



## Mecasteel 145

### Mecasteel 145: prehardened engineering steel

**Mecasteel145** is a steel grade delivered in prehardened condition (YS  $\geq$  145 ksi - 1000 MPa) and available in a very large dimensional program (width 78" ~ 2 m thickness up to 25" - 630 mm).

**It can be used in substitution to conventional steels**, such as AISI 4330 for example in the manufacture of massive steel components (machines, hydraulic systems, frac pumps...).

Its original chemistry and heat treatment process enable to obtain in delivery condition very consistent mechanical properties throughout the whole blocks, even for the heaviest gauge.

Consequently, **this material doesn't need any further hardening after machining**, allowing substantial cost savings. Although it is delivered in prehardened condition, Mecasteel 145 provides good and consistent machinability.

Its chemistry is designed to combine high tensile properties together with very good toughness to prevent components from cracks and failure.

### PROPERTIES

#### CHEMICAL ANALYSIS - WEIGHT%

C	S max	P max	Si max	Mn max	Cr	Ni	Mo	V	Other
0.25 - 0.30	0.010	0.010	0.25	0.5	1.0 - 1.5	3.0 - 3.5	0.6 - 0.9	0.08 - 0.12	B

#### CLEANLINESS

Mecasteel 145 is melted in an electric arc furnace and refined using either a VOD or RH process.

These processes ensure a stringent control of the chemical analysis and an extremely low level of residual oxygen. Cleanliness of the steel is consequently enhanced.

**Guaranteed Micro - cleanliness Measurements in accordance with ASTM E45, method A (worst field).**

	Type A Sulfide	Type B Alumina	Type C Silicate	Type D Oxide
Thin	$\leq 1.0$	$\leq 1.5$	$\leq 1.0$	$\leq 1.5$
Heavy	$\leq 0.5$	$\leq 1.0$	$\leq 0.5$	$\leq 1.0$



### GUARANTEED MECHANICAL PROPERTIES (IN DELIVERY CONDITION)

**Hardness** Guaranteed hardness 350 – 390 HB.

#### Tensile properties

	YS 0.2	UTS	Elongation (%)	Red of area (%)
ksi	≥ 145	≥ 160	≥ 15	≥ 35
MPa	≥ 1000	≥ 1103		

Guaranteed values in length and transverse direction. Sampling according to API 16A, on a QTC (Qualification Test Coupon) or a prolongation at 2.0" (50.8 mm) from the skin of the solid block.

#### Impact properties

CHARPY V notch - 40°F (- 40°C)				
	longitudinal		transverse	
	Individual	Average	Individual	Average
Ft.lb	> 20	> 25	> 20	> 25
J	> 27	> 34	> 27	> 34

Sampling according to API 16A, on a QTC (Qualification Test Coupon) or a prolongation at 2.0" (50.8 mm) from the skin of the solid block. Slightly different properties may be achieved on request - Please consult.

**COMPACTNESS:** All blocks are UT according to ASTM A578 S9, with acceptance criterium FBH 1/8".

**MAGNETIC PARTICUL INSPECTION:** Mecasteel 145 is capable of AMS 2301.

### TYPICAL MECHANICAL PROPERTIES (IN DELIVERY CONDITION)

**Hardness** Typical value: 360 HB.

#### Tensile properties

Typical value measured on a block 23.6" (600 mm) thick.

		YS 0.2 ksi (MPa)	UTS ksi (- MPa)	Elongation (%)	Red. of area ("%)
Length direction	- 2.0 " below skin	152.5 (1051)	164.3 (1132)	16	51
	¼ thickness	146.2 (1007)	162.8 (1122)	15	42
Transverse direction	- 2.0 " below skin	154.1 (1062)	165.3 (1139)	16	49
	¼ thickness	146.4 (1009)	163.3 (1125)	14	39

#### Impact properties

Value measured on a QTC 12" x 6" x 24"

Average of 3 specimens J (ft.lb)			
	24°C / 75°F		- 40°C / - 40°F
	Length direction	Skin (- 50 mm/2")	73 (54)
¼ thickness		64 (47)	
Transv. direction	Skin (- 50 mm/2")	62 (46)	62 (46)
	¼ thickness	58 (43)	56 (41)

### 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.