

MATERIAL NUMBER 1.0501 · CLASS 1.0

# 080A5

Material no. 1.0501

also listed as C35

Chemical composition, mechanical and physical property values, and 123 standard designations from 23 regions.

|                              |                                                |                                      |
|------------------------------|------------------------------------------------|--------------------------------------|
| DENSITY<br><b>7.85</b> g/cm³ | OTHER DESIGNATIONS<br><b>123</b> in 23 regions | PROPERTY VALUES<br><b>18</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>783</b> °C | PREDICTED AE1<br><b>724</b> °C | PREDICTED ACM<br><b>572</b> °C | PREDICTED BS<br><b>563</b> °C |
|--------------------------------|--------------------------------|--------------------------------|-------------------------------|

## Mechanical properties

48 values across 9 conditions

| CONDITION · DIMENSION                   | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>% | HB      |
|-----------------------------------------|-------------------------|-------------------------|---------|--------|---------|
| Pipe hotrolled                          | 600                     | 340                     | 16      | –      | –       |
| Rolled stock cold-worked , GOST 1050-88 | 610                     | –                       | 6       | 35     | –       |
| Rolled stock annealed , GOST 1050-88    | 510                     | –                       | 14      | 40     | –       |
| Band annealed , GOST 2284-79            | 440–690                 | –                       | 14      | –      | –       |
| Band cold-worked , GOST 2284-79         | 690–1030                | –                       | –       | –      | –       |
| Sheet GOST 4041-71                      | –                       | –                       | –       | –      | 167     |
| Rolled stock GOST 1050-88               | –                       | –                       | –       | –      | 241     |
| NORMALIZED                              | RM<br>N/mm <sup>2</sup> |                         | A<br>%  |        |         |
| ≤ 16                                    | 550                     |                         | 18      |        |         |
| 16 – 100                                | 520                     |                         | 19      |        |         |
| 100 – 250                               | 500                     |                         | 19      |        |         |
| 250 – 500                               | 480                     |                         | –       |        |         |
| 500 – 1000                              | 470                     |                         | –       |        |         |
| COLD DRAWN / HARD                       | RM<br>N/mm <sup>2</sup> |                         | A<br>%  |        |         |
| 5 – 10                                  | 650–1000                |                         | 6       |        |         |
| 10 – 16                                 | 600–950                 |                         | 7       |        |         |
| 16 – 40                                 | 580–880                 |                         | 8       |        |         |
| 40 – 63                                 | 550–840                 |                         | 9       |        |         |
| 63 – 100                                | 520–800                 |                         | 9       |        |         |
| AS ROLLED AND TURNED                    |                         |                         |         |        | HB      |
| As rolled and turned                    |                         |                         |         |        | 154–207 |
| CONDITION · DIMENSION                   | RM<br>N/mm <sup>2</sup> |                         | A5<br>% |        |         |
| 4 - 14                                  | 510–660                 |                         | 21      |        |         |
| CONDITION · DIMENSION                   | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% |        |         |
| Pipe cold-rolled                        | 580                     | 320                     | 17      |        |         |

| 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                          | 570                     | 335                     | 19      | 45     |
| NORMALIZING                    | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>% |
| 6 - 60                         | 570                     | 335                     | 19      | 45     |

## 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) | RHO_EL<br>nΩ·m |
|-----------------------|--------------------------|----------|------------------------------|-------------------|----------------|----------------|
| 20                    | 7.85                     | 213      | –                            | 51.5              | 483            | 160            |
| 100                   | –                        | 210      | 11.9                         | 50.6              | 486            | 221            |
| 200                   | –                        | 198      | 12.7                         | 48.1              | 497            | 296            |
| 300                   | –                        | 190      | 13.5                         | 45.6              | 512            | 387            |
| 400                   | –                        | 185      | 14.05                        | 41.9              | 529            | 493            |
| 500                   | –                        | 179      | 14.5                         | 38.1              | 550            | 619            |
| 600                   | –                        | 167      | 14.9                         | 33.5              | 574            | 766            |
| 700                   | –                        | 160      | 15.15                        | 30                | 628            | 932            |
| 800                   | –                        | –        | 12.5                         | 24.8              | 674            | 1110           |
| 900                   | –                        | –        | 13.5                         | 25.7              | 657            | 1150           |
| 1000                  | –                        | –        | 14.5                         | 26.9              | 653            | 1180           |
| 1100                  | –                        | –        | 15.2                         | 28                | 649            | 1207           |
| 1200                  | –                        | –        | 15.8                         | 29.5              | 649            | 1230           |

| PROPERTY                 | VALUE | UNIT              |
|--------------------------|-------|-------------------|
| Density                  | 7.85  | g/cm <sup>3</sup> |
| Transformation point Ac1 | 724   | °C                |
| Transformation point Ac3 | 790   | °C                |
| Transformation point Ar3 | 760   | °C                |
| Transformation point Ar1 | 680   | °C                |

Technological properties

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

Heat treatment

1 regimes

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

Designations across standards

123 designations · 7 documented as identical

| Russia / CIS |  | 28   | France        |                       | 17       |
|--------------|--|------|---------------|-----------------------|----------|
| 35           |  | gost | 1C35          |                       | afnor    |
| 40           |  | gost | 2C35          |                       | afnor    |
| 40GR         |  | gost | AF55          |                       | afnor    |
| 40GTL        |  | gost | AF55C35       |                       | afnor    |
| 40KhFL       |  | gost | C30E          |                       | afnor    |
| 40KHGTR      |  | gost | C35           |                       | afnor    |
| 40KHL        |  | gost | C35E          |                       | afnor    |
| 40KHMFA      |  | gost | C35RR         |                       | afnor    |
| 40KhML       |  | gost | CC35          |                       | afnor    |
| 40KhNL       |  | gost | RF36          |                       | afnor    |
| 40KHS        |  | gost | XC32          |                       | afnor    |
| 40L          |  | gost | XC35          |                       | afnor    |
| AS40Kh       |  | gost | XC38          |                       | afnor    |
| CHVG40       |  | gost | XC38H1        |                       | afnor    |
| ct35         |  | gost | XC38H1TS      |                       | afnor    |
| PK40         |  | gost | XC38H2FF      |                       | afnor    |
| PK40NM       |  | gost | XC38TS        |                       | afnor    |
| A40KHE       |  | gost | United States |                       | 11       |
| AS40         |  | gost |               |                       |          |
| AS40KHGNM    |  | gost | G10340        | This grade's own name | uns      |
| ПК40-6.0     |  | gost | G10350        | This grade's own name | uns      |
| ПК40-6.4     |  | gost | 1034          | This grade's own name | aisi-sae |
| ПК40-6.8     |  | gost | 1035          | This grade's own name | aisi-sae |
| ПК40-7.2     |  | gost | 1038          |                       | aisi-sae |
| ПК40-7.6     |  | gost | C1034         | This grade's own name | aisi-sae |
| ПК40HM-6.8   |  | gost | G10340        |                       | aisi-sae |
| ПК40HM-7.2   |  | gost | G10350        |                       | aisi-sae |
| ПК40HM-7.6   |  | gost | G10380        |                       | aisi-sae |
|              |  |      | G10400        |                       | aisi-sae |
|              |  |      | Gr.1035       |                       | aisi-sae |

|                                       |      |                                        |        |
|---------------------------------------|------|----------------------------------------|--------|
| <b>United Kingdom</b>                 | 11   | <b>Belgium</b>                         | 4      |
| 060A35                                | bs   | C35                                    | nbn    |
| 070M36                                | bs   | C35-1                                  | nbn    |
| 080A32                                | bs   | C35-2                                  | nbn    |
| 080A35                                | bs   | C36                                    | nbn    |
| 080A42                                | bs   |                                        |        |
| 080A5                                 | bs   | <b>Europe</b>                          | 3      |
| 080M36                                | bs   | 1.0501                                 | din-en |
| 1449-40CS                             | bs   | C35 <span>This grade's own name</span> | din-en |
| 40HS                                  | bs   | Gr.1035                                | din-en |
| C35                                   | bs   |                                        |        |
| C35E                                  | bs   | <b>Sweden</b>                          | 3      |
|                                       |      | 1550                                   | ss     |
| <b>Italy</b>                          | 8    | 1572                                   | ss     |
| 1C35                                  | uni  | T550                                   | ss     |
| 1CD35                                 | uni  |                                        |        |
| C35                                   | uni  | <b>Bulgaria</b>                        | 3      |
| C35C                                  | uni  | 35                                     | bds    |
| C35E                                  | uni  | C35                                    | bds    |
| C35R                                  | uni  | C35E                                   | bds    |
| C36                                   | uni  |                                        |        |
| C38                                   | uni  | <b>Austria</b>                         | 3      |
|                                       |      | C35                                    | onorm  |
| <b>Spain</b>                          | 5    | C35SW                                  | onorm  |
| C35                                   | une  | Ck35S                                  | onorm  |
| C35E                                  | une  |                                        |        |
| C35k                                  | une  | <b>International</b>                   | 2      |
| F.113                                 | une  | C35                                    | iso    |
| F.1130                                | une  | C35E4                                  | iso    |
|                                       |      |                                        |        |
| <b>Japan</b>                          | 5    | <b>Poland</b>                          | 2      |
| S35                                   | jis  | 35                                     | pn     |
| S35C                                  | jis  | D35                                    | pn     |
| S38C                                  | jis  |                                        |        |
| SWRCH35K                              | jis  | <b>Hungary</b>                         | 2      |
| SWRCH38K                              | jis  | C35E                                   | msz    |
|                                       |      | MC                                     | msz    |
| <b>China</b>                          | 4    |                                        |        |
| 35                                    | gb   | <b>Switzerland</b>                     | 2      |
| 40 <span>This grade's own name</span> | gb   | C35                                    | snv    |
| ML35                                  | gb   | Ck35                                   | snv    |
| ZG270-500                             | gb   |                                        |        |
|                                       |      | <b>South Korea</b>                     | 2      |
| <b>Romania</b>                        | 4    | SM35C                                  | ks     |
| OLC35                                 | stas | SM38C                                  | ks     |
| OLC35AS                               | stas |                                        |        |
| OLC35q                                | stas | <b>Czechia</b>                         | 1      |
| OLC35X                                | stas | 12040                                  | csn    |
|                                       |      |                                        |        |
|                                       |      | <b>Slovakia</b>                        | 1      |
|                                       |      | 12 040                                 | stn    |

|        |      |                         |        |
|--------|------|-------------------------|--------|
| Serbia | 1    | Australia / New Zealand | 1      |
| Č.1430 | srps | 1035                    | as-nzs |

**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.

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