Xometry

Datasheet

S45C

Alternative Designations

Standard	AFNOR	ANSI/AA	UNS	JIS	SIS	UNE
Designation	AF65C45	1045	G10450	S45C	1650	C45K

Details

This material has low thermal conductivity and low ductility among wrought carbon steels. With a relatively high tensile strength of 630MPa, it is used for screws, forgings, drills, shafts etc. A combination of size accuracy, straightness and concentricity results in minimal wear in high speed applications.

Key Features

High tensile strength • low ductility • Low thermal conductivity

Chemical Composition

Element	C	Si	Mn	P	S	Cr	Mo	Ni
Percentage	0.45	0.4	0.5 – 0.8	0.03	0.02 – 0.035	0.4	0.1	0.4

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Mechanical Properties

Property	Yield strength [MPa]	Ultimate tensile strength [MPa]	Elongation [%]	Hardness
Value	275	560	16	255

Physical Properties

Property	Value
Density [g/cm³]	7.85
Module of elasticity [GPa]	543
Electrical conductivity [m/Ω · mm²]	4.76
Coefficient of thermal expansion [K-1 · 10-6]	12
Thermal conductivity [W/m · K]	34.2
Specific heat capacity [J/kg · K]	332