

Bake-hardening steels

High-strength steels for excellent dent resistance

Bake-hardening steels belong to the product family of conventional high-strength steels. The characteristic property of these steels is an increase in yield strength through heat treatment (bake-hardening effect), which is commonly seen in automotive painting processes. This increase is achieved by adjusting the right amount of dissolved carbon in the steel. Bake-hardening steels are characterized by excellent forming properties, high strength, high buckling resistance in the finished part. This excellent profile of properties makes bake-hardening steels predestined for exposed-panel applications.

Convincing advantages

- » Higher yield strength in the finished part following the paint-baking process
- » Excellent deep-drawing properties
- » High dent resistance
- » Excellent weldability
- » Corrosion resistance based on ZE, Z, ZF, EG, GI, GA or ZM coatings
- » Best quality in exposed panels



PREMIUM QUALITY
WITH REDUCED
CARBON FOOTPRINT

Chemical composition

Heat analysis in % by mass

Steel grade	C max.	Si max.	Mn max.	P max.	S max.	Al total min.	Nb max.	Ti max.
Pursuant to EN 10346								
HX180BD	0.06	0.50	0.70	0.060	0.025	0.015	0.09	0.12
HX220BD	0.08	0.50	0.70	0.085	0.025	0.015	0.09	0.12
HX260BD	0.10	0.50	1.00	0.10	0.030	0.010	0.09	0.12
HX300BD	0.11	0.50	0.80	0.12	0.025	0.010	0.09	0.12

Steel grade	C max.	Si max.	Mn max.	P max.	S max.	Al min.
Pursuant to EN 10268						
HC180B	0.06	0.5	0.7	0.06	0.030	0.015
HC220B	0.08	0.5	0.7	0.085	0.030	0.015
HC260B	0.1	0.5	1.0	0.1	0.030	0.015
HC300B	0.1	0.5	1.0	0.12	0.030	0.015

Steel grade	C max.	Si max.	Mn max.	P max.	S max.	Al min.	Cu max.
Pursuant to VDA 239-100							
CR180BH	0.06	0.50	0.70	0.060	0.025	0.015	0.20
CR210BH	0.08	0.50	0.70	0.085	0.025	0.015	0.20
CR240BH	0.10	0.50	1.00	0.100	0.030	0.015	0.20
CR270BH	0.11	0.50	1.00	0.110	0.030	0.015	0.20

Mechanical properties: Tensile test

Steel grade	Test direction	0.2 % yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Total elongation $A_{80}^{1)}$ min. [%]	r-value $r_{90}^{1)}$ min.	n-value $n_{10-20/A9}^{1)}$ min.	BH ₂ -value BH ₂ min. [MPa]
Pursuant to EN 10346							
HX180BD	transverse	180 – 240	290 – 360	34	1.5	0.16	30
HX220BD	transverse	220 – 280	320 – 400	32	1.2	0.15	30
HX260BD	transverse	260 – 320	360 – 440	28	-	-	30
HX300BD	transverse	300 – 360	400 – 480	26	-	-	30

Pursuant to EN 10268							
HC180B	transverse	180 – 230	290 – 360	34	1.6	0.17	35
HC220B	transverse	220 – 270	320 – 400	32	1.5	0.16	35
HC260B	transverse	260 – 320	360 – 440	29	-	-	35
HC300B	transverse	300 – 360	390 – 480	26	-	-	35

Steel grade	Test direction	0.2 % yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Total elongation $A_{80}^{1)}$ min. [%]	r-value $r_0^{1)}$ min.	n-value $n_{10-20/A9}^{1)}$ min.	BH ₂ -value BH ₂ min. [MPa]
Pursuant to VDA 239-00							
CR180BH	longitudinal	180 – 240	290 – 370	34	1.1	0.17	30
CR210BH	longitudinal	210 – 270	320 – 400	32	1.1	0.16	30
CR240BH	longitudinal	240 – 300	340 – 440	29	1.0	0.15	30
CR270BH	longitudinal	270 – 330	360 – 460	27	-	0.13	30

¹⁾ Thickness and coating limitations pursuant to EN 10346, EN 10268 and VDA 239-100.

Coatings and available dimensions

Available thicknesses [mm] based on coating

Steel grade pursuant to			Uncoated / UC	ZE / EG	Z / GI	ZF / GA	ZM / ZM
EN 10346	EN 10268	VDA 239-100					
HX180BD	HC180B	CR180BH	0.5 – 1.6	0.5 – 1.6	0.6 – 2.5	0.6 – 2.0	0.6 – 2.0
HX220BD	HC220B	CR210BH	0.5 – 1.6	0.5 – 1.6	0.6 – 2.5	0.6 – 2.0	0.6 – 2.0
HX260BD	HC260B	CR240BH	0.5 – 2.0	0.5 – 2.0	0.6 – 2.5	0.6 – 2.0	0.6 – 2.0
HX300BD	HC300B	CR270BH	0.5 – 2.0	0.5 – 2.0	0.6 – 2.5	0.6 – 1.5	0.6 – 1.8

Please find available dimensions at www.voestalpine.com/Produktinformationsportal or contact us directly.

OUR PATH TO A GREENER FUTURE

Premium products in the greentec steel Edition

With greentec steel, voestalpine is pursuing an ambitious step-by-step plan in the long-term decarbonization of steel production. The declared objective is to achieve carbon-neutral production by 2050, and the initial steps have already been taken. Process-optimized production operations already prevent up to 10% of the direct CO₂ emissions at the Linz site. The material and processing properties of the steel are not affected in any way in this production route. Each voestalpine steel strip product is available in premium quality in the greentec steel Edition with a reduced carbon footprint and unique benefits.



Premium quality with reduced carbon footprint

Cold-rolled steel strip – greentec steel Edition

Max. carbon footprint 2.15 kg CO₂e per kg of steel ¹⁾

Hot-dip galvanized steel strip – greentec steel Edition

Max. carbon footprint 2.30 kg CO₂e per kg of steel ¹⁾

Electrogalvanized steel strip – greentec steel Edition

Max. carbon footprint 2.30 kg CO₂e per kg of steel ¹⁾

¹⁾ per EN 15804+A2 (EPD methodology) cradle to gate

All products, dimensions and steel grades listed in each voestalpine supply range are available as greentec steel Edition.

The information and product properties contained in this printed material are non-binding and serve the sole purpose of technical orientation. They do not replace individual advisory services provided by our sales and customer service teams. The product information and characteristics set forth herein shall not be considered as guaranteed properties unless explicitly stipulated in a separate contractual agreement. For this reason, voestalpine shall not grant any warranty nor be held liable for properties and/or specifications other than those subject to explicit agreement. This also applies to the suitability and applicability of products for certain applications as well as to the further processing of materials into final products. All application risks and suitability risks shall be borne by the customer. The General Terms of Sale for Goods and Services of the voestalpine Steel Division shall apply to all materials supplied by the voestalpine Steel Division and can be accessed using the following link: www.voestalpine.com/stahl/en/The-Steel-Division/General-Terms-of-Sale

Technical changes are reserved. Errors and misprints are excepted. No part of this publication may be reprinted without explicit written permission by voestalpine Stahl GmbH.

Please find further information and downloadable files at www.voestalpine.com/steel



voestalpine Stahl GmbH
voestalpine-Straße 3
4020 Linz, Austria
produktmanagement@voestalpine.com
www.voestalpine.com/steel

voestalpine

ONE STEP AHEAD.