

MATERIAL NUMBER 1.0310 · CLASS 1.0

# PK10

## Material no. 1.0310

also listed as C10D

Chemical composition, mechanical and physical property values, and 33 standard designations from 5 regions.

|                                          |                                              |                                      |
|------------------------------------------|----------------------------------------------|--------------------------------------|
| DENSITY<br><b>7.85</b> g/cm <sup>3</sup> | OTHER DESIGNATIONS<br><b>33</b> in 5 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>831 °C | PREDICTED AE1<br>722 °C | PREDICTED ACM<br>363 °C | PREDICTED BS<br>596 °C |
|-------------------------|-------------------------|-------------------------|------------------------|

Mechanical properties

36 values across 4 conditions

| CONDITION · DIMENSION                    | RM<br>N/mm² | RE<br>N/mm² | A5<br>% | Z<br>% | KCU<br>kJ/m² | HB  |
|------------------------------------------|-------------|-------------|---------|--------|--------------|-----|
| Pipe hot strain, GOST 550-75             | 353         | 216         | 25      | 50     | 780          | –   |
| Pipe, GOST 8731-87                       | 353         | 216         | 24      | –      | –            | –   |
| Pipe, GOST 10705-80                      | 314         | 196         | 25      | –      | –            | –   |
| Rolled stock cold-worked , GOST 1050-88  | 410         | –           | 8       | 50     | –            | –   |
| Rolled stock annealed , GOST 1050-88     | 290         | –           | 26      | 55     | –            | –   |
| Rolled stock, GOST 10702-78              | 390         | –           | 8       | 50     | –            | –   |
| (cold-drawn, cold-worked) , GOST 1050-88 | –           | –           | –       | –      | –            | 187 |
| (hot-rolled) , GOST 1050-88              | –           | –           | –       | –      | –            | 143 |
| Sheet GOST 4041-71                       | –           | –           | –       | –      | –            | 117 |
| Pipe GOST 8731-87                        | –           | –           | –       | –      | –            | 137 |
| Pipe GOST 550-75                         | –           | –           | –       | –      | –            | 137 |
| Bar GOST 10702-78                        | –           | –           | –       | –      | –            | 115 |
| CONDITION · DIMENSION                    | RM<br>N/mm² |             | A<br>%  |        |              |     |
| ≤ 16                                     | 335–475     |             |         |        | ≥ 24         |     |
| ≥ 16                                     | 335–475     |             |         |        | ≥ 24         |     |
| CONDITION · DIMENSION                    | RM<br>N/mm² |             | A5<br>% |        |              |     |
| 4 - 14                                   | 290–420     |             |         |        | 32           |     |
| NORMALIZING                              | RM<br>N/mm² | RE<br>N/mm² | A5<br>% | Z<br>% |              |     |
| to 80                                    | 330         | 205         | 31      | 55     |              |     |

## 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                    | 7.856                    | 210      | –                            | –                 | –              | 140            |
| 100                   | 7.832                    | 203      | 12.4                         | 57                | 494            | 190            |
| 200                   | 7.8                      | 199      | 13.2                         | 53                | 532            | 263            |
| 300                   | 7.765                    | 190      | 13.9                         | 49.6              | 565            | 352            |
| 400                   | 7.73                     | 182      | 14.5                         | 45                | 611            | 458            |
| 500                   | 7.692                    | 172      | 14.85                        | 39.9              | 682            | 584            |
| 600                   | 7.653                    | 160      | 15.1                         | 35.7              | 770            | 734            |
| 700                   | 7.613                    | –        | 15.2                         | 32                | 857            | 905            |
| 800                   | 7.582                    | –        | 12.05                        | 29                | 875            | 1081           |
| 900                   | 7.594                    | –        | 14.08                        | 27                | 795            | 1130           |
| 1000                  | –                        | –        | 12.6                         | –                 | 666            | –              |
| 1100                  | –                        | –        | 14.4                         | –                 | 668            | –              |

| PROPERTY                 | VALUE | UNIT              |
|--------------------------|-------|-------------------|
| Density                  | 7.85  | g/cm <sup>3</sup> |
| Transformation point Ac1 | 724   | °C                |
| Transformation point Ac3 | 876   | °C                |
| Transformation point Ar3 | 850   | °C                |
| Transformation point Ar1 | 682   | °C                |

## Technological properties

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

## Designations across standards

33 designations · 4 documented as identical

| Russia / CIS  |      | 28 | United States |                       | 2        |
|---------------|------|----|---------------|-----------------------|----------|
| 10            | gost |    | G10100        | This grade's own name | uns      |
| 10GT          | gost |    | 1010          | This grade's own name | aisi-sae |
| 10KHNDP       | gost |    | Europe        |                       | 1        |
| 10KHSND       | gost |    | C10D          | This grade's own name | din-en   |
| 10ps          | gost |    | Japan         |                       | 1        |
| 10YuA         | gost |    | S10C          |                       | jis      |
| 10XCHД-Ш      | gost |    | China         |                       | 1        |
| ASU10E        | gost |    | 10            | This grade's own name | gb       |
| AU10E         | gost |    |               |                       |          |
| PA-ZhNGr10TSs | gost |    |               |                       |          |
| PK10          | gost |    |               |                       |          |
| PK10F         | gost |    |               |                       |          |
| ShKh10        | gost |    |               |                       |          |
| Sv-10GA       | gost |    |               |                       |          |
| Sv-10GN       | gost |    |               |                       |          |
| Sv-10GSMТ     | gost |    |               |                       |          |
| Sv-10KhM      | gost |    |               |                       |          |
| Sv-10KhMFA    | gost |    |               |                       |          |
| Sv-10KhMFT    | gost |    |               |                       |          |
| Sv-10MKh      | gost |    |               |                       |          |
| Sv-10NMA      | gost |    |               |                       |          |
| МГ30ЖН1К      | gost |    |               |                       |          |
| ПК10-6.0      | gost |    |               |                       |          |
| ПК10-6.4      | gost |    |               |                       |          |
| ПК10-6.8      | gost |    |               |                       |          |
| ПК10-7.2      | gost |    |               |                       |          |
| ПК10-7.6      | gost |    |               |                       |          |
| ПК10Φ-6.8     | 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 PK10

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

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## ISSUED

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