

Steel Data

CK55



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Identification

Designation by Standards					
Brand Name	Ravne No.	Mat. No.	DIN	EN	AISI
CK55	621	1.1203	Ck55	-	1055

Chemical Composition

Chemical Composition in Weight %								
C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.56	max. 0.40	0.75	max. 0.40	max. 0.10	max. 0.40	-	-	(Cr+Mo+Ni) = max. 0.63

General Information

Description

CK55 steel has a higher (0.55%) carbon content for greater strength than the lower carbon alloys. It is hardenable by heat treatment, quench and tempering.

Applications

Steel for springs, for quenched and tempered springs, for surface hardened products like shafts, bushings, crankshafts, etc.

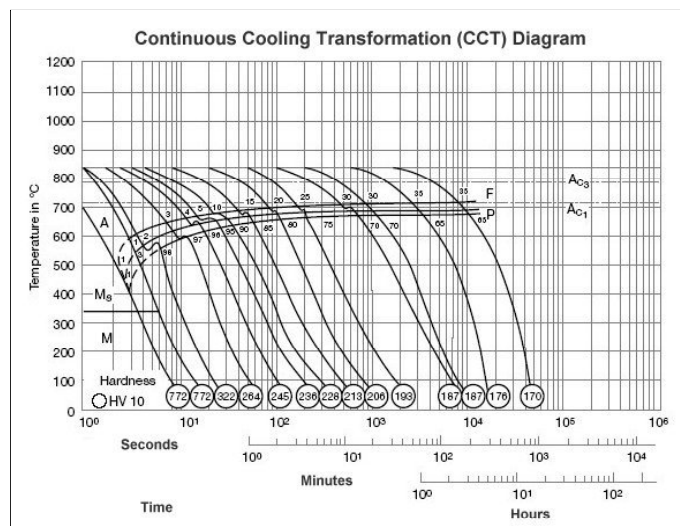
Properties

Physical properties (average values) at ambient temperature:

Modulus of elasticity [$10^3 \times \text{N/mm}^2$]: 210

Density [g/cm^3]: 7.85

Continuous Cooling Transformation (CCT) Diagram



Double-click the images to enlarge them and click once to make them thumbnail size again.

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Heat Treatment

Soft Annealing

Hardness after soft annealing is 229 HB.

Normalizing

Normalizing temperature: 825-865°C.

Hardening

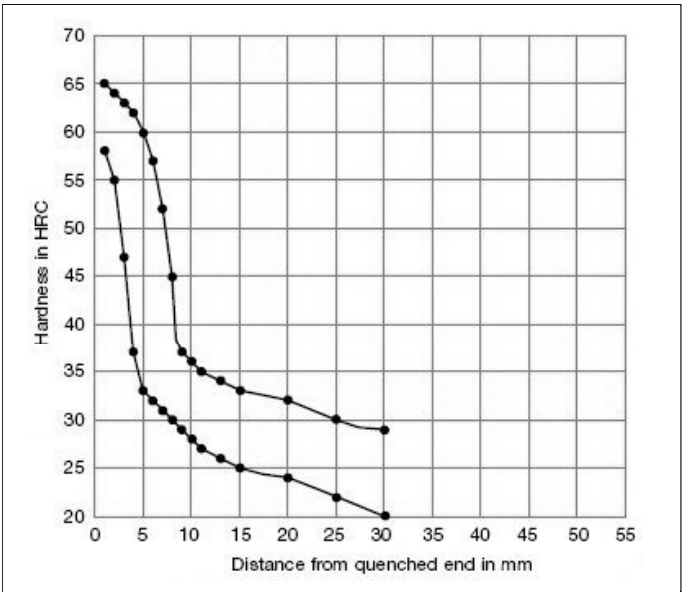
Harden from a temperature of 840-870°C, 850-880°C followed by water or oil quenching.

Tempering

Tempering from the quenched condition may be done at 540-680°C depending upon the strength desired.

Mechanical Properties in Hardened+Tempered Condition				
Diameter (mm)	0.2 % proof stress (N/mm ²)	Tensile strength (N/mm ²)	Elongation A ₅ (%)	Reduction Z (%)
up to 16*	540	780-930	12	25
17-40	460	740-890	14	35
41-100	420	700-850	15	40
up to 16	430	630-780	17	40

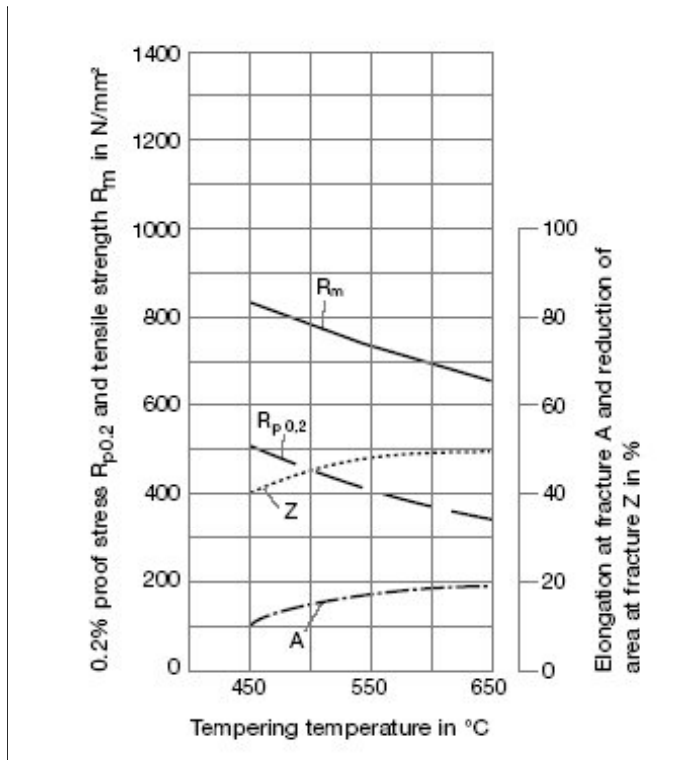
Hardenability Diagram



Double-click the images to enlarge them and click once to make them thumbnail size again.

[View a full size diagram.](#)

Mechanical Properties vs. Temperature



Double-click the images to enlarge them and click once to make them thumbnail size again.

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Workability

Forging

Hot forming temperature: 1100-850°C.

Machinability

Machinability is good, rated at 50% that of the AISI 1112 alloy used as a 100% machining rated steel.

Other Information

Corrosion Resistance: This is a steel alloy and will rust if not protected. it is not corrosion resistant.

Welding: CK55 steel is weldable by all of the welding methods. However with its higher carbon content it is important to use both pre-heat at 150 to 260°C and post-heat at 590 to 650°C practice per an approved welding procedure.

Cold working: In the annealed state the CK55 alloy is readily cold worked by conventional methods.

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

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