

CONCEPTLASER

a GE Additive company

CL 50WS Hot-work steel

Hot-work steel 1.2709 (powder)

With an appropriate approval* CL 50WS can be used for the production of tool inserts with conformal cooling in the area of injection moulding and die-casting as well as functional components.

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Fe

55,847

CHEMICAL COMPOSITION

Component	Indicative value (%)
C	≤ 0,03
Si	≤ 0,10
Mn	≤ 0,15
P	≤ 0,010
S	≤ 0,010
Cr	≤ 0,25
Mo	4,50 - 5,20
Ni	17,0 - 19,0
Ti	0,80 - 1,20
Co	8,50 - 10,0
Fe	Balance

RANGE OF APPLICATION

With an appropriate approval* CL 50WS can be used for the production of tool inserts with conformal cooling in the area of injection moulding and die-casting as well as functional components.

TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

	90° (horizontal)	45° (polar angle)	0° (upright)
Yield Strength $R_{p0,2}$ ¹	1814 ± 25 N/mm ²	1864 ± 75 N/mm ²	1778 ± 27 N/mm ²
Tensile Strength R_m ¹	1882 ± 14 N/mm ²	1969 ± 39 N/mm ²	1880 ± 29 N/mm ²
Elongation A ^{1,2}	7 ± 1 %	5 ± 1 %	5 ± 1 %
Young's Modulus ³	approx. 200 · 10 ³ N/mm ²	approx. 200 · 10 ³ N/mm ²	approx. 200 · 10 ³ N/mm ²
Thermal Conductivity λ ³	approx. 20 W/mK	approx. 20 W/mK	approx. 20 W/mK
Hardness ⁴	up to 52 HRC	up to 52 HRC	up to 52 HRC
¹ Tensile test at 20°C according to DIN EN 50125 ² By using a special heat treatment a higher elongation can be achieved. ³ Specification according to the material manufacturer's data sheet. ⁴ Hardness test according to DIN EN ISO 6508			

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 1.2709

MICROSECTION

Test piece (x 20 magnification)



Test piece (x 100 magnification)



HEAT TREATMENT

Heat up with 100°C/h up to 540°C. Maintain temperature for 6-10 hours. Allow the components to cool down in the oven with 100°C/h.

MICROSTRUCTURE

Components made from hot-work steel CL 50WS display a homogeneous, dense structure after they are manufactured by means of the metal laser melting process LaserCUSING®.

All of the specified figures are approximate figures. The figures which are provided reflect the current level of our knowledge and are dependent on process and machine parameters. The information provided on this material data sheet is therefore not binding and is not deemed to be certified.

* The approval is branch-specific and/or application-specific and it must be, therefore, carried out by the consumer/user. Approval of materials by Concept Laser GmbH is not available.

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