

MATERIAL NUMBER 1.1192 · CLASS 1.1

# 45KHNM

Material no. 1.1192

also listed as C45EC

Chemical composition, mechanical and physical property values, and 14 standard designations from 3 regions.

|                                          |                                              |                                      |
|------------------------------------------|----------------------------------------------|--------------------------------------|
| DENSITY<br><b>7.85</b> g/cm <sup>3</sup> | OTHER DESIGNATIONS<br><b>14</b> in 3 regions | PROPERTY VALUES<br><b>16</b> on file |
|------------------------------------------|----------------------------------------------|--------------------------------------|

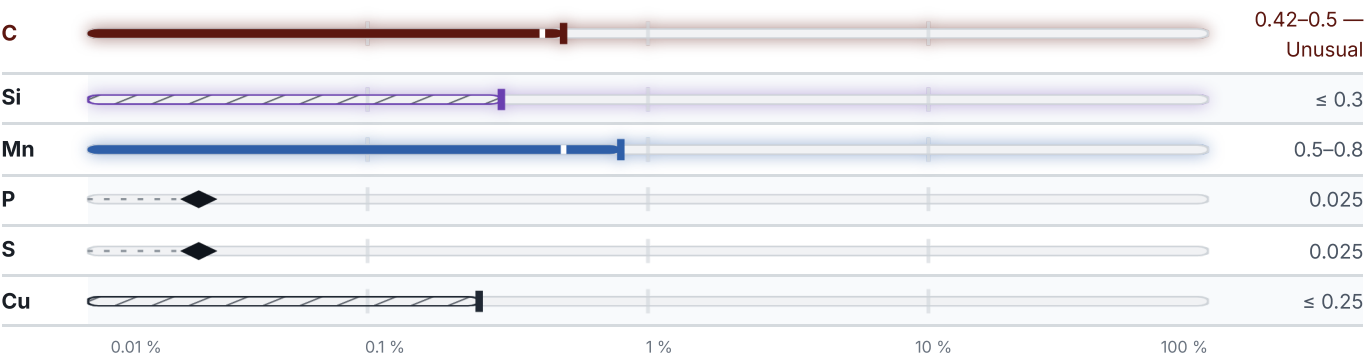
Chemical composition

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, Cr, Mo.

## Mechanical properties

24 values across 4 conditions

| CONDITION · DIMENSION                   | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>% | HB  |
|-----------------------------------------|-------------------------|-------------------------|---------|--------|-----|
| Pipe, GOST 8731-87                      | 588                     | 323                     | 14      | –      | –   |
| Rolled stock cold-worked , GOST 1050-88 | 640                     | –                       | 6       | 30     | –   |
| Rolled stock annealed , GOST 1050-88    | 540                     | –                       | 13      | 40     | –   |
| Band annealed , GOST 2284-79            | 440–690                 | –                       | 14      | –      | –   |
| Band cold-worked , GOST 2284-79         | 690–1030                | –                       | –       | –      | –   |
| Pipe GOST 8731-87                       | –                       | –                       | –       | –      | 207 |
| Rolled stock GOST 1050-88               | –                       | –                       | –       | –      | 229 |
| CONDITION · DIMENSION                   | RM<br>N/mm <sup>2</sup> |                         |         | Z<br>% |     |
| Bar cold-drawn , GOST 10702-78          |                         | 590                     |         |        | 40  |
| NORMALIZING                             | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>% |     |
| to 80                                   | 600                     | 355                     | 16      |        | 40  |
| NORMALIZING                             | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>% |     |
| 6 - 60                                  | 600                     | 355                     | 16      |        | 40  |

## 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                    | 7.826                    | 200      | –                            | –                 | –              |
| 100                   | 7.799                    | 201      | 11.9                         | 48                | 473            |
| 200                   | 7.769                    | 193      | 12.7                         | 47                | 494            |
| 300                   | 7.735                    | 190      | 13.4                         | 44                | 515            |
| 400                   | 7.698                    | 172      | 14.1                         | 41                | 536            |
| 500                   | 7.662                    | –        | 14.6                         | 39                | 583            |
| 600                   | 7.625                    | –        | 14.9                         | 36                | 578            |
| 700                   | 7.587                    | –        | 15.2                         | 31                | 611            |
| 800                   | 7.595                    | –        | –                            | 27                | 720            |
| 900                   | –                        | –        | –                            | 26                | 708            |

| PROPERTY                 | VALUE | UNIT              |
|--------------------------|-------|-------------------|
| Density                  | 7.85  | g/cm <sup>3</sup> |
| Transformation point Ac1 | 730   | °C                |
| Transformation point Ac3 | 755   | °C                |
| Transformation point Ar3 | 690   | °C                |
| Transformation point Ar1 | 780   | °C                |

Technological properties

| PROPERTY           | VALUE              | UNIT |
|--------------------|--------------------|------|
| Weldability        | hard weldability.  |      |
| Flake sensitivity  | weakly predisposed |      |
| Temper brittleness | not predisposed    |      |

Designations across standards

14 designations · 3 documented as identical

| Russia / CIS |      | 10 | Europe |                       | 3      |
|--------------|------|----|--------|-----------------------|--------|
| 45           | gost |    | C45EC  | This grade's own name | din-en |
| 45FL         | gost |    | CF45   |                       | din-en |
| 45GL         | gost |    | Cq 45  | This grade's own name | din-en |
| 45KHN        | gost |    |        |                       |        |
| 45KHNM       | gost |    | China  |                       | 1      |
| 45L          | gost |    | 45     | This grade's own name | gb     |
| 45T          | gost |    |        |                       |        |
| CHVG45       | gost |    |        |                       |        |
| VCH45        | gost |    |        |                       |        |
| A45E         | 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 45KHNМ

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

[Start an enquiry](#)

|                        |                   |              |              |
|------------------------|-------------------|--------------|--------------|
| DATASHEET ONLINE       | GRADE SEARCH      | MATERIAL NO. | ISSUED       |
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