

## Material specification sheet

### Saarstahl - 16MnCr5 - 16MnCrS5

|               |                    |   |
|---------------|--------------------|---|
| Material No.: | Former brand name: | International steel grades:   |
| 1.7131        | EC 80              | <b>BS:</b> 527M17, 590M17<br><b>AFNOR:</b> 16MC4, 16MnCr5<br><b>SAE:</b> 5115 |
| 1.7139        |                    |   |

**Material group:** Case hardening steels according to DIN EN 10084

| Chemical composition:<br>(Typical analysis in %) | Steel    | C    | Si   | Mn   | Cr   | S              | other |
|--|----------|------|------|------|------|----------------|-------|
|  | 16MnCr5  | 0,16 | 0,25 | 1,15 | 0,95 | <0,035         | (Pb)  |
|  | 16MnCrS5 | 0,16 | 0,25 | 1,15 | 0,95 | 0,020<br>0,035 | (Pb)  |

**Application:** Alloyed case hardening steel for parts with a required core tensile strength of 800 - 1100 N/mm<sup>2</sup> and good wearing resistance as piston bolts, camshafts, levers and other vehicle and mechanical engineering components.

|  |                         |                     |
|--|-------------------------|---------------------|
| <b>Hot forming and heat treatment:</b> | Forging or hot rolling: | 1100 - 850°C        |
|  | Normalising:            | 840 - 870°C/air     |
|  | Soft annealing:         | 650 - 700°C/furnace |
|  | Carburising:            | 880 - 980°C         |
|  | Core hardening:         | 860 - 900°C/oil     |
|  | Intermediate annealing: | 650 - 700°C         |
|  | Case hardening:         | 780 - 820°C/oil     |
|  | Tempering:              | 150 - 200°C         |

|                               |   |                                  |
|-------------------------------|---|----------------------------------|
| <b>Mechanical Properties:</b> | Treated for cold shearability, +S:                                  | Shearable in as rolled condition |
|                               | Soft annealed, +A:  | max. 207 HB                      |
|                               | Treated for strength, +TH:  | 156 - 207 HB                     |
|                               | Treated for ferrite and pearlite structure and hardness range, +FP: | 140 - 187 HB                     |

after hardening and tempering at 200°C:

| Diameter d [mm]                                      | d ≤ 16    | 16 < d ≤ 40 | 40 < d ≤ 100 |
|--|-----------|-------------|--------------|
| Tensile strength R <sub>m</sub> [N/mm <sup>2</sup> ] | min. 1000 | min. 900    | min. 700     |