

# Material data sheet TOMFER

Status: 24.03.2005

## Cladding composite

## TOMFER

(Low carbon steel, single or double side cladded with red brass)

### Brief description

TOMFER is a single- or double side cold rolled cladded composite material combining the forming and strength properties of low carbon deep drawing steel with the physical and decorative properties of red brass.

### Standard-Raw materials

Position	Material	Description	Material-No.	Norm
Core	Unalloyed deep drawing steel	DD14	1.0389	DIN EN 10111
Cladding layer	Red brass	CuZn10 (Ms90)	2.0230	EN 1652
Cladding layer	Red brass	CuZn15 (Ms85)	2.0240	EN 1652

### Chemical composition

Steel	C	Mn	P	S	Al
DD14	- 0,08	- 0,35	- 0,025	- 0,025	0,015 0,070

Red brass	Cu	Al	Fe	Ni	Pb	Sn	Zn	Other elements
CuZn10 (CW501L)	89,0 91,0	- 0,02	- 0,05	- 0,3	- 0,05	- 0,1	Rest -	- 0,1
CuZn15 (CW502L)	84,0 86,0	- 0,02	- 0,05	- 0,3	- 0,05	- 0,1	Rest -	- 0,1

### Deliverable (standard-) dimensions

Strip thickness: 0,2 – 1,50 mm  
Strip width: 20 – 650 mm  
Cut-to-length: 1.000 – 2.000 mm

### Cladded layers and adhesion

Nominal layer thickness: Double-sided 5/5 or 10/10 % of strip thickness, alternatively one-sided or difference cladding on request  
Adhesion: Not possible to strip off the cladded layer from the steel core  
Measuring of the layer thickness: Magnetic force, metallographical or gravimetric

### Surface qualities

Type/description	Characteristics	Roughness Ra
bright	Bright, metallicly clean surface. Pittings, grooves and scratches are permitted as long as the uniform smooth appearance is not essentially impaired when viewed with the naked eye.	< 0,10 µm
regular	Metallicly clean surface. Pittings, minimal defects and scratches are acceptable in a scale not impairing the technical function of the outside layers of the composite material.	0,15 – 0,80 µm
isotropic		1,0 – 2,0

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## Mechanical characteristics

Cladded layer Red brass (%)	Surface type	Strength condition <sup>1)</sup>	Yield stress $R_{p0,2}$ (N/mm <sup>2</sup> )	Tensile strength $R_m$ (N/mm <sup>2</sup> )	Elongation $A_{80}$ (%)
5/5 10/10	regular isotropic	LC	max. 250	max. 370	min.34
5/5 10/10	bright regular isotropic	LC+	200-320 180-300	300-380 280-370	min. 30
5/5 10/10	regular	C330 C320	min. 300 min. 280	330-420 310-410	min. 12
5/5 10/10	regular	C380 C370	--- ---	380-480 370-470	min. 4

<sup>1)</sup> Description LC and Cxxx according to DIN EN 10139

The forming properties are not adjusted isotropic because of the production technology.

## Tolerances

- Size limits of thickness - according to classes A, B, C of DIN EN 10140
- Size limits of width - according to classes A, B of DIN EN 10140
- Size limits of length - according to classes A, B of DIN EN 10140

## Edge types

GK, NK according to DIN EN 10140

## Delivery forms

Strips, sheets

## Ordering example

Every order should be specified in consideration of the following information based on this material data sheet:

Product features	Example 1	Example 2
Cladding composite	TOMFER	TOMFER
Layer material	CuZn10	CuZn15
Cladded layer P(side1-side2) (%)	P(05-05)	P(10-00)
Strength condition	LC	C380
Surface quality	bright	regular
Edge type	GK	GK
Delivery form	strips	sheets
Thickness (tolerance) x width (tolerance) x length (tolerance) (mm)	0,80 (+/- 0,025) x 100 (+/-0,13) mm	1,20 (+/-0,030) x 420 (+/-0,30) x 1.500 (-0/+6) mm

## Miscellaneous

All information in this material data sheet are referring to TOMFER-materials based on a standard production.

Further product features on request.