

## ROBERT 12 DIN CK 60

## FINE CARBON STEEL

### CHEMICAL COMPOSITION : EN 10132-4

<b>C</b>	0.57-0.65%
<b>Si</b>	0.40% Max.
<b>Mn</b>	0.30-0.40%
<b>P</b>	0.035% Max.
<b>S</b>	0.035% Max.
<b>Cr</b>	0.40% Max.
<b>Mo</b>	0.10% Max.
<b>Ni</b>	0.40% Max.

### ALLOY DENOMINATIONS :

MATERIAL N° EN :	10132-4
WN/MATERIAL N° DIN :	1.1221
ROBERT LAMINAGE :	912 / ROBERT 12
EN :	C 60 E
DIN :	CK 60

### PHYSICAL PROPERTIES :

Density 20° C	7.86	Kg/dm <sup>3</sup>
Melting point	1400-1500	°C
Modulus of elasticity, longitudinal	210	GPa
Thermal Conductivity	45-55	W/M . K
Electrical Conductivity	7.7	M/Ω mm <sup>2</sup>
Electrical resistivity	0.13	Ω mm <sup>2</sup> /M
Coefficient of linear expansion from 20 up to 300°C	12 x 10 <sup>-6</sup>	°C <sup>-1</sup>
IACS (International Annealed Copper Standard)	13	%

### WORKABILITY :

Coldworking	Very Good
Machining	Good
Polishing	Very Good
Annealing temp.	650-750 °C
Non cémentable	

### MAIN APPLICATIONS :

Deep moulding, deep drawing  
Watch components, dials, hands, tirettes, ponts  
Stamping, Folding, Cutting

### THERMAL TREATMENT :

Oil soaked 825-855 °C

### QUALITY OF EDGES :

Slit edges

### CONDITIONING :

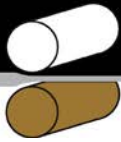
- a) In coils
- b) Cut to length, from 0.5 up to 3 m

### AVAILABLE SIZES :

Widths	from 2 up to 170mm
Thickness	from 0.01 up to 2.0mm

### TOLERANCES :

Depending on product



**MECHANICAL PROPERTIES :    ROBERT 12 DIN CK 60**

**ROBERT LAMINAGE NORM**

TEMPER	Hardness vickers	
Soft	110-135	
1/4 hard	135-165	
1/2 hard	160-185	
3/4 hard	180-210	
Hard	205-230	
Extra hard	225-250	

**EN 10132-4 NORM**

TEMPER	Hardness Vickers	Rp 0.2 (Mpa)	ELONGATION (%)
Soft cold rolled	195 max	495 max	17 mini
Hard cold rolled	305 max	.	-
Hardened heat treated	345-530	-	-

**DIN 17222 NORM**

TEMPER	Hardness Vickers	Rp 0.2 (Mpa)	ELONGATION (%)
Soft	185 max	-	13 mini
Hardened heat treated	350-500	-	-