

## Technical data sheet – 42CrMo4 (1.7225)

- Versatile engineering steel with high strength and simultaneously high toughness
- If the sulfur content is 0.020-0.040%, this steel is called 1.7227

**Applications:** piston rods, tie rods, coupling rods, rotor axles, hammer axles, crankshafts, connecting rods, axles, gears

### Chemical composition (DIN EN ISO 683-2 (09/2018))

| mass fraction in % |               |               |               |               |
|--------------------|---------------|---------------|---------------|---------------|
| <b>42CrMo4</b>     | <b>C [%]</b>  | <b>Si [%]</b> | <b>Mn [%]</b> | <b>Cr [%]</b> |
|                    | 0,38 - 0,45   | 0,10 - 0,40   | 0,60 - 0,90   | 0,90 - 1,20   |
|                    | <b>P [%]</b>  | <b>S [%]</b>  | <b>Mo [%]</b> | <b>V [%]</b>  |
|                    | max. 0,025    | max. 0,035    | 0,15 - 0,30   |               |
|                    | <b>Ni [%]</b> | <b>Cu [%]</b> |               |               |
|                    |               | max. 0,40     |               |               |

**Addition:** Si content can be reduced if alternative agents are used for deoxidation. Better machinability can be achieved by higher sulfur contents up to about 0.10% S (including controlled sulfide morphology) or lead additions. In this case, the upper limit of the Mn content may also be increased by 0.15%.

ISO 9001: 2015 TÜV NORD certified.

## Mechanical properties (DIN EN ISO 683-2 (09/2018))

### Flat products (QT):

| Dimensions   | 0,2% Yield strength (Rp0,2) | Tensile strength (Rm) | Elongation (A 5,65) | Constriction (Z) | ISO-V/ Charpy-V |
|--------------|-----------------------------|-----------------------|---------------------|------------------|-----------------|
| <= 8 mm      | >= 900 MPa                  | 1.100 - 1.300 MPa     | >= 10 %             | >= 40 %          |                 |
| 8 - 20 mm    | >= 750 MPa                  | 1.000 - 1.200 MPa     | >= 11 %             | >= 45 %          | >= 35 J         |
| 20 - 60 mm   | >= 650 MPa                  | 900 - 1.100 MPa       | >= 12 %             | >= 50 %          | >= 35 J         |
| 60 - 100 mm  | >= 550 MPa                  | 800 - 950 MPa         | >= 13 %             | >= 50 %          | >= 35 J         |
| 100 - 160 mm | >= 500 MPa                  | 750 - 900 MPa         | >= 14 %             | >= 55 %          | >= 35 J         |

### Round products (QT):

| Dimensions   | 0,2% Yield strength (Rp0,2) | Tensile strength (Rm) | Elongation (A 5,65) | Constriction (Z) | ISO-V/ Charpy-V |
|--------------|-----------------------------|-----------------------|---------------------|------------------|-----------------|
| <= 16 mm     | >= 900 MPa                  | 1.100 - 1.300 MPa     | >= 10 %             | >= 40 %          |                 |
| 16 - 40 mm   | >= 750 MPa                  | 1.000 - 1.200 MPa     | >= 11 %             | >= 45 %          | >= 35 J         |
| 40 - 100 mm  | >= 650 MPa                  | 900 - 1.100 MPa       | >= 12 %             | >= 50 %          | >= 35 J         |
| 100 - 160 mm | >= 550 MPa                  | 800 - 950 MPa         | >= 13 %             | >= 50 %          | >= 35 J         |
| 160 - 250 mm | >= 500 MPa                  | 750 - 900 MPa         | >= 14 %             | >= 55 %          | >= 35 J         |

Annealed: <= 241 HBW

Achievable surface hardness (inductive/flame hardening):  
54-59HRC in max. 6mm depth