



CHROMIUM CARBIDE OVERLAY PLATE



Welded anti-abrasion overlay CCO-S · CCO-O

Chromium carbide deposited onto a carbon steel backing plate by submerged arc (CCO-S) or open arc (CCO-O). Microstructure of primary Cr_7C_3 carbides in a eutectic austenitic matrix, with carbide volume above 35 % and overlay hardness of 58-63 HRC evenly distributed through the layer. Overlay thickness tolerance under 0.5 mm and flatness within ± 3 mm/m. Ductile mild steel backing absorbs impact and allows forming and rolling without damaging the overlay. In high-abrasion service, working life is 5 to 6 times that of 400 BHN quenched and tempered plate.

GRADES AND THICKNESSES

OTHER THICKNESSES AND SIZES ON REQUEST

Grade	Thickness base + overlay (mm)	Composition Cr / C (%)	Hardness (HRC)	Standard size (mm)
CCO-S submerged arc	4 + 4	25-35 / 3.5-5.0	58 - 63	1400 × 3000
	5 + 5	26-35 / 3.5-5.0	58 - 63	1400 × 3000
	6 + 6	27-37 / 3.5-5.0	58 - 63	1400 × 3500
	8 + 5	26-35 / 3.5-5.0	58 - 63	1400 × 3500
	8 + 6	27-37 / 3.5-5.0	58 - 63	1400 × 3500
	8 + 7	27-37 / 3.5-5.0	58 - 63	1400 × 3500
	8 + 8	28-38 / 3.5-5.0	58 - 63	1400 × 3500
	10 + 10	30-40 / 4.0-5.5	58 - 63	1400 × 3500
	12 + 12	30-40 / 4.0-5.5	58 - 63	1400 × 3500
CCO-O open arc	3 + 3	17-22 / 4.5-7.5	58 - 63	1400 × 3400
	4 + 4	20-25 / 4.5-7.5	58 - 63	1400 × 3400
	6 + 4	20-25 / 4.5-7.5	58 - 63	1400 × 3400
	6 + 6	21-26 / 4.5-7.5	58 - 63	1400 × 3400
	8 + 4	20-25 / 4.5-7.5	58 - 63	1400 × 3400
	8 + 6	21-26 / 4.5-7.5	58 - 63	1400 × 3400
	8 + 7	22-27 / 4.5-7.5	58 - 63	1400 × 3400
	8 + 8	24-29 / 4.5-7.5	58 - 63	1400 × 3400

WELDING

Backing plate welds with standard mild steel or low-hydrogen consumables, no preheat required. Avoid arc contact with the overlay layer.

CUTTING

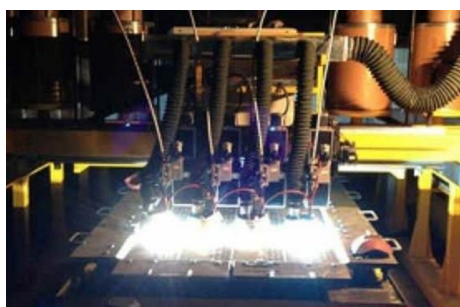
Plasma cutting from the backing side gives a clean edge and prevents carbon contamination.

MACHINING

Holes, studs, radii and custom shapes. Plate can be cold formed and rolled.



6 + 6 MM OVERLAY · 1400 × 3000 SIZE



AUTOMATIC OVERLAY DEPOSITION



SUBMERGED ARC LINE

SMOOTH CCO

Smooth-surface CCO plate, practically free of cracks and weld beads: uniform chemistry and hardness through the full overlay thickness —above 670 HV (60–64 HRC) with less than 3 Rockwell points of variation—. The flat surface lowers friction and prevents build-up in bulk material handling, and delivers 1.5 to 4 times the service life of conventional overlay plate. Three lines by dominant wear mechanism: M30, M70 and M10.

M30

General abrasion with moderate impact.

- Cr 21–35 % · C 2.5–5.5 % · >670 HV (60–64 HRC)
- Thickness 5+5 to 12+25 · 1000 × 3000 / 1200 × 3000

M70

Extreme abrasion with high impact.

- Composite carbides Nb+Mo+Ti+V+W 7–10 % · G65 mass loss <0.11 g
- Thickness 8+8 to 12+25 · 1000 × 3000 / 1200 × 3000

M10

Wear under strong magnetic fields.

- Non-magnetic 0Cr18Ni9 base · permeability <1.3 × 10⁻⁶
- 5 times the life of AISI 304 in magnetic separators

SPECIFICATIONS

M30 · M70 · M10

Property	M30	M70	M10
Base plate	Q235B (S235)	Q235B (S235)	0Cr18Ni9
Overlay alloy	Chromium carbide	Chromium carbide + composite carbides	Austenite + chromium carbide
Primary carbide volume	>37 %	>37 %	—
Overlay hardness	>670 HV (60–64 HRC)	>670 HV (60–64 HRC)	>500 HV
Thickness base + overlay (mm)	5+5 · 6+6 · 8+8 · 10+10 · 12+12 · 12+17 · 12+20 · 12+25	8+8 · 10+10 · 12+12 · 12+17 · 12+20 · 12+25	5+5 · 6+6 · 8+8 · 10+10
Standard size (mm)	1000 × 3000 / 1200 × 3000	1000 × 3000 / 1200 × 3000	600 × 3000
Cr / C (%)	21–35 / 2.5–5.5	18–28 / 2.5–5.5	18–35 / 2.0–4.0
Nb+Mo+Ti+V+W (%)	<1.5	7–10	<0.5
Mn / Si / B (%)	<1.5 / <1.2 / <0.6	<1.5 / <1.2 / <0.3	>13 / <1.2 / <0.7
P / S (%)	<0.033 / <0.033	<0.033 / <0.033	<0.033 / <0.033
Application	General abrasion, moderate impact	Extreme abrasion, high impact	Strong magnetic environment

ABRASION RESISTANCE

ASTM G65 · REFERENCE VALUES

Sample	Density (g/cm ³)	Mass loss (g)	G-65 volume loss (mm ³)	Hardness (HRC)
M30 (11 + 10)	7.5156	0.1306	17.69	59.44
M70 (11 + 10)	7.5556	0.0947	12.76	59.88

Specification limits: mass loss M30 <0.15 g · M70 <0.11 g. Test run on an 11 + 10 mm specimen; hardness values are those measured on the tested specimen.



SMOOTH CCO · SURFACE FREE OF BEADS AND CRACKS



LAMINATED WEAR BLOCKS

Chrome white iron metallurgically bonded to a mild steel backing by vacuum copper brazing. A 700 BHN (63 HRC) working layer over a base that can be welded, drilled, tapped and bolted in the field without losing impact strength. Supplied in standard and custom shapes —chocky bars, buttons, strips, plates and hammer tips— for localised protection of the highest-wear zones without replacing the full liner.

CHROME WHITE IRON — 700 BHN (63 HRC)

COPPER BRAZED BOND

WELDABLE MILD STEEL BACKING



STANDARD AND CUSTOM SHAPES · WELDABLE ONTO THE BASE STEEL

AVAILABLE SHAPES

CHOCKY BARS

Continuous protection on high-wear surfaces; replaced piece by piece.

BUTTONS AND BLOCKS

Spot protection in areas of concentrated impact.

STRIPS AND RUNNERS

Linear protection along contact and material-guiding zones.

WEAR PLATES

Flat coverage on buckets, hoppers and rock boxes.

HAMMER TIPS

Restores the working profile on crusher hammers.

INSTALLATION AND REPLACEMENT

INSTALLATION

Welded directly onto the base steel, bolted or drilled in the field.

REPLACEMENT

Modular, piece by piece, without removing the full liner.

AGAINST AR PLATE

700 BHN working layer against the 400–500 HBW of quenched AR plate.



BUCKET LIP



CHUTE LINER



TRUCK BODY LINING

SELECTION & APPLICATIONS

SELECTION GUIDE

BY DOMINANT WEAR MECHANISM

Product	Overlay hardness	Dominant mechanism	Recommended application
CCO-S	58-63 HRC	Sliding abrasion	Chutes, hoppers, ducts, truck bodies
CCO-O	58-63 HRC	Abrasion + moderate impact	Buckets, feeders, screens
Smooth CCO M30	60-64 HRC	Abrasion and erosion by fines	Cyclones, fans, launders
Smooth CCO M70	60-64 HRC	Extreme abrasion + high impact	Crusher liners, grizzly bars, rock boxes
Smooth CCO M10	>500 HV	Abrasion in magnetic fields	Magnetic and iron separators
Laminated blocks	700 BHN (63 HRC)	Concentrated impact + abrasion	Bucket lips, hammer tips, impact zones

PROCESSING SERVICES

TO DRAWING OR TO SAMPLE

CUT TO SIZE

Plasma cut from the backing side, flat or developed blanks.

DRILLING AND COUNTERSINKING

Through holes and countersinks for bolted fixing.

ROLLING AND FORMING

Radii and curves to suit chute, cyclone or duct.

EQUIPMENT KITS

Pre-cut, numbered sets ready to install during a shutdown.

APPLICATIONS

- Shovel, loader and excavator buckets
- Lips, sides and heels
- Chute and launder liners
- Feeder and impact plates
- Hopper and silo liners
- Truck bodies and dump boxes
- Crusher and mill liners
- Grizzly bars and rock boxes
- Cyclones, ducts and fans
- Mixers and dampers
- Crusher hammer tips
- Dredging: suction mouths and cutter head



Industries Mining · Quarrying · Cement · Steel and coke · Dredging · Recycling · Ports

WHICH WEAR ZONE DO YOU NEED TO PROTECT?

Tell us the equipment, the available thickness and the material you process. We quote within 24 hours.

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WHEN THE ROCK DEMANDS MORE

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