

MATERIAL NUMBER 1.0503 · CLASS 1.0

# 50HS

## Material no. 1.0503

also listed as C45

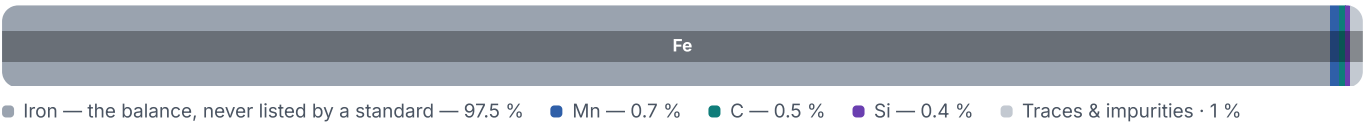
Chemical composition, mechanical and physical property values, and 93 standard designations from 23 regions.

|                              |                                               |                                     |
|------------------------------|-----------------------------------------------|-------------------------------------|
| DENSITY<br><b>7.85</b> g/cm³ | OTHER DESIGNATIONS<br><b>93</b> in 23 regions | PROPERTY VALUES<br><b>9</b> on file |
|------------------------------|-----------------------------------------------|-------------------------------------|

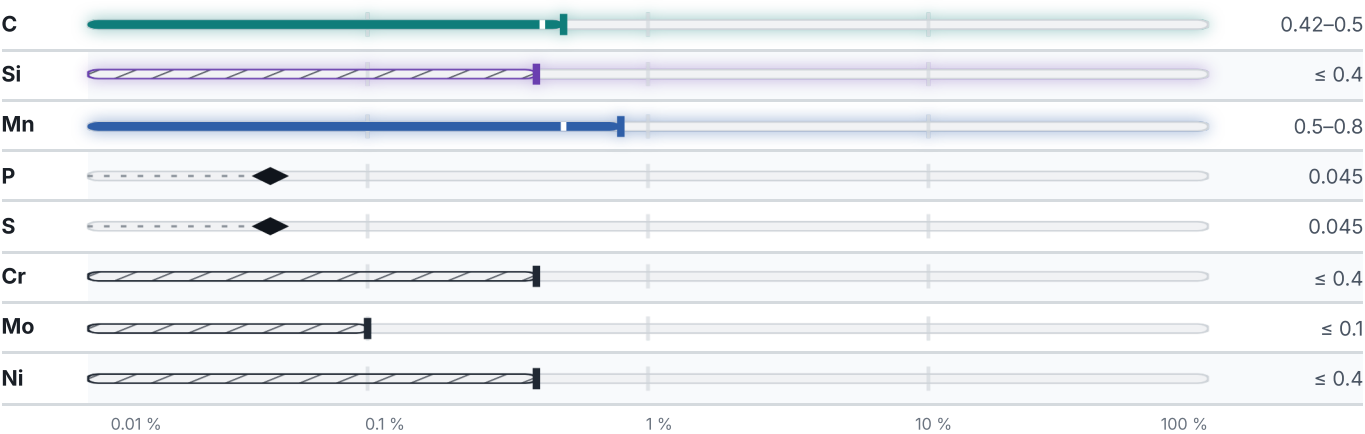
Chemical composition

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

computed from composition · °C

|                                |                                |                                |                               |
|--------------------------------|--------------------------------|--------------------------------|-------------------------------|
| PREDICTED AE3<br><b>764</b> °C | PREDICTED AE1<br><b>724</b> °C | PREDICTED ACM<br><b>637</b> °C | PREDICTED BS<br><b>556</b> °C |
|--------------------------------|--------------------------------|--------------------------------|-------------------------------|

## Mechanical properties

21 values across 5 conditions

| NORMALIZED                      | RM<br>N/mm <sup>2</sup> | A<br>% |
|---------------------------------|-------------------------|--------|
| ≤ 16                            | 620                     | 14     |
| 16 – 100                        | 580                     | 16     |
| 100 – 250                       | 560                     | 16     |
| 250 – 500                       | 540                     | –      |
| 500 – 1000                      | 530                     | –      |
| COLD DRAWN / HARD               | RM<br>N/mm <sup>2</sup> | A<br>% |
| 5 – 10                          | 750–1050                | 5      |
| 10 – 16                         | 710–1030                | 6      |
| 16 – 40                         | 650–1000                | 7      |
| 40 – 63                         | 630–900                 | 8      |
| 63 – 100                        | 580–850                 | 8      |
| TREATED TO IMPROVE SHEARABILITY | HB                      |        |
| Treated to improve shearability | 255                     |        |
| SOFT ANNEALED                   | HB                      |        |
| Soft annealed                   | 207                     |        |
| AS ROLLED AND TURNED            | HB                      |        |
| As rolled and turned            | 172–242                 |        |

## Physical properties

1 values

| PROPERTY | VALUE | UNIT              |
|----------|-------|-------------------|
| Density  | 7.85  | g/cm <sup>3</sup> |

## Heat treatment

1 regimes

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

| STEP      | TEMPERATURE            | MEDIUM |
|-----------|------------------------|--------|
| Tempering | Temperature not stated | —      |

## Designations across standards

93 designations · 5 documented as identical

|                                           |          |                                        |        |
|-------------------------------------------|----------|----------------------------------------|--------|
| <b>France</b>                             | 15       | <b>Spain</b>                           | 7      |
| 1C45                                      | afnor    | C45                                    | une    |
| 2C45                                      | afnor    | C45E                                   | une    |
| AF65                                      | afnor    | C45k                                   | une    |
| AF65C45                                   | afnor    | C48k                                   | une    |
| C40E                                      | afnor    | F.114                                  | une    |
| C45                                       | afnor    | F.1140                                 | une    |
| C45E                                      | afnor    | F.1142                                 | une    |
| C45RR                                     | afnor    |                                        |        |
| CC45                                      | afnor    | <b>China</b>                           | 6      |
| XC42H1                                    | afnor    | 45                                     | gb     |
| XC42H1TS                                  | afnor    | 45H                                    | gb     |
| XC45                                      | afnor    | ML45                                   | gb     |
| XC45H1                                    | afnor    | SM45                                   | gb     |
| XC48                                      | afnor    | ZG310-570                              | gb     |
| XC48H1                                    | afnor    | ZGD345-570                             | gb     |
| <b>United States</b>                      | 14       | <b>Italy</b>                           | 6      |
| G10430 <span>This grade's own name</span> | uns      | 1C45                                   | uni    |
| G10450 <span>This grade's own name</span> | uns      | C43                                    | uni    |
| 1042                                      | aisi-sae | C45                                    | uni    |
| 1043 <span>This grade's own name</span>   | aisi-sae | C45E                                   | uni    |
| 1044                                      | aisi-sae | C45R                                   | uni    |
| 1045 <span>This grade's own name</span>   | aisi-sae | C46                                    | uni    |
| 1045H                                     | aisi-sae |                                        |        |
| G10420                                    | aisi-sae | <b>Japan</b>                           | 4      |
| G10430                                    | aisi-sae | S45C                                   | jis    |
| G10440                                    | aisi-sae | S48C                                   | jis    |
| G10450                                    | aisi-sae | SWRCH45K                               | jis    |
| Gr.1043                                   | aisi-sae | SWRCH48K                               | jis    |
| M1044                                     | aisi-sae |                                        |        |
| A830                                      | astm     | <b>Australia / New Zealand</b>         | 4      |
| <b>United Kingdom</b>                     | 9        | 1045                                   | as-nzs |
| 060A47                                    | bs       | HK1042                                 | as-nzs |
| 070M46                                    | bs       | K1042                                  | as-nzs |
| 080M                                      | bs       | K1045                                  | as-nzs |
| 080M46                                    | bs       | <b>Europe</b>                          | 3      |
| 1449-50CS                                 | bs       | 1.0503                                 | din-en |
| 1449-50HS                                 | bs       | C45 <span>This grade's own name</span> | din-en |
| 50HS                                      | bs       | Gr.1043                                | din-en |
| C45                                       | bs       |                                        |        |
| C45E                                      | bs       |                                        |        |

|                 |      |                      |       |
|-----------------|------|----------------------|-------|
| <b>Romania</b>  | 3    | <b>Switzerland</b>   | 2     |
| OLC45           | stas | C45                  | snv   |
| OLC45q          | stas | Ck45                 | snv   |
| OLC45X          | stas |                      |       |
| <b>Bulgaria</b> | 3    | <b>South Korea</b>   | 2     |
| 45              | bds  | SM45C                | ks    |
| C45             | bds  | SM48C                | ks    |
| C45E            | bds  |                      |       |
| <b>Belgium</b>  | 3    | <b>International</b> | 1     |
| C45-1           | nbn  | C45                  | iso   |
| C45-2           | nbn  |                      |       |
| C46             | nbn  | <b>Russia / CIS</b>  | 1     |
|                 |      | 45                   | gost  |
| <b>Sweden</b>   | 2    | <b>Slovakia</b>      | 1     |
| 1650            | ss   | 12 050               | stn   |
| 1672            | ss   |                      |       |
| <b>Czechia</b>  | 2    | <b>Poland</b>        | 1     |
| 12050           | csn  | 45                   | pn    |
| 12056           | csn  |                      |       |
| <b>Hungary</b>  | 2    | <b>Serbia</b>        | 1     |
| A3              | msz  | Č.1530               | srps  |
| C45E            | msz  | <b>Austria</b>       | 1     |
|                 |      | C45SW                | onorm |

**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 50HS

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

[Start an enquiry](#)

### DATASHEET ONLINE

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### GRADE SEARCH

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### MATERIAL NO.

1.0503

### ISSUED

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