



Manganese-boron steel

MBW[®] manganese-boron steel from thyssenkrupp for hot forming offers maximum strength coupled with good formability. A combination of MBW[®] manganese-boron steel with high- and ultra-high-strength steels allows components with extremely complex geometries to be manufactured by hot forming.

In addition, significant weight savings can be achieved. In contrast to cold forming, this hot forming process combines the forming operation and the hardening treatment in a single step. Typical applications for MBW[®] manganese-boron steel are bumper crossbeams, side impact beams, pillars and components for car body reinforcement.

Manganese-boron steel for hot forming

Steel type		Mechanical properties as-delivered, longitudinal				Typical mechanical properties after heat treatment, longitudinal			
Short designation	Surface finish	Proof stress R _{p0.2} MPa min.	Tensile strength R _m MPa	Elongation at fracture A ₈₀ % min.	Elongation at fracture A %	Proof stress R _{p0.2} MPa	Tensile strength R _m MPa	Elongation at fracture A ₈₀ % min.	Elongation at fracture A % min.
MBW-W®1500 ¹⁾	–	320	500	10	12	1,000	1,500	5	6
MBW®500 ¹⁾	+AS	300–520	400–600	16	–	400	550	17	–
MBW®600 ¹⁾	+AS	340–580	520–720	12	–	450	650	16	–
MBW®1500 ¹⁾	+AS	350–550	500–700	12	–	1,000	1,500	5	–
MBW-K®1500 ¹⁾	–	240–450	450–600	18	–	1,000	1,500	5	–
MBW-K®1900 ¹⁾	–	300–500	450–650	16	–	1,200	1,900	4	–

Steel type		Chemical composition, heat analysis									
Short designation	Surface finish	Percentage by weight % max.									
		C	Si	Mn	P	S	Al min.	CR+Mo	Nb	Ti	B
MBW-W®1500 ¹⁾	–	0.25	0.40	1.40	0.025	0.010	0.015	0.50	–	0.05	0.005
MBW®500 ¹⁾	+AS	0.10	0.35	1.00	0.030	0.025	0.015	–	0.10	0.15	0.005
MBW®600 ¹⁾	+AS	0.10	0.50	2.00	0.030	0.025	0.015	–	0.10	0.15	0.005
MBW®1500 ¹⁾	+AS	0.25	0.40	1.40	0.025	0.010	0.015	0.50	–	0.05	0.005
MBW-K®1500 ¹⁾	–	0.25	0.40	1.40	0.025	0.010	0.015	0.50	–	0.05	0.005
MBW-K®1900 ¹⁾	–	0.38	0.40	1.40	0.025	0.010	0.015	0.50	–	0.13	0.005

1) Special mill grade