



Case-hardening and Heat-treatable Steels

Hot-rolled Steel Strip

voestalpine

ONE STEP AHEAD

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Best formability and wear resistance.

Highest trueness to strip profile gauge.

Comprehensive product selection.

These steels are contained in EN 10083 and EN 10084, respectively. They are used in cases where the finished components are subjected to heat treatment (e.g. case-hardening or tempering).

Case-hardening Steels

Case-hardening steels are structural steels with a relatively low carbon content which are used for components whose surface layer prior to hardening is usually carburized (carbo-nitrided). For some of these steel grades the aluminium content is strictly limited to avoid formation of soft spots.

Heat-treatable Steels

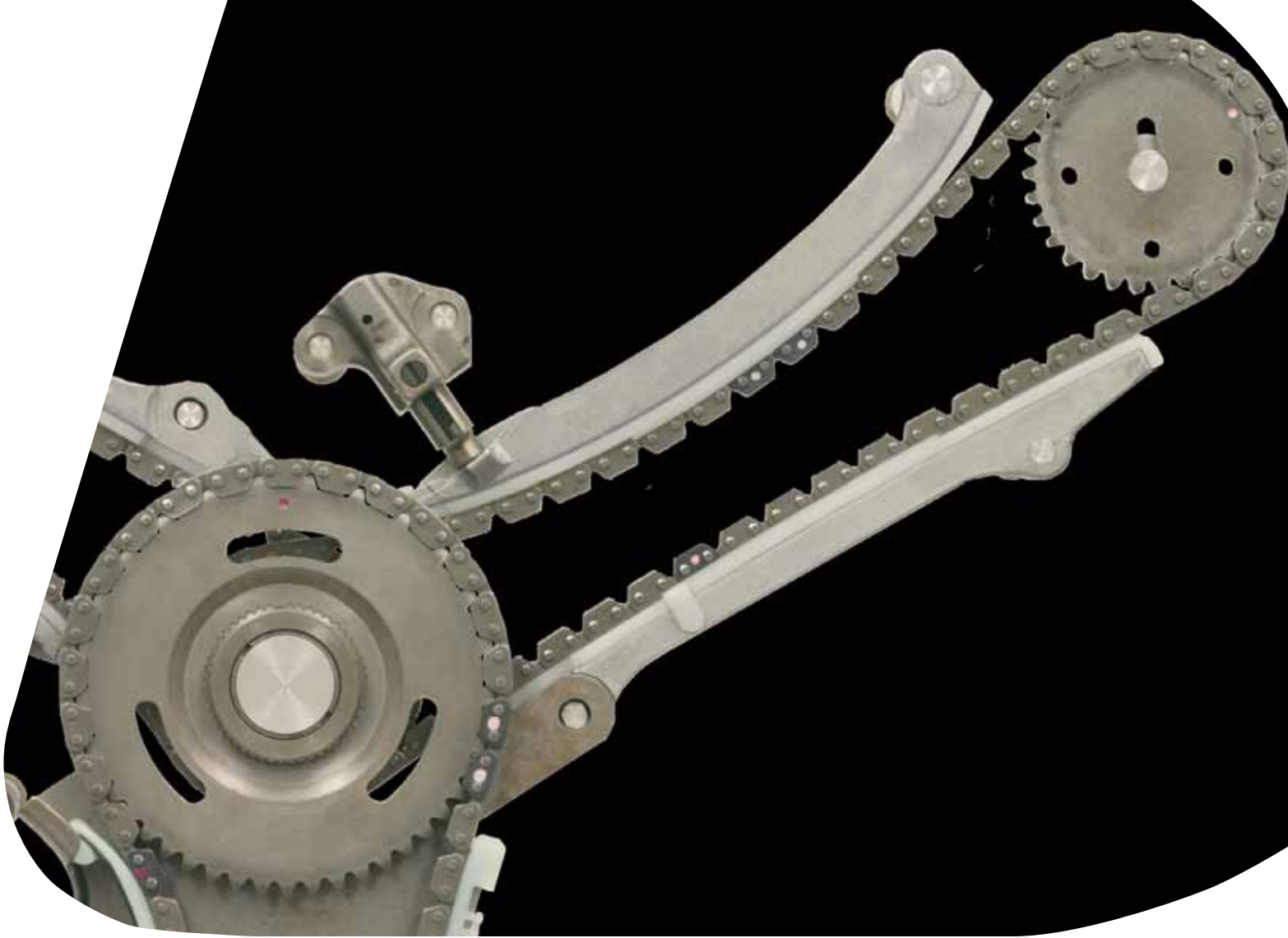
Heat-treatable steels are steels for mechanical engineering which, as a result of their chemical composition, are suitable for hardening and in heat-treated condition show good toughness characteristics for a given tensile strength. In general, the steels are used in soft condition to produce parts which are subsequently subjected to heat treatment to obtain the desired functional properties.

Boron-containing Heat-treatable Steels

Boron-containing heat-treatable steels are alloyed with a low mass percentage of boron to improve hardenability. This automatically increases the core strength of the steel. Prior to heat treatment, the steel grades show good cold formability characteristics. More detailed information is available upon request.

Applications

- Chain saws
- Springs
- Mowing blades
- Flywheels
- Gear parts
- Punched parts



The Advantages

Best Formability and Wear Resistance

High levels of steel strength are achieved in the subsequent heat treatment. This also increases the wear resistance of the steel.

Highest Trueness to Strip Profile Gauge

The high level of thickness consistency across the width of the strip results in a flat strip profile and makes the material excellent for further processes such as fine punching. The entire strip width can be used for highest-quality products.

Comprehensive Product Selection

The material can be precisely selected for the specific customer application from a large variety steels containing different levels of carbon combined with other alloying additions.

Lower Minimum Order Quantity Possible

High flexibility – even with large order lots

Fine-tuned Manufacturing Program

Range of quality products – standard grades up to at least CK 75 – large spectrum of finely scaled products

Adjustable Microstructure

Depending on the subsequent processing of the material, the customer can select between coarse and fine lamina.

Chromium-alloyed and Boron-alloyed Grades Available

- Chromium as an alloying element makes it possible to broaden the range of applications to hardenable steels with improve heat treatability.
- Boron-containing grades are alloyed with a low mass percentage of boron to improve hardenability.

Customer-specific Solutions and Service

- Development of new special steel grades in collaboration with our customers
- Individual production processes possible

Delivery Specifications

Dimension Limits for Case-hardening and Heat-treatable Unpickled

	C10E	C15E	C35	C45 Max. Thickness	C55E	C60	CK75
Thickness mm							
1.5 - 1.74	1,075	1,075	–	–	–	–	–
1.75 - 1.89	1,175	1,175	1,125	1,075	–	–	–
1.90 - 2.24	1,250	1,250	1,150	1,125	1,090	–	–
2.25 - 2.49	1,425	1,425	1,240	1,180	1,180	1,100	1,040
2.5 - 2.74	1,600	1,600	1,300	1,250	1,260	1,150	1,080
2.75 - 2.99	1,600	1,600	1,375	1,325	1,325	1,225	1,150
3.00 - 3.24	1,600	1,600	1,450	1,375	1,400	1,275	1,200
3.25 - 3.49	1,600	1,600	1,575	1,475	1,475	1,350	1,275
3.5 - 3.74	1,600	1,600	1,600	1,600	1,550	1,425	1,340
3.75 - 3.99	1,600	1,600	1,600	1,600	1,600	1,525	1,425
4.00 - 7.99	1,600	1,600	1,600	1,600	1,600	1,600	1,525
8.00 - 12.00	1,600	1,600	1,600	1,600	1,600	1,600	1,525

Minimum order width of 900 mm

Deviating dimensions only upon request

Values do not apply to pickled case-hardening and heat-treatable steels



Chemical Composition

Heat-treatable Steels

Guaranteed values of heat analysis in %

Steel Grade	C	Si	Mn	P max.	S max.	Cr	Ni	Mo
C45E	0.42 - 0.50	max. 0.40	0.50 - 0.80	0.035	0.035	max. 0.40	max. 0.40	-
C45E - special agreement	0.42 - 0.50	max. 0.40	0.50 - 0.80	0.035	0.035	0.15 - 0.40	max. 0.40	-
C50E	0.47 - 0.55	max. 0.40	0.60 - 0.90	0.035	0.035	max. 0.40	max. 0.40	-
1050	0.48 - 0.55	0.15 - 0.35	0.60 - 0.90	0.040	0.050	-	-	-
C60E	0.57 - 0.65	max. 0.40	0.60 - 0.90	0.035	0.035	max. 0.40	max. 0.40	-
HCK60Cr	0.57 - 0.65	max. 0.40	0.60 - 0.90	0.035	0.035	0.20 - 0.40	max. 0.40	-
HCK67Cr	0.65 - 0.72	0.15 - 0.35	0.60 - 0.90	0.035	0.035	0.20 - 0.40	-	-
HCK67	0.65 - 0.72	0.15 - 0.35	0.60 - 0.90	0.035	0.035	-	-	-
SAE8667Mod.	0.61 - 0.72	0.20 - 0.35	0.30 - 0.50	0.025	0.015	0.20 - 0.35	0.20 - 0.35	0.08 - 0.15
Ck75	0.70 - 0.80	0.15 - 0.35	0.60 - 0.80	0.035	0.035	-	-	-
1074	0.69 - 0.80	0.15 - 0.35	0.50 - 0.80	0.030	0.035	-	-	-

As-delivered condition: normalized rolled, soft-annealed upon request

Case-hardening Steels

Guaranteed values of heat analysis in %

Steel Grade	C	Si max.	Mn	P max.	S max.	Cr
C10E	0.07 - 0.13	0.40	0.30 - 0.60	0.035	0.035	-
C15E	0.12 - 0.18	0.40	0.30 - 0.60	0.035	0.035	-
16MnCr5	0.14 - 0.19	0.40	1.00 - 1.30	0.035	0.035	0.80 - 1.10

As-delivered condition: normalized rolled, soft-annealed upon request



Technically More Advanced. Successful Together. voestalpine – The Partner You Can Trust.

High-quality materials are the basis for our products. We strive to be the best partner for our customers and want to provide them with the best-possible solution. We focus our expertise on two aspects: personal contact with dedicated, competent employees and high-quality technically sound methods, products and services.

The companies in the voestalpine Steel Division pledge the following:

- Understanding for the business of our customers
- Dedication to professionalism
- Reliability
- Partnerships based on trust
- Responsibility for satisfactory project completion

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