



## HX220BD+Z / (CR210BH-GI\*)

Steels with high yield strength  
for cold forming – bake hardening

<b>Material no.</b>	<b>1.0919</b>
according to	DIN EN 10346

\* VDA 239-100

### General information

Bake hardening steels feature in the condition supplied to the customer a lower yield strength and an excellent formability. This permits the production of difficult constructional elements in only a few forming steps with low forming force.

The ready and assembled construction elements receive after cold hardening during deep drawing and burning in of lacquer an increase of yield strength. At the same time the E-modul is released to the initial value. This effect is not found by conventional IF grades.

Because of higher stiffness (E-Modul) and increase of elastic range (increase of yield strength) the dent resistance is increased, which is particularly relevant for body shell parts (doors, front lid, roof, etc).

Bake hardening steels combine the forming properties of conventional deep drawing grades with strength properties of high strength steels like microalloyed steels.

### Chemical composition<sup>1)</sup> (in percent by weight)

	min. in %	max. in %
C		0.08
Si		0.50
Mn		0.70
P		0.085
S		0.025
Al	0.015	
Nb		0.09 <sup>2)</sup>
Ti		0.12 <sup>2)</sup>
Cu		0.20 <sup>3)</sup>

- 1) heat analysis
- 2) according to DIN EN 10346
- 3) according to VDA 239-100

### Mechanical properties<sup>4)</sup>

Yield strength $R_e^{5)}$ in MPa	
transverse	220 – 280
longitudinal	210 – 270
Tensile strength $R_m$ in MPa	
transverse	320 – 400
longitudinal	320 – 400
Total elongation $A_{80}^{6)}$ in %	
transverse	≥ 32
longitudinal	≥ 32
Hardening exponent n	
transverse	≥ 0.15
longitudinal	≥ 0.16

Anisotropie r	
transverse	≥ 1.2
longitudinal	≥ 1.1

Bake Hardening BH <sub>2</sub>	
≥ 30	

4) Test direction is according to DIN EN in transverse and according to VDA in longitudinal rolling direction.

5)  $R_{eL}/R_{p0,2}$

6) Reduced minimum values of elongation are valid for thicknesses ≤ 0.5 mm (minus 4 units) and for thicknesses > 0.5 mm and ≤ 0.7 mm (minus 2 units).

### Available dimensions

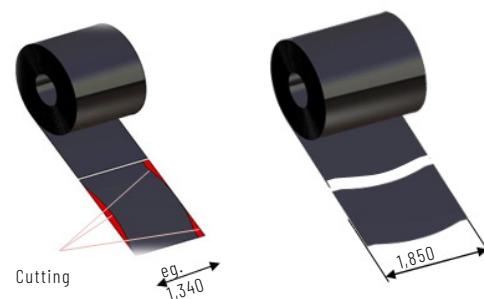
Thickness in mm	Width in mm
0.50 – 0.55	1,000 – 1,575
0.56 – 0.69	1,000 – 1,735
0.70 – 1.79	1,000 – 1,850
1.80 – 3.00	900 – 1,635

### Surface finish

MB, MCunexposed, exposed

### Usage

Large width in outer skin quality.



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