*selectarc*

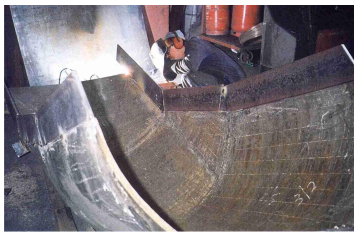
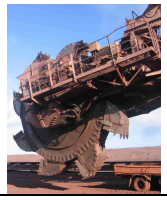
# Electrodes for Cement Plants and Quarries

FSH WELDING GROUP
INNOVATIVE WELDING CONSUMABLES
www.fsh-welding.com

## Introduction

Due to continuous wear during the various stages in Cement production, maintenance and repair welding is an important consideration. The table below gives a selection of electrodes used for this purpose.

## Selection Table

| Selectarc | Electrodes for | Wear Type |
|---|---|---|
| **HBA**<br>E10-UM-60-GRZ | High chromium carbide deposit with excellent resistance to mineral abrasion combined with moderate impact.<br>Virtually Slag-free deposit.<br>For components subject to low or moderate shock combined with good resistance to abrasion.<br><br>*For continuous screws, mixer paddles, pump bodies for abrasive materials, excavator teeth, crushers, concrete pumps, brick extruder screws, wear and, chute plates.*<br><br>Hardness: 60-63 HRC | Mineral Abrasion<br>Moderate Impact<br>  |
| **HB63**<br>E10-UM-60-GRPZ | High chromium carbide deposit for excellent resistance to mineral abrasion combined with moderate impact. Self-releasing slag.<br>Very smooth surface.<br><br>*Exhaust fan blades, chute plates*<br><br>Hardness: ~60 HRC | Mineral Abrasion<br>Moderate Impact<br>  |
| **HB65**<br>E10-UM-65-GR | High efficiency (190%) electrode, resistant to severe abrasion up to 300°C.<br>Virtually Slag-free deposit.<br><br>*"Fuller" pump screws, conveyor screws, exhaust fan blades.*<br><br>Hardness : ~64 HRC | Heavy Mineral Abrasion<br> |

*selectarc*

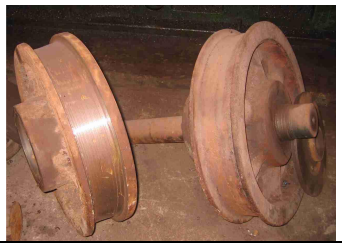
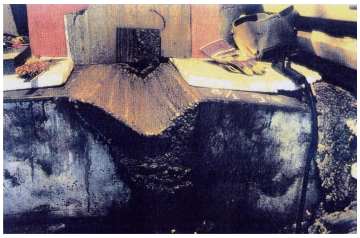
# Electrodes for Cement Plants and Quarries

FSH WELDING GROUP
INNOVATIVE WELDING CONSUMABLES
www.fsh-welding.com

| | | |
|---|---|---|
| **HB66**<br>E10-UM-65-GRZ | High efficiency (200%) electrode resistant to extreme abrasion and moderate impact up to 550°C.<br>*Clinker cooler screen plates, clinker crusher hammer hooks, various types of crusher parts, crusher jaws, borer bits, slag crushers.*<br>Hardness : ~65 HRC | Heavy Mineral Abrasion combined with heat |
| **HRT60WC**<br>E 21-UM-62-G | Tungsten-carbide filled tubular electrode. Deposit highly resistant to abrasion without impact. Steel matrix with a high amount of tungsten carbides and an exceptional resistance to scraping abrasion. . Smooth fusion and a stable arc, the slag is easily removed. The weld deposit is not machineable. Surfacing of parts, which are subject to extreme mineral abrasion. Maximum 2 layers.<br>*For concrete and sand mixer blades, conveyer screws, brick dies, shredder knives, etc.* | Extreme Mineral Abrasion<br> |
| **HB61B**<br>E6-UM-60-S | Basic coated, general-purpose hardfacing electrode for applications subject to impact, compression and abrasive wear.<br>For hardfacing of components made of C-steel, cast steel and Manganese steel. The deposit is tough-hard and crack resistant.<br>*Excavator buckets, shovel bucket teeth, chisels, miner's bars, etc.*<br>Hardness: ~58 HRC | Abrasion and Impact<br> |
| **HB61R**<br>E6-UM-60-S | Rutile-basic coated, general-purpose hardfacing electrode for applications subject to impact, compression and abrasive wear. Approx. 120%. electrode recovery<br>For hardfacing of components made of C-steel, cast steel and Manganese steel. The deposit is tough-hard and crack resistant.<br>*Hardfacing of block presses, crusher jaws, wheel rims, rollers, caterpillar tracks, ploughshares, running surfaces, cutting edges etc.*<br>Hardness : ~ 60 HRC | Abrasion and Impact<br> |

# selectarc
# Electrodes for Cement Plants and Quarries

FSH WELDING GROUP
INNOVATIVE WELDING CONSUMABLES
www.fsh-welding.com

| | | |
|---|---|---|
| **HB14Mn**<br>E7-UM-250-KP | Rutile-basic coated electrode, suitable for surfacing all components subject to severe impact. Frequently used as a cushion layer prior to hardfacing, where heavy deposits are required. Allows substantial build up followed by I or 2 abrasion resistant final layers, (HB 63). The deposit is exceptionally resistant to wear combined with impact.<br>*Repair of shovel buckets, crusher jaws, clay and clinker crusher hammers, rock crushers, excavator and grab teeth.*<br>Hardness : as welded ~ 230 HB; after work hardening up to 500 HB | Mineral Abrasion and heavy Impact<br> |
| **HB300B**<br>E1-UM-300-P | Basic coated electrode tough, semi-hard, machineable deposit with approx. 120% recovery, for surfacing of equipment parts and tools. Resistant to moderate friction and compression - highly resistant to shock - dense, crack-free deposit.<br>*Mandrels, gear teeth, chains.*<br>*Mainly used for heavy build up and as cushion layer..*<br>Hardness: ~300HB | Compression and Shock loading<br>  |
| **B90**<br>ENiCrFe-3<br>E-Ni6182 | Semi-synthetic basic electrode with 140% recovery with an “Inconel 600” * alloy deposit.<br>Resistant to high temperature.<br>High integrity repairs, dissimilar joints, difficult to weld steels.<br>*Repairing cracks on clinker cooler screening plates, Rotary Kiln Rings and Rotary Kiln Rolls.* | Cracks<br> |
| **Ni82**<br>E-Ni6082 | Basic coated Nickel base electrode with very high ductility and elongation for repair and construction welding.<br>Resistant to temperatures up to ~ 900 °C.<br>High integrity repairs, dissimilar joints, difficult to weld steels.<br>*Repair of cracks in clinker cooler screening plates, Oven rollers and tyres, anchors for clay crusher hammers, repair of clinker cooler screens and supports, cooler screen control levers, cement kiln burner liners.* | Cracks<br>  |

# *selectarc*
# Electrodes for Cement Plants and Quarries

FSH WELDING GROUP
INNOVATIVE WELDING CONSUMABLES
www.fsh-welding.com

| | | |
|---|---|---|
| **29/9**<br>E312-16<br>E29 9 R32 | Austenitic-ferritic deposit with excellent mechanical characteristics.<br>Machineable deposit.<br><br>*Universal repair electrode.*<br>*Overlay of crankshaft bearings of clinker coolers* | Repairs<br> |
| **Inox308Mo**<br>E308Mo-17<br>E20 10 3 R32 | Rutile-basic coated stainless steel type electrode with an austenitic-ferritic structure used to weld dissimilar joints between construction/mild steels and stainless steels.<br>Due to its high level of delta ferrite (~25%) also used as a universal repair electrode in maintenance welding. Highly crack resistant. Soft fusion, nice aspect of the bead, self-lifting slag. | Repairs |
| **307R**<br>~E307R-16<br>E18 8 Mn R32 | Fully Austenitic (non-magnetic) rutile-coated electrode for joining and overlaying of manganese steels (up to 14% Mn), high sulphur and phosphorus containing steels, also for joining dissimilar steels, construction steels to stainless steels, for cushion layers prior to hardfacing. Repair of components subject to shock or frictional wear. | Repairs<br> |
| **18/8Mn**<br>~E307-26<br>E18 8 Mn R73X | Rutile-basic electrode with high recovery (160%). Fully austenitic stainless steel deposit with a high Mn-content. For welding and cladding of 14% Mn-steels (Hadfields), dissimilar joints, difficult to weld materials, cushion layers prior hardfacing and repair of components subject to shock. Easy to use, soft fusion, low spatter, easily removable slag, regular weld bead, highly crack resistant deposit<br><br>*Crusher hammers.*<br>*Repai of digger buckets, screening steels.* | Repairs<br>Heavy impact<br> |
| **48SP**<br>E6013<br>E42 0 RC11 | Special rutile cellulosic mild steel electrode for use in all positions, including vertical down.<br>Good operability, easy strike, forceful arc with good penetration.<br>Ideal for use on poorly prepared surfaces (oil, grease, oxides). Exceptional ease of use.<br><br>*General use.*<br>*Recommended for poor quality steels.* | Repairs<br> |

# selectarc
# Electrodes for Cement Plants and Quarries

FSH WELDING GROUP
INNOVATIVE WELDING CONSUMABLES
www.fsh-welding.com

| | | |
|---|---|---|
| **B7016Sp**<br>E7016<br>E38 2 B 12 | Basic coated electrode with exceptional welding characteristics due to its double coating.<br>Arc very stable in all positions. Virtually spatter free, easily removable slag. Universal use for all metal construction and repairs. Recommended for root passes and on badly prepared joints.<br>*Recommended for root passes and on poorly prepared joints.* | Repairs<br> |
| **B73**<br>E9018-D1<br>E55 4 MnMo B42 | Low hydrogen basic coated electrode with high yield strength for welding fine grain steels operating at temperatures between -50 to +500°C. Heat treatable, low alloy, C-Mn steels.<br>*To weld higher strength carbon steels.* | Repairs<br>High Strength<br> |
| **B63**<br>E8018-B2<br>E CrMo1 B42 | Low-hydrogen, basic coated electrode alloyed with 1.%Cr and 0.5%Mo.<br>Resistant to temperatures up to 500-550°C.<br>*For welding creep resisting steels T/P11; T/P12 ; 15Mo3; 25CrMo4.* | Repairs<br>Creep resistant |
| **Bimetal-NiFe**<br>E NiFe-CI | Graphite-basic coating, «Bimetal» core wire with high electrical conductivity. The «Bimetal» core wire allows high deposition rates with direct current as well as with alternative current, without any risk of overheating the electrode.<br>*For repair and construction welding on all cast iron types and dissimilar joints between cast iron and steels.* | Repair<br> |