu	Mn	Mo	N2	Ni	P	S	Si	W
0.02	25.0	0.8	0.6	3.5	0.22	9.5	0.020	0.015	0.4	0.70

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	910 N/mm²
Elongation	25%
0.2% Proof Stress	690 N/mm²
Reduction of Area	45%
Impact Energy @ -50°C	46J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
45-70	70-110	110-140	140-180

Related Specification:
Type 2595-16.Cu.WR.
Current:
AC/DC (AC OCV 80 min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

Telephone: +44 (0) 121 556 6366 Fax: +44 (0) 1782 566123

MAC STAIN E125 B

Designed on an alloyed core wire with a special basic flux which deposits a super duplex weld metal system to give optimum all-positional welding. The electrode is designed for all positional welding of super duplex alloys subject to service in the as welded condition. The weld has a matching microstructure to the base alloy by virtue of an increased nickel content eg; microstructure of weld and base metal austenite with 40 to 60 Ferrite. The materials and applications it is suitable for are 25% chrome super duplex alloys conforming to ASTM A182 F53, UNS S32760, BS EN 1088-2, X2 Cr Ni Mo, N25-7-4

Casting's : UNS J93404 ASTM A890 Grade 5A/6A

Proprietary Alloys : Weir pumps – Zeron 100 XKS – Sandvik – Avesta – SAF 2507. Particularly recommended for fixed positional pipework in the ASME 5G/6G position.

Typical All Weld Metal Chemical Analysis (%)

C	Cr	Cu	Mn	Mo	N	Ni	P	S	Si
0.03	25.0	0.10	1.0	3.9	0.28	9.5	0.020	0.015	0.5

Typical All Weld Metal Mechanical Properties

As Welded	Typical
Ultimate Tensile Strength	910 N/mm²
Elongation	28%
0.2% Proof Stress	710 N/mm²
Reduction of Area	45%
Impact Energy @ -50°C	>50J

Sizes Available and Recommended Amperages

2.5mm	3.2mm	4.0mm	5.0mm
50-75	70-95	100-160	130-190

Related Specification:
AWS E2594L-15
Current:
DC+ (OCV 80 min)
Storage:
If allowed to become damp, the electrodes should be re-dried for one hour at 250°C before use.

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