

Data Sheet

GENERAL DESCRIPTION
– SUBJECT TO CHANGES OR DEVIATIONS

Deoxidized Low Phosphorous Copper – Luvata Alloy DLP

Alloy description

Luvata DLP copper grade is a general purpose copper alloy for number of applications where medium high electrical and thermal conductivity are required. DLP grade contains 0,005-0,013% phosphorous which is alloyed to bind free oxygen in the alloy.

Typical applications:

- Cooling elements
- Aluminium smelter anode hanger bars

Products / shapes:

Cast/hot rolled and machined components

Chemical composition and corresponding standards:

| | | | |
|----------------------|---|------------------------|------------------------|
| Luvata Pori Oy alloy | Composition / alloying elements | EN – CEN/TS 13388:2008 | ASTM / USA |
| DLP | P-content 0,005 – 0,013 % (50 – 130 ppm) | Cu-DLP / CW023A | CDA C12000 / Cu-DLP |

Physical properties:

| | | | |
|-------------------------------|--|-----------------------------|---------------------------|
| Density kg/dm ³ | Coefficient of linear expansion 1/K | Specific heat J/(kg x K) | Melting temperature °C |
| 8,9 | 0,0000175 | 385 | 1083 |

Mechanical properties – typical values:

| | | | |
|---------------------|-----------------------------|-----------------------------|-----------------------------|
| | Soft temper | Half-hard temper | Hard temper |
| Hardness HV | 35 – 65 HV | 70 – 95 HV | 85 – 115 HV |
| Tensile strength | 200 – 220 N/mm ² | 250 – 350 N/mm ² | 260 – 400 N/mm ² |
| 0,2% yield strength | 35 – 65 N/mm ² | 180 – 280 N/mm ² | 220 – 380 N/mm ² |
| Elongation | min. 40 % | min. 12 % | min. 5 % |

Electrical and thermal properties – typical values:

| | | | |
|------------------------------|--------|----------------------|------------|
| Electrical conductivity | vol | % IACS * | appr 92 |
| | mass | %IACS | appr 91,5 |
| | MS/m | | appr 53 |
| Electrical resistivity | vol | Ω mm ² /m | appr 0,019 |
| | mass | Ω g/m ² | appr 0,17 |
| Thermal conductivity (20 °C) | W / Km | | 365 |

* % IACS = International Annealed Copper Standard. The % IACS values are calculated as percentages of the standard value for annealed high conductivity copper as laid down by the International Electrotechnical Commission.

Joining and machining:

| | | | | | |
|--|-----------|-----------|------|------|------|
| Machinability rating (free cutting brass = 100) | Soldering | Brazing | TIG | MIG | EBW |
| 20 | Excellent | Excellent | Good | Good | Good |

