

MATERIAL NUMBER 1.7131 · CLASS 1.7

# 17MnCr10

Material no. 1.7131

also listed as 16MnCr5

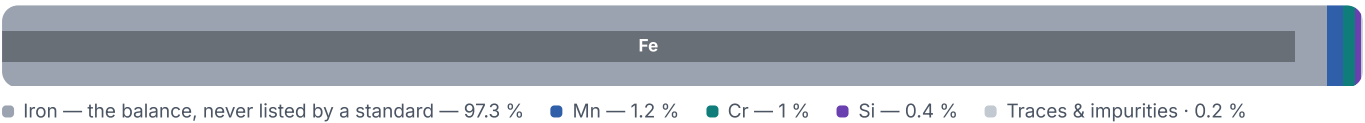
Chemical composition, mechanical and physical property values, and 78 standard designations from 23 regions.

|                              |                                               |                                      |
|------------------------------|-----------------------------------------------|--------------------------------------|
| DENSITY<br><b>7.76</b> g/cm³ | OTHER DESIGNATIONS<br><b>78</b> in 23 regions | PROPERTY VALUES<br><b>14</b> on file |
|------------------------------|-----------------------------------------------|--------------------------------------|

## Chemical composition

Mass fraction in %

What this alloy is



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

Not enough recorded composition to predict a transformation temperature for this grade — missing: Ni, Mo.

## Mechanical properties

24 values across 8 conditions

|                                                             |             |             |         |        |              |
|-------------------------------------------------------------|-------------|-------------|---------|--------|--------------|
| QUENCHING 850°C, OIL, DRAWING<br>200°C, AIR                 | RM<br>N/mm² | RE<br>N/mm² | A5<br>% | Z<br>% | KCU<br>kJ/m² |
| 5                                                           | 1520        | 1320        | 12      | 50     | 720          |
| 20                                                          | 980         | 730         | 15      | 55     | 1130         |
| CONDITION · DIMENSION                                       |             |             |         |        | HB           |
| (annealing) , GOST 4543-71                                  |             |             |         |        | 217          |
| (cold-worked) , GOST 4543-71                                |             |             |         |        | 229          |
| SOFT ANNEALED                                               | HB          |             | HRB     |        | HV           |
| Soft annealed                                               | 207         |             | 84      |        | 170          |
| TREATED TO HARDNESS RANGE                                   |             |             |         |        | HB           |
| Treated to hardness range                                   |             |             |         |        | 156–207      |
| TREATED TO FERRITE-PEARLITE<br>STRUCTURE AND HARDNESS RANGE |             |             |         |        | HB           |
| Treated to ferrite-pearlite structure<br>and hardness range |             |             |         |        | 140–187      |
| NORMALIZED                                                  |             |             |         |        | HB           |
| Normalized                                                  |             |             |         |        | 138–187      |
| CONDITION · DIMENSION                                       | RM<br>N/mm² | RE<br>N/mm² | A5<br>% | Z<br>% | KCU<br>kJ/m² |
| Bar, GOST 4543-71                                           | 980         | 885         | 9       | 50     | 780          |
| CONDITION · DIMENSION                                       |             |             |         |        | RM<br>N/mm²  |
| 200                                                         |             |             |         |        | 1000         |

## Physical properties

8 values

| CONDITION · DIMENSION | RHO<br>g/cm <sup>3</sup> | E<br>GPa | ALPHA<br>10 <sup>-6</sup> /K | LAMBDA<br>W/(m·K) | CP<br>J/(kg·K) |
|-----------------------|--------------------------|----------|------------------------------|-------------------|----------------|
| 20                    | 7.8                      | 211      | –                            | 37                | –              |
| 100                   | –                        | 205      | 10                           | 38                | 495            |
| 200                   | –                        | 197      | 11.5                         | 38                | 508            |
| 300                   | –                        | 191      | 12.3                         | 37                | 525            |
| 400                   | –                        | 176      | 12.8                         | 35                | 537            |

| CONDITION · DIMENSION | RHO<br>g/cm <sup>3</sup> | E<br>GPa | ALPHA<br>10 <sup>-6</sup> /K | LAMBDA<br>W/(m·K) | CP<br>J/(kg·K) |
|-----------------------|--------------------------|----------|------------------------------|-------------------|----------------|
| 500                   | –                        | 168      | 13.3                         | 34                | 567            |
| 600                   | –                        | 155      | 13.6                         | 31                | 588            |
| 700                   | –                        | 136      | –                            | 30                | 626            |
| 800                   | –                        | 129      | –                            | 29                | 705            |

| PROPERTY                 | VALUE | UNIT              |
|--------------------------|-------|-------------------|
| Density                  | 7.76  | g/cm <sup>3</sup> |
| Transformation point Ac1 | 740   | °C                |
| Transformation point Ac3 | 825   | °C                |
| Transformation point Ar3 | 730   | °C                |
| Transformation point Ar1 | 650   | °C                |

## Technological properties

| PROPERTY           | VALUE                | UNIT |
|--------------------|----------------------|------|
| Weldability        | without limitations. |      |
| Flake sensitivity  | not predisposed      |      |
| Temper brittleness | weakly predisposed   |      |

## Heat treatment

2 regimes

| STEP                                                  | TEMPERATURE            | MEDIUM |
|-------------------------------------------------------|------------------------|--------|
| source joins the operations with + / procedural order |                        |        |
| Quenching                                             | Temperature not stated | —      |
| Tempering                                             | Temperature not stated | —      |
| Carburizing                                           | Temperature not stated | —      |

## Designations across standards

78 designations · 6 documented as identical

| United States    |                       | 11       | China       |                       | 5      |
|------------------|-----------------------|----------|-------------|-----------------------|--------|
| G51150           | This grade's own name | uns      | 15CrMn      |                       | gb     |
| G51170           | This grade's own name | uns      | 16MnCr      |                       | gb     |
| G51200           |                       | uns      | 18CrMn      |                       | gb     |
| 5115             | This grade's own name | aisi-sae | 20CrMn      |                       | gb     |
| 5117             | This grade's own name | aisi-sae | 20CrMnTi    |                       | gb     |
| 5120             |                       | aisi-sae |             |                       |        |
| G51150           |                       | aisi-sae | France      |                       | 4      |
| G51200           |                       | aisi-sae | 16MC4       |                       | afnor  |
| H51200           |                       | aisi-sae | 16MC5       |                       | afnor  |
| SAE5115          |                       | aisi-sae | 16MnCr5RR   |                       | afnor  |
| SA-29 Grade 5115 |                       | astm     | 20MC5       |                       | afnor  |
| Russia / CIS     |                       | 8        | Sweden      |                       | 4      |
| 18ChG            |                       | gost     | 2127        |                       | ss     |
| 18KHG            |                       | gost     | 2173        |                       | ss     |
| 18KHGT           |                       | gost     | 2511        |                       | ss     |
| 18YuA            |                       | gost     | SIS 14 2127 | This grade's own name | ss     |
| 18XГ             |                       | gost     |             |                       |        |
| Sv-18KhGS        |                       | gost     | Czechia     |                       | 4      |
| Sv-18KhMA        |                       | gost     | 14220       |                       | csn    |
| cT.18XГ          |                       | gost     | 14221       |                       | csn    |
|                  |                       |          | 14222       |                       | csn    |
|                  |                       |          | 14223       |                       | csn    |
| United Kingdom   |                       | 6        | Poland      |                       | 4      |
| 16MnCr5          |                       | bs       | 15HG        |                       | pn     |
| 20MnCr5          |                       | bs       | 16HG        |                       | pn     |
| 527M17           |                       | bs       | 18HGT       |                       | pn     |
| 527M20           |                       | bs       | 20HG        |                       | pn     |
| 590H17           |                       | bs       |             |                       |        |
| 590M17           |                       | bs       |             |                       |        |
| Spain            |                       | 5        | Romania     |                       | 4      |
| 16MnCr5          |                       | une      | 17MnCr10    |                       | stas   |
| 20MnCr5          |                       | une      | 18MnCr10q   |                       | stas   |
| F.1515           |                       | une      | 18MnCr11    |                       | stas   |
| F.1515-16MnCr5   |                       | une      | 20MnCr12    |                       | stas   |
| F.1516           |                       | une      |             |                       |        |
| International    |                       | 5        | Europe      |                       | 2      |
| 16MnCr5          |                       | iso      | 1.7131      |                       | din-en |
| 16MnCrS5         |                       | iso      | 16MnCr5     | This grade's own name | din-en |
| 20MnCr5          |                       | iso      |             |                       |        |
| 20MnCrS5         |                       | iso      | Japan       |                       | 2      |
| 21MnCr5          |                       | iso      | SMnC420     |                       | jis    |
|                  |                       |          | SMnC420H    |                       | jis    |
|                  |                       |          | Italy       |                       | 2      |
|                  |                       |          | 16MnCr5     |                       | uni    |
|                  |                       |          | 20MnCr5     |                       | uni    |

|                         |        |   |               |        |   |
|-------------------------|--------|---|---------------|--------|---|
| Hungary                 |        | 2 | Latin America |        | 1 |
| BC3                     | msz    |   | 5115          | copant |   |
| BC3Z                    | msz    |   |               |        |   |
| Australia / New Zealand |        | 2 | Serbia        |        | 1 |
| 5120                    | as-nzs |   | Č.4320        | srps   |   |
| 5120H                   | as-nzs |   |               |        |   |
| Bulgaria                |        | 2 | Belgium       |        | 1 |
| 16ChG                   | bds    |   | 16MnCr5       | nbn    |   |
| 18ChG                   | bds    |   |               |        |   |
| Slovakia                |        | 1 | Finland       |        | 1 |
| 14 220                  | stn    |   | 20MnCr5       | sfs    |   |
|                         |        |   | South Korea   |        | 1 |
|                         |        |   | SMnC420H      | ks     |   |

**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 17MnCr10

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

[Start an enquiry](#)

|                        |                   |              |              |
|------------------------|-------------------|--------------|--------------|
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