

**DESCRIPTION:**

The WELDWELL PH31A is a thinly coated electrode of the cellulose type, intended for welding in all-positions. The excellent properties of this type show to the best advantage in downward welding, in particular the stove-pipe technique. The arc is easy to ignite, is powerful and extremely stable, giving this electrode deep-penetration properties. The thin layer of slag being easy to remove. The PH31A type of electrode has been primarily developed for welding circumferential seams in pipe lines in the vertical down position; the welding time is considerably shorter than where upward welding is done conventionally.

**Welding Techniques**

Circumferential pipe seams to be welded with the PH31A type must have an included angle of 60° and a root face of 1.5mm. The root gap between pipes must be 1.5mm wide. The root pass (or stringer bead) is done by pushing the electrode firmly into the root of the weld, so that the arc burns inside the pipe, and is carried out with a relatively high rate of travel. As the coating is fairly tough, no drawbacks will be encountered should the electrode become slightly bent by this firm pressure. The root pass is ground flat, to prevent slag inclusions when the second layer is welded.

The second layer (hot-pass) is welded with a high current, a short to medium arc length and a fairly high travel speed. The subsequent layers are welded with a medium arc length. Sometimes a rapid thrusting movement is used to advantage. To prevent porosity relatively thin layers are welded. As desired, a slightly weaving motion can be employed or layers can be deposited side by side.

The X-ray quality of the joints welded as described satisfy the requirements to which they have to conform in practice. The PH31A electrode can be used either with DC + or with AC where the open circuit voltage is not less than 70V.

**Recommended Amperages**

Dia. mm	Length mm	Amperes	Fusion Time in seconds
2.5	305	60-95	
3.2	380	90-125	52
4.0	380	115-175	65

Note that fusion time rate are at maximum current values.

AC 70V DC +

**Welding Positions:**

F, H, V, VD, OH

AWS A5.1:2004 : E6011  
AS/NZS 4855B:2007 : E4311A

**WELDWELL****31A****ELECTRODES  
FOR WELDING  
MILD STEEL**

TIP COLOUR Brown  
FLUX MARKING PH31A 6011 4311A

**Approvals:**

American Bureau of Shipping  
Lloyds Register of Shipping  
Bureau Veritas

**Storage**

Store electrodes in a dry place. Rebaking is not recommended.

**Typical Mechanical Properties of Weld Metal**

Tensile Strength	510 MPa
Yield Value	410 MPa
Elongation(1 = 5d)	31%
Impact Value Charpy	
V Notch at -30°C	89 J

**Typical Chemical Analysis**

C	0.12%
Mn	0.60%
Si	0.16%

**DESCRIPTION:**

Austarc 11 is a high cellulose electrode developed for all positional welding on both AC and DC supplies.

Features include: Forceful, deep penetrating arc with fast freezing slag. Particularly suited for vertical and incline pipe welding where complete root penetration is required. The thin brittle slag is easily removed.

Austarc 11 is recommended for specific applications including pipeline welding and storage tank construction where either the "Stove Pipe" or "Flick" techniques can be used to obtain full root penetration in critical structural joints.

**Recommended Amperages**

Dia. mm	Length mm	Amperes
5.0	450	160-220

AC 70 OCV DC+

**Welding Positions:**

F, H, V, VD, OH

AWS A5.1:2004 : E6011  
AS/NZS 4855B:2007 : E4311A

**AUSTARC 11  
ELECTRODES  
FOR WELDING  
MILD STEEL**

TIP COLOUR Brown  
FLUX MARKING WIA 4311A

**Approvals:**

American Bureau of Shipping  
Lloyds Register of Shipping

**Storage**

Same as PH31A.

**Typical Mechanical Properties and  
Chemical Analysis**

Same as PH31A.