Hot-rolled, Boron-Alloyed Steels
The strong alternative with economic focus
It is precisely the automotive sector which calculates in large numbers of items. What counts are components with uncompromising economic efficiency – using Hohenlimburg production and development capacities.

It is only developers who have the choice and, depending on the material requirements, who can decide with a clear conscience for the more favourable solution. With Hoesch Hohenlimburg narrow strip all requirements can be met: extremely rational basic material with boron-alloyed steels – as the current alternative to conventional heat-treatable steels.

More and more Hoesch specialists are involved in the automotive field as well as in the classical agricultural fields, from economical and technical planning up to and including finished components. Always with the backing of production on the most modern plant – within the meaning of optimum quality.

Boron-alloyed steels from Hohenlimburg narrow strip show their strengths traditionally where it all depends on stable security with economic conditions:

- considerably increased hardening capability
- achieving high strengths with hardening and tempering
- better processing through low carbon content
- already very good ductility following hardening, tempering treatment possibly redundant

In addition to standardised boron-alloyed grades, we have developed market-oriented analysis variants as trade marks, which meet specific requirements. Just talk to our application consultants!
Selector fork
Grade: HLB 27

Only one of many highlights

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Interior/seats/doors
Outstanding mechanical quality values with the strongest hardening capability effect

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Chassis and drive systems
Robust long-life materials hold their own in hard cost competition

Pages 8-9
Agricultural machinery/cutting tools
Reliable material durability with fatigue stress and maximum loading

Page 10
Service
Economic further processing of the material and to this support from A to Z
Reliable and nevertheless cost-effective in manufacture – these are the central requirements on components in the area of the interior and restraint system assemblies. Whether it is continuous stress or maximum loading in emergencies – the material must hold!

Absolutely decisive here are exact analysis and precise production, which is monitored at every step. Laboratory tests have determined the achievable hardness for the individual grades in the hardened and, at 200 respectively 400 °C, tempered condition (see diagram on Page 5). In addition, detailed tempering diagrams for water hardening and oil hardening at 650 °C are created and regression analytically prepared.

When the chips are down: safety has right of way!
The ductile behaviour was examined with the aid of notched bar tests and notched impact strength tests in accordance with DIN 11 100. The important position of the supplier for safety systems allows no compromises. That is the standard!

Comfort and convenience are today decisive parameters. Simply – the material must fit!

Passenger vehicle seat backrest adjustor
Grade: HLB 27

Seat Belt tensioner
Grade: HLB 27

Water quenching
Oil quenching
A recommendation on the quality: durability simply drives better
Precision in performance is our objective.
Here only quality gets the green light!

Axles and gearboxes have simply to function permanently – any defect can have as a result the most dangerous driving situations. Therefore durability and strength values of the materials used are decisive. The outstanding mechanical quality values of the Hoesch trade marks speak for themselves.

Boron is the alloying element with the strongest durability increasing effect. It delays the conversion into softer types of microstructure and, with hardening, a martensitic microstructure develops across the strip cross-section. Through defined, small additions of boron (ca. 30 ppm) in combination with lower carbon content the same hardness is achieved as with conventional tempering steels.

These lower carbon contents improve the processing properties.
Expensive alloying elements such as Cr, Ni or Mo can be dispensed with in part or completely.
Depending on the range of application a tempering treatment can be dispensed with following hardening, as a high durability already exists in the quenched condition.

Boron-alloyed steels from Hoesch Hohenlimburg offer an ideal platform when what matters is the combination of design modifications with favourable forming properties.

Rear axle tube
Grade: HLB 27
Whether sweeping or painstaking: diverse design success brings in the harvest

Metal on stone – that grates! In hard agricultural use such loading tests are a daily event.

No wonder that developers of agricultural machinery employ the most robust and most durable materials, which of course have also to hold their ground in the hard cost competition: boron-alloyed steels from Hoesch Hohenlimburg.

Sound base for these products is the production train for narrow strip. Not only several mill stands but rather an interlinked plant made up of furnaces, reversing mill, thermal tunnel, finishing train, cooling line and coiling plant provides, highly automated, for defined results. In order that the qualitative lead remains maintained permanently, the latest state-

Assembly: Agricultural machinery/cutting tools

- Chaff cutter blade
  Grade: HLB 20/22

- Ploughshare
  Grade: HLB 40

- Driving shaft
  agricultural machine
  Grade: HLB 22
In daily practice
down times are a catastrophe.
Permanent reliability shows its strength here!

Very nearly unlimited possibilities

For many mobile fields of employment boron-alloyed steels are the first preference. All design requirements with regard to stability and reliability are certainly capable of realisation.

It all depends on solid consistency.
On the complete line:
Support for optimum results

Boron-alloyed steels –
Ideal for further processing

Economical fine blanking
Boron-alloyed steels, depending on the quality and application, can have economic fine blanking even without previous annealing treatment. Ask us for details!

Versatile cold-forming
Already in the hot-rolled state, boron steels show good forming properties. Dependent on the annealing treatment and structural condition even the most difficult cold-forming is thus possible.

Welding without problem
Due to its low carbon content compared with normal heat treatable steels, boron steels are significantly better suited for welding.

In full attendance from the start –
or detailed questions first at a later date?

 Decide yourself at which point in time and to what extent you wish to make use of our comprehensive customer service.

 We support you completely individually and practically:
  • advice on the selection of materials
  • further development of materials according to your requirements
  • support with optimisation of your fabrication
  • laboratory investigation.

 Simply talk to us – our technical customer service is there for you!