Covered electrodes for repair of cracked material

Unalloyed and low alloy steels

Product Name Classification AWS Classification EN Classification DIN	Mechanical Properties Typical Values	Size (mm)	Approvals	Characteristics and Applications
UTP 613 kb AWS A5.1: ~ E 7018-1 H4 R EN ISO 2560-A: E 42 5 B42 H5	UTS: >510 MPa YS: >420 MPa El: >25% CVN Impact: >120J	2.5 x 350 3.2 x 350 4.0 x 350 5.0 x 450	TÜV, DB, ABS, BV, DNV	UTP 613 Kb is a basic-coated stick electrode for construction-, boiler-, tube- and fine-grained steels as well as for steels with up to 0.35% C-content. UTP 613 Kb has a good weldability and a stable arc. The weld metal is resistant to ageing, crack-resistant and is little affected by steel impurities.
LOTUS - 23	UTS: 450 - 520 MPa El: 25 - 30%	2.50 x 350 3.15 x 350 4.0 x 350 5.0 x 350	-	All position electrode for touch welding of low carbon steels. Smooth weld bead of X-ray quality. Minimum distortion. Weld bead with fine ripples and self-releasing slag. Excellent mechanical properties & impact strength Applications: Sheet metal work, storage tanks, air conditioning unit ducts, pipelines, furniture etc.
LOTUS - 24	UTS: 520 - 600 MPa El: 25 - 32% CVN Impact: 27°C: 190J	2.50 x 350 3.15 x 350 4.0 x 350 5.0 x 350	-	High strength welds deposit and minimum distortion. Smooth weld bead of X- ray quality. Weld bead with fine ripples and easy slag removal. Suitable for low & medium carbon steels. Excellent mechanical properties including impact strength. Applications: Flanges, crane girders, shovel boom, dumper chassis and heavy equipment maintenance.

Stainless Steels

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UTP S 63 AWS A5.4: E307-16 EN ISO 3581-A: E 18 8 Mn R 32	UTS: >600 MPa YS: >350 MPa El: >40% CVN Impact: +20°C: 60J	2.50 x 350 3.25 x 350 4.00 x 350 5.00 x 450	-	Non alloy structural and heat treatable steels can be welded, also in combination with austenitic CrNi steels. Universally applicable for surfacing of work pieces exposed to impact, pressure and rolling wear. Such as curved rails, crusher parts, and excavator teeth. Provides crack-proof buffer layers under hard alloys. Weld deposit resist to scaling, rust and cracks, work hardened. Hardness of the pure weld metal As welded: 190 HB | After work hardened: 250 HB
UTP 65 EN 14700: E Z Fe11 DIN 8555: ~ E 9-UM-250-KR	UTS: >800 MPa YS: >620 MPa El: >22%	1.5 x 250* 2.0 x 250 2.5 x 250 3.2 x 350 4.0 x 350 5.0 x 350 * available on request	DB	UTP 65 is particularly suitable for joinings on hardly weldable steels, when highest demands on the welding seam are made. High crack resistance when joining parent metals of difficult weldability, such as austenitic and ferritic steels, high-manganese steels with alloyed and non-alloyed steels, heat-treatable and tool steels. As cushion layer on these materials it is also ideally suited. UTP 65 finds a variety of applications in the repair and maintenance of machine and drive components as well as in tool repairing.
UTP 65 D EN ISO 3581-A: ~ E 29 9 R 12 EN 14700: E Z Fe11	UTS: >800 MPa YS: >640 MPa El: >20%	1.5 x 250* 2.0 x 250 2.5 x 250 3.2 x 350 4.0 x 350 5.0 x 350 * available on request	-	UTP 65 D has been developed to satisfy the highest requirements for joining and surfacing. It is extremely crack-resistant when joining steels of difficult weldability, such as e. g. hard manganese steels, tool steels, spring steels, high speed steels as well as dissimilar metal joints. Due to the good corrosion and abrasion resistance and high tensile strength. UTP 65 D finds its application particularly in repair and maintenance of machine and drive components, such as gears, cams, shafts, hot cuts, hot trim plates and dies. Also ideally suited as an elastic cushioning layer for very hard surfacings.

Stainless Steels

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LOTUS-32	UTS: 700 - 800 MPa El: 20 - 25%	2.50 x 350 3.15 x 350 4.0 x 350 5.0 x 350	-	Weld deposit contains 40-50 % ferrite. Controlled grain structure. Superior crack resistance and ductile. Excellent weldability with all stainless steels with known & unknown composition. Good resistance to corrosion, friction, heat and impact. Applications: Tools, dies, gears, pinions, shafts, joining dissimilar steels, machinable build up and overlay.
LOTUS-36	UTS: 550 - 650 MPa El: 32 - 40%	2.50 x 350 3.15 x 350 4.0 x 350 5.0 x 350	-	Extra low carbon molybdenum bearing stainless steel electrode. Crack resistant at elevated & sub-zero temperature. Suitable for AISI 316/316L and 318 type steels. Mo and extra low C prevent acid pitting. Applications: Chemical tanks, turbine blades, pumps, hot forging dies, plating tanks.
LOTUS-37	UTS: 520 - 640 MPa El: 30 - 35%	2.50 x 350 3.15 x 350 4.0 x 350 5.0 x 350	-	Extra low carbon (C < 0.03%). Stabilized weld metal. Resistance to scaling up to 800°C. Free from inter-crystalline corrosion. Nb stabilized with controlled ferrite. Suitable for AISI 321, 347, 304 and 308 type stainless steels. Applications: Food, chemical, brewery, aircraft industries etc.
LOTUS-38L	UTS: 520 - 640 MPa El: 35 - 40%	2.50 x 350 3.15 x 350 4.0 x 350 5.0 x 350	-	Weld deposit with extra low carbon (C< 0.03%). Resistant to scaling up to 800°C. Good inter-granular corrosion resistant. Suitable for all position welding of AISI 301, 302, 304, 308L and 347 etc. Applications: Kitchen and dairy equipment's, brewery, food & chemical industry equipment.
LOTUS-39	UTS: 550 - 650 MPa El: 30 - 42%	2.50 x 350 3.15 x 350 4.0 x 350 5.0 x 350	-	Ideal for oxidation and heat resistance up to 1200°C. Suitable for welding of unknown composition steel and AISI 309. Dissimilar welding of mild steel, low alloy steel and stainless steel possible. Applications: Heat exchangers, valves, furnace parts, heat treatment plants, tanks and baskets.

Nickel Alloys

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UTP 68H AWS A5.4: E 310-16	UTS: 560 MPa YS: 430 MPa El: 35% CVN Impact: +20°C : 50J	2.50 x 350 3.25 x 350 4.00 x 350	-	UTP 68 H is rutile coated stick electrode for joining and surfacing of heat resistant Cr Steel, CrSi, CrAl, CrNi Steel / Cast Steels. Excellent creep and high temperature corrosion resistance with operational service temperature up to 1000°C. Weld metal microstructure is fully austenite and good hot cracking resistance with proper welding control. Application fields are in the engineering of furnace, pipework and fittings.
UTP 068 HH AWS A5.11: E NiCrFe-3 (mod.) EN ISO 14172: E Ni 6082 (NiCr20Mn3Nb)	UTS: 680 MPa YS: 420 MPa El: 40% CVN Impact: 120J -196 °C: >80J	2.0 X 250 2.5 x 300 3.2 x 300 4.0 x 350 5.0 x 400	TÜV, KTA, ABS, GL, BV, DNV	UTP 068 HH is predominantly used for joining identical or similar heat-resistant Ni-base alloys, heat-resistant austenites, such as 2.4817 (LC NiCr15Fe), 1.4876 (X10 NiCrTiAl 32 20), 1.4941 (X8 CrNTi 18 10). Specially used for joining of high carbon containing 25/35 CrNi cast steel to 1.4859 or 1.4876 for petrochemical installations with working temperatures up to 900°C. Furthermore UTP 068 HH can be used for repair welding of hardly weldable steels such as heat-treatable steels or tool steels. Additionally mixed joints of austenitic and ferritic materials with elevated service temperatures can be welded. The welding deposit of UTP 068 HH is hot-cracking-resistant, does not tend to embrittlement and is scale-resistant at high temperatures.

Cast Iron

Product Name Classification AWS Classification EN Classification DIN	Mechanical Properties Typical Values	Size (mm)	Approvals	Characteristics and Applications
UTP 8 C AWS A5.15: E Ni-CI EN ISO 1071: E C Ni-CI I	YS: Approx. 220 MPa	2.5 x 300 3.2 x 350 4.0 x 350	DB	UTP 8 C is suited for joining and surfacing of all common cast iron qualities, such as grey cast iron GG 10 – GG 40 including alloyed qualities - nodular cast iron GGG 38 – GGG 60 and for all malleable cast iron qualities. It is also suitable for construction and repair welds. A special application field are electrode pickup coatings and buffer layers on alloyed grey cast iron, especially in the tool welding construction if a further weld with UTP 86 FN is continued.
UTP 81 AWS A5.15: E St EN ISO 1071: E C Z Fe-1	-	2.5 x 300* 3.2 x 300 4.0 x 400 *available on request	-	UTP 81 is especially suited for pickup layers on poorly weldable cast iron (e.g. old cast iron) as a base for a secondary weld with pure nickel or nickel-iron stick electrodes. Wear surfacing can also be performed with a one-pass weld.
UTP 86 FN AWS A5.15: E NiFe-CI EN ISO 1071: E C NiFe-13	YS: Approx. 340 MPa	2,5 x 300 3,2 x 350 4,0 x 350	DB	UTP 86 FN is suitable for joining and surfacing of lamellar grey cast iron EN GJL 100 - EN GJL 400, nodular cast iron (spheroidal cast iron) EN GJS 400 - EN GJS 700 and malleable cast iron grades EN GJMB 350 - EN GJMB 650 as well as for joining these materials with each other or with steel and cast steel. Universally applicable for repair, construction and production welding. UTP 86 FN has excellent buttering characteristics on cast iron. The stick electrode has a stable arc and produces a flat seam structure without undercutting. Particularly for fillet welds an optimal seam structure is achieved (e.g. welding GJS-flanges or sockets to GJS-tubes). Due to the bimetallic core wire, the current carrying capacity and the deposition rate are excellent. The bead appearance is smooth. The weld deposit is highly crack resistant and easily machinable with cutting tools.
MONEL AWS A5.15: E Ni Cu	-	3.15 x 350 4.00 x 350 5.00 x 350	-	Monel is a medium coated electrode with monel core wire specially designed for welding and surfacing of cast iron. The arc is soft and stable with least spatter. Weld metal is machinable, free from cracks. Suitable for welding of cast iron parts, correcting machining errors on casting, rebuilding worn surface, joining cast iron to steel surfacing of cast iron parts as well as iron ferrous materials.
UTP N 815 C	UTS: 350 MPa	2.50 x 350 3.15 x 350 4.00 x 350	-	UTP N 815 C is suited for joining and surfacing of all common cast iron grades, such as grey cast iron, including alloyed grades - nodular cast iron and for all malleable cast iron grades. It is also suitable for fabrication and repair welds. A special application field are electrode pickup coatings and buffer layers on alloyed grey cast iron, especially in the tool welding construction if a further weld with UTP N 819 FN is continued. UTP N 815 C has a very good, stable arc and good deposition efficiency. Therefore, edge welding is easily possible. The controllable and spatter free flow makes out of position welding possible by using minimum current setting. Slag detachability and weld pattern are excellent & weld deposit is easily machinable. Applications: Pump valve seats, cast iron moulds, gears & pulleys, sliding tables for machine tools, steel-to-cast iron welding, cylinder head cracks between inlet and exhaust ports, touch-up & hole patch-up repairs of cast iron.

Cast Iron

Product Name Classification AWS Classification EN Classification DIN	Mechanical Properties Typical Values	Size (mm)	Approvals	Characteristics and Applications
UTP N 819 FN	UTS: 430 MPa YS: 380 MPa	2.50 x 350 3.15 x 350 4.00 x 350	-	UTP N 819 FN is suitable for joining and surfacing of lamellar grey cast iron, nodular cast iron (spheroidal cast iron) and malleable cast iron grades and as well as for joining these materials with each other or with steel and cast steel. Universally applicable for repair, fabrication and production welding. UTP N 819 FN has excellent buttering characteristics on cast iron. The stick electrode has a stable arc and produces a flat seam structure without undercuts. Particularly for fillet welds an optimal seam structure is achieved. Due to the bimetallic core wire, the current carrying capacity and the deposition rate are excellent. The bead appearance is smooth. The weld deposit is highly crack resistant and easily machinable with cutting tools. Applications: Nodular Iron castings, housings, foundry defects, cast iron press die cladding and build-up, for pump casings, high-strength alloyed cast iron gearboxes, bell housings, motor casings, machine bases, etc.
UTP N 817	-	2.50 x 350 3.15 x 350 4.0 x 350	-	UTP N 817 is especially suited for pickup layers on poorly weldable cast iron (e.g. old cast iron) as a base for a secondary weld with pure nickel or nickel-iron stick electrodes. Wear surfacing can also be performed with a one-pass weld. UTP N 817 has good welding properties and is welded by applying the stringer bead technique. It has a high deposition efficiency and low penetration. Out of position welding is possible. Applications: Sealing oil-soaked cast iron parts, casting defects, cast iron furnace grates, oil pans, cast iron dies etc. Deposits will rust and it will match the casting in colour.

Copper alloys

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LOTUS 51	UTS: 560 MPa YS: 430 MPa El: 35% CVN Impact: +20°C : 50J	3.15 x 350 4.0 x 350 5.0 x 350	-	Light coated electrode with graphite base. Designed for welding of Copper and Bronze. Deposit is porosity free & machinable. Suitable for cladding also. Dissimilar welding between MS, phosphorus bronze & brass possible. Applications: Pump casting, casting sleeves, impellers, marine components, bus bars, propellers etc.

Aluminium

Product Name Classification AWS Classification EN Classification DIN	Mechanical Properties Typical Values	Size (mm)	Approvals	Characteristics and Applications
UTP 48 DIN 1732: EL-AlSi12	UTS: 180 MPa YS: 80 MPa El: 5%	2.5 x 355* 3.2 x 355* 4.0 x 355* * available on request	-	UTP 48 is a aluminium stick electrode with 12% Si and a special coating for joining and surfacing on aluminium-silicon casting alloys with a Si-content up to 12% Si according to DIN 1725 e.g. 3.2581 G- AlSi12 | 3.2583 G- AlSi12(Cu) 3.2383 G- AlSi10Mg(Cu) | 3.2381 G- AlSi10Mg 3.2373 G- AlSi9Mg