

MATERIAL NUMBER 1.7035 · CLASS 1.7

# S Gr 440

Material no. 1.7035

also listed as 41Cr4

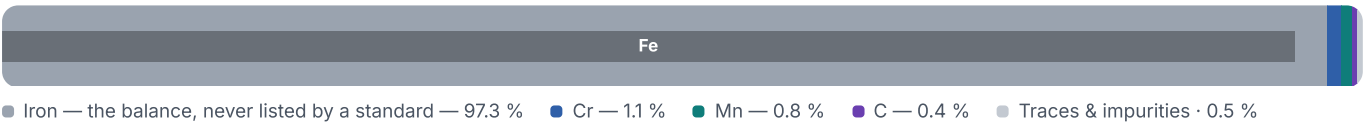
Chemical composition, mechanical and physical property values, and 67 standard designations from 18 regions.

|                              |                                               |                                      |
|------------------------------|-----------------------------------------------|--------------------------------------|
| DENSITY<br><b>7.72</b> g/cm³ | OTHER DESIGNATIONS<br><b>67</b> in 18 regions | PROPERTY VALUES<br><b>14</b> on file |
|------------------------------|-----------------------------------------------|--------------------------------------|

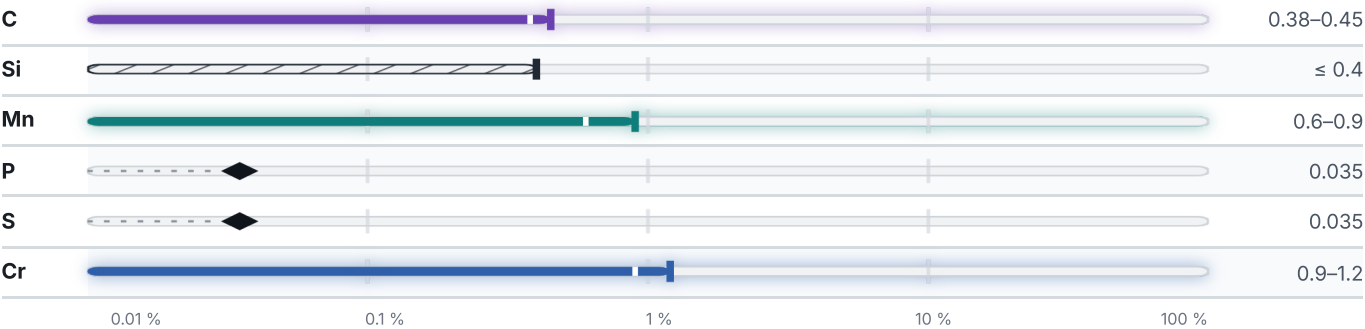
Chemical composition

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

19 values across 6 conditions

| CONDITION · DIMENSION                  | RM<br>N/mm <sup>2</sup> | A5<br>%                 | HB                      |        |                          |
|----------------------------------------|-------------------------|-------------------------|-------------------------|--------|--------------------------|
| Band annealed , GOST 2283-79           | 640–740                 | 10–15                   | –                       |        |                          |
| Band cold-worked , GOST 2283-79        | 740–1180                | –                       | –                       |        |                          |
| (annealing) , GOST 4543-71             | –                       | –                       | 229                     |        |                          |
| (normalize) , Sheet trick GOST 1577-93 | –                       | –                       | 255                     |        |                          |
| (annealing) , Sheet trick GOST 1577-93 | –                       | –                       | 217                     |        |                          |
| QUENCHED AND TEMPERED                  |                         |                         | RM<br>N/mm <sup>2</sup> |        |                          |
| ≤ 8                                    |                         |                         | 1000                    |        |                          |
| 8 – 20                                 |                         |                         | 900                     |        |                          |
| 20 – 50                                |                         |                         | 800                     |        |                          |
| QUENCHED AND TEMPERED · ROUND PRODUCTS |                         |                         | A<br>% · Lo = 5,65 √So  |        |                          |
| ≤ 16                                   |                         |                         | 11                      |        |                          |
| 16 – 40                                |                         |                         | 12                      |        |                          |
| 40 – 100                               |                         |                         | 14                      |        |                          |
| TREATED TO IMPROVE SHEARABILITY        |                         |                         | HB                      |        |                          |
| Treated to improve shearability        |                         |                         | 255                     |        |                          |
| SOFT ANNEALED                          |                         |                         | HB                      |        |                          |
| Soft annealed                          |                         |                         | 241                     |        |                          |
| QUENCHING AND DRAWING                  | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>%                 | Z<br>% | KCU<br>kJ/m <sup>2</sup> |
| Ø 25                                   | 650                     | 390                     | 13                      | 40     | 390                      |

## 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                    | 7.81                     | 216      | –                            | 43                | –              |
| 100                   | –                        | 213      | 11.8                         | 42                | 487            |
| 200                   | –                        | 208      | 12.5                         | 41                | 500            |
| 300                   | –                        | 199      | 13.2                         | 38                | 517            |

| CONDITION · DIMENSION | RHO<br>g/cm³ | E<br>GPa | ALPHA<br>10^-6/K | LAMBDA<br>W/(m·K) | CP<br>J/(kg·K) |
|-----------------------|--------------|----------|------------------|-------------------|----------------|
| 400                   | –            | 185      | 13.8             | 36                | 533            |
| 500                   | –            | 174      | 14.3             | 34                | 559            |
| 600                   | –            | 160      | 14.8             | 31                | 584            |
| 700                   | –            | 142      | 15.1             | 29                | 609            |
| 800                   | –            | 130      | 12.3             | 28                | 676            |

| PROPERTY                 | VALUE | UNIT  |
|--------------------------|-------|-------|
| Density                  | 7.72  | g/cm³ |
| Transformation point Ac1 | 723   | °C    |
| Transformation point Ac3 | 760   | °C    |
| Transformation point Ar3 | 740   | °C    |
| Transformation point Ar1 | 680   | °C    |

Technological properties

| PROPERTY           | VALUE             | UNIT |
|--------------------|-------------------|------|
| Weldability        | hard weldability. |      |
| Flake sensitivity  | predisposed       |      |
| Temper brittleness | predisposed       |      |

Designations across standards

67 designations · 7 documented as identical

| Russia / CIS |                       | 17   | United States |                       | 9        |
|--------------|-----------------------|------|---------------|-----------------------|----------|
| 38ChA        |                       | gost | G51400        |                       | uns      |
| 38KhA        |                       | gost | H51400        | This grade's own name | uns      |
| 40CH         | This grade's own name | gost | 5140          |                       | aisi-sae |
| 40KH         |                       | gost | 5140H         | This grade's own name | aisi-sae |
| 40X          |                       | gost | 5140RH        | This grade's own name | aisi-sae |
| 45KH         |                       | gost | 5145          |                       | aisi-sae |
| 45X          |                       | gost | 5145H         |                       | aisi-sae |
| 50           |                       | gost | G51450        |                       | aisi-sae |
| 50A          |                       | gost | H51450        |                       | aisi-sae |
| 50G          |                       | gost |               |                       |          |
| 50KH         |                       | gost | Japan         |                       | 5        |
| 50KhGL       |                       | gost | S Gr 440      |                       | jis      |
| 50KHN        |                       | gost | SCr 4 H       |                       | jis      |
| 50KhNM       |                       | gost | SCr440        |                       | jis      |
| 50KHSA       |                       | gost | SCr440H       |                       | jis      |
| N50          |                       | gost | SCr445        |                       | jis      |
| ct.40X       |                       | gost |               |                       |          |

|                                         |       |                                             |        |
|-----------------------------------------|-------|---------------------------------------------|--------|
| Czechia                                 | 5     | Spain                                       | 3      |
| 14 151                                  | csn   | 42Cr4                                       | une    |
| 14 151 PH                               | csn   | F.1202-4204                                 | une    |
| 14140                                   | csn   | F1202                                       | une    |
| 14141                                   | csn   |                                             |        |
| 14148VN                                 | csn   | Europe                                      | 2      |
|                                         |       | 1.7035                                      | din-en |
| United Kingdom                          | 4     | 41Cr4 <span>This grade's own name</span>    | din-en |
| 520M40                                  | bs    |                                             |        |
| 530A40                                  | bs    | China                                       | 2      |
| 530M40                                  | bs    | 40Cr                                        | gb     |
| EN18 <span>This grade's own name</span> | bs    | 40CrH                                       | gb     |
|                                         |       |                                             |        |
| France                                  | 4     | Sweden                                      | 2      |
| 41Cr4                                   | afnor | 2245                                        | ss     |
| 42C4                                    | afnor | SIS 2245 <span>This grade's own name</span> | ss     |
| 42C4FF                                  | afnor |                                             |        |
| 45C4                                    | afnor | Italy                                       | 1      |
|                                         |       | 41Cr4                                       | uni    |
| International                           | 4     |                                             |        |
| 37Cr4                                   | iso   | Latin America                               | 1      |
| 37CrS4                                  | iso   | 5140                                        | copant |
| 41Cr4                                   | iso   |                                             |        |
| 41CrS4                                  | iso   | Serbia                                      | 1      |
|                                         |       | Č.4131                                      | srps   |
| Poland                                  | 4     |                                             |        |
| 38HA                                    | pn    | Türkiye                                     | 1      |
| 40H                                     | pn    | Ç 5140                                      | mke    |
| 40HA                                    | pn    |                                             |        |
| 45H                                     | pn    | Hungary                                     | 1      |
|                                         |       | Cr 3                                        | msz    |
|                                         |       |                                             |        |
|                                         |       | Bulgaria                                    | 1      |
|                                         |       | 45Ch                                        | bds    |

**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 S Gr 440

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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