

# Factory fresh electrodes straight from the pack

Kevin Xaba, product manager for filler metals at ESAB Southern Africa, presents the case for adopting the ‘remarkable’ OK 55.00/OK 55.00L low moisture absorption (LMA) electrode range, which stand out as a testament to ESAB’s commitment to excellence.

“Not all stick welding electrodes are created equal. For over a century, ESAB has been at the forefront of welding innovation, providing cutting-edge solutions to industries worldwide,” begins Kevin Xaba of ESAB South Africa.

Founded in 1904, ESAB revolutionised welding technology with the introduction of the first coated electrode. Building on this legacy, the company continues to set new benchmarks in quality and performance. “Among its many remarkable products, OK 55.00/OK 55.00L low moisture absorption (LMA) electrodes, which are classified as AWS A5.1 E7018-1 H4R, still stand out as a testament to ESAB’s commitment to excellence, offering advanced features that address the challenges of modern welding applications,” he adds.

“When it comes to achieving superior weld quality in demanding applications, the choice of welding electrode is critical. Among the top contenders in the field, OK 55.00 from ESAB are a most reliable and efficient solution for professional welders. This low-moisture absorption electrode

offers a host of benefits that make it a preferred choice across various industries.

## Key benefits

Outlining the benefits of using OK 55.00 consumables from ESAB, Xaba first lifts out the outstanding weld quality: “One of the primary benefits of OK 55.00 is its ability to produce high-quality welds consistently,” he says, adding that the low moisture absorption/low hydrogen content of this electrode minimises the risk of hydrogen-induced cracking, a common challenge when working with high-strength steels.

This type of cracking starts with hydrogen atoms (H) dissociating in the high-temperature arc from the moisture in the air (H<sub>2</sub>O). Being the smallest element, atomic hydrogen can diffuse through solid metal and into the heat-affected zone of the parent material. On cooling, these atoms combine to form hydrogen gas (H<sub>2</sub>), which has a much larger volume than individual atoms. This raises the internal pressure, and if the microstructure is brittle and already under stress, this can cause very high localised stress in the metal that, if



not safely dissipated, results in cracking.

“The danger of hydrogen cracking, which is sometimes called cold cracking, is that it often only occurs after the weld has cooled to near room temperature. By using ESAB’s OK 55.00 LMA electrodes, the moisture that initiates the problem is significantly reduced, which helps to overcome this welding challenge,” explains Kevin Xaba.

On the weldability and visual side, he adds that the OK 55.00 range delivers smooth and clean weld bead appearances, which reduces the need for extensive post-weld cleaning.

## LMA means no re-baking, no holding ovens and no quivers

LMA OK 55.00 welding electrodes in VacPac can be used straight from the package without the need to re-bake them. Laminated, multi-layer aluminium foil is vacuum sealed around a strong plastic inner box to effectively protect the electrodes against moisture re-absorption from the air. Upon breaking the vacuum, fresh and dry electrodes are guaranteed.

ESAB welding electrodes in VacPac are all low moisture absorption (LMA) types with a coating that only slowly re-absorbs moisture from the atmosphere. The safe exposure time is typically 12 hours after opening the VacPac, if the foil is left in place. And for optimal security, it is best to take out only one electrode at a time, he advises.

The LMA OK 55.00 range exceeds industry norms for moisture pick up at between 0 and 100°C, which specifies moisture pickup of less than 0.4% after nine hours at 27.4 °C in 80% relative humidity. Since electrodes exposed beyond above limits usually need to be re-baked, convenient VacPac sizes have been established – 2.5 mm/350 mm long electrodes in packs of 73 rods; 3.2 mm/350 mm long electrodes in packs of 83 rods; and 4.0 mm/450 mm long electrodes in packs of 58 rods – to enable



welders to finish an open pack of electrodes before their shift finishes.

“This gives the assurance that, if cooling rate recommendations for crack-sensitive materials are properly implemented, these ESAB electrodes will deliver crack-free welds with tough mechanical properties in high or low temperature environments – at high humidity worksites or the most challenging positional-welding projects.”

## Versatility in applications

The OK 55.00 LMA range is designed to be versatile, making it suitable for a wide range of applications. It works effectively on carbon steels and low-alloy steels, catering for diverse industrial requirements. Additionally, it performs reliably in all welding positions, ensuring adaptability in different working conditions.

These electrodes also offer superior re-strike capabilities that few competitors can match. This means that the full length of the electrode can be used without having to restrike or, in some cases, throw away a partly used electrode due to the arc being extinguished multiple times. This raises the net deposition efficiency, which is already at 125% compared to only 110% for many alternatives.

This efficiency advantage reduces the true cost of the OK 55.00 by at least 15%, and significantly more if you consider that the entire length of the electrode can almost always be used.

## Superior mechanical properties

“The electrode is renowned for its exceptional mechanical properties. It produces welds with high toughness and strength, even under low-temperature conditions. These properties make it ideal for structural applications and projects that demand du-

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Right: OK 55.00 LMA is a reliable, high-quality, low-hydrogen electrode particularly suitable for welding high strength low-alloy steels.

reliability and resilience,” Xaba continues.

OK 55.00 carries the EN ISO 2560-A E 46 5 B 32 H5 classification, which means the product will deliver a minimum yield strength (YS) of 460 MPa in the as-welded condition. This expands the operational window of the electrode range, allowing ASTP Grade 70 and Grade 80 steels (YS: 482 and 551 MPa, respectively) and API X65 (YS: 450 MPa) to be welded using these electrodes.

Ease of use is another hallmark of OK 55.00. Its stable arc characteristics provide better control during welding, even for operators with less experience. Moreover, the electrode offers easy slag removal, simplifying the post-weld cleaning process and enhancing productivity.

## Compliance with industry standards

OK 55.00 meets or exceeds the requirements of globally recognised standards such as AWS and ASME. This ensures that welds made with this electrode are compliant with stringent quality and safety regulations, providing peace of mind to engineers and inspectors alike. “Every batch of OK 55.00 Class C5 or OK 55.00L Class C5/OK 55.00L Class C3 purchased comes with a 3.1 test certificate and 3.2 testing can be done if required,” Kevin Xaba assures.

## Ideal for critical applications

OK 55.00 LMA is a reliable, high-quality, low-hydrogen electrode particularly suitable for welding high strength low-alloy steels. The good, low-temperature impact strength of the weld metal should also be noted. It is

widely used in industries such as shipbuilding, pressure vessel fabrication, structural steelwork and construction; along with other sectors such as oil and gas where weld integrity is of utmost importance.

In summary, OK 55.00 from ESAB is a top-tier choice for professionals seeking exceptional performance, versatility, and reliability in welding. Its combination of outstanding weld quality, ease of use, and compliance with industry standards makes it a trusted solution for a variety of demanding applications.

“Whether you’re working on structural projects, pressure vessels, or other critical tasks, OK 55.00 LMA in VacPac ensures a level of performance that meets and exceeds expectations. ESAB South Africa and its distributors are fully stocked up on all sizes of OK 55.00 to suit every need,” says Xaba.

“And All ESAB products 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 your machines. And our products are backed with the most comprehensive warranty in the welding industry.

“With ESAB, you can be sure the products you purchase will meet your needs, today and in the future. Product and process training is also available. Just ask your ESAB sales representative or distributor for a complete ESAB solution,” Kevin XABA concludes.

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ESAB OK 55.00 LMA electrodes are ideal for high humidity worksites and positional-welding projects.