BÖHLER

TOOL STEEL FOR HOT STAMPING

PURE LIGHTNESS

THE CAREFUL AND DELIBERATE USE OF RESOURCES MINIMIZES THE BURDEN ON ENVIRONMENT AND MAINTAINS THE CAPACITY TO REGENERATE, MEANING THAT NATURAL SYSTEMS WILL REMAIN AT OUR DISPOSAL FOR THE LONG TERM. ENERGY EFFICIENCY PLAYS A SIGNIFICANT ROLE IN MANY SECTORS. FASTER, LIGHTER, MORE ECONOMICAL ARE THE DEMANDS THAT NEED TO BE MET HERE.

Concepts for mobility demand weight to be saved in road traffic. Along with the high safety standards called for, the demands in automotive manufacturing are shifting towards thinner yet even higher strength sheets of metal. One process for shapingthese sheets is hot stamping.

BÖHLER has recognized this trend and has developed a series of tool steels for the hot stamping process.

Intelligent bodywork concepts require tool materials with the highest performance characteristics.

HOT STAMPING – INDIRECT PROCESS

Hot stamping is a process to manufacture components from high-tensile and super high strength sheets (22MnB5 or the like). The high strength is achieved by the martensitic transformation in cooled tools during quenching. Two processes for this have taken hold of the market.

WITH INDIRECT HOT STAMPING
THE SHEET IS SHAPED TO A COMPONENT IN A SOFT, COLD STATE, SUBSEQUENTLY AUSTENITIZED AND QUENCHED BETWEEN COOLED TOOLS.

Indirect Process

Cold forming and trimming | Austenitisation | **Hot stamping** | Surface conditioning

BÖHLER W350 ISOBLOC®

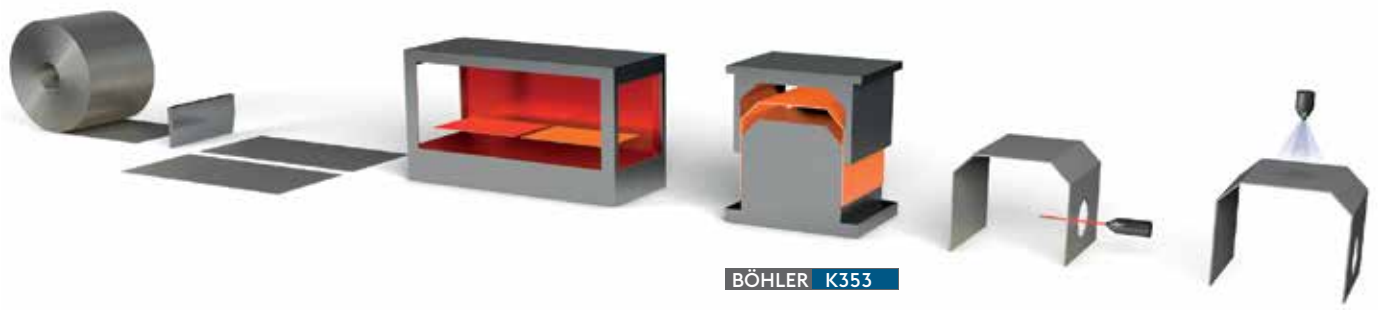
BÖHLER W360 ISOBLOC®

HOT STAMPING –
DIRECT PROCESS

WITH DIRECT HOT STAMPING THE SHAPING AND QUENCHING OF THE PREVIOUSLY AUSTENITIZED SHEET TAKES PLACE IN ONE WORK STEP. AFTER QUENCHING THE COMPONENTS ARE CUT AND SHAPED TO THEIR FINAL CONTOUR. IF REQUIRED THE COMPONENT SURFACE MAY ALSO BE CONDITIONED.

Direct Process

Cold forming and trimming | Austenitisation | **Hot stamping** | Trimming | Surface conditioning



BÖHLER K353

BÖHLER W350 ISOBLOC®

BÖHLER W360 ISOBLOC®

REQUIREMENTS ON TOOL STEELS

» High thermal conductivity (short cycle time)

» Sufficient wear resistance (abrasion / adhesion)

» Sufficient compression strength

» Hardness level up to 42 – 60 HRC

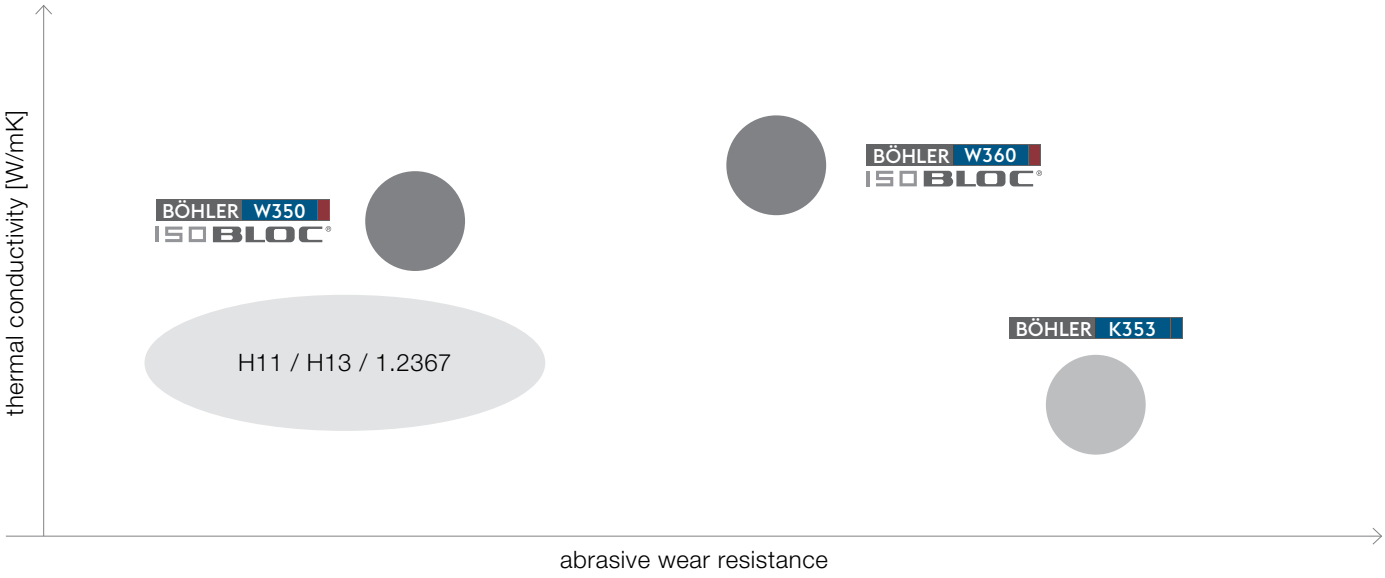
» Vacuum heat treatment

» Good weldability

The required combination of material properties results from the applied hot stamping process.

BÖHLER K353	Direct process: Highest abrasive wear resistance
BÖHLER W350 ISOBLOC®	For both processes: Big tools and segmnets, improved toughness and thermal conductivity
BÖHLER W360 ISOBLOC®	For both processes: Complex geometries, excellent strength – toughness relation, improved thermal conductivity

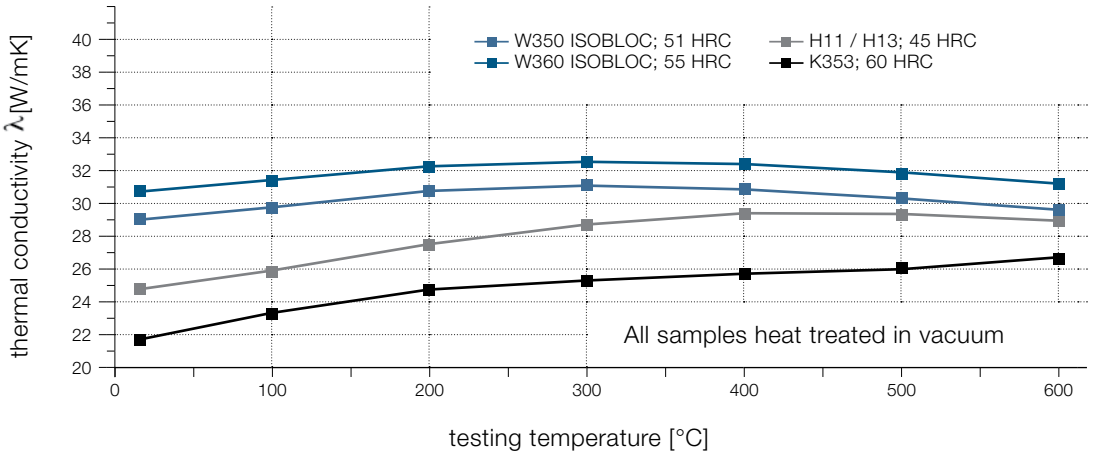
BÖHLER grades for hot stamping



BÖHLER grade DIN / EN	AISI	Thermal conductivity	High temperature wear resistance	High temperature toughness	Machinability
BÖHLER K353	–	★★	★★★★★	★★	★★★★
BÖHLER W350 ISOBLOC®	–	★★★	★★★★	★★★★★	★★★★★
BÖHLER W360 ISOBLOC®	–	★★★★	★★★★★	★★★★	★★★★★
< 1.2343 > X38CrMoV5-1	H11	★★	★★	★★★★	★★★★★
< 1.2344> X40CrMoV5-1	H13	★★	★★★	★★★★	★★★★★

FACTS

Thermal conductivity



BÖHLER Grade DIN / EN	AISI	C	Si	Mn	Cr	Mo	V	Al
BÖHLER K353	–	0.82	0.70	0.40	8.00	1.60	0.60	+
BÖHLER W350 ISOBLOC®	–	0.38	0.20	0.55	5.00	1.75	0.55	–
BÖHLER W360 ISOBLOC®	–	0.50	0.20	0.25	4.50	3.00	0.55	–
< 1.2343 > X38CrMoV5-1	H11	0.38	1.10	0.40	5.00	1.30	0.40	–
< 1.2344> X40CrMoV5-1	H13	0.39	1.10	0.40	5.20	1.40	0.95	–

NOTES:

The data contained in this brochure is merely for general information and therefore shall not be binding on the company. We may be bound only through a contract explicitly stipulating such data as binding. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer.

SPECIAL STEELS FOR THE WORLD'S TOP PERFORMERS

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