

75 KD

Oil tempered SiCrV-alloyed clutch and transmission spring wire

75 KD is especially intended for the manufacture of clutch and transmission springs and similar moderately high fatigue stressed springs.

75 KD S is a shaved version of 75 KD intended for applications with higher surface requirements.

The material has good relaxation properties. The wire is manufactured in sizes from Ø 1.60 to 7.00 mm. Other wire sizes and shapes on request.

Chemical composition

| Element | Weight % |
|---------|---------------|
| C | 0.50% - 0.70% |
| Si | 1.20% - 1.65% |
| Mn | 0.50% - 0.80% |
| P max. | 0.025% |
| S max. | 0.020% |
| Cr | 0.50% - 1.00% |
| V | 0.05% - 0.20% |

Cleanliness in steel

Non-metallic inclusions:

Max. level 2 according to DIN 50602-M.

Corresponding standard: ASTM E-45-A.

Mechanical properties

Table definitions

Diameter: Other wire sizes on request.

Tolerance: Ovality, i. e. the difference between the largest and smallest dimension of a cross section, is maximum half the tolerance range.

Tensile strength: Conversion from tensile strength to hardness values can be calculated in standard ISO EN 18265. The tensile strength R_m within one coil does not vary more than 60 N/mm^2 .

Torsions: Torsion test is carried out for assessing deformability. The fracture of the torsion test piece shall be smooth and perpendicular to the wire axis. The rupture shall show no longitudinal cracks.

For round wire

| Diameter (mm) | Tolerance (mm) | Tensile Strength (N/mm^2) | Torsions (l=300 mm, min. revs) | Reduct. of area (min. %) |
|---------------|----------------|--------------------------------------|--------------------------------|--------------------------|
| 1.60 - 2.00 | ± 0.020 | 2160 - 2310 | 5 | 45 |
| 2.01 - 2.50 | ± 0.020 | 2110 - 2210 | 5 | 45 |
| 2.51 - 3.20 | ± 0.020 | 2060 - 2160 | 4 | 45 |
| 3.21 - 4.00 | ± 0.025 | 2010 - 2110 | 4 | 45 |
| 4.01 - 5.00 | ± 0.025 | 1960 - 2060 | 4 | 45 |
| 5.01 - 5.60 | ± 0.030 | 1910 - 2010 | 4 | 40 |
| 5.61 - 6.00 | ± 0.035 | 1910 - 2010 | 3 | 40 |
| 6.01 - 6.50 | ± 0.035 | 1910 - 2010 | | 40 |
| 6.51 - 7.00 | ± 0.035 | 1860 - 2010 | | 40 |

| Diameter (mm) | Tolerance (mm) | Tensile Strength (N/mm ²) | Torsions (l=300 mm, min. revs) | Reduct. of area (min. %) |
|------------------|-------------------|---|--------------------------------------|-----------------------------|
| | | | | |

Yield point

The proof stress $R_{p0.2}$ is min. 0.9 x tensile strength of the wire.

Surface conditions

Surface condition

Surface condition – non-destructive testing

In the standard size range 2.00 - 6.00 mm the wire is tested continuously in Eddy Current equipment; for 75 KD a level of 60 microns and for 75 KD S of 40 microns.

Surface condition – end sample test

The wire is end sample tested by means of etch testing and binocular inspection as well as microscopical inspection of the material structure.

Max. permissible depth of partial surface decarburization and surface defects, 1.3% x wire diameter. No complete decarburization allowed.

Technical specification

| Property | Value |
|-------------------------|-------------------------|
| E modulus of elasticity | 206 kN/mm ² |
| G modulus of shear | 79.5 kN/mm ² |

Steel grades and product standards

| | | |
|--------------------------------------|------------|--------------|
| Nearest equivalent product standards | EN 10270-2 | ASTM A1000 D |
| Nearest equivalent steel grades | EN TDSiCrV | |

Recommendations

Heat treatment

As soon as possible after coiling, the springs should be stress relieved.

Hot presetting

After shot peening, the springs should be hot preset or stress relieved. In order to reach optimum fatigue and relaxation properties, the springs must be preset at an appropriate stress.

Shot peening

In order to obtain optimum fatigue properties, the process time should be adjusted to get a complete treatment. Size of shots should be adapted to wire dimension, pitch and shot peening equipment. Shot peening of the inside of the spring coils is particularly critical.

Additional

Additional information

Decarburisation

No total decarburisation. Partial decarburisation (no continuous zones) max. 1.2% of a corresponding round wire dimension.