

# Speciality Welds



## Underwater Wet Welding Electrodes

The Barracuda™ 'Gold' is a special rutile flux coated welding electrode, which has added nickel and iron powders. It has a special formulated clear polymer based waterproof coating, to ensure the maximum resistance to water and moisture penetration is achieved. The electrode also allows for higher levels of misuse in its handling and care, and provides electrical insulation for improved diver safety. The electrodes are provided in either a standard triangular cardboard box, or a plastic telescopic container.



The electrode has a particularly smooth, soft arc characteristic that welders find very pleasing and easy to use. The electrode produces a superb weld finish and the slag is easily removed. It offers easy striking and re-striking and may be used in all positions. The electrode provides for excellent mechanical properties.

(see technical data below).



### Technical Data



#### Weld Metal Properties

Mechanical Analysis*		
As welded	Dry	Wet
Tensile Strength (N/mm <sup>2</sup> )	540	564
Elongation on 4d:	26%	12-13.5%
Reduction of Area:	70%	47%
Charpy Impact Energy	62J (@ 0°C)	50-54J (@ -20°C)

\*The wet welded samples were taken from two butt welded steel plates of grade AS1548-7-460R. Both welds were independently examined, and the mechanical properties obtained, met those requirements detailed in AWS D3.6-99 class 'B'. While, the X-ray quality met those of class 'A' standards.

Chemical Analysis	
Deposited Weld Metal Analysis	Typical (dry) %
Carbon (C)	0.05
Manganese (Mn)	0.5
Silicon (S)	0.45
Sulphur (S)	0.025
Phosphorous (P)	0.025
Nickel (Ni)	0.30

#### Welding Parameters

Electrode Dia	3.2mm	4.0mm
<b>Electrical Characteristics</b>		
Current Type:	DC Only	
Polarity:	DCSP (-Ve) or DCRP (+ Ve)	
Amps:	145-165 (185 Max)	170-220 (240 Max)
Volts: (OCV)	80 (Max)	

#### Recommended Welding Techniques

The welding techniques we recommend for underwater wet welding are touch technique, of which, there are essentially three variations:

Drag  
Oscillation  
Step-back

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## Welding & Usage Guide

### Health & Safety

Take all necessary precautions when welding.

- Follow employer's safety practices.
- Fume and gases can be hazardous to your health.
- Electric shock can kill.
- Arc rays can injure eyes and skin.
- Use adequate ventilation while welding on the surface.
- Wear suitable eye protection and protective clothing.
- Do not touch live electrical parts.
- Wear rubber gloves.
- Only change the electrode when cold.

Safety should always be in the forefront of everybody's mind. The guidelines as specified by the AODC code of practice "Safe use of electricity underwater" should always be followed.

### Storage & Care

Any physical damage to the electrode coating will have a detrimental effect on weldability. Electrodes should be handled and stored in a manner that prevents any physical damage.

Electrodes should remain in their packaging until required. Other than avoiding prolonged immersion in water and direct sunlight, no other special precautions are necessary when using the **Barracuda**, as the waterproof coating provides excellent physical protection, thereby allowing for higher levels of misuse.

### Handling & Transportation

Electrodes may be used directly from the packet and taken into the water in quantities that will allow for their use within a reasonable time. Any unused electrodes should be discarded. Ensure the transportation method allows for the electrodes to arrive at the work site damage free.

We recommend that electrodes are not secured together using duct tape, as this may cause damage to the waterproof coating.

Electrodes should be transported in a suitable welder's quiver. Electrodes that have been submerged for longer than 60 minutes should be discarded, as a detrimental effect on both the welding performance and resultant weld quality may ensue.

### Operating Instructions

We recommend that all underwater wet welding should be carried out using DCSP. However the electrode will also perform satisfactorily on DCRP should this be necessary. In addition, a circuit breaker should be fitted into the welding circuit to allow for safe isolation. This may be either dual pole or single pole. The use of double insulated welding cables and a suitably insulated electrode holder (**Stinger**) is also required. The use of our **Piranha** weld control unit is recommended, as it also provides essential welding parameter information, and offers fault finding capabilities for the welding plant and welding circuit.

(See over for welding parameters & techniques).

Please note, the maximum recommended current rating for these electrodes. Should higher currents be used the electrode may overheat, causing the flux and waterproof coating to breakdown prematurely. Typically the electrode will perform satisfactorily down to a stub end of less than 50mm.

### Electrode Preparation

Ensure the power is COLD.

- Fit a new electrode and gently rub the tip against an abrasive surface, so as to remove the waterproof coating, thereby ensuring good electrical contact.  
*Caution must be exercised so as not to unduly damage the flux coating.*
- Carefully place the electrode where required, call to make it HOT, the arc should strike, if not, gently twist the electrode while exerting a slight downward pressure.

Occasionally the electrode may stick, should this occur, make it COLD and then break the electrode away from the workpiece. Should an excess amount of flux have broken away, make it HOT and lightly strike it along a suitable piece of material as in striking a match. This will burn away the excess core wire, once again producing a suitable striking condition. Call for the electrode to be made COLD, replace the electrode as required, call for it to be made HOT, the electrode should now start satisfactorily.

### Local Representative