

# Copper Magnesium

## SD01 | SD02 | SD03 | SD04 | SD05 |



Material Designation					
Sundwiger	SD01	SD02	SD03	SD04	SD05 *
DIN-EN Symbol	(CuMg0,1)	CuMg0,2	CuMg0,3	(CuMg0,4)	CuMg0,5
DIN-EN	CW127C	CW127C	CW127C CW128C	CW128C	CW128C
UNS	C18661		C18661 / C18665		

\* Symbol for contact wire

### Typical Applications

- Conductor wire
- Connector wire
- Pins
- Telecommunications cable
- Catenary cables
- Contact wire for high-speed trains

### Physical Properties\*

Sundwiger	SD01	SD02	SD03	SD04 / SD05 **
Electrical conductivity in % IACS (hard condition)	≥80	≥77	≥72	≥64
Electrical conductivity in MS/m	≥46.4	≥44.6	≥41.7	≥37.1
Thermal conductivity in W/(m*K)	310	310	290	250
Density in g/cm <sup>3</sup>	8.9	8.9	8.9	8.9

\* Reference values at room temperature | \*\* Symbol for contact wire

### Mechanical Properties\*

Sundwiger		SD01	SD02	SD03	SD04
Tensile strength in N/mm <sup>2</sup>	soft	220 - 290	230 - 300	250 - 320	270 - 340
	hard	300 - 400	360 - 460	400 - 500	510 - 610
	springhard	400 - 500	460 - 560	500 - 600	610 - 710
	super springhard	500 - 700	560 - 800	600 - 820	710 - 1000
Elongation A100 in %, soft		> 30			

\* Reference values at room temperature

### About the Alloy

The strength of copper can be exceeded significantly by alloying of magnesium, thereby the conductivity is only slightly reduced.

By alloying of Mg in the range of 0.1 to 0.8 %, the ratio of tensile strength and conductivity can be adjusted very precisely. CuMg is suitable for electric connections, for connector pins and for overhead telephone lines.

In recent years, this alloy has become more and more important as a material for contact wire and catenary cables for high-speed trains.

This alloy family is used as a substitution for copper-cadmium which is already prohibited in many countries due to its toxic properties.

### Available Dimensions

Rounded, modified square wire	5.1 mm	max. 2000 kg
	7.4 mm	
	1.2 - 6.2 mm in coils	
	1.8 - 6.2 mm on stands	
	0.5 - 3 mm on reels	
Round wire	1.5 - 3 mm on acropaks	max. 400 kg
	on request: in drums	max. 400 kg
	Catenary wire	On drums, cross-section area: 100 / 120 / 150 mm <sup>2</sup> customized length (max. 1.5 km)
	Contact wire	On drums (for high-speed trains)

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## Correspondent Standards for Railway Applications:

DIN 17 666	Low-alloyed wrought copper alloys
EN 50 149	Railway applications - stationary equipment, grooved contact wire of copper and copper alloys
Ebs (DR-M) 25 - 45.020	Contact wire of copper-magnesium-wrought alloy, technical delivery conditions, overhead line Re 250 DR
DIN 43 138	Flexible cables for catenary systems and return lines
DIN 43 140	Contact wire, technical delivery conditions
DIN 48 200, Teil 2	Wire for catenary cables
DIN 48 201, Teil 2	Catenary cables
DIN 48 203, Teil 2	Wire and cables for wrought copper alloy lines
DIN 48 300	Wire for overhead telephone lines
NF C 34 - 110 - 1	Copper alloy wire for overhead line conductors
NF C 34 - 110 - 2	Copper alloy conductors for overhead lines
NF C 34 - 110 - 3	Hard drawn copper conductors for overhead lines
SIP 1221	Properties of bronze overhead lines

## Your Contact Person

Worldwide



Sundwiger Messingwerk GmbH

Hönnetalstraße 110  
58675 Hemer  
Deutschland  
Tel. +49 2372 661-0  
Fax +49 2372 661-259  
E-Mail: [sales-sundwig@sundwiger-mw.com](mailto:sales-sundwig@sundwiger-mw.com)  
[www.sundwiger-mw.com](http://www.sundwiger-mw.com)

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