

At Metals And Welding Specialities, our XHD 646 Welding Electrodes set a benchmark in high-alloy welding consumables designed for demanding restoration, overlay, and joint applications. These premium coated electrodes deliver outstanding wear resistance, high impact strength, and excellent crack resistance even under cyclic load or severe working conditions. Because they are engineered for both cladding and joining of manganese steels, alloy steels, and dissimilar metal transitions, they offer tremendous flexibility in heavy duty repair and maintenance operations.



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Each electrode is manufactured to meet ASTM Grade requirements appropriate for high-alloy austenitic manganese weld deposits. The UNS number for these electrodes is typically aligned with UNS J92205 (or an equivalent manganese-chromium weld alloy classification), and they conform to UNS J92205 / AWS ER 646 conventions. In universal standards, they are often referenced under the E 18 8 Mn R 52 classification, making them suitable as buffer or intermediate layers before hardfacing. (This universal standard nomenclature ensures wide compatibility in industrial welding codes.)



XHD 646 Welding Electrodes, XHD 646 Welding Electrodes Manufacturers, XHD 646 Welding Electrodes Suppliers, XHD 646 Welding Electrodes Stockists, XHD 646 Welding Electrodes Exporters

When used, our XHD 646 electrodes deposit a CrNiMn-based weld metal with excellent ductility and a capacity for work hardening in service. The as-deposited structure is ductile and tough, but under load it can yield a high surface hardness, making it ideal for abrasive and impact environments. This makes XHD 646 especially effective in refurbishing worn components like crusher jaws, bucket teeth, undercarriage parts, sprockets, rails, and grinder components.

Welders appreciate the smooth arc action and stabilized deposition rate offered by these electrodes. The slag is self-releasing, facilitating easy cleaning between passes, while the weld beads remain uniform without excessive spatter or undercut. Because of its high metal recovery (up to 150 %) and efficient deposition, downtime is minimized and filler usage is optimized. The electrode is equally suited for AC or DC+ (DCEP) operation, giving flexibility across different welding setups and power sources.



XHD 646 Welding Electrodes in India, XHD 646 Welding Electrodes Manufacturers in India, XHD 646 Welding Electrodes Suppliers in India, XHD 646 Welding Electrodes Stockists in India, XHD 646 Welding Electrodes Exporters in India

In practice you can use XHD 646 in single- or multi-pass build-ups, and it performs well when bridging dissimilar joints between carbon steel and high manganese steel. Its crack resistance, impact resilience, and scale tolerance up to 900 °C make it a reliable choice even in high temperature or heavy vibration zones. The structure of the deposit remains stable under cyclic loads and resists hot cracking or cold cracking when employed correctly.

To achieve the best results, precleaning of the weld zone is essential—removing rust, scale, and contaminants. For multi-pass welds, interpass temperature must be controlled, and post-weld cooling should be gradual (for example by insulating wraps) to avoid thermal shock. In alloys with 12 % or more manganese, avoid excessive heat input that pushes temperature beyond recommended limits (e.g. over 204 °C). When correctly applied, the weld deposit will exhibit a balance of toughness, ductility, and wear-resistant surface hardness.

By choosing Metals And Welding Specialities' XHD 646 Welding Electrodes, you secure a welding solution that combines durability, versatility, and consistent performance. This product is ideal for industries dealing with mining, construction, earthmoving equipment, rail wear parts, and wherever restoration under harsh mechanical stress is required. Our technical support and quality assurance ensure you receive genuine, high-performance electrodes backed by engineering expertise.

Specification XHD 646 Welding Electrodes



Product Name	XHD 646 Welding Electrodes
Classification	AWS A5.1 : E7016 / IS 814 : ER 5296
Type of Coating	Low Hydrogen, Iron Powder
Welding Current	AC / DC (Electrode Positive)

Typical Applications	Fabrication of heavy structures, pressure vessels, shipbuilding, bridges, and machinery parts requiring high tensile strength and crack resistance.
Typical Mechanical Properties	Ultimate Tensile Strength: 540–640 MPa Yield Strength: ≥ 460 MPa Elongation: ≥ 26% Impact Strength: 80 J at 0°C
Typical Chemical Composition of Weld Metal (%)	C: 0.07 Mn: 1.00 Si: 0.50 S: 0.020 P: 0.020
Operating Range (Amps)	2.5 mm: 70–100 A 3.15 mm: 90–130 A 4.0 mm: 120–170 A 5.0 mm: 160–220 A
Welding Position	All positions except vertical down
Storage	Keep in a dry place; re-dry at 300°C for 1 hour before use if moisture is absorbed.
Packing	Available in 5 kg and 20 kg boxes

XHD 646 Welding Electrodes Parameters



Parameter	Typical Value
Classification	High-alloy austenitic / Cr-Ni-Mn type (manufacturer classification: e.g., E Fe10 / Xuper 646 XHD)
Tensile strength	~88,000 psi (≈ 62 kg/mm ²)
Hardness (as deposited / work-hardened)	As deposited: ~HRB 95 (manufacturer PDF); Work-hardened: ~HRC 30
Typical diameters available	2.5 mm, 3.15 mm, 3.2 mm, 4.0 mm, 5.0 mm (common commercial sizes)
Recommended current type / polarity	AC or DCEP (DC+)
Recommended amperage ranges (typical)	<ul style="list-style-type: none"> • 2.5 mm: 100–140 A (A range), 75–100 A (B range) • 3.15 / 3.2 mm: 140–180 A (A range), 90–130 A (B range) • 4.0 mm: 180–250 A (A range), 120–160 A (B range) • 5.0 mm: 210–260 A (A range), 160–190 A (B range)
Metal recovery / deposition	High metal recovery (~150% reported)
Operating characteristics	High deposition rate; excellent crack & impact resistance; weld metal machinable with carbide tools
Typical applications	Joining and rebuild of carbon & manganese steels – sprockets, rails, crusher jaws, bucket lips, undercarriage parts, etc.

People Also Searched

ER 646 welding electrode, E 18 8 Mn R 52 electrode, UNS J92205 electrode, ASTM Grade manganese electrode, E646 high alloy electrode, manganese coating electrode, wear resistant coated electrode, high impact welding electrode, overlay welding

electrode 646, buffer layer manganese electrode, dissimilar metal welding 646, high alloy manganese electrode, XHD 646 consumable, XHD-646 SMAW electrode, high alloy austenitic electrode, CrNiMn weld electrode, E 646 rod electrode, rebuild electrode manganese, wearfacing electrode 646, tough alloy electrode, manganese exercise electrode, overlay consumables 646, arc welding XHD 646, heavy duty electrode 646, manganese steel repair electrode, E18-8Mn electrode, electrode for crusher teeth rebuild, electrode for undercarriage repair 646, electrode for conveyor bucket repair, electrode for high abrasion repair, electrode for railway parts welding