

ASSAB 7210M

ASSAB 
ASSOCIATED SWEDISH STEELS AB

M-STEELS... A new concept in machinery steels

ASSAB M-steels are machinery steels with unique machinability. They are made by a special melting technique which makes it possible to increase the cutting speed by up to 30% or extend the tool life up to four times.

More information about the M-steels can be found in our brochure ASSAB M-STEELS.

NEAREST STANDARDS

AISI/SAE	DIN	BS	AFNOR	JIS	SS
3115	15CrNi6	637A16 (EN 352)	16Nc6	SNC21	2511

CHEMICAL COMPOSITION

C %	Si %	Mn %	Cr %	Ni %	Mo %
0.15	0.25	0.90	0.80	1.2	0.1

PROPERTIES AND APPLICATIONS

ASSAB 7210M is an alloyed case hardening steel with high core strength. It is used for applications requiring a hard, wear resistant surface and a tough core, such as transmissions components for the automotive industry.

ASSAB 7210M is used for complicated parts, subjected to strict demands on dimensional stability, core hardness and toughness.

SIZE RANGE

ASSAB 7210M is available in standard sizes: 20—200 mm diameter, unmachined and pre-machined.

In non-M-execution ASSAB 7210 is available in standard sizes 200—406 mm diameter, unmachined and pre-machined.

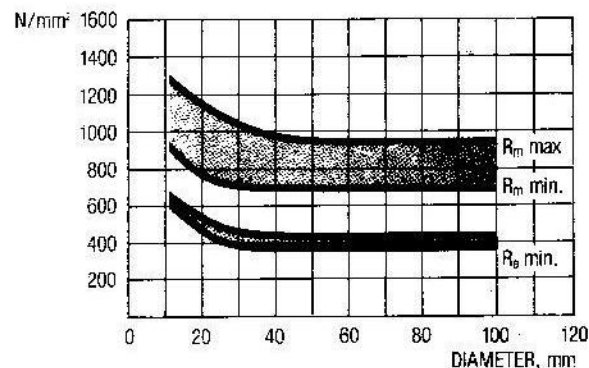
MECHANICAL PROPERTIES

Supplied hot rolled to max. 217 Brinell.

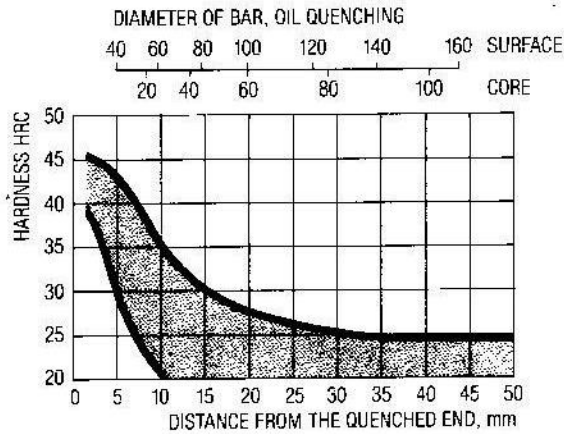
Core strength in hardened condition.

Diameter, mm	11	63
Yield strength, Re	min. 640	440
Tensile strength, Rm	980—1320	690—980
Elongation, A5	min. 8	11
Reduction of area, Z	min. 30	30
Impact strength, KU	—	30*
Hardness HB	300—405	200—300

* For guidance only



Hardenability diagram



Soft annealing at 600—670°C

Soak at temperature for 2 hours. Cool with furnace to 600°C, then freely in air.

Carburizing at 850—950°C

The carburizing temperature must be adjusted to suit the carburizing agent and the required depth of case. (See table above!)

880—925°C in box with carburizing powder.

850—900°C in salt bath.

Mainly used for case depths up to 0,5 mm.

880—950°C in gas. When desired case depth has been reached, lower the temperature to 820—840°C before quenching.

Intermediate annealing at 650—680°C.

Soak at temperature for 2 hours. Cool with furnace to 600°C, then freely in air. Should be carried out if the material is to be machined after carburizing.

Isothermal annealing

Austenitising at 950—1000°C, cooling to 620—650°C, soak for 3 hours, then freely in air. Should be carried out for optimum machinability.

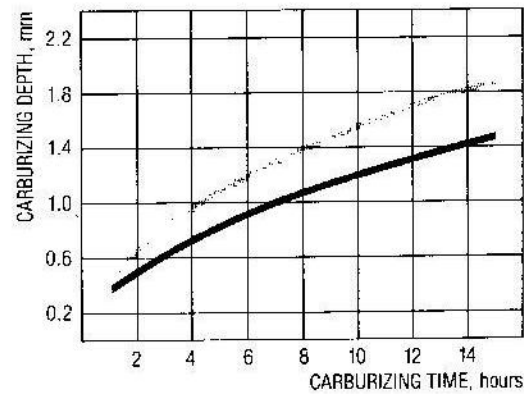
Hardening at 780—880°C

Direct hardening for case depths up to 0,5 mm (if gas carburized also bigger depths. Quench direct from carburizing temperature in oil or salt bath (180—220°C).

Single treatment for box carburized parts with case depths up to 1.25 mm. After carburizing leave to cool in box to room temperature. Reheat to 780—830°C and quench in oil or salt bath (180—220°C).

Double treatment for box carburized parts with case depths over 1.25 mm. After carburizing leave to cool in box to room temperature. Reheat to 860—890°C and then cool freely in air (normalising). Reheat once more to 780—830°C and quench in oil or salt bath (180—220°C).

Carburizing diagram



CARBURIZING TEMPERATURE 925°C

CARBURIZING POTENTIAL

..... 1.2% C

———— 0.8% C

The carburizing depth is the depth that corresponds to a carbon content of 0.3%.

Tempering at 160—200°C

Soaking time should be 1—2 hours after the workpiece has attained full temperature throughout, and a surface hardness of 58—62 HRC can then be obtained, provided a case depth of minimum 0.5 mm. For smaller depths the Vickers or Rockwell 15 N test should be used.

Tempering diagram

