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EN 10263-4 Grade 41Cr4 quenched and tempered (+QT)

Description

The cold-upsettable steel 41 Cr 4 can be cold-formed with the suitable tools with a low to medium rate of forming according to the usual forming methods on single-stage and multi-stage presses. It is used for normed screws and screws manufactured according to drawings of strength class 8.8 in the thick dimension range of strength class 12.9 in the thin dimension range. Also used for high-strength parts manufactured according to drawings (ball studs).

Related Standards

DIN 1654-4

EN 10263-4

Equivalent Materials

NBN 41Cr4

GB 40CrH

AFNOR 42C4

BS 530M40

GOST 40Ch

ISO C16

UNI 41Cr4KB

JIS SCr440

PN 40H

SS 2245

UNE F.1211-41Cr4DF

ASTM 5140

DIN 1.7035

AFNOR 41Cr4

BS 41Cr4

UNE 41Cr4

AISI 5140

AISI 5140H

SAE 5140

SAE 5140H

JIS SCr440WCH

JIS SCr440H

JIS SCr440M

EN 41Cr4

EN 1.7035

GOST 41H

GOST 38ChA

GB 40Cr

GB/T 40Cr

GB/T A20402

UNS H51400

UNS G51400

IS 40Cr1

IS 40Cr4



This material data has been provided by **WIAM**.

All metrics apply to room temperature unless otherwise stated. SI units used unless otherwise stated.

Equivalent standards are similar to one or more standards provided by the supplier. Some equivalent standards may be stricter whereas others may be outside the bounds of the original standard.

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Properties

[Request Fatigue Data \(S-N Curve\)](#)

General

Property	Temperature	Value
Density	20.0 °C	7.83 g/cm³

Mechanical

Property	Temperature	Value
Elastic modulus	-100.0 °C	217 GPa
	20.0 °C	212 GPa
	100.0 °C	207 GPa
	200.0 °C	199 GPa

	300.0 °C	192 GPa
	400.0 °C	184 GPa
	500.0 °C	175 GPa
	600.0 °C	164 GPa
Elongation	20.0 °C	10 - 14 %
Poisson's ratio	20.0 °C	0.28 [-]
Reduction of area	20.0 °C	30 - 40 %
Tensile strength	20.0 °C	800 - 1200 MPa
Yield strength	20.0 °C	560 - 800 MPa

Thermal

Property	Temperature	Value	Comment
Coefficient of thermal expansion	-100.0 °C	1.05E-5 1/K	
	20.0 °C	1.15E-5 1/K	
	100.0 °C	1.21E-5 1/K	
	200.0 °C	1.27E-5 1/K	
	300.0 °C	1.32E-5 1/K	
	400.0 °C	1.36E-5 1/K	
	500.0 °C	1.4E-5 1/K	
	600.0 °C	1.44E-5 1/K	
Melting point		1382 - 1529 °C	Typical for Chromium Steel
Specific heat capacity	-100.0 °C	423 J/(kg·K)	

**Thermal
conductivity**

20.0 °C	461 J/(kg·K)
100.0 °C	479 J/(kg·K)
200.0 °C	499 J/(kg·K)
300.0 °C	517 J/(kg·K)
400.0 °C	536 J/(kg·K)
500.0 °C	558 J/(kg·K)
600.0 °C	587 J/(kg·K)

**Thermal
diffusivity**

20.0 °C	45.1 W/(m·K)
100.0 °C	45.1 W/(m·K)
200.0 °C	44.1 W/(m·K)
300.0 °C	41.9 W/(m·K)
400.0 °C	39.4 W/(m·K)
500.0 °C	36.9 W/(m·K)
600.0 °C	34.4 W/(m·K)

20.0 °C	12.5 mm²/s
100.0 °C	11.6 mm²/s
200.0 °C	10.6 mm²/s
300.0 °C	9.5 mm²/s
400.0 °C	8.4 mm²/s
500.0 °C	7.1 mm²/s
600.0 °C	5.8 mm²/s

Electrical

Property	Temperature	Value
Electrical resistivity	20.0 °C	2.31E-7 Ω·m
	100.0 °C	2.84E-7 Ω·m
	200.0 °C	3.58E-7 Ω·m
	300.0 °C	4.48E-7 Ω·m
	400.0 °C	5.52E-7 Ω·m
	500.0 °C	6.71E-7 Ω·m
	600.0 °C	8.06E-7 Ω·m

Chemical properties

Property	Value
Carbon	0.38 - 0.45 %
Chromium	0.9 - 1.2 %
Manganese	0.6 - 0.9 %
Phosphorus	0.04 %
Silicon	0.4 %
Sulfur	0.035 %