



4140 MODIFIED PRE HARD

Standards

DIN Designation 40CrMnMoS
8.AFNOR 40CMD8S
WERKSTOFF 1.2312

Chemical Composition (Typical Values Weight %)

<u>C</u>	<u>Smax</u>	<u>Pmax</u>	<u>Si</u>	<u>Mn</u>	<u>Cr</u>	<u>Mo</u>
0.4	0.070	0.008	0.3	1.50	1.90	0.20

Characteristics

4140 MODIFIED PH is a 300 HB pre-hardened grade specially designed for the plastic mold industry with considerably increased machinability.

4140 MODIFIED PH is a chromium-manganese-molybdenum grade, supplied with sulphur addition and in the pre-hardened state ~300 HB (30Rc).

The machining is drastically improved in comparison to W1.2311/P20 low sulphur:

-milling tool life is multiplied by at least 5 (at constant cutting speed)

-dramatic improvement in in productivity with:

- Three fold increase in drilling speed
- >30% improvement in milling speed

Applications

4140 MODIFIED PH is typically used for:

- Plastic injection molds for thermoplastics
- Extrusion dies for thermoplastics
- Compression molds

Heat Treatment

4140 MODIFIED PH is intended to be used in the as supplied condition, however, for specific applications where mechanical properties higher than 300 HB are required, hardening can be performed in the following way:

- Heating (about 850 °C -1562 °F) with a sufficient holding time (1hour/inch)
- Water, oil or air quenching depends on thickness
- Temper between 400 and 1150 °F depending on desired hardness. Two hours per temper
- Double tempering with complete cooling to room temperature for each treatment.

Machining 4140 MODIFIED PH

Grade performs well in drilling and in milling using high speed steel or carbide tools. The machinability is increased by a controlled sulfur addition which gives:

- 500% increase in milling tool life (at constant cutting speed)
- 300% increase in drilling speed
- 30% increase in milling speed

For more information, contact:

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