

# HR402

Specification for nickel-chromium-cobalt-titanium-aluminium heat-resisting alloy seamless tubes (Nickel base, Cr 19.5, Co 18.0, Ti 2.5, Al 1.5) HR402 steel chemical information,mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, We can produce round bars, forged rings, forged cakes, flat bars, tubes, sheets, plates, steel wires, steel strips, steel coils, etc. The size can be customized, the maximum order quantity is 100Kg. It also contains the use of **HR402**,such as it is commonly used in bars, sheet,plates, steel coils, steel pipes,forged and other materials application.

## Data Table for Grades Stainless Steels - Special Steels Specification for nickel-chromium-cobalt-titanium-aluminium heat-resisting alloy seamless tubes (Nickel base, Cr 19.5, Co 18.0, Ti 2.5, Al 1.5) HR402

HR402 Standard Number		
ITEM	Standard Number	Descriptions
1	BS HR 402 (1973)	Specification for nickel-chromium-cobalt-titanium-aluminium heat-resisting alloy cold worked and softened seamless tubes (nickel base, Cr 19.5, Co 18.0, Ti 2.5, Al 1.5)
2	BS 2HR 402 (2011)	Specification for nickel-chromium-cobalt-titanium-aluminium heat-resisting alloy seamless tubes (Nickel base, Cr 19.5, Co 18.0, Ti 2.5, Al 1.5)

HR402 Chemical composition(mass fraction)(wt.%)		
Chemical	Min.(%)	Max.(%)
C		0.13
Si		1.00
Mn		1.00
P		
S		0.015
Cr	18.00	21.00
Ni		remaining



## HR402

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Mo		
Co	15.00	21.00
Ti	2.00	3.00
Fe		1.50
Al	1.00	2.00
Cu		0.20
Zr		0.15
B		0.02
Bi		0.0001
Pb		0.002
Ag		0.0005

### HR402 Physical Properties

Tensile strength	115-234	?b/MPa
Yield Strength	23	? 0.2 ?/MPa
Elongation	65	?5? (%)
?	-	?? (%)
Akv	-	Akv?/J
HBS	123-321	-
HRC	30	-

### HR402 Mechanical Properties

Tensile strength	231-231	?b/MPa
Yield Strength	154	? 0.2 ?/MPa
Elongation	56	?5?(%)
?	-	??(%)
Akv	-	Akv?/J
HBS	235-268	-



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HRC	30	-
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HR402 Heat Treatment Regime				
Annealing	Quenching	Tempering	Normalizing	Q & T
?	?	?	?	?

HR402 Range of products				
Product type	Products	Dimension	Processes	Deliver Status
Plates / Sheets	Plates / Sheets	0.08-200mm(T)*W*L	Forging, hot rolling and cold rolling	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Steel Bar	Round Bar, Flat Bar, Square Bar	∅8-1200mm*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 Stainless Steels - Special Steels the specifications follows:

Note:

- (1) listed in the table apex diameter (d), to steel thickness (a) multiples said.
- (2) in the ASTM A6 standard specified scope can meet any additional conditions.
- (3) from the standard for 50 mm (2 in).

Mechanical properties

Mechanische Eigenschaften

Caracteristiques mecaniques

ReH Minimum yield strength / Mindestwert der oberen Streckgrenze / Limite d'elasticite minimale

Rm Tensile strength / Zugfestigkeit / Resistance a la traction

A Minimum elongation / Mindestwert der Bruchdehnung / Allongement minimal

J Notch impact test / Kerbschlagbiegeversuch / Essai de flexion par choc



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Round bar:

Diameter : 1mm-2000mm

Square bar:

Size: 50mm \* 50mm-600mm \*600mm

Plate steel/flat bar:

Size: Thickness: 0.1mm-800mm Width: 10mm to 1500mm

Tube/pipe:

Size: OD: 6-219mm WT: 1-35 mm.

Cold-rolled sheet: Thickness: 2-5mm Width:1000mm Length: 2000mm

Hot-rolled sheet: Thickness:6-80mm Width: 210-610mm

Length: We can supply any length based on the customer's requirement.

Forging/hot rolling/ extrusion of steel.

Forging: Shafts with flanks/pipes/tubes/slugs/donuts/cubes/other shapes

Finished goods condition: hot forging/hot rolling + annealing/normalizing + tempering/quenching + tempering/any conditions based on the customer's requirement

Surface conditions: scaled (hot working finish)/ground/rough machining/fine machining/based on the customer's requirement

Furnaces for metallurgical processing: electrode arc + LF/VD/VOD/ESR/Vacuum consumable electrode.

Ultrasonic inspection: 100% ultrasonic inspection for any imperfections or based on the customer's requirement.

UTS according to SEP 1921 C/c,D/d,E/e;A388 or GB/T 6402

Excellent service for all kinds of industries, with advantages of technologies, equipment and price.

We serve you with our honesty, integrity, and professionalism.