

12CrMo9-10

Heat-resistant pressure-vessel steels

Material no.	1.7375
according to	DIN EN 10028-2
Tensile strength class	B

Usage

These steel grades are characterised by a good weldability. They are used above all for manufacturing boilers, pressure vessels and pipes transporting hot liquids.

The user of these steel grades must make sure that his calculation, design and processing methods are appropriate for the material. The grades of this series offer good cold and hot-forming properties.

Chemical composition ^{1) 2)}

(in percent by weight)

	min.	max.
C	0,10%	0,15%
Si		0,30%
Mn	0,30%	0,80%
P		0,015%
S		0,010%
Cu		0,25% ¹⁾
Cr	2,00%	2,50%
Al	0,010%	0,040%
Mo	0,90%	1,10%

1) Heat analysis

2) A lower Cu-content and a maximum tin content may be agreed in the order, e. g. with respect to formability.

Welding

The steel grades of this series may be welded by means of the usual welding techniques.

Mechanical properties ¹⁾

Nom. thick. e	Yield strength R _{eH}
≤250 mm	≥ 355 MPa

Nom. thick. e	Tensile strength R _m
≤250 mm	540 – 690 MPa

Nom. thick. e	Total elongation A ₅
≤250 mm	≥ 18 %

1) Transverse samples, normalised

Notch impact energy ¹⁾

Temperature	Notch impact energy
+20°C	≥ 70 J
0°C	≥ 40 J
-20°C	≥ 27 J

1) Average values of 3 samples; one individual value may fall short of the required minimum value by not more than 30 %. The sample width shall equal the product thickness if the latter is between 6 and 10 mm. The tests are performed by using samples similar to Charpy-V samples. The values specified in the table above are to be reduced proportionally to the sample width.

Condition of delivery, scope of testing and certificate

The provisions of EN 10028-2, chapters 8.2 and 9 shall apply for delivery and inspection. The steel grade 12CrMo9-10 is delivered in the as-rolled condition; the test is carried out on simulating heat-treated samples (normalised and tempered).

Yield point at elevated temperature

Test temperature	Yield point at elev. temp. R _{p0,2}	
	e ≤ 16 mm	e > 16 mm
50°C	≥ 341 MPa	≥ 341 MPa
100°C	≥ 323 MPa	≥ 323 MPa
150°C	≥ 311 MPa	≥ 311 MPa
200°C	≥ 303 MPa	≥ 303 MPa
250°C	≥ 298 MPa	≥ 298 MPa
300°C	≥ 295 MPa	≥ 292 MPa
350°C	≥ 287 MPa	≥ 279 MPa

Available dimensions

Hot-rolled coils unpickled, mill edge

Thickness in mm	Width in mm
2,00 – 2,24	900 – 1400
2,25 – 2,49	900 – 1450
2,50 – 2,99	900 – 1500
3,00 – 3,99	900 – 1680
4,00 – 12,70	900 – 1750

Widths < 900 mm and thicknesses > 12.70 mm on request

Hot-rolled slit strip

Thickness in mm	Width in mm
2,00 – 2,24	100 – 690
2,25 – 2,49	100 – 715
2,50 – 2,99	100 – 740
3,00 – 4,60	100 – 800
4,61 – 6,00	116 – 800
6,01 – 7,00	175 – 800
7,01 – 8,00	233 – 800

Widths < 100 mm on request