

# F6NM (X4CrNiMo13-1)

## Material Designation

415	AISI
S41500	UNS
F6NM	

## Standards

ASTM A276
ASTM A182
NACE MR0175/ ISO 15156-3

## Chemical Composition Mass-%

	C	Si	Mn	P	S	Cr	Ni	Mo
min.	-	-	0,5	-	-	12,0	3,5	0,5
max.	0,05	0,6	1,0	0,03	0,03	14,0	5,5	1,0

Customer specific restrictions upon request

## Properties

UNS S41500 is a low carbon Cr-Ni-alloyed martensitic stainless steel with excellent toughness properties.

It has good corrosion resistance (PREN ~15) in chloride-free, moderately corrosive environments which can be significantly improved by surface polishing.

## Delivery Condition

- ✘ quenched and tempered (+QT)
- ✘ quench., tempered, stress relieved (+QT +SR)

## Application Area

Components for high mechanical loads in the temperature range from -76 °F and 660 °F.

## Typical Applications

- ✘ Locking bolts for radioactive waste casks, safety bolts for mining applications
- ✘ Pumps and compressors
- ✘ Hydropower turbines
- ✘ Petrochemical industry
- ✘ Valves and fittings
- ✘ Moldmaking and tooling

## Mechanical Properties

Yield strength	Tensile strength	Elongation	Red. of Area	Hardness	Hardness
[ksi]	[ksi]	[%]	[%]	[HBW] (ASTM)	[HRC] (NACE)
≥ 90	≥ 115	≥ 15	≥ 45	≤ 295	≤ 23

## Heat Treatment

	Standard	Temperature [°F]	Cooling medium
Quenching and tempering	ASTM Cond. T	≥ 1850 (Hardening) 1040 - 1120 (Tempering)	Air or oil Air
Quenching and tempering	NACE MR0175	≥ 1850 (Hardening) 1200 - 1275 (1st Tempering) 1100 - 1150 (2nd Tempering)	Air or oil Air Air

## Quality

- ISO 9001
- ISO 14001
- ISO 50001
- Approvals acc. to standards like ABS, BV, DNVGL ...
- Customer specific approval certificates

## Innovation

- Fully automated ultrasonic testing up to dia. 37.4"
- CO<sub>2</sub>-reduction by innovative heat treatment solutions

## Flexibility

- Product range from fine wire to forging
- Directly from stock close at hand

## Individuality

- Dimensions
- Tolerances
- Surface qualities
- Delivery conditions

## Your personal contact:

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