

MATERIAL NUMBER 1.7225 · CLASS 1.7

# Gr.4140

## Material no. 1.7225

also listed as 42CrMo4

Chemical composition, mechanical and physical property values, and 95 standard designations from 24 regions.

| DENSITY                       | OTHER DESIGNATIONS      | PROPERTY VALUES  |
|-------------------------------|-------------------------|------------------|
| <b>7.72</b> g/cm <sup>3</sup> | <b>95</b> in 24 regions | <b>8</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.

Mechanical properties

15 values across 6 conditions

|                                        |       |                   |
|----------------------------------------|-------|-------------------|
| QUENCHED AND TEMPERED · ROUND PRODUCTS |       | A                 |
|                                        |       | % · Lo = 5,65 √So |
| ≤ 16                                   |       | 10                |
| 16 – 40                                |       | 11                |
| 40 – 100                               |       | 12                |
| 100 – 160                              |       | 13                |
| 160 – 250                              |       | 14                |
| QUENCHED AND TEMPERED                  |       | RM                |
|                                        |       | N/mm²             |
| ≤ 8                                    |       | 1100              |
| 8 – 20                                 |       | 1000              |
| 20 – 50                                |       | 900               |
| 50 – 80                                |       | 800               |
| SOFT ANNEALED                          | RM    | A80               |
|                                        | N/mm² | %                 |
| 0.3 – 3                                | 620   | 15                |
| TREATED TO IMPROVE SHEARABILITY        |       | HB                |
| Treated to improve shearability        |       | 255               |
| SOFT ANNEALED                          | HB    | HV                |
| Soft annealed                          | 241   | 195               |
| QUENCHED AND TEMPERED                  |       | HV                |
| Quenched and tempered                  |       | 340–490           |

Physical properties

1 values

|          |       |       |
|----------|-------|-------|
| PROPERTY | VALUE | UNIT  |
| Density  | 7.72  | g/cm³ |

Heat treatment

5 regimes

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

| STEP                                                  | TEMPERATURE            | MEDIUM |
|-------------------------------------------------------|------------------------|--------|
| Normalizing                                           | Temperature not stated | —      |
| Tempering                                             | 510–610 °C             | Oil    |
| source joins the operations with + / procedural order |                        |        |
| Quenching                                             | Temperature not stated | —      |
| Tempering                                             | Temperature not stated | —      |
| source joins the operations with + / procedural order |                        |        |
| Annealing                                             | Temperature not stated | —      |
| Annealing                                             | Temperature not stated | —      |
| Tempering                                             | Temperature not stated | —      |
| Normalizing                                           | Temperature not stated | —      |
| Tempering                                             | Temperature not stated | —      |
| Spheroidize annealing                                 | Temperature not stated | —      |
| Quenching and tempering                               | Temperature not stated | —      |

## Designations across standards

95 designations · 27 documented as identical

| United States    |                       | 28       | Russia / CIS              |                       | 8      |
|------------------|-----------------------|----------|---------------------------|-----------------------|--------|
| G41400           | This grade's own name | uns      | 35ChM                     |                       | gost   |
| G41420           | This grade's own name | uns      | 35KHM                     |                       | gost   |
| G4145            |                       | uns      | 38ChM                     |                       | gost   |
| G41450           | This grade's own name | uns      | 38ChMA                    |                       | gost   |
| G46200           |                       | uns      | 38KHM                     |                       | gost   |
| H41400           | This grade's own name | uns      | 38KhMA / 40KhM            |                       | gost   |
| H41420           | This grade's own name | uns      | 38XM                      |                       | gost   |
| H41450           | This grade's own name | uns      | 38XMA                     |                       | gost   |
| K14248           | This grade's own name | uns      |                           |                       |        |
| 4140             | This grade's own name | aisi-sae | Spain                     |                       | 6      |
| 4140 4142        |                       | aisi-sae | 40CrMo4                   |                       | une    |
| 4140H            | This grade's own name | aisi-sae | 42CrMo4                   |                       | une    |
| 4140RH           | This grade's own name | aisi-sae | 42CrMoS4                  |                       | une    |
| 4142             | This grade's own name | aisi-sae | F.8232                    |                       | une    |
| 4142H            | This grade's own name | aisi-sae | F.8232 - 42 CrMo4         |                       | une    |
| 4145             | This grade's own name | aisi-sae | F1252                     |                       | une    |
| 4620             |                       | aisi-sae |                           |                       |        |
| G41400           |                       | aisi-sae | France                    |                       | 5      |
| G41420           |                       | aisi-sae | 40CD4                     | This grade's own name | afnor  |
| G41500           |                       | aisi-sae | 42CD4                     | This grade's own name | afnor  |
| Gr.4140          |                       | aisi-sae | 42CD4FF                   |                       | afnor  |
| H41400           |                       | aisi-sae | 42CrMo4                   |                       | afnor  |
| J14047           |                       | aisi-sae | A35-590                   |                       | afnor  |
| A 505            | This grade's own name | astm     |                           |                       |        |
| A 519            | This grade's own name | astm     | United States / Aerospace |                       | 5      |
| A193 B7          |                       | astm     | 6294                      |                       | ams    |
| A331             | This grade's own name | astm     | 6349                      |                       | ams    |
| A829             |                       | astm     | 6381                      |                       | ams    |
|                  |                       |          | 6382                      |                       | ams    |
|                  |                       |          | 6395                      |                       | ams    |
| United Kingdom   |                       | 14       |                           |                       |        |
| 19A              |                       | bs       | Japan                     |                       | 4      |
| 42CrMO4          |                       | bs       | SCM4                      | This grade's own name | jis    |
| 50CrMo4          |                       | bs       | SCM440                    |                       | jis    |
| 708A42           |                       | bs       | SCM440H                   |                       | jis    |
| 708H37           | This grade's own name | bs       | SCM4H                     | This grade's own name | jis    |
| 708M40           | This grade's own name | bs       |                           |                       |        |
| 708M40 / 42CrMo4 |                       | bs       | Europe                    |                       | 2      |
| 708M40 EN 19A    |                       | bs       | 1.7225                    |                       | din-en |
| 709M40           |                       | bs       | 42CrMo4                   | This grade's own name | din-en |
| CFS11            |                       | bs       |                           |                       |        |
| EN19             | This grade's own name | bs       | International             |                       | 2      |
| EN19A            | This grade's own name | bs       | 42CrMo4                   |                       | iso    |
| EN19B            | This grade's own name | bs       | 42CrMoS4                  |                       | iso    |
| EN19C            | This grade's own name | bs       |                           |                       |        |
|                  |                       |          | China                     |                       | 2      |
|                  |                       |          | 42CrMnMo                  |                       | gb     |
|                  |                       |          | 42CrMo                    |                       | gb     |

|                 |       |                                |        |
|-----------------|-------|--------------------------------|--------|
| <b>Italy</b>    | 2     | <b>Slovakia</b>                | 1      |
| 38CrMo4KB       | uni   | 15 142                         | stn    |
| 42CrMo4         | uni   |                                |        |
| <b>Czechia</b>  | 2     | <b>Poland</b>                  | 1      |
| 15142           | csn   | 40HM                           | pn     |
| 15341           | csn   |                                |        |
| <b>Romania</b>  | 2     | <b>Latin America</b>           | 1      |
| 41MoCr11        | stas  | 4140                           | copant |
| 42MoCr11        | stas  |                                |        |
| <b>Bulgaria</b> | 2     | <b>Serbia</b>                  | 1      |
| 38ChM           | bds   | Č.4732                         | srps   |
| 40ChML          | bds   |                                |        |
| <b>Austria</b>  | 2     | <b>Türkiye</b>                 | 1      |
| 42CrMo4SP       | onorm | Ç 4140                         | mke    |
| BOHLERV320      | onorm |                                |        |
| <b>Sweden</b>   | 1     | <b>Hungary</b>                 | 1      |
| 2244            | ss    | CMo 4                          | msz    |
|                 |       | <b>Australia / New Zealand</b> | 1      |
|                 |       | 4140                           | as-nzs |
|                 |       | <b>Finland</b>                 | 1      |
|                 |       | 42CrMo4                        | sfs    |

**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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#### ISSUED

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