



W 1.2316 S

W 1.2316 S: A resulturized and corrosion resistant prehardened mold steel

W1.2316 S is a 16%Cr 1% Mo mold steel with improved corrosion resistance properties, thanks to the chromium and molybdenum additions. Furthermore, specific sulfur additions are considered to increase its machinability properties. In quenched and tempered conditions, the grade has a fully bainite martensite microstructure and can be delivered in the prehardened conditions (300 HB).

The grade is not designed for highly finish polished surfaces or etched surfaces. This grade is commonly used for mold steel applications including cores, inserts, molds... subjected to wet processing and/or storage conditions. The grade is also used for the manufacturing of corrosive materials like PVC.

PROPERTIES

STANDARD

- > EN X36 X36 CrMo17 (S)
- > WERKSTOFF Nb 1.2316 with S addition (\approx 1.2085)
- > AFNOR Z40 CD16S

CHEMICAL ANALYSIS

Typical values (weight%)

C	S max	P max	Si	Mn	Cr	Mo
.4	.070	.030	.350	.80	16	1.03

MECHANICAL PROPERTIES

1.2316 S is delivered **quenched and tempered to 280 - 325 HB (29 - 33 HRC)**.

Hardness	Rp 0.2 Yield Strength		Rm Tensile strength		Elongation	Reduction of area	Elastic modulus	
	MPa	ksi	MPa	ksi			GPa	ksi
300	860	125	1045	152	10	21	207	30023

Higher hardness (340HB) available on demand.

PHYSICAL PROPERTIES

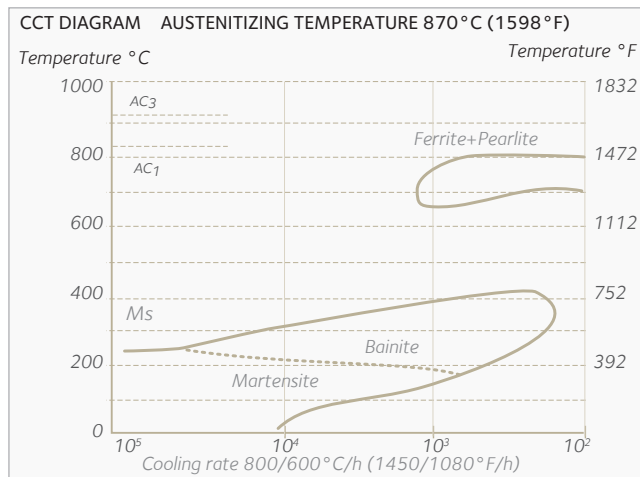
Thermal conductivity W.m-1.K-1	Thermal expansion Coefficient (10 ⁻⁶ .K-1)				Specific heat J/kg.°C
20°C	20-100°C	20-200°C	20-300°C	20-400°C	
24.3	11	11.1	11.4	11.7	460

Typical value

METALLURGICAL PROPERTIES

Metallurgical transformation points

AC ₁	AC ₃	M _s	B _s
817°C 1503°F	903°C 1657°F	235°C 455°F	235/400°C 455/752°F



DELIVERY CONDITIONS

DIMENSIONAL PROGRAM

Thickness	Width
20 - 120 mm (.79" - 4.7")	1500 - 2500 mm (59 - 98.4")
120 - 300 mm (4.7" - 12")	1500 - 1700 mm (49" - 67")

Length: up to 6000 mm (19.6 ft). For specific dimensions, please contact our sales department.

PLATE PROCESSING

HEAT TREATMENT

W1.2316S is generally delivered in hardened and tempered conditions (quenched + tempered). Subsequent heat treatment is therefore not necessary.

Hardening

For applications requiring higher mechanical characteristics than those usually required, hardening can be performed in the following way:

- > heating between 985 and 1020°C (1805 - 1868°F) with sufficient soaking time (\approx 1 hour per inch)
- > oil or air cooling depending on wall thickness (refer to CCT diagram)

Tempering

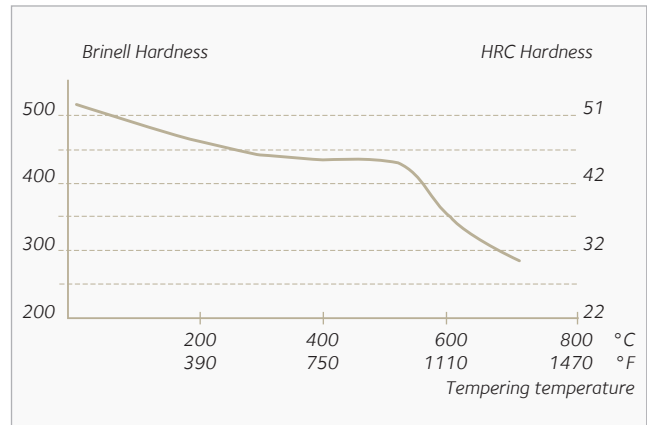
Tempering temperature is depends on the required mechanical properties. In a general way, the following instructions should be taken into account:

- > uniform heating to the selected temperature
- > soaking for one hour per inch of total thickness

- > double tempering with cooling to room temperature

Note - complicated parts require accurate control of steel temperatures and holding time.

Tempering curve



APPLICATIONS

- > Holders and support plates
- > For any corrosion application

YOUR CONTACTS

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Technical data and information are to the best of our knowledge at the time of printing. However, they may be subject to some slight variations due to our ongoing research programme on steels. Therefore, we suggest that information be verified at time of enquiry or order. Furthermore, in service, real conditions are specific for each application. The data presented here are only for the purpose of description, and considered as guarantees when written formal approval has been delivered by our company. Further information may be obtained from the address opposite.