AISI 410 / 1.4006 (X12Cr13)

Excellence in Specialty Steel

Material Designation

1.4006	DIN
S41000	UNS
410	AISI

Standards

DIN EN 10088-3
DIN EN 10250-4
DIN EN 10272
ASTM A182/A182M (Grade F6a)
ASTM A193/A193M (Grade B6)
ASTM A276/A276M
ASTM A479/A479M
ANSI/NACE MR 0103/ISO 17945
ANSI/NACE MR 0175/ISO 15156-3

Chemical Composition Mass-%

	C	Si	Mn	P	S	Cr	Ni
min.	0,08	-	-	-	-	11,5	-
max.	0,15	1,0	1,0	0,02	0,015	13,5	0,5

Customer specific restrictions upon request

Properties

1.4006 is a martensitic ferromagnetic steel offering good corrosion resistance in non-chloride containing, moderately corrosive environments (PREN ≈ 14).
The corrosions resistance can be further improved by surface polishing / high gloss polishing.

Delivery Condition

- quenched and double tempered (QDT)
- quenched and tempered (+QT)
- annealed

Application Area

Operating conditions requiring moderate corrosion resistance and high mechanical properties for application temperatures up to 400 °C.

Typical Applications

- Chemical and petrochemical industry
- Hydraulic engineering, e.g. pumps, valves, fittings
- Mechanical engineering
- Decorative features and household

Mechanical Properties Based on ANSI/NACE MR 0175/ISO 15156-3 (condition QDT)

Yield strength [N/mm²] ([ksi])	Tensile strength [N/mm²] ([ksi])	Elongation [%]	Red. of area [%]	Hardness [HRC]	Impact toughness[1] [J] Charpy-V
552 - 655 (80 - 95)	≥ 690 (100)	≥ 20	≥ 45	≤ 22	≥ 27 @ -29 °C (-20 °F)

[1] Other temperature ratings upon request

Mechanical Properties Acc. to ASTM A276/A276M

Condition	Yield strength [N/mm²] ([ksi])	Tensile strength [N/mm²] ([ksi])	Elongation [%]	Red. of area [%]
A	≥ 275 (40)	≥ 480 (70)	≥ 20	≥ 45
T	≥ 550 (80)	≥ 690 (100)	≥ 15	≥ 45
H	≥ 620 (90)	≥ 830 (120)	≥ 12	≥ 40

Quality

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

Innovation

- Fully automated ultrasonic testing up to dia. 1000 mm
- CO_2-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:

BGH Edelstahlwerke GmbH
Am Stahlwerk 1
01705 Freital
+49 351 646-0
www.bgh.de

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Mechanical Properties Acc. to DIN EN 10088-3

Condition	Diameter [mm]	Yield strength [N/mm²]	Tensile strength [N/mm²]	Elongation [%]	Impact toughness [J] Charpy-V
+A	-	-	≤ 730	-	-
+QT650	≤ 160	≥ 450	650 - 850	≥ 15	≥ 25

Delivery with mechanical properties according to ASTM A182, A193 and A479 upon request.

Heat Treatment

	Temperature [°C] ([°F])	Cooling medium
QDT (Quenched and double tempered)	≥ 980(1800) - 1010(1850) (Hardening)	Air or faster
Guideline values acc. NACE MR 0175/ISO 15156-3	$T_1 \geq 650$ (1200) $\geq T_2$ (1st Tempering)	Air
	$T_2 \geq 621$ (1150) (2nd Tempering)	Air
Quenched and tempered (+QT 650)	950(1740) - 1000(1830) (Hardening)	Oil, air
Guideline values acc. to DIN EN 10088-3	680 (1255) - 780(1435) (Tempering)	
Annealed (+A)	745(1370) - 825(1520)	Air
Guideline values acc. to DIN EN 10088-3		

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