Data Sheet

Steel 1.1191 / XC48H1 / C45E

Alternative Designations

1045 (AISI) | Ck45 (DIN) | S45C (JIS) | XC45 (AFNOR) | 080M46 (BS)

Key Features

Excellent machinability • Good resistance against wear • High strength

Description

Steel C45E / 1.1191 is a medium carbon steel with good strength and toughness. It has a higher than average hardenability and is suitable for applications requiring moderate wear resistance. The steel is suitable for case hardening and can be surface hardened by carburising, cyaniding or nitriding. It can be machined in all states, either annealed or normalized, and is readily weldable. The steel can be surface hardened by carburizing, cyaniding or nitriding.

Mechanical Properties

Yield strength	230 – 565 MPa
Tensile strength	530 – 1050 MPa
Elongation at break	5 – 18%
Hardness	172 – 255
Module of elasticity	220 GPa

Physical Properties

Density	7.85 g/cm³
Electrical conductivity	8.33 MS/m
Coefficient of thermal expansion	11.1 K-1 · 10-6
Thermal conductivity	50 W/m · K
Specific heat capacity	460 J/kg · K

Chemical Composition

Al	-	N	-
Bi	-	Nb	-
C	0.42 – 0.50%	Ni	0.4%
Cd	-	O	-
Co	-	P	0.02%
Cr	0.4%	Pb	-
Cu	0.3%	S	0.035%
Fe	-	Si	0.1 – 0.4%
H	-	Sn	-
Mg	-	Ti	-
Mn	0.50 – 0.80%	V	-
Mo	0.1%	Zn	-

Reference

Datasheets provided by Xometry contain materials sourced through trusted OEMs, material distributors, and databases. Please visit Materialdatacenter.com for further information on this material.