

# Stainless Steels

## DATA SHEET

## B-46

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## ELECTRODE FOR 310MoLN

### Alloy type

25%Cr-22%Ni-2.5%Mo-0.15%N (alloy 310MoLN)  
 austenitic corrosion resistant alloy.

### Materials to be welded

**AISI** 310MoLN  
**AFNOR** Z1 CND 25.22.Az  
**DIN / EN** 1.4465 (X2CrNiMoN 25-25-2)  
 1.4466 (X1CrNiMoN 25-22-2)  
**UNS** S31050  
**Proprietary** Uranus 25 22 2 (Usinor Industeel)  
 2RE69, 3R60U.G (Sandvik)  
 Cronifer 25.25.LCN (VDM)  
 HR3ELM (Sumitomo)

### Applications

Ultramet B310MoLN is used primarily for welding similar wrought or cast 310MoLN parent alloys. It is particularly suited to positional welding, including fixed pipework qualified in the ASME 6G position, in material thickness from 3mm up to the heaviest sections.

The 310MoLN alloy has very good resistance to pitting, intergranular corrosion, chloride bearing media and nitric acid. The main applications of the alloy are in the production and processing of **urea** and **sulphuric acid**.

Applications are mainly for joining matching steels although it can also be used for **surfacing**.

### Microstructure

In the as-welded condition the microstructure is fully austenitic. Typical magnetic permeability is <1.01.

### Welding guidelines

No preheat required and interpass should be controlled to 150°C maximum. It is also desirable for heat input to be limited to a maximum of 1.5kJ/mm, particularly with 4mm diameter electrodes.

### Additional information


The alloy has excellent resistance to the ASTM A262 practice C corrosion test (Huey test). Typically required to meet <0.16g/m<sup>2</sup>/h (0.18mm/year), and selective attack <0.07mm.

### Products available

Process	Product	Specification
MMA	<b>Ultramet B310MoLN</b>	BS EN E 25 22 2 NLB

# ULTRAMET B310MoLN

MMA electrode for welding alloy 310MoLN

<b>Product description</b>	MMA electrode with a specially balanced basic carbonate-fluoride flux on high purity stainless steel core wire. Low silicon and high manganese levels ensure freedom from microfissuring. Recovery is about 110% with respect to core wire, 65% with respect to whole electrode.										
<b>Specifications</b>	<b>BS EN 1600</b>		E 25 22 2 N L B								
	<b>BS 2926</b>		25.21.2 L Mn B								
<b>ASME IX Qualification</b>	<b>QW432</b> F-No 5, <b>QW442</b> A-No 9.										
<b>Composition (weld metal wt %)</b>		C	Mn	Si	S	P	Cr	Ni	Mo	N	Cu
	min	--	3.0	--	--	--	24.0	20.0	2.0	0.10	--
	Max	0.04	5.0	1.0	0.025	0.030	27.0	23.0	3.0	0.20	0.50
	typ	0.03	4	0.4	0.005	0.02	25	22	2.2	0.15	0.05
<b>All-weld mechanical properties</b>	As welded					min		typical			
	Tensile strength					MPa		510 640			
	0.2% Proof stress					MPa		320 430			
	Elongation on 4d					%		-- 37			
	Elongation on 5d					%		25 36			
	Reduction of area					%		-- 50			
	Impact energy					-50°C J		-- 75			
	Hardness cap/mid					HV		-- 185/205			
<b>Operating parameters</b>	DC +ve 										
	∅ mm	2.5		3.2		4.0					
	min A	60		75		100					
	max A	90		120		155					
<b>Packaging data</b>	∅ mm	2.5		3.2		4.0					
	length mm	300		340		340					
	kg/carton	11.4		13.8		13.8					
	pieces/carton	501		408		270					
<b>Storage</b>	<p><b>3 hermetically sealed ring-pull metal tins</b> per carton, with unlimited shelf life. Direct use from tin is satisfactory for longer than a working shift of 8h. Excessive exposure of electrodes to humid conditions will cause some moisture pick-up and increase the risk of porosity.</p> <p>For electrodes that have been exposed:  <b>Redry</b> 200 – 300°C/1-2h to restore to as-packed condition. Maximum 300° C, 3 cycles, 10h total.  <b>Storage</b> of redried electrodes at 50 – 200°C in holding oven or heated quiver: no limit, but maximum 6 weeks recommended. Recommended ambient storage conditions for opened tins (using plastic lid): &lt; 60% RH, &gt; 18°C.</p>										
<b>Fume data</b>	Fume composition, wt % typical:										
		Fe	Mn	Ni	Cr	Cu	F	OES (mg/m <sup>3</sup> )			
		9	10	2	7.5	<0.2	18	0.6			