

30MnB5 boron-added hot-rolled steel plates for quenching and tempering

Product description

30MnB5 steel is used for the production of component parts and items, which after quenching and tempering become wear resistant, are high strength and resistant to mechanical stress.

30MnB5 steel in hot-rolled condition can be shaped, bent, welded and cut, which allows for the construction of complex structures, components and parts.

30MnB5 plate is produced in accordance with the requirements of the standard EN 10083-3.

Application

30MnB5 plate is widely used in agricultural machinery for the production of wear resistant pads, grader blades, caterpillar tracks, lining and screen plates, grinding equipment, blades, hand-held tools, ploughs, disc harrows and more.

30MnB5 steel is a more effective solution than 65G steel and other GOST equivalents because 30MnB5 steel in hot-rolled condition has better ductility and is better suited for cold forming and cutting.

After quenching and tempering, the steel takes on higher strength and hardness characteristics, which increases the service life of finished goods – 2-3 times longer compared to products made of 65G steel.

Available dimensions

30MnB5 steel plates are produced 6-50 mm thick, 1500-2700 mm wide, and 6000-12500 mm long. Steel plates are supplied to tolerances and other dimensional characteristics according to GOST 19903 or EN 10029, with class A surface, subclass 1 according to EN 10163-2, if not otherwise agreed upon the buyer.

Chemical composition of 30MnB5 steel according to EN 10083-3

C	Si	Mn	P	S	B
0.27 – 0.33	Max. 0.40	1.15 – 1.45	Max. 0.025	Max. 0.035	0.0008 – 0.005

Note: the requirement for fine-grained structure is ensured by adding 0.02-0.05% of aluminium

Mechanical properties of 30MnB5 rolled steel according to EN 10083-3

30MnB5 steel plates are supplied hot-rolled without defining mechanical properties.

In accordance with the requirements of EN 10083-3, after quenching and tempering, the rolled products acquire the following mechanical properties:

Thickness, mm	R_{eT} , min. MPa	R_m , MPa	A, min., %	Z, min., %	KV, min., J
$t \leq 8$	800	950 – 1150	13	50	-
$8 < t \leq 20$	650	800 – 950	13	50	60

R_{eT} - upper yield strength, or if no yield phenomenon occurs 0.2% of proof strength $R_{0.2}$;

R_m - tensile strength;

A – Percentage elongation after fracture;

Z – Reduction in cross section on fracture;

KV – impact strength of longitudinal Charpy-V-notch test pieces.

Recommended heat treatment mode for 30MnB5 steel items according to EN 10083-3

Steel designation		Quenching, °C	Quenching agent	Tempering, °C	End quench test, °C
Name	Number				
30MnB5	1.5531	860 – 900	Water	400 - 600	880 ± 5

Conditions in this table are for reference only. However, the temperatures for the end quench test are necessary.

The period of austenitization is a minimum of 30 minutes (approximately). In selecting the quenching agent, it is necessary to take into account the effects of parameters such as shape, dimension and temperature of quenching on properties and susceptibility to cracking. Another quenching agent can be used, for example a synthetic agent. The tempering period should be at least 60 minutes.

Welding of 30MnB5 steel products

Boron-added steel can be welded as hot-rolled or hardened, with a choice of applicable welding materials. In general, it is recommended to use low-hydrogen welding consumables.

To weld boron-added steel in hot-rolled condition, standard high strength steel welding technologies can be used.

Contacts

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