



## SIQUAL 0503 Steel

### Designation by Standards

Brand Name	Ravne	Mat. No.	DIN	EN	AISI/SAE
SIQUAL 0503	C45	1.0503	C45	C45	1045

### Chemical Composition (in weight %)

C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.46	max. 0.40	0.65	max. 0.40	max. 0.10	max. 0.40	-	-	(Cr+Mo+Ni)= max. 0.63

### Description

SIQUAL 0503 is a medium carbon steel is used when greater strength and hardness is desired than in the "as rolled" condition. Extreme size accuracy, straightness and concentricity combine to minimize wear in high speed applications. Turned, ground and polished.

### Applications

Quenched and subsequently tempered steel for screws, forgings, wheel tyres, shafts, sickles, axes, knives, wood working drills, hammers, etc.

### Physical properties (average values) at ambient temperature

Modulus of elasticity [ $10^3 \times \text{N/mm}^2$ ]: 205

Density [ $\text{g/cm}^3$ ]: 7.85

Specific heat capacity [ $\text{J/g.K}$ ]: 0.48

### Coefficient of Linear Thermal Expansion $10^{-6} \text{ }^\circ\text{C}^{-1}$

20-100°C	20-250°C	20-500°C
11.5	13.0	14.0

### Soft Annealing

Heat to 680-710°C, cool slowly in furnace. This will produce a maximum Brinell hardness of 207.

### Normalizing

Normalizing temperature: 840-880°C/air.

### Hardening

Harden from a temperature of 820-860°C followed by water or oil quenching.

### Tempering

Tempering temperature: 550-660°C/air.

### Mechanical Properties in Quenched+Tempered Condition

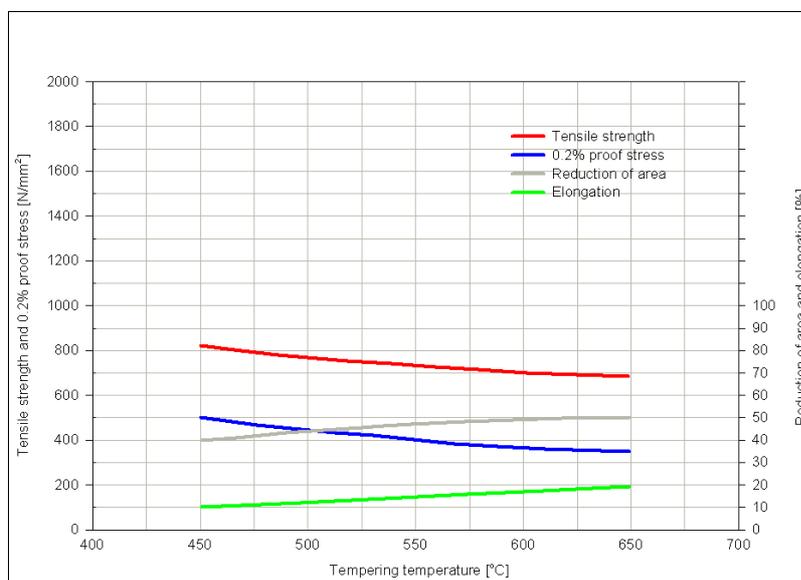
Diameter d (mm)	Thickness t (mm)	0.2 % proof stress ( $\text{N/mm}^2$ )	Tensile strength ( $\text{N/mm}^2$ )	Elongation $A_5$ (%)	Reduction Z (%)
<16	<8	min. 490	700-850	min. 14	min. 35

<17-40	<8<=20	min. 430	650-800	min. 16	min. 40
<41-100	<20<=60	min. 370	630-780	min. 17	min. 45

### Mechanical Properties in Normalized Condition

Diameter d (mm)	Thickness t (mm)	0.2 % proof stress (N/mm <sup>2</sup> )	Tensile strength (N/mm <sup>2</sup> )	Elongation A <sub>5</sub> (%)
<16	<16	min. 390	min. 620	min. 14
<17-100	<16<=100	min. 305	min. 305	min. 16
<101-250	<100<250	min. 275	min. 560	min. 16

### Diagram Tempering Temperature - Mechanical Properties



### Forging

Hot forming temperature: 1050-850°C.

### Machinability

No data.

Forms manufactured: Please see the [Dimensional Sales Program](#).

### Disclaimer

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