CARBO WELD
SCHWEISSMATERIALIEN GMBH

CARBODUR WZ 61 AC

Standards

DIN 8555	E 4-UM-65-ST

Typical applications and characteristics

AC-weldable heavy coated electrode with 140 % recovery, designed for hardfacing high-speed steel tools and low alloyed base materials and for reinforcing cutting edges.
The weld metal's high tungsten content provides excellent edge-holding quality.
The weld metal has good tempering properties and allows heat treatment like other high-speed steels of similar composition.
Typical applications: hot shear blades, slotting tools, spiral drills, reamers, and milling cutters (for materials over 880 N/mm²)

Recommendations for welding and heat treatment

Preheating and interpass temperature should be kept between 400 and 550° C, depending on base material and its heat abduction. The upper temperature limit is recommended in any case for overlaying large areas.
Hardness and tenacity can be increased by annealing at 530° C.
Repair welding of high speed steel requires previous soft annealing (2 to 4 hours at 850°C) and preheating to 500 – 700°C. Slow cooling (if necessary in oven or sand) is advisable.
Reclaimed tools can be rebuilt by welding several layers one on top of the other. Start with heating the base metal up to a hardening temperature, then expose it to still air for an appropriate period of time and stabilize temperature at 400 to 550° C. Welding can now be performed in this temperature range. The structure formed in the weld metal ensures stress relief and high resistance to cracking. Annealing is recommendable after normal cooling-off. For simple overlaying the work piece should be preheated to 400 – 550° C only and immediately welded afterwards. Blade edges require overlays in this case, as there might be some transitional areas of reduced hardness. Immediate annealing after cooling-off is advisable..

Hardness of all-weld metal (typical values)

as welded	**Annealed 2 h at 570°C**	**Hardened 1290°C**	**annealed** after Hardening	**soft annealed 5 h at 850°C**
ca.62 HRc	ca. 64 HRc	ca. 64 HRc	ca. 65HRc	ca. 250 HB

Weld metal analysis (typical, wt. %)

C	Cr	Co	W	V	Mo
0,8	4.5	5	18	1,5	1

Current = + / ~ , 65 V

Welding positions PA, PB, PC

Rebaking 1 h, 350 °C + / - 10 °C (if required)

Dia./Length	Amperage (A)	Pcs./ packet	Pcs./ carton	kg / 1000	kg / packet	kg / carton
2,0 x 300	50 - 70	238	952	16,8	4,0	16,0
2,5 x 350	70 - 100	163	651	30,7	5,0	20,0
3,2 x 350	100 - 140	96	385	51,9	5,0	20,0
4,0 x 350	140 - 170	64	254	78,6	5,0	20,0
5,0 x 450	160 - 220	38	152	157,8	6,0	24,0

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