

Swissbain-7MnB8

Cold-heading steel for environmental and economic added value



Steeltec

Member of Swiss Steel Group

Conventional production



Swissbain-7MnB8



Reduce costs by shortening the process chain

› Range of sizes from 7 to 40 mm, other diameters possible on request.

Swissbain-7MnB8 is a microalloyed bainitic steel for cold-heading without heat treatment for components of the strength class 800 to 1000 MPa.

The strength of a component is determined by the combination of wire rod strength plus work hardening during drawing and cold-heading. Typical examples of components are ball pins, screws, bolts and hollow parts made without heat treatment after cold-heading.

Chemical composition

Material No.: 1.5519

	C	Si	Mn	P	S	Cr	Mo	Ni	V	Ti	Al	B
Min.	0.06	0.15	1.85						0.03	0.06	0.02	0.0015
Max.	0.09	0.25	1.95	0.015	0.015	0.20	0.05	0.25	0.05	0.10	0.04	0.0030

Details in percent by weight

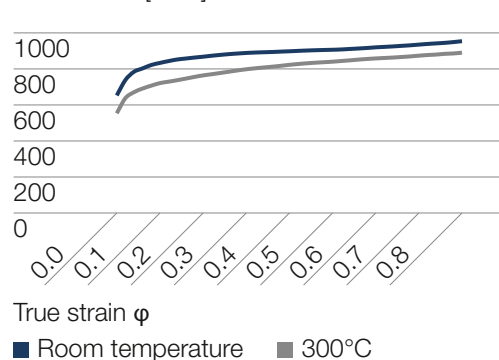
Mechanical properties as rolled

Yield stress	Tensile strength	Elongation at fracture	Reduction of area
Rp _{0.2}	Rm	A5	Z
500 – 650 MPa	600 – 850 MPa	≥ 18 %	≥ 55 %

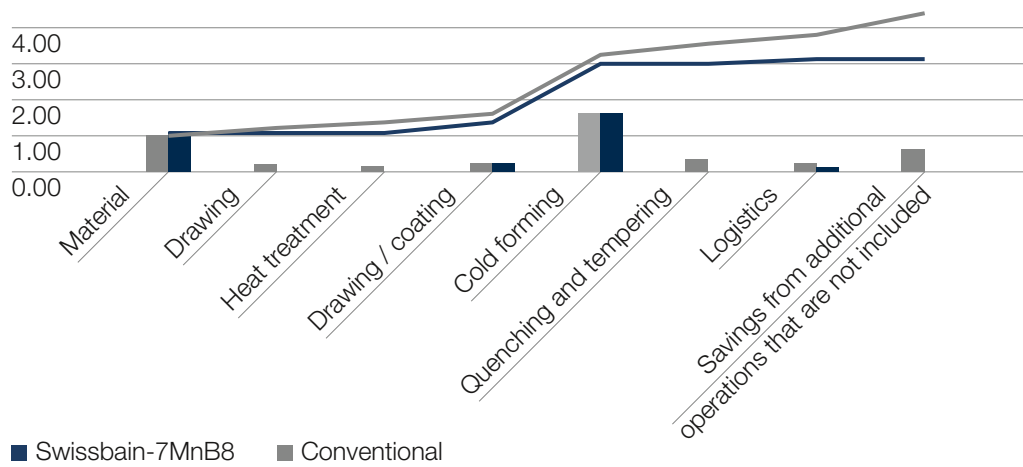
Forming behaviour

The flow curves were determined with a forming speed of 1 s⁻¹ at the specified temperatures (without temperature compensation).

Yield stress [MPa]



Cost comparison

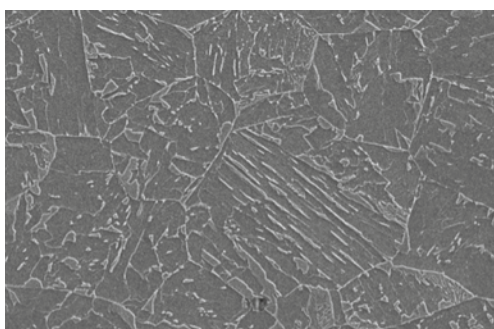


Environmental and economic benefits

The technical properties of Swissbain-7MnB8 have economic benefits, e.g.:

- Cost savings for heat treatment before cold-heading
- Cost savings for quenching and tempering
- Cost savings on subsequent unexpected related costs for quenching and tempering, e.g. machining or straightening
- Cost savings on machining due to comparatively good machinability
- Savings in further processing due to the good weldability

Swissbain-7MnB8 production is more economical than conventional manufacture, as the general comparison of costs in the example shows. Economization during heat treatment helps protect the environment: The heat energy alone that is required for spheroidising and quenching and tempering produces 43 kg of CO₂ emissions per ton of processed steel (heat source: natural gas). In addition, further emissions are produced in approximately the same amount in the form of radiated heat, heating of the insulation, etc.



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