

**CIGWELD**

AN ESAB BRAND



# PIPELINE SOLUTIONS



Products for pipeline welding,  
featuring **Pipeweld Filler Metals**  
and **Pipeweld Orbiter**.

# GOING THE EXTRA MILE FOR THE PIPELINE INDUSTRY.

As the world's energy needs increase, so do the demands for new pipelines. But building and maintaining these networks is no easy task, especially with increasingly stringent regulations and requirements.

At ESAB, we understand the unique challenges of pipeline welding and have developed innovative products for both onshore and offshore applications. Our Pipeweld line — designed by pipeline welders for pipeline welders — delivers optimal productivity, consistency, ease of use, and safety. Combine our wide selection of consumables with the versatile Pipeweld Orbiter and you have a complete solution for pipeline production welding.

Over the years, ESAB products have been used across all sectors around the world. We're proud to have contributed to thousands of miles of pipelines — and we look forward to being a trusted partner on your next project.

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CIGWELD/ESAB also offers additional products for pipeline repair and maintenance. Contact your local sales representative or visit [www.cigweld.com.au/information-centre/product-catalogues-fliers](http://www.cigweld.com.au/information-centre/product-catalogues-fliers) for more information.



# PIPELINE WELDING SOLUTIONS



# LAND PIPELINES.

Accounting for the majority of global installations, landlines are built with diameters up to 3.96 m (156 in.) and utilize all welding processes. As a single-source partner, ESAB offers a wide range of above-ground and trenched pipeline welding solutions, from traditional SMAW to increasingly popular automatic MIG and FCAW.

MAINLINE WELD



TIE-IN WELD



SPECIAL SECTIONS AND CROSSINGS



## Typical applications and recommended solutions.

- Automatic mainline narrow gap welds — Pipeweld solid wires
- Tie-ins, special sections, and crossings — Pipeweld FCAW wires and Pipeweld Orbiter
- Manual root pass welding and repairs — Pipeweld electrodes



# SUBSEA PIPELINES.

Whether installed on the seabed or below ground, subsea pipelines present unique welding challenges. ESAB helps you get the job done with high-quality consumable solutions for an array of processes – including sub arc (double jointing) and GMAWP – and all installation methods.

J LAY



S LAY



REEL LAY (SPOOL-BASE)



REEL LAY (OFFSHORE)



## Typical applications and recommended solutions.

- Automatic welds, double jointing, and manual repairs — Pipeweld solid wires
- Partial thickness repairs — Pipeweld flux-cored wires
- Manual root pass welding and repairs — Pipeweld electrodes



# FILLER METALS

## SELECTION GUIDE

API 5L PIPE STEEL GRADE	MINIMUM YIELD STRENGTH	MINIMUM TENSILE STRENGTH	CELLULOSIC ELECTRODES	LOW-HYDROGEN ELECTRODES VERTICAL UP	LOW-HYDROGEN ELECTRODES VERTICAL DOWN	FLUX-CORED WIRES	SOLID WIRES
<b>X52</b>	360 MPa (52200 psi)	460 MPa (66700 psi)					
Root			Pipeweld 6010P/PLUS	Pipeweld 7016	NA	NA	Pipeweld 70S-6/Plus
Hot Pass			Pipeweld 6010P/PLUS	Pipeweld 7016	Pipeweld 80 DH	Pipeweld 71-T1	Pipeweld 70S-6/Plus
Fill and cap			Pipeweld 6010P/PLUS	Pipeweld 7016	Pipeweld 80 DH	Pipeweld 71T-1	Pipeweld 70S-6/Plus
<b>X60</b>	415 MPa (60200 psi)	520 MPa (75400 psi)					
Root			Pipeweld 6010P/PLUS	Pipeweld 7016	NA	NA	Pipeweld 70S-6/Plus
Hot Pass			Pipeweld 7010 PLUS	Pipeweld 7016	Pipeweld 80 HD	Pipeweld 91T-1	Pipeweld 70S-6/Plus
Fill and cap			Pipeweld 7010 PLUS	Pipeweld 7016	Pipeweld 80 HD	Pipeweld 91T-1	Pipeweld 70S-6/Plus
<b>X65</b>	450 MPa (65300 psi)	535 MPa (77600 psi)					
Root			Pipeweld 6010P/PLUS	Pipeweld 7016	NA	NA	Pipeweld 70S-6/Plus
Hot Pass			Pipeweld 8010 PLUS	Pipeweld 8016	Pipeweld 80 HD	Pipeweld 91T-1	Pipeweld 70S-6/Plus
Fill and cap			Pipeweld 8010 PLUS	Pipeweld 8016	Pipeweld 80 HD	Pipeweld 91T-1	Pipeweld 70S-6/Plus
<b>X70</b>	485 MPa (70300 psi)	570 MPa (82700 psi)					
Root			Pipeweld 6010P/PLUS	Pipeweld 7016	NA	NA	Pipeweld 70S-6/Plus
Hot Pass			Pipeweld 8010 PLUS	Pipeweld 8016	Pipeweld 90 DH	Pipeweld 101T-1	Pipeweld 70S-6/Plus
Fill and cap			Pipeweld 8010 PLUS	Pipeweld 8016	Pipeweld 90 DH	Pipeweld 101T-1	Pipeweld 70S-6/Plus
<b>X80</b>	555 MPa (80500 psi )	625 MPa (90600 psi)					
Root			Pipeweld 6010P/PLUS	Pipeweld 7016	NA	NA	Pipeweld 70S-6/Plus
Hot Pass			Pipeweld 9010 PLUS	Pipeweld 10018	Pipeweld 100 DH	Pipeweld 111T-1	Pipeweld 100S
Fill and cap			NA	Pipeweld 10018	Pipeweld 100 DH	Pipeweld 111T-1	Pipeweld 100S



# CELLULOSIC ELECTRODES.

ESAB's cellulosic electrodes produce high-integrity weld and excellent mechanical properties on pipeline steels up to X80. With a range of products designed for both vertical up and down positions, Pipeweld cellulosic electrodes deliver excellent performance for root pass welding and filling for all grades.



## Pipeweld 6010P

- Cellulosic electrode designed for DC+ and AC welding
- Performs particularly well in uphill welding
- AWS E6010

## Pipeweld 6010 PLUS

- Developed for root pass welding on electrode negative
- Offers superior penetration and excellent root profiles
- Can be used either vertical down or in an upwards progression
- AWS E6010

## Pipeweld 7010 PLUS

- Designed for DC+ welding of low-alloy steel
- Deep penetrating arc provides exceptional performance
- Electrode performs well for filling and capping on X52-X60 pipe materials in a downward progression
- AWS E7010-P1

## Pipeweld 8010 PLUS

- Designed for DC+ welding on low-alloy steel
- Deep penetrations in all positions
- Electrode performs well for filling and capping on X60-X70 pipe materials in a downward progression
- AWS E8010-P1

## Pipeweld 9010 PLUS

- Designed for DC+ welding of low-alloy steels
- Deep penetration welding in all positions
- Performs well for filling and capping on X70 and X80 hot passing and light wall applications greater than 9.5 mm (0.37 in.)
- AWS E9010-P1



# LOW-HYDROGEN ELECTRODES.

Providing high weld metal strength and impressive low-temperature toughness, ESAB low-hydrogen basic electrodes are used for pipe steel grades up to X80.



Pipeweld basic electrodes offer good penetration during uphill welding and can be used for the root pass, filling and capping, and weaving.

## Uphill welding

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### Pipeweld 7016

- Basic thin-coated AC/DC electrode providing excellent mechanical properties
- Ensures fully penetrated root passes, even in adverse conditions
- Low moisture content of the coating has a high resistance to moisture re-absorption
- For vertical up applications
- AWS E7016-1

### Pipeweld 8016

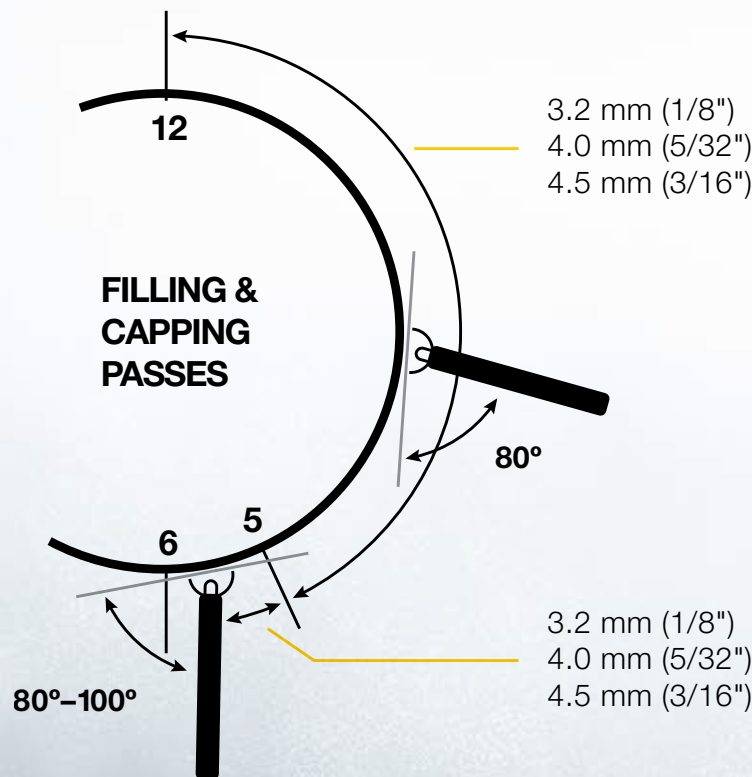
- All-positional basic electrode that offers good CVN toughness at low temperatures
- Can be used up to X80
- AWS E8016-G

### Pipeweld 10018

- High-strength all-positional electrode for pipe applications
- Can be used on X80 (strain based) and X10
- AWS E10018-D2

# LOW-HYDROGEN VERTICAL DOWN ELECTRODES.

Designed for downhill welding, Pipeweld DH electrodes feature patented technology that offers consistently perfect starts, higher current density, and greater weld penetration. Unlike other electrodes with a conical start end, the coating of Pipeweld DH products does not easily chip off.



## Downhill welding technique

- Welding must be done with a short arc length and travel speeds should allow the weld pool to be solidifying around 1 cm (0.4 in.) behind the arc
- Start the electrode some distance below the crater and run it to the top once electrode ignites; slag should be removed from the crater prior to starting
- Slight weaving (no wider than two times the core wire diameter) is required to reduce the chance of the electrode short circuiting
- Avoid narrow grooves, welding areas should be ground if required
- Accelerating the travel speed just before breaking the arc helps to reduce the crater thickness but a short arc length must be maintained even during the stop procedure
- All slag should be removed after each completed pass
- A remote control is recommended when using these electrodes as rapid current changes may be required to react to changes in joint geometry and when the underside of the pipe is reached
- A slight pushing technique can be adopted on the underside of the pipe to facilitate a flatter weld profile



# LOW-HYDROGEN VERTICAL DOWN ELECTRODES.

## Pipeweld 80 DH

- Low-hydrogen electrode for downhill welding of circumferential joints
- Designed to provide excellent striking properties
- Production is much higher than conventional vertical up electrodes
- Can be used on applications up to X70
- AWS E8045-P2 H4R

## Pipeweld 90 DH

- Low-hydrogen electrode for downhill welding of circumferential joints
- Specially designed to provide excellent striking properties
- Production is much higher than conventional vertical up electrodes
- Can be used on applications X70 and X80
- AWS E9045-P2 H4R

## Pipeweld 100 DH

- Low-hydrogen electrode for downhill welding of circumferential joints
- Specially designed to provide excellent striking properties
- Production is much higher than conventional vertical up electrodes
- Can be used on X80
- AWS E10018-G H4R





# GAS-SHIELDED FLUX-CORED WIRES.

Extremely welder friendly, ESAB's low-hydrogen flux-cored wires are designed for applications involving the welding of pipe and pipe components with impact toughness requirements down to  $-60^{\circ}\text{C}$  ( $-76^{\circ}\text{F}$ ).

Operating in the spray arc mode, Pipeweld flux-core wires make it easy to obtain flat welds with good penetration and smooth wetting onto the pipe edges. Brittle slag is easily removed and typical positional welding defects are avoided, such as a lack of fusion and slag inclusions. The wires also have a good tolerance to poor joint preparation.



## Pipeweld 71T-1

- All-position rutile flux-cored wire
- Can be used with either Ar-CO<sub>2</sub> or CO<sub>2</sub> shielding gases
- Suitable for up to X52 pipe
- AWS E71T-1M H8

## Pipeweld 91T-1

- All-position rutile flux-cored wire
- Used with Ar-CO<sub>2</sub> shielding gas
- Offers excellent weldability
- Suitable for up to X65 pipe
- AWS E91T1-G

## Pipeweld 101T-1

- All-position rutile flux-cored wire
- Used with Ar-CO<sub>2</sub> shielding gas
- Offers excellent weldability
- Suitable for up to X70 pipe
- AWS E101T-G

## Pipeweld 111T-1

- All-position rutile flux-cored wire
- Used with Ar-CO<sub>2</sub> shielding gas
- Offers excellent weldability
- Suitable for up to X100 pipe
- AWS E111 T1 K3MJ-H4

# SOLID MAG WIRES.

ESAB offers a range of solid MAG wires for a variety of applications. The Pipeweld series includes our premium copper-coated MAG welding wire. These products feature a controlled wire surface condition and produce consistently high mechanical properties of welds.

For even higher productivity, improved weld quality, and cleaner work environment, use Pipeweld Plus non-copper-coated MAG wires with advanced surface characteristics (ASC) that prevent contamination of wire feeders, liners, torches, and contact tips.



## Pipeweld 70S-6

- Copper-coated wire electrode designed for downhill welding of pipe
- Chemistry of this product is carefully controlled to give outstanding mechanical properties
- Can be used up to X70 or X80 on narrow gap applications
- AWS A5.18
- ER 70S-6

## Pipeweld ER70S 6 Plus

- Copper-free wire electrode specially designed for superior feeding qualities and low surface deposits to reduce cleaning
- Chemistry of this product is carefully controlled to give outstanding mechanical properties
- Can be used up to X70 or X80 on narrow gap applications
- AWS A5.18
- ER 70S-6

## Pipeweld 100 S

- Copper-coated wire electrode designed for downhill welding of pipe
- High-strength wire can be used on applications up to X100
- AWS A5.28
- ER 100S-G



# PACKAGING AND STORAGE.

## VacPac

Pipeweld basic electrodes are supplied in VacPac — ESAB's easy-to-use-vacuum-seal packaging that preserves the low-moisture condition. This innovative package eliminates the need for re-baking ovens and quivers.

Area to write date and time of opening VacPac

Complete product information on the label

Ducted plastic box and aluminum foil can be separated for disposal and recycling

Plastic box protects electrodes and can be resealed for future use

## Flux-cored wire vacuum packaging

To maintain the highest level of quality, Pipeweld low-hydrogen flux-cored wires are provided in vacuum-seal packaging. The wire is guaranteed to remain dry until the package is opened or the vacuum seal is compromised.



For storage and handling information for all filler metals, visit [esab.com](http://esab.com).





# EQUIPMENT

# WELDING AUTOMATION.

## Pipeweld Orbiter

A lightweight bug for orbital welding, the Pipeweld Orbital is ideal for cross country pipelines, offshore platforms, piling, and other tubular fabrications. It enables the use of one welding system for diameters of 20 cm (8 in.) pipe and above without the need to swap the drivetrain.

Designed for industry-leading quality, consistency, and simple operation, Pipeweld Orbital offers precise electrode positioning, unrestricted orbital travel, and the ability to weld on both sides of joints.

- Easy handling for operator
- Integrated wire feed system and torch
- 360-degree movement with rocker switch to change directions
- On-board control box and connectivity with Handheld Programming Unit (HHPU)
- Only supplies required are control, power, and gas



### AMI—part of the ESAB family.

For a complete orbital tube welding solution, ESAB products can be complemented with innovative Arc Machines, Inc. (AMI) equipment. AMI orbital products are ideal for critical applications, ultra-high-quality welds, and small tubes.

To learn about our AMI product line contact CIGWELD/ESAB, at [enquiries@cigweld.com.au](mailto:enquiries@cigweld.com.au)

# THE GLOBAL LEADER OF WELDING AND CUTTING SOLUTIONS.

At ESAB, our roots as pioneers in welding date back to 1904. Today, we remain at the forefront of welding and cutting technology. Through our commitment to quality, the environment, and safety, we strive to improve our products and processes to meet the ever-changing demands of our customers.

## Our complete solutions include:

- Consistent, globally available welding consumables
- High-productivity welding equipment
- Cutting-edge automation and robotics integration
- Cutting machines and software
- Full range of personal protection equipment.

## Manufacturing excellence.

ESAB is one of a few international companies to have achieved the ISO 14001 and OHSAS 18001 standards in Environmental, Health & Safety Management Systems across all our global manufacturing facilities.



## Product documents.

All Pipeweld products are supported by core documentation such as product data sheets (PDS) and safety data sheets (SDS).

Available at [esab.com/pipelines](https://esab.com/pipelines)



# UNRIVALED SERVICE AND SUPPORT.

Like all ESAB products, our pipeline solutions are backed by our commitment to superior customer service and support. Our skilled customer service department is prepared to quickly answer any questions, address problems, and help with the maintenance and upgrading of your ESAB equipment and software.

## We offer:

- Value packages, including machine and process audits to maximize your investment
- Proactive preventive maintenance programs and maintenance contracts to keep your equipment and software up and running ESAB plasma consumables for the perfect cut
- Specialized repair services
- Retrofit upgrade products and packages for the latest in machine, control, and software technology
- Complete product and process training, including advanced training programs

And, our products are backed with the most comprehensive warranty in the business. With ESAB, you can be confident that the product you purchased will meet your needs today and in the future.

Ask your CIGWELD/ESAB sales representative or distributor for a complete ESAB solution.

For more information, contact CIGWELD/ESAB at [enquiries@cigweld.com.au](mailto:enquiries@cigweld.com.au)

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