Industeel

ArcelorMittal

MECASTEEL 110

Prehardened forged rolled steel

MECASTEEL 110 is a modified AISI 4130 especially adapted for mechanical parts. MECASTEEL 110 is manufactured via the electric arc furnace with desulphurization, dephosphorisation, ladle refining and vacuum degassing to provide a reproducible, clean and homogeneous steel.

Chemical analysis and heat treatment applied to MECASTEEL 110 enable to obtain very homogeneous steel even for thick sections (up to 32"). The low carbon content and uniform microstructure of MECASTEEL 110 also lead to excellent weldability and toughness properties as compared to standard steels.

Delivery conditions

Quenching and tempering.
Tempering temperature adapted to required tensile properties.

Chemical analysis - % weight

C	P max	Cr	Mn	Mo	S Max	Ni max	Boron max
.23 - .28	.01	1.4 - 1.8	1.3 - 1.7	.6 - .8	.007	.5	.003

Typical values

Mechanical properties

Typical values for 110 KSI minimum Yield Strength guaranteed for all thicknesses up to 32"

Hardness (HB)	Y.S. 0.2 KSI	UTS KSI	El %	Reduction of area %
330	130	150	15	45

Transverse direction

Block compactness guaranteed to ultrasonic levels determined by ASTM A578.

Typical Charpy-V value at 32°F, for all thicknesses up to 32" is 10 J (7.4 ft.lb).

Physical properties

Density = 7.85 kg/dm³

Thermal conductivity W.m⁻¹ . °K⁻¹	Thermal expansion coefficient 10⁻⁶ °K⁻¹			
at 68°F	*68-212°F*	*68-392°F*	*68-572°F*	*68-752°F*
38	11.9	12.4	12.8	13.1

Structure

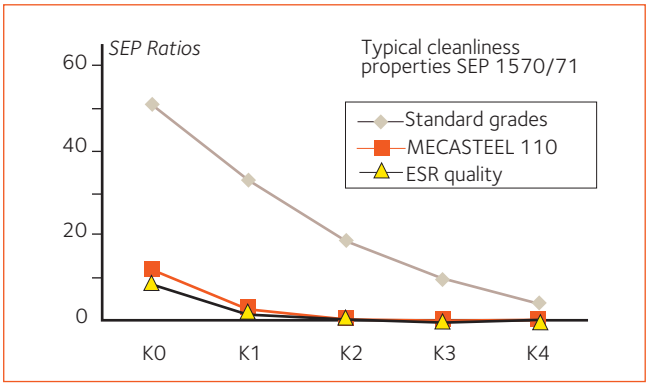
MECASTEEL 110 is melted in an electric arc furnace and refined using either a VOD or DH process.

These processes ensure a stringent control of the chemical analysis and an extremly low level of residual oxygen. Cleanliness of the steel is consequently enhanced. Optimized chemical analysis and accurate control of solidification parameters contribute to a more homogeneous microstructure.

Cleanliness

MECASTEEL 110 quality offers improved cleanliness (close to ESR quality), over conventional grades. Guaranteed cleanliness per ASTM E45 method A (worst field)

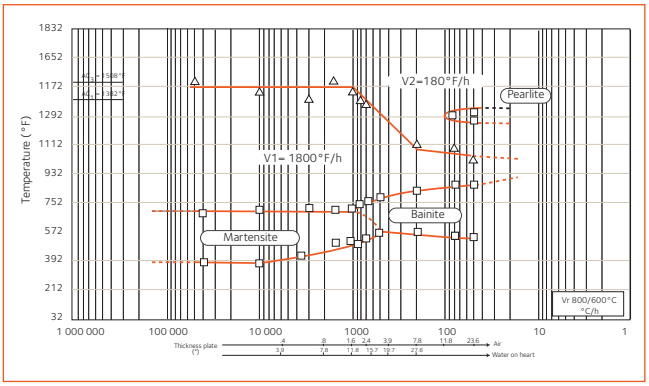
A	B	C	D
≤ 1.5	≤ 1.5	≤ 1.0	≤ 1.5



Quenching

	AC_1 °F	AC_3 °F	M_s °F
MECASTEEL 110	1382	1508	716

	V_1 °F/h	V_2 °F/h	M_f °F
MECASTEEL 110	1800	180	392



CCT Diagram MECASTEEL 110

Compared with standard grades, the optimized chemical analysis of MECASTEEL 110 allows the homogeneity to be improved throughout the thickness (reduction of the critical speed of ferrite/pearlite formation and extension of bainitic zone).
This improved chemical analysis also avoids the formation of retained austenite, which is the major cause of hard spots.

PWHT / Stress relieving

MECASTEEL 110 can be stress relieved. Advised stress relieving temperature is 1022°F.

Manufacturing program

Thicknesses	Widths
from 5" to 32"	from 40" to 80"

For specific sizes, please ask us

For any information :

Industeel USA LLC
139 Modena Rd
Coatesville, PA 19320

Tel +1 610 383 3002
Fax +1 610 383 3007

Industeel Creusot
Marketing Department
56 rue Clemenceau
F-71201 Le Creusot Cedex
Tel +33 3 85 80 51 51
Fax +33 3 85 80 55 00

www.industeel.info
www.arcelormittal.com

transforming tomorrow