

3M993

also listed as 18KH12VMBFR

Chemical composition, mechanical and physical property values, and 4 standard designations from 1 regions.

OTHER DESIGNATIONS	PROPERTY VALUES
4 in 1 regions	15 on file

Chemical composition

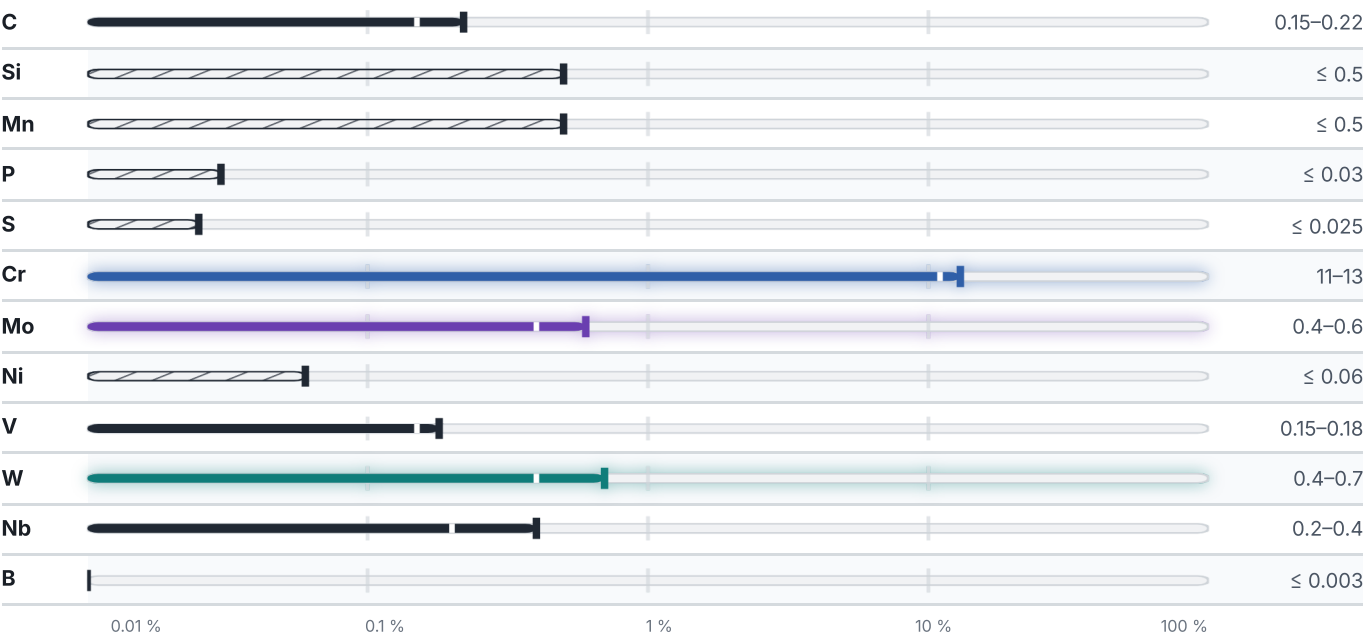
Mass fraction in %

What this alloy is



● Iron — the balance, never listed by a standard — 85.2 % ● Cr — 12 % ● W — 0.6 % ● Si — 0.5 % ● Traces & impurities · 1.8 %

Logarithmic scale, 0.01 % to 100 % — every value here compares directly, decade by decade.



The scale is logarithmic, not the element's raw share of the alloy — the only honest way to fit 0.01 % and 100 % in one picture, and it means every value here can be compared with every other.

Predicted transformation temperatures

This grade's composition falls outside the published model's validated range (a low-alloy composition window), so no

transformation temperature is predicted here.

Mechanical properties

16 values across 3 conditions

NORMALIZING 1050°C,COOLING AIR, DRAWING 750°C, 3H,COOLING AIR	RM N/mm ²	RE N/mm ²	A5 %	Z %	KCU kJ/m ²
Ø 30 × 6	820	640	17	56	900
Ø 219 × 27	750	590	15	43	400
QUENCHING AND DRAWING	RM N/mm ²	RE N/mm ²	A5 %	Z %	KCU kJ/m ²
Ø 60	740	490	12	45	390
CONDITION · DIMENSION					HB
18KH12VMBFR (18X12BMБФР) (annealing) , Bar GOST 5949-75					229

Physical properties

3 values

CONDITION · DIMENSION	RHO g/cm ³	E GPa	ALPHA 10 ⁻⁶ /K	LAMBDA W/(m·K)
20	7.85	228	—	27.6
100	—	—	11.15	21.8
200	—	215	11.13	24
300	—	209	11.42	25.1
400	—	195	11.8	26.3
500	—	188	12	27.2
600	—	173	12.5	28
700	—	155	12.65	28.9
800	—	—	11.6	—
PROPERTY			VALUE	UNIT
Transformation point Ac1			850	°C
Transformation point Ac3			930	°C

Technological properties

PROPERTY	VALUE	UNIT
Weldability	is not used.	

Designations across standards

4 designations · 1 documented as identical

Russia / CIS		4
18KH12VMBFR	This grade's own name	gost
18X12BMБФР		gost
2X12BMБФР		gost
3И993		gost

Note on use. The data is compiled to the best of our knowledge from publicly available standards and manufacturer documentation. It replaces neither material testing nor an inspection document to EN 10204. Please request a mill certificate to EN 10204 2.1, 3.1 or 3.2 together with your enquiry. The standard in its current valid edition always prevails.

Enquiry about 3И993

Quotation, availability, mill certificate or a technical question — directly on the material page.

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MATERIAL NO.

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ISSUED

Aug 15, 2026