17-4PH & 17-4MOD

17-4PH is a chromium-nickel-copper precipitation hardening stainless steel used for applications requiring high strength and a moderate level of corrosion resistance. High strength is maintained to approx. 316°C.

17-4PH is a martensitic in structure in the annealed condition and is further strengthened by a low temperature treatment which precipitates a copper containing phase in the alloy. In comparison to many alloys in the precipitation hardening family, 17-4PH requires a simple hardening treatment in the temperature range 482°C to 621°C depending on the combination of strength and toughness desired.

17-4MOD is an updated version of 17-4PH developed by close control of the chemical composition within the standard rage. Its machinability under solution-treated condition is substantially improved up to 45% over the conventional 17-4PH.

17-4MOD shows a significant improvement in ductility in all heat-treated conditions and it is markedly tougher than conventional 17-4PH as measured by Charpy impact tests, especially in the low temperature.

Chemical Composition, %

element	Cr	Ni	Fe	Cu	Nb+Ta	С	Mn	Si	Р	S
min.	15.00	3.00	bal.	3.00	0.15					
max.	17.50	5.00		5.00	0.45	0.070	1.00	1.00	0.040	0.030

Chemical Composition according to ASTM. Some compositional limits of other specifications may vary slightly.

Designation and standards

National	Material	Chemical	Foreinge	Rod and	Plate and	Strip	Seamless
Standards	designation	composition		bar	sheet	Sulp	tube
ASTM ASME SAE NACE	UNS S17400 AISI 630	A959 SA959 MR0175	A705 SA705 AMS5643	A564 SA564 AMS5643 AMS7474	A693 SA693 AMS5604	A693 SA693 AMS5604	AMS5643
DIN	1.4542 X5CrNiCuNb16-4	DIN 10088-1		DIN 10088-3	DIN 10088-2		
RCC	X6CrNiCu17-04			M5110			
GB/T	05Cr17Ni4Cu4Nb 0Cr17Ni4Cu4Nb S51740	GB/T 20878	GJB 5040	GB/T 1220 GB/T 1221 GB/T 8732 GJB 2294 GJB 8268	GB/T 4238	GB/T 4238	

Density 7.81g/cm³

Corrosion resistance

- excellent resistance to oxidation up to approx. 540°C
- corrosion resistance comparable to stainless type 304 in most media
- good resistance to stress-corrosion cracking, gained by hardening at temperatures of 552°C and higher
- acceptable resistance to sulfide stress cracking at Rockwell C33 maximum hardness per NACE MR0175.

Applications

Typical applications are:

- oil field valve parts
- chemical process equipment
- aircraft fittings
- pump shafts
- nuclear reactor components
- paper mill equipment
- jet engine parts

You could send email to sales@huishih.com for more information.

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