

## 16Mn5 All

### General Information

Hydax 25 has high sulfur content to further improve the machinability of M-steel. Mechanical properties fulfil the requirements of the standard EN 10025-2 steel grade S355J0.

### M-Steel®

The concept: Our M-Steel treatment can be applied to any steel grade. The basis for the concept is that non-metallic inclusions are modified and controlled with calcium treatment. These inclusions are modified in a way to maximize machinability and to improve transverse fatigue strength. In this way, a protective layer is formed on the cutting tool during machining that very significantly reduces the wear on the tool and increases the tool life. At every stage of the M-Steel production process the material is optimised to improve machinability, from raw material through melt, to casting, hot rolling and the final heat treatment. Individual delivery requirements can be met to supply your material in the best form for your machines in compliance with tight straightness and dimensional tolerances. M-Steel has a consistent machinability from cast to cast, meaning that machines can be run with fixed high cutting rates and predictable tool change intervals from one production run to another. Recent findings also show that the M-Steel effect is particularly pronounced in turning in very hard condition using Cubic Boron Nitride (CBN) inserts. Replacing traditional grinding of case- or induction-hardened surfaces with Hard Part Turning can mean very large cost savings, together with production lead time and quality improvements.

### Chemical composition

Variant	Cast	Di	Weldability		C %	Si %	Mn %	P %	S %	V %
Hydax 15, 2720	CC	0.8	CEV 0.43 <sub>max</sub>	Min	0.10	0.15	1.00	0.000	0.090	0.020
			Pcm 0.26 <sub>max</sub>	Max	0.20	0.55	1.60	0.035	0.150	0.090

## Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A <sub>5</sub> [%]	Reduction of area Z <sub>min</sub> [%]	Hardness	Impact (ISO-V) strength <sub>min</sub>
Hydax 15, 2720	+AR	Round bar	25 < 40	345*	490-630	22	45	< 180 HB	-20 °C 27 J (long)
		Round bar	40 < 80	335*	490-630	21	45	< 180 HB	-20 °C 27 J (long)
		Round bar	80 < 90	315*	490-630	20	45	< 180 HB	-20 °C 27 J (long)
		Round bar	95 < 200	315	490-630	20	45	< 180 HB	0 °C 27 J (long)

*R<sub>p0.2</sub> \* R<sub>eh</sub>, \*\* R<sub>el</sub>*

## Transformation temperatures

	Temperature °C
MS	417
AC1	692
AC3	842

## Other properties (typical values)

Youngs module (GPa)	Poisson's ratio (-)	Shear module (GPa)	Density (kg/m <sup>3</sup> )
210	0.3	80	7800
Average CTE 20-300°C (µm/m°K)	Specific heat capacity 50/100°C (J/kg°K)	Thermal conductivity Ambient temperature (W/m°K)	Electrical resistivity Ambient temperature (µΩm)
12	460 - 480	40 - 45	0.20 - 0.25

### Contact us

Would you like to know more about our offers? Don't hesitate to contact us:

Via e-mail: [info@ovako.com](mailto:info@ovako.com)

Via telephone: +46 8 622 1300

For more detailed information please visit <http://www.ovako.com/en/Contact-Ovako/>

### Disclaimer

*The information in this document is for illustrative purposes only. The data and examples are only general recommendations and not a warranty or a guarantee. The suitability of a product for a specific application can be confirmed only by Ovako once given the actual conditions. The purchaser of an Ovako product has the responsibility to ascertain and control the applicability of the products before using them. Continuous development may necessitate changes in technical data without notice. This document is only valid for Ovako material. Other material, covering the same international specifications, does not necessarily comply with the properties presented in this document.*