SSAB M43

A STEEL REVOLUTION IN PROGRESS

SSAB

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The new SSAB M43 steel can be quenched in plain water without an immediate need for tempering, and still reach exceptionally high values for hardness and impact strength.

SSAB M43 is a major step in steel development. This new steel grade will make quench and press hardening a faster, simpler and more energy efficient process with reduced impact on the environment.

A REVOLUTION EXPLAINED

Behind the performance of SSAB M43 are a number of innovative advances in steel production. The chemical composition in combination with unique rolling parameters, (patent pending) provide outstanding workshop properties. Shearing, blanking and piercing can be executed without risk for micro-cracking, thus avoiding more time-consuming and expensive processing.

Heat treatment results in a fully martensitic, fine-grain microstructure with an unmatched hardness to toughness ratio. Typical values are 58 HRC and 25 J/cm^2 at + 20°C. If even higher toughness is needed, low temperature tempering is enough to reach > 30 J/cm^2 with hardness still at a level of 56 HRC. The steel's self-tempering properties prevent hardening cracks when quenching in water. Aqueous quenching fluids or oil give equally impressive results.

YOU WILL BENEFIT

SSAB M43 offers a range of benefits for both manufacturers and end users. Quenching in water instead of aqueous quenching fluids or oil is cheaper, safer and more environmentally friendly. It saves energy, time and reduces CO_2 emissions. End users will benefit from extended lifetime and minimized risk for cracks or breakage thanks to the combination of high hardness and toughness.

Learn more about a steel revolution at ssab.com

Technology expert Tommi Liimatainen and project manager Kati Rytinki proudly demonstrate one of the SSAB M43 test pieces. Examination after shearing, flame cutting, punching and quenching in water confirms the performance of this revolutionary material.

Mechanical properties					
Material condition	Yield strength Re [MPa] typical	Tensile strength Rm [MPa] typical	Elongation A [%] typical	Hardness [HRC] typical	Impact toughness [J/cm^2] +20°C typical
As rolled	440	660	16	18	-
Water quenched	-	2400	-	58	25
Water quenched and tempered (175 °C)	-	-	-	56	37
Oil quenched	-	1750	-	52	38
Oil quenched and tempered (175 °C)	-	-	-	51	39

Dimensions			
Delivery form	Thickness [mm]	Width [mm]	Length [mm]
Hot rolled coil	3.0 – 12.0	870 – 1800	–
Hot rolled slit coil	3.0 – 12.0	100 – 1800	–
Hot rolled sheet	3.0 – 12.0	1000 – 1800	2000 – 13000

Tolerances
Dimensions: EN 10051 Surface condition: EN 10163-2
Delivery condition
SSAB M43 is delivered in as-rolled (+AR), or annealed (+A) condition.