

This page is mainly introduced the AISI 414 Datasheet, including chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of AISI 414, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.

Datasheet for Steel Grades Special Steel AISI 414

AISI 414 Standard Number:

ITEM	Standard Number	Descriptions
------	-----------------	--------------

AISI 414 Chemical composition (mass fraction) (wt.%)

Chemical				Min.(%)			Max.(%)		
C	Si	Mn	P	S	Cr	Ni	Mo	V	Ta
0.15	1.00	1.00	0.04	0.03	11.5-13.5	1.25-2.50			
W	N	Cu	Co	Pb	B	Nb	Al	Ti	Other

AISI Type 414 is a Martensitic Standard grade Stainless Steel. It is commonly called AISI Type 414 Chromium steel. It is composed of (in weight percentage) 0.15% Carbon (C), 1.00% Manganese (Mn), 1.00% Silicon (Si), 11.5-13.5% Chromium (Cr), 1.25-2.50% Nickel (Ni), 0.04% Phosphorus (P), 0.03% Sulfur (S), and the base metal Iron (Fe). Other designations of AISI Type 414 stainless steel include UNS S41400 and AISI 414.

Steel is the common name for a large family of iron alloys. Steels can either be cast directly to shape, or into ingots which are reheated and hot worked into a wrought shape by forging, extrusion, rolling, or other processes. Wrought steels are the most common engineering material used, and come in a variety of forms with different finishes and properties. Stainless steels are high-alloy steels that have superior corrosion resistance than other steels because they contain large amounts of chromium. Stainless steels contain at least 10% chromium, with or without other elements. Stainless steels can be divided into

three basic groups based on their crystalline structure: austenitic, ferritic, and martensitic.

The typical elastic modulus of stainless steels at room temperature (25°C) ranges from 190 to 210 GPa. The typical density of stainless steels ranges from 7.75 to 8.1 g/cm³. The typical tensile strength varies between 515 and 827 MPa. The wide range of ultimate tensile strength is largely due to different heat treatment conditions.

AISI 414 Physical Properties

Tensile strength	115-234	σ_b /MPa
Yield Strength	23	$\sigma_{0.2} \geq$ /MPa
Elongation	65	$\delta_5 \geq$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	Akv \geq /J
HBS	123-321	-
HRC	30	-

AISI 414 Mechanical Properties

Tensile strength	231-231	σ_b /MPa
Yield Strength	154	$\sigma_{0.2} \geq$ /MPa
Elongation	56	$\delta_5 \geq$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	Akv \geq /J
HBS	235-268	-
HRC	30	-

AISI 414 Heat Treatment Regime

Annealing	Quenching	Tempering	Normalizing	Q & T
√	√	√	√	√

AISI 414 Range of products

Product type	Products	Dimension	Processes	Deliver Status
Plates / Sheets	Plates / Sheets	0.08-200mm(T)*W*L	Forging, hot rolling and	Annealed, Solution and

			cold rolling	Aging, Q+T, ACID-WASHED, Shot Blasting
Steel Bar	Round Bar, Flat Bar, Square Bar	Φ8-1200mm*L	Forging, hot rolling and cold rolling, Cast	Black, Rough Turning, Shot Blasting,
Coil / Strip	Steel Coil /Steel Strip	0.03-16.0x1200mm	Cold-Rolled & Hot-Rolled	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Pipes / Tubes	Seamless Pipes/Tubes, Welded Pipes/Tubes	OD:6-219mm x WT:0.5-20.0mm	Hot extrusion, Cold Drawn, Welded	Annealed, Solution and Aging, Q+T, ACID-WASHED

We can produce Special Steel the specifications follows: