

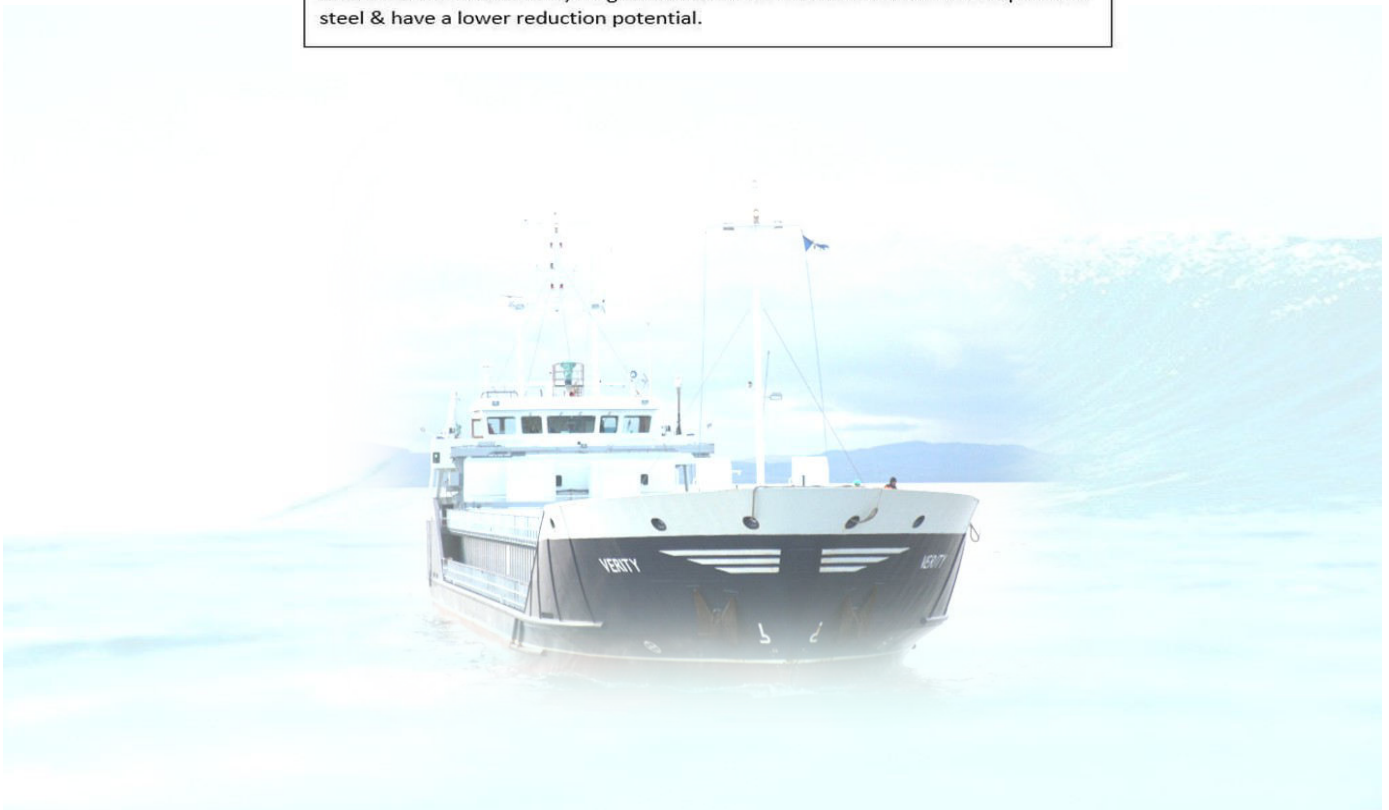
PROTECT YOUR INVESTMENT

Galvanic Series of Metals in Seawater

<u>Metals and Alloys</u>	<u>Corrosion Potential</u> (volts DC ref. Ag/AgCl)	
Magnesium and Magnesium Alloys	-1.60 to -1.63	anodic - active
Aluminum - Anode	-1.10	
Zinc	-0.98 to -1.03	
Aluminum Alloys	-0.76 to -1.00	
Mild Steel (clean & shiny)	-0.60 to -0.71	
Mild Steel (rusty)	-0.20 to -0.50	
Cast Iron (not graphitized)	-0.60 to -0.71	
Stainless steels	-0.46 to -0.58	
Stainless Steel, Type 316 (active in saltwater)	-0.43 to -0.54	
Aluminum Bronze (92% Cu, 8% Al)	-0.31 to -0.42	
Copper	-0.30 to -0.57	
Naval Brass (60% Cu, 39% Zn)	-0.30 to -0.40	
Yellow Brass (65% Cu, 35% Zn)	-0.30 to -0.40	
Red Brass (85% Cu, 15% Zn)	-0.30 to -0.40	
Muntz Metal (60% Cu, 40% Zn)	-0.30 to -0.40	
Admiralty Brass (71% Cu, 28% Zn, 1% Sn)	-0.28 to -0.36	
Aluminum Brass (76% Cu, 22% Zn, 2% Al)	-0.28 to -0.36	
Silicone Bronze (96% Cu max, 0.80% Fe, 1.5% Zn, 2.00% Si, 0.75% MN, 1.60% Sn)	-0.26 to -0.29	
90% Cu, 10% Ni	-0.21 to -0.28	
75% Cu, 20% Ni, 5% Zn	-0.19 to -0.25	
Lead	-0.19 to -0.25	
70% Cu, 30% Ni	-0.18 to -0.23	
Stainless steel, Type 304 (passive)	-0.05 to -0.10	
Stainless steel, Type 316 (passive)	-0.00 to -0.10	
Titanium	+0.06 to -0.05	
Platinum	+0.25 to +0.19	
Carbon, Graphite, Coke	+0.30 to +0.20	cathodic - noble



Metals such as Aluminium, Magnesium & Zinc are active in nature as compared to steel & have a lower reduction potential.



www.ukanodes.com

UK Anodes Ltd. Unit 19a, British Nuralite Industrial Estate, Canal Road, Higham, Rochester, Kent, ME3 7JA

Company Reg:10536626 Vat Number: 260930318



UK ANODES LTD

Manufacturers of Zinc and Aluminium Anodes

Tel: 01474 824113

Mob: 07771 526615

Email: info@invicta-anodesltd.co.uk

The team at UK Anodes Ltd located in the south east of England have over 20 years experience in manufacturing zinc and aluminium sacrificial anodes we cater for all marine environments, from leisure craft, shipping, jetties through to off shore constructions.

We can produce an extensive range of standard anodes and as a producer have the flexibility to produce non standard items to your own requirements, all our materials are produced from the highest grades of zinc and aluminium and accurately alloyed to the correct specification, minor variations can have a dramatic effect to the effectiveness of the anodes and worst have an effect to not protecting your vessel or structure.

We pride our selves on the quality of our products and follow to strict procedures through out the production process and show full traceability on all of our products, we have allocated melting furnaces to each type alloy type to prevent any contamination from other metals.

Forms of Corrosion

1)Uniform attack: The most common form of corrosion an electrochemical reaction that proceeds over a large area. This is predictable and easily controlled by 1) correct materials 2) inhibitors 3) Cathodic Protection.

2) Galvanic: A potential difference exists between dissimilar metals when they are immersed in a conductive solution. If the materials are placed in direct contact, this potential difference produces electron flow between them. Corrosion of the less corrosion resistant- resistant material is usually increased and attack of the more resistant material is decreased.

The less resistant material becomes anodic and the more resistant material becomes cathodic.

Examples of the galvanic tables are the EMF SERIES and the GALVANIC SERIES for commercially available metals and alloys in seawater.

What can you do

Make sure your anodes are fitted correctly and purchased from a reputable supplier. The anodes are added to your boat to sacrifice them selves, to look other metals on your vessel or structure, if the anodes are not corroding further investigation would be required as the anodes once fitted and stable should start to show signs of corrosion soon after.

Where ever corrosion can or does occur, UK Anodes Ltd is ready to advise and help solve your problem so that your investment has a happy and longer life.

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ZINC SPECIFICATION OF SACRIFICIAL ANODES

SPECIFICATION CODE

US MIL SPEC 18001K

IRON	FE	0.005%
CADMIUM	CD	0.025-0.07
COPPER	CU	0.005MAX
ALUMINIUM	AL	0.10-0.50
LEAD	PB	0.006MAX
OTHERS TOTAL		0.10 MAX
ZINC	ZN	REMAINDER

Capacity: 780 Amp-Hr/Kg

Potential: -1.050 v silver/silver reference cell

This alloy is produced from pure high grade Zinc (99.995% purity) and then alloyed to above specification, it is false economy to purchase zinc anodes which are not correctly formulated, minor variations can have a dramatic effect on the effectiveness of the alloys and their life time.

ALUMINIUM SPECIFICATION OF SACRIFICIAL ANODES

SPECIFICATION CODE

US MIL SPEC 24779B

IRON	FE	0.090 MAX
SILICON	SI	0.08-0.20
COPPER	CU	0.004MAX
ZINC	ZN	4.0-6.5
INDIUM	IN	0.014-0.020
TITANIUM	TI	N/A
GALLIUM	GA	N/A
MERCURY	HG	0.001MAX
NICKEL	NI	N/A
OTHERS		0.0250MAX
ALUMINIUM		REMAINDER

Capacity: 2535 Amp-Hr/Kg

Potential: -1.05 v silver/silver reference cell

This alloy is produced from high grade aluminium and then alloyed to above specification, ideally suited for transition from sea to brackish water, or varying seawater temperatures, and salinity.

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ZINC BOLT ON ANODES

<p>Zn53uk</p>  <p>0.25 kg Nominal Weight 60 diameter x 20mm Single central hole To suit m-10 stud £5.95</p>	<p>Zn52uk</p>  <p>0.5 kg Nominal Weight 70 diameter x 33mm Single central hole To suit m-10 stud £8.06</p>	<p>Zn51uk</p>  <p>0.7kg Nominal Weight 84 diameter x 33mm Single central hole To suit m-10 stud £10.03</p>
<p>Zn56uk(most popular)</p>  <p>1kg Nominal Weight 100 diameter x 30mm Single central hole To suit m-10 stud £11.47</p>	<p>Zn58uk</p>  <p>2.2kg Nominal Weight 140 diameter x 30mm Single central hole To suit m-10 stud £19.68</p>	<p>Zn59uk</p>  <p>2.2kg Nominal Weight 120 diameter x 35mm Single central hole To suit m-16 stud £19.68</p>
<p>Zn55uk</p>  <p>7.2kg Nominal Weight 225 diameter x 25mm Single central hole To suit m-10 stud or 16mm £58.44</p>	<p>Zn61uk</p>  <p>3.0kg Nominal Weight 165 diameter x 25mm Single central hole To suit m-10 studs or 16mm £26.81</p>	<p>Zn8uk</p>  <p>8.0kg Nominal weight 160 diameter x 55mm Single central hole To suit m-20 stud £65.86</p>
<p>Zn77euk</p>  <p>2.8kg Nominal Weight 318x65x32mm Variable centres 110/210mm To suit m-10 stud £28.52</p>	<p>Zn76euk</p>  <p>1.4kg Nominal Weight 200x65x32mm Variable centres up to 110mm To suit m-10 stud £17.82</p>	<p>Zn77uk(most popular)</p>  <p>2.1kg Nominal Weight 150x83x41mm Centres 200mm To suit m-10 stud £18.01</p>

ZINC BOLT ON ANODES

<p>Zn78buk(most popular)4.0kg Nominal</p>  <p>4.0kg Nominal Weight 305X76X41mm Centres 200mm To suit m-10 stud £35.83</p>	<p>Zn78bLuk</p>  <p>3.0kg Nominal Weight 305X75X35mm Centres 200mm To suit m-10 stud £25.69</p>	<p>Zn78bhuk</p>  <p>4.5kg Nominal Weight 300X87X45MM Centres 200mm To suit m-10 stud £40.27</p>
<p>Zn40buk</p>  <p>4.0kg Nominal Weight 200x100x35mm Centres 110mm To suit m-10 stud or 16mm £35.83</p>	<p>Zn5buk</p>  <p>0.5kg Nominal Weight 130x40x10mm Centres 67mm To suit m-6 stud or blank £13.95</p>	<p>Zn80buk</p>  <p>8.0kg Nominal Weight 300x150x27mm Centres 160mm To suit m-16 stud £65.86</p>
<p>Zn100buk</p>  <p>10.0kg Nominal Weight 300x150x32mm Centres 160mm To suit m-16 stud £82.49</p>	<p>Zn120buk</p>  <p>12.0kg Nominal Weight 300x150x40mm Centres 160mm To suit m-16 stud £99.08</p>	<p>Zn72buk(most popular)</p>  <p>12.0kg Nominal Weight 457x102x64mm Centre 229mm +/-5mm To suit m-16 stud £97.00</p>
<p>Zn72bmuk(most popular)</p>  <p>7.25kg Nominal Weight 457x102x38mm Centres 229mm and 200mm To suit m-16 stud and m-10 £60.74</p>	<p>Zn72bmpuk</p>  <p>7.25kg Nominal Weight 450x100x35mm Centres 200mm To suit m-10 stud £60.74</p>	<p>Zn79uk</p>  <p>3.0kg Nominal weight 170x80x50mm Centres 200mm To suit m-10 stud £26.93</p>

ZINC WELD ON ANODES

<p>Zn75wuk</p>  <p>0.4 kg Nominal Weight 80x40x25mm Weld On Overall 160mm £7.90</p>	<p>Zn76wuk</p>  <p>1.0kg Nominal Weight 100x75x30mm Weld On Overall 160mm £11.45</p>	<p>Zn3wuk</p>  <p>3.0kg Nominal Weight 160x90x45mm Weld On Overall 250mm £25.76</p>
<p>Zn6wuk</p>  <p>6.5kg Nominal Weight 200x150x35mm Weld On Overall 330mm £48.84</p>	<p>Zn60wuk</p>  <p>6.0kg Nominal Weight 300x120x25mm Weld on Overall 380mm £45.06</p>	<p>Zn78wuk</p>  <p>4.5kg Nominal Weight 305x90x40mm Weld On Overall 380mm £36.76</p>
<p>Zn80wuk</p>  <p>8.5kg Nominal Weight 305x152x32mm Weld on Overall 405mm £63.24</p>	<p>Zn73wuk</p>  <p>10. kg Nominal Weight 355x154x32mm Weld On Overall 460mm £78.43</p>	<p>Zn20wuk</p>  <p>20.0kg Nominal Weight 545x130x45mm Weld On Overall 700mm £154.06</p>
<p>Zn25wuk</p>  <p>25.0kg Nominal Weight 545x130x50mm Weld On Overall 700mm £192.57</p>	<p>Zn30wuk</p>  <p>30.0kg Nominal Weight 545x130x55mm Weld On Overall 700mm £231.08</p>	<p>Zn72wuk</p>  <p>14.0kg Nominal Weight 457x102x64mm Weld On Overall 650mm £114.76</p>

ALUMINIUM BOLT ON ANODES

<p>AL53uk</p>  <p>0.095 kg Nominal Weight 60 diameter x 20mm Single central hole To suit m-10 stud £5.95</p>	<p>AL52uk</p>  <p>0.190 kg Nominal Weight 70 diameter x 33 mm Single central hole To suit m-10 stud £8.06</p>	<p>AL51uk</p>  <p>0.300 kg Nominal Weight 84 diameter x 33mm Single central hole To suit m-10 stud £8.36</p>
<p>AL56uk(most popular)</p>  <p>0.380 kg Nominal Weight 100 diameter x 30mm Single central hole To suit m-10 stud £8.89</p>	<p>AL58uk</p>  <p>0.800 kg Nominal Weight 140 diameter x 30mm Single central hole To suit m-10 stud £14.55</p>	<p>AL59uk</p>  <p>0.838 kg Nominal Weight 120 diameter x 35mm Single central hole To suit m-16 stud £15.65</p>
<p>AL55uk</p>  <p>2.8 kg Nominal Weight 225 diameter x 25mm Single central hole To suit m-10 stud or 16mm £36.17</p>	<p>AL61uk</p>  <p>1.5kg Nominal Weight 165 diameter x 25mm Single central hole To suit m-10 studs or 16mm £19.37</p>	<p>AL8uk</p>  <p>3.0kg Nominal weight 160 diameter x 55mm Single central hole To suit m-20 stud £38.72</p>
<p>AL77euk</p>  <p>1.2 kg Nominal Weight 318x65x32mm Variable centres 110/210mm To suit m-10 stud £29.86</p>	<p>AL76euk</p>  <p>0.6 kg Nominal Weight 200x65x32mm Variable centres up to 110mm To suit m-10 stud £22.04</p>	<p>AL77uk(most popular)</p>  <p>1.0kg Nominal Weight 150x83x41mm Centres 200mm To suit m-10 stud £15.02</p>

ALUMINIUM BOLT ON ANODES

<p>AL78buk</p>  <p>1.6 kg Nominal Weight 305X76X41mm Centres 200mm To suit m-10 stud £24.40</p>	<p>AL78bLuk</p>  <p>1.2 kg Nominal Weight 305X75X35mm Centres 200mm To suit m-10 stud £19.36</p>	<p>AL78bhuk (most popular)</p>  <p>1.7 kg Nominal Weight 300X87X45MM Centres 200mm To suit m-10 stud £28.73</p>
<p>AL40buk</p>  <p>1.6 kg Nominal Weight 200x100x35mm Centres 110mm To suit m-10 stud or 16mm £24.40</p>	<p>AL5buk</p>  <p>0.190 kg Nominal Weight 130x40x10mm Centres 67mm To suit m-6 stud or blank £13.95</p>	<p>AL80buk</p>  <p>3.0kg Nominal Weight 300x150x27mm Centres 160mm To suit m-16 stud £45.31</p>
<p>AL100buk</p>  <p>3.5 kg Nominal Weight 300x150x32mm Centres 160mm To suit m-16 stud £46.85</p>	<p>AL120buk</p>  <p>4.5 kg Nominal Weight 300x150x40mm Centres 160mm To suit m-16 stud £48.85</p>	<p>AL72buk(most popular)</p>  <p>5.0 kg Nominal Weight 457x102x64mm Centre 229mm +/-5mm To suit m-16 stud £49.76</p>
<p>AL72bmuk</p>  <p>2.8 kg Nominal Weight 457x102x38mm Centres 229mm and 200mm To suit m-16 stud and m-10 £33.50</p>	<p>AL72bmpuk</p>  <p>2.8 kg Nominal Weight 450x100x35mm Centres 200mm To suit m-10 stud £42.28</p>	<p>AL79uk</p>  <p>1.2 kg Nominal weight 170x80x50mm Centres 200mm To suit m-10 stud £17.93</p>

ALUMINIUM WELD ON ANODES

<p>AL75wuk</p>  <p>0.200 kg Nominal Weight 100x45x28mm Weld On Overall 160mm</p> <p style="text-align: right;">£5.93</p>	<p>AL76wuk</p>  <p>0.5 kg Nominal Weight 100x75x30mm Weld On Overall 160mm</p> <p style="text-align: right;">£7.43</p>	<p>AL3wuk</p>  <p>1.5 kg Nominal Weight 160x90x45mm Weld On Overall 250mm</p> <p style="text-align: right;">£11.36</p>
<p>AL6wuk</p>  <p>2.5 kg Nominal Weight 200x150x35mm Weld On Overall 330mm</p> <p style="text-align: right;">£23.39</p>	<p>AL60wuk</p>  <p>2.3 kg Nominal Weight 300x100x25mm Weld on Overall 380mm</p> <p style="text-align: right;">£22.19</p>	<p>AL78wuk</p>  <p>2.0 kg Nominal Weight 305x90x40mm Weld On Overall 380mm</p> <p style="text-align: right;">£20.22</p>
<p>AL80wuk</p>  <p>3.2 kg Nominal Weight 305x152x32mm Weld on Overall 405mm</p> <p style="text-align: right;">£24.40</p>	<p>AL73wuk</p>  <p>5.0 kg Nominal Weight 355x154x32mm Weld On Overall 460mm</p> <p style="text-align: right;">£37.43</p>	<p>AL20wuk (al82)</p>  <p>8.0 kg Nominal Weight 545x130x45mm Weld On Overall 800mm</p> <p style="text-align: right;">£65.43</p>
<p>AL25wuk (al90)</p>  <p>11.0kg Nominal Weight 545x130x50mm Weld On Overall 800mm</p> <p style="text-align: right;">£80.62</p>	<p>AL30wuk</p>  <p>12.5kg Nominal Weight 545x130x55mm Weld On Overall 700mm</p> <p style="text-align: right;">£91.61</p>	<p>AL72wuk</p>  <p>6.0kg Nominal Weight 457x102x64mm Weld On Overall 565mm</p> <p style="text-align: right;">£51.43</p>

Zinc Pencil Anodes

Machine Finish
Thread Cut into anode



Pencils below £9.35 each

- 375/2-zinc pencil (3/8"x2") Thread 3/8"-16nc
- 375/3-zinc pencil (3/8"x3") Thread 3/8"-16nc
- 375/4-zinc pencil (3/8"x4") Thread 3/8"-16nc
- 500/2-zinc pencil (1/2"x2") Thread 3/8"-16nc
- 500/4-zinc pencil (1/2"x4") Thread 3/8"-16nc
- 500/6-zinc pencil (1/2"x6") Thread 3/8"-16nc
- 625/2-zinc pencil (5/8"x2") Thread 3/8"-16nc
- 625/3-zinc pencil (5/8"x3") Thread 3/8"-16nc
- 625/4-zinc pencil (5/8"x4") Thread 3/8"-16nc
- 625/6-zinc pencil (5/8"x6") Thread 3/8"-16nc
- 750/2-zinc pencil (3/4"x2") Thread 5/8"-11nc
- 750/3-zinc pencil (3/4"x3") Thread 5/8"-11nc
- 750/4-zinc pencil (3/4"x4") Thread 5/8"-11nc
- 750/6-zinc pencil (3/4"x6") Thread 5/8"-11nc
- 1050/2-zinc pencil (1.05"x2") Thread 3/4"-10nc
- 1050/3-zinc pencil (1.05"x3") Thread 3/4"-10nc
- 1050/4-zinc pencil (1.05"x4") Thread 3/4"-10nc
- 1050/6-zinc pencil (1.05"x6") Thread 3/4"-10nc

Brass Anode Plugs



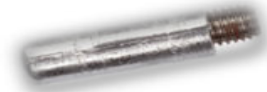
- Bp250-to suit type 375 (1/4"npt) **£12.35**
- Bp375-to suit type 500 (3/8"npt) **£13.89**
- Bp500-to suit type 625 (1/2"npt) **£16.62**
- Bp750-to suit type 750 (3/4"npt) **£19.14**
- Bp1000- to suit type 1050 (1"npt) **£22.43**



Zinc Pencil Anodes

Cast Finish

Steel thread cast into anode (for easier replacement)



Pencils below £7.25 each

- Zn10p/50-(10mmx50mm)Thread 1/4ww-unc
- Zn10p/100-(10mmx100mm) Thread 1/4ww-unc
- Zn12p/50-(12mmx50mm) Thread 1/4ww-unc
- Zn12p/100-(12mmx100mm) Thread 1/4ww-unc
- Zn16p/50-(16mmx50mm) Thread 3/8ww-unc
- Zn16p/100-(16mmx100mm) Thread 3/8ww-unc
- Zn20p/50-(20mmx50mm) Thread 3/8ww-unc
- Zn20p/100-(20mmx100mm) Thread 3/8ww-unc
- Zn25p/50-(25mmx50mm) Thread 3/8ww-unc
- Zn25p/100-(25mmx100mm) Thread 3/8ww-unc
- Zn30p/50-(30mmx50mm) Thread 3/8ww-unc
- Zn30p/100-(30mmx100mm) Thread 3/8ww-unc

Threads can be easily Modified to suit your Requirements.

Brass Anode Plugs



- Bp10-to suit type zn10p (1/4"npt) **£12.35**
- Bp12-to suit type zn12p (3/8"npt) **£13.89**
- Bp16-to suit type zn16p (1/2"npt) **£16.62**
- Bp20-to suit type zn20p (3/4"npt) **£19.14**
- Bp25-to suit type zn25p (1"npt) **£22.43**

If the size anode or thread is not listed above.

Please contact us with your own requirements.

Or refer to zinc rods and cut your own.

Zinc Rod(aluminium on request)



Zr10-zinc rod 500mm long x 10mm diameter.
0.3kg **£12.10**

Zr12-zinc rod 500mm long x 12mm diameter.
0.4kg **£14.38**

Zr16-zinc rod 500mm long x 16mm diameter.
0.7kg **£15.79**

Zr20-zinc rod 500mm long x 20mm diameter.
1.25kg **£18.06**

Zr25-zinc rod 500mm long x 25mm diameter.
1.8kg **£24.28**

Zr30-zinc rod 500mm long x 30mm diameter.
2.5kg **£26.80**

Zr40-zinc rod 500mm long x 40mm diameter.
4.5kg **£41.05**

Zr50-zinc rod 500mm long x 50mm diameter.
7.0kg **£62.21**

Zr60-zinc rod 500mm long x 50mm diameter.
10.0kg **£87.61**

Zr70-zinc rod 500mm long x 70mm diameter.
13.7kg **£118.91**

Zr80-zinc rod 500mm long x 80mm diameter.
17.7kg **£152.77**

Zr100-zinc rod 500mm long x 100mm diameter.
27.7kg **£234.05**

Magnesium Anodes (fresh water only)
LIMITED STOCKS



Mg56uk

100mm diameter
35mm depth
0.4kg **£15.84**



Mg77uk

180mm x 80mm x 40mm
200mm hole centres
0.8kg **£15.92**



Mg78buk

305mm x 88mm x 38mm
200mm hole centres
1.3kg **£35.64**



Mg78wuk

305mm x 80mm x 40mm
Over all length 440mm
1.5kg **£24.95**



Mg80wuk

305mm x 155mm x 30mm
Over all length 405mm
2.0kg **£42.82**



Mg73wuk

355mm x 155mm x 35mm
Over all length 500mm
2.5kg **£50.77**



Mg72wuk

430mm x 100mm x 50mm
Over all length 570mm
3.5kg **£64.79**

Ancilleries



M10grp

Zinc plated stud assembly. c/w nuts, washers and cable connectors.

M-10 for grp vessels. **£6.72**



M16grp

Zinc plated stud assembly. c/w nuts, washers and cable connectors.

M-16 for grp vessels. **Not available**



M10st

Steel stud assembly. c/w nuts and washer, weld on type.

M-10 for steel hull. **£6.05**



M16st

Steel stud assembly. c/w nuts and washer, weld on type.

M-16 for steel hull. **£7.56**



Bp56

Expanded neoprene gasket to suit 100mm diameter.

To suit (anode type 56) **£2.59**



Bp58

Expanded neoprene gasket to suit 140mm diameter.

To suit (anode type 58) **£2.66**



Bp78-72

Expanded neoprene gasket 460mm x 100mm

To suit (anode type 78) **£2.81**

To suit (anode type 72) **£3.74**



Bp77 Expanded neoprene

gasket

To suit (Anode type 77) **£2.66**

Raw Materials (prices on request)



Zinc ingots

Z1- 99.995% (dimensions advised)



Lead ingots

Produced to required dimension.



Zinc Balls

50mm diameter 0.5kg

Produced to required specification.



Aluminium ingot

Produced to required specification

If we do not have listed what you require please contact us.

As we are a producer we also have the flexibility to produce one off specials, any size large or small.

We also have our own iron and bronze foundry where we produce various other components.

We produce a large range of hanging anodes for added protection or for vessels that are unable to be dry docked.