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## Materialspecification of Dip-Forming Rod Cu-OF1 acc. to EN 1977 / Cu-OFE acc. to ASTM B 49

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### Description:

Copper-Rod manufactured according to the Dip-Forming-Process

Material No: CW007A and CW009A acc. to EN 1977, UNS No C10200 and C10100 acc. to ASTM B 49 / B 224 (not for silver alloyed Cu)

Melting from cathodes Cu-CATH-1 (acc. to EN 1978), Grade 1 (acc. to ASTM B 115)

### Chemical Composition: Demand acc. to EN 1977 maximum in ppm

Ag	As	Bi	Fe	Pb	S	Sb	Se	Te	Grp1	Grp2	Grp3	Total
25,0	5,0	2,0	10,0	5,0	15,0	4,0	2,0	2,0	15,0	3,0	20,0	= 65

### Typical chemical Composition of Dip-Forming-Rod: in ppm (AES-Analysis)

Ag	As	Bi	Fe	Pb	S	Sb	Se	Te	Grp1	Grp2	Grp3	Total
8,0	1,0	0,4	1,0	1,0	4,0	1,0	0,5	1,0	3,0	1,0	5,0	25

Grp 1: (As+Cd+Cr+Mn+P+Sb)

Grp 2: (Bi+Se+Te)

Grp 3: (Co+Fe+Ni+Si+Sn+Zn)

The mentioned analyses values are average values without engorgement

### Hydrogen-resistance: acc. to EN ISO 2626

Close Bend Test: No cracks or scars (Oxygen-content:  $\leq 8$  ppm (typical 3-6 ppm))

Reverse Bend Test: No cracks or scars (Oxygen-content:  $\leq 5$ )

### Dimension:

Dip-Forming-Rod  $\varnothing$  12,5 mm, 9,5 mm and 8,0 mm

Tolerance  $\pm 0,4$  mm

### Mechanical and electrical properties:

Tensile strength  $R_m$  210 to 240 N/mm<sup>2</sup>

Elongation  $A_{L200}$   $\geq 40$  %

Conductivity:  $\geq 102$  % IACS, i.e. 59,0 m/ $\Omega$  mm<sup>2</sup>

Density:  $\geq 8,92$  g/cm<sup>3</sup>

The above mentioned figures are valid for the condition at time of delivery

### Surface structure:

Without any pickling process, very smooth and clean, no scars or scratches or other surface defects

### Range of products

TWN = Normal quality, as Cu-OF1 (CW007A) acc. to EN 1977 and ASTM B224 UNS No. C10200, hydrogen resistance acc. Close Bend Test

TWF = Fine wire drawing material, drawable  $\leq 0,050$  mm, other properties as Cu-OF1 acc. to EN 1977

TWD = Rivet quality, optimised especially for cold-forming process other properties as Cu-OF1 acc. to EN 1977

TWH = Cu-OFE (CW009A) acc. to EN 1977 and ASTM B224 UNS No. C10100 High resistance against hydrogen-embrittlement,

Reversed Bend Test acc. to ISO 2626:  $N_b \geq 10$

TWS = Silver-alloyed types with 0,10%, 0,08%, 0,03%, 0,035% and 0,01% Ag other properties as Cu-OF1 acc. to EN 1977 (excl. Ag-content)