Industeel

W 1.2085

ArcelorMittal

W 1.2085: A resulfurized prehardened (300HB) and corrosion resistant mould steel

W 1.2085 is a 16%Cr mould steel with improved corrosion resistance properties, thanks to the chromium addition. Furthermore, specific sulfur improves the machinability response.

The grade delivered in quenched and tempered condition has a fully bainite martensite microstructure and typical hardness of 320 HB. The grade is not designed for highly polished or etched surfaces.

This steel is commonly used for mould steel applications including holders or support plates subjected to wet working and/or storage conditions.

Properties

According to standard
> Euronorm X33Cr16+S
> WERKSTOFF W 1.2085

Chemical Analysis (*% Weight*).

	C	S	P	Si	Mn	Cr
Min	0.28	0.05	-	-	-	15.0
Typical	0.33	0.07	0.03	0.30	1.10	16.0
Max	0.38	0.10	0.03	1.00	1.40	17.0

Mechanical Properties (*typical values*).

W 1.2085 is delivered **hardened and double tempered to 280 - 325 HB (29 - 33 HRC).**

Hardness	Rp 0.2 Yield Strength		Rm Tensile strength		Elongation	Reduction of area	Elastic modulus	
HB	MPa	ksi	MPa	ksi	%	Z%	GPa	ksi
320	905	131	1100	160	10	21	207	30023

Physical Properties (*typical values*).

Thermal conductivity $W.m^{-1}.K^{-1}$	Thermal expansion Coefficient ($10^{-6}.K^{-1}$)			
20°C	20/100°C	20/200°C	20/400°C	Specificheat J/kg.°C
24.3	11	11.1	11.4	460

Metallurgical properties

Transformation points

AC_1	AC_3	M_S	V1 (cooling rate)
850°C 1472°F	885°C 1625°F	245°C 473°F	100 000°C 180 032 °F

Plate processing

Heat treatment

W 1.2085 steel is delivered quenched and tempered to a hardness range of 280/325 HB. Subsequent heat treatment is therefore generally not necessary.

Hardening

For applications demanding higher mechanical characteristics hardening can be performed in the following way.

- heating between 985 and 1020 °C (1805 -1868°F) with sufficient soaking time
- oil or air cooling depending on the thickness of the part.

Tempering

Tempering temperature depends on the required mechanical properties.
In a general way, the following instructions must 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: In case of complicated parts, holding time should be determined considering the thicker section.

Dimensions

Typical delivery sizes

Manufacturing process	Thickness
Continuous casting hot rolled	15- 120 mm
Ingot casting forged	121 -350 mm

Your contact

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