



PREMIUM QUALITY  
WITH REDUCED  
CARBON FOOTPRINT

## HOT-ROLLED STEEL STRIP

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Range of supply  
October 2023

# STRUCTURAL STEELS

Steel grade	Standards and specifications	Yield strength $R_{eH}$ transverse min. [MPa]		Tensile strength $R_m$ transverse [MPa]	
		$\leq 16$ mm	$> 16$ mm	$< 3$ mm	$\geq 3$ mm
<b>Unalloyed structural steels / Edging grades</b>					
<b>EN 10025-2</b>		<b><math>\leq 16</math> mm</b>	<b><math>&gt; 16</math> mm</b>	<b><math>&lt; 3</math> mm</b>	<b><math>\geq 3</math> mm</b>
S185	EN 10025-2	185	175	310 - 540	290 - 510
S235JR <sup>2) 3)</sup>	EN 10025-2	235	225	360 - 510	360 - 510
S235J0 <sup>2) 3)</sup>	EN 10025-2	235	225	360 - 510	360 - 510
S235J2 <sup>2) 3)</sup>	EN 10025-2	235	225	360 - 510	360 - 510
S275JR <sup>2) 3)</sup>	EN 10025-2	275	265	430 - 580	410 - 560
S275J0 <sup>2) 3)</sup>	EN 10025-2	275	265	430 - 580	410 - 560
S275J2 <sup>2) 3)</sup>	EN 10025-2	275	265	430 - 580	410 - 560
S355JR <sup>2) 3)</sup>	EN 10025-2	355	345	510 - 680	470 - 630
S355J0 <sup>2) 3)</sup>	EN 10025-2	355	345	510 - 680	470 - 630
S355J2 <sup>2) 3)</sup>	EN 10025-2	355	345	510 - 680	470 - 630
S355K2 <sup>2) 3)</sup>	EN 10025-2	355	345	510 - 680	470 - 630
E295	EN 10025-2	295	285	490 - 660	470 - 610
E335	EN 10025-2	335	325	590 - 770	570 - 710
E360	EN 10025-2	360	355	690 - 900	670 - 830
<b>Weather-resistant structural steels</b>					
<b>EN 10025-5</b>		<b><math>\leq 16</math> mm</b>	<b><math>&gt; 16</math> mm</b>	<b><math>&lt; 3</math> mm</b>	<b><math>\geq 3</math> mm</b>
S355J2W <sup>3)</sup>	EN 10025-5	355	345	510 - 680	470 - 630
S355J0W <sup>3)</sup>	EN 10025-5	355	345	510 - 680	470 - 630

<sup>1)</sup> KV<sub>2</sub> minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)

<sup>2)</sup> Code letter "C" stands for bendability and roll-formability

<sup>3)</sup> As-delivered condition: +N (normalized-rolled), +AR (as-rolled)

Total elongation transverse min. [%]					Notch impact energy KV <sub>2</sub> <sup>1)</sup>		
A <sub>80</sub>					A <sub>5</sub>	Test temperature [°C]	KV <sub>2</sub> [Joule]
≤ 1.50 mm	1.51 - 2.00 mm	2.01 - 2.50 mm	2.51 - 2.99 mm	≥ 3 mm			
≤ 1.50 mm	1.51 - 2.00 mm	2.01 - 2.50 mm	2.51 - 2.99 mm	≥ 3 mm	Test temperature [°C]	KV <sub>2</sub> [Joule]	
9	10	11	12	16	-	-	
16	17	18	19	24	20	27	
16	17	18	19	24	0	27	
16	17	18	19	24	-20	27	
14	15	16	17	21	20	27	
14	15	16	17	21	0	27	
14	15	16	17	21	-20	27	
13	14	15	16	20	20	27	
13	14	15	16	20	0	27	
13	14	15	16	20	-20	27	
13	14	15	16	20	-20	40	
11	12	13	14	18	-	-	
7	8	9	10	14	-	-	
4	5	6	7	10	-	-	
≤ 1.50 mm	1.51 - 2.00 mm	2.01 - 2.50 mm	2.51 - 2.99 mm	≥ 3 mm	Test temperature [°C]	KV <sub>2</sub> [Joule]	
-	14	15	16	20	-20	27	
-	14	15	16	20	0	27	

# MILD STEELS

Steel grade	Standards and specifications	Thickness [mm]	Yield strength $R_{p0.2}$ transverse [MPa]	Tensile strength $R_m$ transverse max. [MPa]
<b>Mild unalloyed steels for cold forming</b>				
<b>EN 10111</b>		<b>Thickness</b>	<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>
DD11	EN 10111	1.5 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 360 170 - 340 170 - 340	440
DD12	EN 10111	1.5 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 340 170 - 320 170 - 320	420
DD13	EN 10111	1.5 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 330 170 - 310 170 - 310	400
DD14	EN 10111	1.5 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 310 170 - 290 170 - 290	380
<b>Unalloyed special steels for cold forming</b>				
<b>Special voestalpine grade</b>		<b>Thickness</b>	<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>
DD11mod.H	voestalpine	< 3.0 ≥ 3.0	250 - 340 235 - 325	360 - 420 350 - 410
DD12mod.H	voestalpine	< 3.0 ≥ 3.0	250 - 340 235 - 325	360 - 420 350 - 410
DD13mod.H	voestalpine	< 3.0 ≥ 3.0	240 - 320 230 - 310	350 - 420 350 - 410
S235JRmod.H	voestalpine	< 3.0 ≥ 3.0	275 - 365 260 - 350	400 - 460 390 - 450

Total elongation transverse min. [%]		Bending test transverse Bending mandrel Angle = 180° Sheet thickness = s	Period of validity
A <sub>80</sub>	A <sub>5</sub>		
A <sub>80</sub>	A <sub>5</sub>	Mandrel diameter	Months
23 24 -	- - 28	-	-
25 26 -	- - 30	-	6 months
28 29 -	- - 33	-	6 months
31 32 -	- - 36	-	6 months
A <sub>80</sub>	A <sub>5</sub>	Mandrel diameter	Months
28 -	- 32	0 s	-
30 -	- 34	0 s	-
32 -	- 36	0 s	-
25 -	- 28	0 s	-

# CARBON STEELS

Steel grade	Standards and specifications	As-rolled condition (standard value)		Soft-annealed (max. value/standard value)
		Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Tensile strength $R_m$ [MPa]
<b>Case-hardening steels</b>				
<b>EN ISO 683-3 <sup>1)</sup></b>		<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>	<b><math>R_m</math></b>
C10E	EN ISO 683-3	300	400	380
C15E	EN ISO 683-3	330	470	450
16MnCr5	EN ISO 683-3	400	600	480
<b>Unalloyed heat-treatable steels</b>				
<b>EN ISO 683-1</b>		<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>	<b><math>R_m</math></b>
C35E	EN ISO 683-1	450	680	500
C45E	EN ISO 683-1	460	750	600
C50E	EN ISO 683-1	490	830	600
C55E	EN ISO 683-1	500	840	600
C60E	EN ISO 683-1	520	860	650
<b>Alloyed heat-treatable steels</b>				
<b>EN ISO 683-2 <sup>1)</sup></b>		<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>	<b><math>R_m</math></b>
25CrMo4	EN ISO 683-2	650	850	550
34CrMo4	EN ISO 683-2	770	970	650
42CrMo4	EN ISO 683-2	790	990	660
51CrV4	EN ISO 683-2	850	1050	680
20MnB5	EN ISO 683-2	530	680	570
27MnCrB5-2	EN ISO 683-2	490	670	520
<b>Spring steels</b>				
<b>EN 10089 <sup>1)</sup></b>		<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>	<b><math>R_m</math></b>
51CrV4	EN 10089	850	1050	680

<sup>1)</sup> Please inquire about any deviations from the indicated melt analyses or narrower limit values.

**Chemical composition**  
Ladle analysis in weight percent

C	Si max.	Mn	P max.	S max.	Cr	Ni max.	Mo max.	Cu max.	other
0.07-0.13	0.40	0.30-0.60	0.025	0.035	0.40	0.40	0.10	0.30	-
0.12-0.18	0.40	0.30-0.60	0.025	0.035	0.40	0.40	0.10	0.30	-
0.14-0.19	0.40	1.00-1.30	0.025	0.035	0.80-1.10	-	-	0.40	-

C	Si	Mn	P max.	S max.	Cr. max.	Ni max.	Mo max.	Cu max.	other
0.32-0.39	0.40	0.50-0.80	0.025	0.035	0.40	0.40	0.10	0.30	-
0.42-0.50	0.40	0.50-0.80	0.025	0.035	0.40	0.40	0.10	0.30	-
0.47-0.55	0.40	0.60-0.90	0.025	0.035	0.40	0.40	0.10	0.30	-
0.52-0.60	0.40	0.60-0.90	0.025	0.035	0.40	0.40	0.10	0.30	-
0.57-0.65	0.40	0.60-0.90	0.025	0.035	0.40	0.40	0.10	0.30	-

C	Si max.	Mn	P max.	S max.	Cr	Ni max.	Mo	Cu max.	other
0.22-0.29	0.40	0.60-0.90	0.025	0.035	0.90-1.20	-	0.15-0.30	0.40	-
0.30-0.37	0.40	0.60-0.90	0.025	0.035	0.90-1.20	-	0.15-0.30	0.40	-
0.38-0.45	0.40	0.60-0.90	0.025	0.035	0.90-1.20	-	0.15-0.30	0.40	-
0.47-0.55	0.40	0.60-1.00	0.025	0.025	0.80-1.10	-	-	0.40	V=0.10-0.25
0.17-0.23	0.40	0.10-1.40	0.025	0.035	-	-	-	0.40	B=0.0008-0.0050
0.24-0.30	0.40	0.10-1.40	0.025	0.035	0.30-0.60	-	-	0.40	B=0.0008-0.0050

C	Si max.	Mn	P max.	S max.	Cr	Ni max.	Mo max.	V
0.47-0.55	0.40	0.70-1.10	0.025	0.025	0.90-1.20	-	-	0.10-0.25

# CARBON STEELS

Steel grade	Standards and specifications	As-rolled condition (standard value)		Soft-annealed (max. value/standard value)
		Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Tensile strength $R_m$ [MPa]
<b>Alloyed heat-treatable steels and special steels</b>				
<b>EN 10132-4 (chemistry) and voestalpine special grade <sup>1)2)</sup></b>		<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>	<b><math>R_m</math></b>
D6A	voestalpine	980	1250	650
58CrV4	voestalpine	870	1070	680
63NiNb4	voestalpine	700	1000	680
68NiCrMo3	voestalpine	700	1000	680
72NiCrMo4-2	voestalpine	700	1000	680
75Cr1	voestalpine	700	1000	680
75CrNiMo	voestalpine	840	1140	680
C67S <sup>2)</sup>	EN 10132-4	550	950	660
C75S <sup>2)</sup>	EN 10132-4	550	950	680
75Ni8 <sup>2)</sup>	EN 10132-4	740	1100	680
80CrV2 <sup>2)</sup>	EN 10132-4	990	1300	720
C100S <sup>2)</sup>	EN 10132-4	700	1200	720

<sup>1)</sup> Please inquire about any deviations from the indicated melt analyses or narrower limit values.

<sup>2)</sup> Raw material for steel grades EN10132-4 (standard for cold-rolled strip)



**Chemical composition**  
Ladle analysis in weight percent

C	Si	Mn	P max.	S max.	Cr	Ni	Mo	Cu max.	other
0.42-0.49	0.15-0.35	0.70-1.00	0.025	0.01	0.80-1.20	0.40-0.70	0.80-1.20	0.25	V=0.10-0.15
0.54-0.62	0.15-0.35	0.70-1.10	0.025	0.01	0.90-1.20	max. 0.25	max. 0.06	0.25	V=0.10-0.25
0.60-0.66	0.15-0.35	0.30-0.60	0.025	0.01	max. 0.15	0.85-1.10	max. 0.15	0.25	Nb=0.03-0.05
0.65-0.71	0.15-0.35	0.30-0.60	0.025	0.01	0.40-0.60	0.50-0.80	0.15-0.25	0.25	-
0.69-0.75	0.15-0.35	0.40-0.70	0.025	0.01	0.30-0.60	0.70-1.00	0.05-0.10	0.25	-
0.70-0.80	0.25-0.50	0.60-0.80	0.025	0.01	0.30-0.40	max. 0.25	max. 0.06	0.25	-
0.70-0.80	0.15-0.35	0.60-0.90	0.025	0.01	0.50-0.70	0.30-0.60	0.05-0.15	0.25	-
0.65-0.73	0.15-0.35	0.60-0.90	0.025	0.025	max. 0.40	max. 0.40	max. 0.10	-	-
0.70-0.80	0.15-0.35	0.60-0.90	0.025	0.025	max. 0.40	max. 0.40	max. 0.10	-	-
0.72-0.78	0.15-0.35	0.30-0.50	0.025	0.01	max. 0.15	1.80-2.10	max. 0.06	0.25	-
0.78-0.85	0.15-0.35	0.40-0.70	0.025	0.01	0.40-0.60	max. 0.25	max. 0.06	0.25	V=0.15-0.25
0.95-1.05	0.15-0.35	0.30-0.60	0.025	0.01	max. 0.40	max. 0.25	max. 0.06	0.25	-

# CARBON STEELS

Steel grade	Standards and specifications	As-rolled condition (standard value)		Soft-annealed (max. value/standard value)
		Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Tensile strength $R_m$ [MPa]
<b>Boron-containing heat-treatable steels</b>				
<b>EN ISO 683-2 and voestalpine special grade</b>		$R_{p0.2}$	$R_m$	$R_m$
durostat B2	voestalpine	< 550	< 700	-
durostat B4	voestalpine	< 600	< 800	-
20MnB5	EN ISO 683-2	500	650	550
20MnB9	voestalpine	600	750	580
26MnB5	voestalpine	500	700	540
26MnB5+V	voestalpine	600	750	590
27MnCrB5-2	EN ISO 683-2	500	700	540
34MnB5	voestalpine	500	700	580
40MnB5	voestalpine	500	700	620

Steel grade	Standards and specifications	Standard values				Edging radii $R_i$ min. at 90° edging (Sheet thickness = s) Location of bending edge in direction of rolling	
		Hardness <sup>1)</sup> [HB]	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Fracture elongation $A_5$ [%]	Long.	Trans.
<b>Wear-resistant steel grades</b>							
<b>Special voestalpine grade</b>		<b>HB</b>	$R_{p0.2}$	$R_m$	$A_5$	<b>Long.</b>	<b>Trans.</b>
durostat 400	voestalpine	360 - 440	1100	1250	10	4 s	3 s
durostat 450	voestalpine	410 - 490	1200	1400	9	4 s	3 s
durostat 500	voestalpine	460 - 540	1300	1550	8	4.5 s	3.5 s

$$CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$$

$$CET = C + (Mn+Mo)/10 + (Cr+Cu)/20 + Ni/40$$

<sup>1)</sup> Hardness measurements are conducted pursuant to EN ISO 6506. Test condition HBW2.5 | 187.5 is applied to plate thicknesses ≤ 3 mm

**Chemical composition**  
Ladle analysis in weight percent

C	Si max.	Mn	P max.	S max.	Cr	Ni max.	V	Cu max.	other
0.24 - 0.30	0.40	1.10 - 1.40	0.020	0.010	0.30 - 0.50	0.25	-	0.25	B=0.0008 - 0.0050
0.38 - 0.42	0.40	1.10 - 1.40	0.025	0.025	0.30 - 0.50	0.25	-	0.25	B=0.0008 - 0.0050
0.18 - 0.23	0.40	1.10 - 1.40	0.020	0.010	0.10 - 0.40	0.25	-	0.25	B=0.0008 - 0.0050
0.18 - 0.23	0.40	2.00 - 2.30	0.020	0.010	0.10 - 0.40	0.25	-	0.25	B=0.0008 - 0.0050
0.24 - 0.28	0.40	1.10 - 1.40	0.020	0.010	0.10 - 0.40	0.25	-	0.25	B=0.0008 - 0.0050
0.24 - 0.28	0.40	1.10 - 1.40	0.020	0.010	0.10 - 0.40	0.25	0.05 - 0.10	0.25	B=0.0008 - 0.0050
0.24 - 0.30	0.40	1.10 - 1.40	0.020	0.010	0.30 - 0.60	0.25	-	0.25	B=0.0008 - 0.0050
0.32 - 0.37	0.40	1.10 - 1.40	0.020	0.010	0.10 - 0.40	0.25	-	0.25	B=0.0008 - 0.0050
0.38 - 0.42	0.40	1.10 - 1.40	0.020	0.010	0.30 - 0.60	0.25	-	0.25	B=0.0008 - 0.0050

**Chemical composition**  
Ladle analysis in weight percent

C max.	Si max.	Mn max.	P max.	S max.	Al min.	Cr max.	Mo max.	Ti max.	B max.	CEV max.	CET max.
0.15	0.60	2.30	0.025	0.010	0.020	0.50	0.20	0.050	0.005	0.59	0.38
0.20	0.60	2.30	0.025	0.010	0.020	0.50	0.20	0.050	0.005	0.62	0.42
0.24	0.60	2.30	0.025	0.010	0.020	0.50	0.20	0.050	0.005	0.66	0.46

# MICRO-ALLOYED STRUCTURAL STEELS

Steel grade	Standards and specifications	Test direction	Yield strength $R_{eH}$ [MPa]	Tensile strength $R_m$ [MPa]	Total elongation min. [%]	
					$A_{80}$	$A_5$
<b>Normalized rolled steels <sup>2)</sup></b>						
<b>Special voestalpine grade</b>			<b><math>R_{eH}</math></b>	<b><math>R_m</math></b>	<b><math>A_{80}</math></b>	<b><math>A_5</math></b>
alform 180 N	voestalpine	Transverse	180 - 290	280 - 360	28	34
alform 200 N	voestalpine	Transverse	200 - 320	320 - 400	26	32
alform 240 N	voestalpine	Transverse	240 - 360	360 - 470	23	28
alform 280 N	voestalpine	Transverse	280 - 420	430 - 530	21	26
alform 340 N/NE	voestalpine	Transverse	340 - 485	460 - 470	20	25
alform 355 N/NE	voestalpine	Transverse	355 - 500	470 - 580	20	25
alform 380 N/NE	voestalpine	Transverse	380 - 520	510 - 610	19	24
<b>Thermomechanically rolled steels</b>						
<b>Special voestalpine grade <sup>3)</sup></b>			<b><math>R_{eH}</math></b>	<b><math>R_m</math></b>	<b><math>A_{80}</math></b>	<b><math>A_5</math></b>
alform 280 M	voestalpine	Longitudinal	280 - 400	370 - 470	24	28
alform 315 M	voestalpine	Longitudinal	315 - 440	390 - 490	22	26
alform 340 M	voestalpine	Longitudinal	340 - 470	420 - 520	20	24
alform 355 M/ME	voestalpine	Longitudinal	355 - 480	430 - 530	20	24
alform 380 M/ME	voestalpine	Longitudinal	380 - 510	450 - 550	20	24
alform 420 M/ME	voestalpine	Longitudinal	420 - 550	480 - 600	18	22
alform 460 M/ME	voestalpine	Longitudinal	460 - 590	520 - 640	16	19
alform 500 M/ME	voestalpine	Longitudinal	500 - 650	550 - 680	15	18
alform 550 M/ME	voestalpine	Longitudinal	≥ 550	600 - 740	14	17
alform 600 M/ME	voestalpine	Longitudinal	≥ 600	650 - 800	13	16
alform 650 M/ME	voestalpine	Longitudinal	≥ 650	700 - 850	12	15
alform 700 M/ME	voestalpine	Longitudinal	≥ 700	750 - 930	11	14
<b>EN10149-2</b>			<b><math>R_{eH}</math></b>	<b><math>R_m</math></b>	<b><math>A_{80}</math></b>	<b><math>A_5</math></b>
S315MC	EN10149-2	Longitudinal	315	390 - 510	20	24
S355MC	EN10149-2	Longitudinal	355	430 - 550	19	23
S420MC	EN10149-2	Longitudinal	420	480 - 620	16	19
S460MC	EN10149-2	Longitudinal	460	520 - 670	14	17
S500MC	EN10149-2	Longitudinal	500	550 - 700	12	14
S550MC	EN10149-2	Longitudinal	550	600 - 760	12	14
S600MC	EN10149-2	Longitudinal	600	650 - 820	11	13
S650MC	EN10149-2	Longitudinal	650	700 - 880	10	12
S700MC	EN10149-2	Longitudinal	700	750 - 950	10	12
S900MC	EN10149-2	Longitudinal	900	930 - 1200	7	8

<sup>1)</sup>  $KV_2$  minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)

<sup>2)</sup> These steel grades comply with all requirements of comparable steels pursuant to EN 10025-2.

<sup>3)</sup> These steel grades comply with all requirements of comparable steels pursuant to EN 10149-2.

<sup>4)</sup> Option to be agreed upon at the time of the order

Notch impact energy KV <sub>2</sub> <sup>1)</sup> [Joule]		Edging radii Ri min. at 90° edging Sheet thickness = s		
Test temperature -20 °C	Test temperature -40 °C	< 3 mm	3 - 6 mm	> 6 mm
-20 °C / N	-40 °C / NE	< 3 mm	3 - 6 mm	> 6 mm
-	-	0.25 s	0.5 s	1 s
-	-	0.25 s	0.5 s	1 s
27	-	0.25 s	0.5 s	1 s
40	-	0.25 s	0.5 s	1 s
40	27	0.25 s	0.5 s	1 s
40	27	0.25 s	0.5 s	1 s
40	27	0.25 s	0.5 s	1 s
-20 °C / M	-40 °C / ME	< 3 mm	3 - 6 mm	> 6 mm
40	-	0.25 s	0.5 s	0.8 s
40	-	0.25 s	0.5 s	0.8 s
40	-	0.25 s	0.5 s	0.8 s
40	27	0.25 s	0.5 s	0.8 s
40	27	0.25 s	0.5 s	0.8 s
40	27	0.5 s	1.0 s	1.0 s
40	27	0.5 s	1.0 s	1.4 s
40	27	0.8 s	1.2 s	1.6 s
40	27	0.8 s	1.2 s	1.6 s
40	27	0.8 s	1.2 s	1.6 s
40	27	0.8 s	1.2 s	1.6 s
40	27	0.8 s	1.2 s	1.6 s
-20 °C <sup>4)</sup>	-40 °C <sup>4)</sup>	≤ 3 mm	3 - 6 mm	> 6 mm
40	27	0.25 s	0.5 s	1.0 s
40	27	0.25 s	0.5 s	1.0 s
40	27	0.5 s	1.0 s	1.5 s
40	27	0.5 s	1.0 s	1.5 s
40	27	1.0 s	1.5 s	2.0 s
40	27	1.0 s	1.5 s	2.0 s
40	27	1.0 s	1.5 s	2.0 s
40	27	1.5 s	2.0 s	2.5 s
40	27	1.5 s	2.0 s	2.5 s
40	-	-	4.0 s	-

# MICRO-ALLOYED STRUCTURAL STEELS

Steel grade	Standards and specifications	Yield strength $R_{eH}$ [MPa]	Tensile strength $R_m$ [MPa]	Total elongation min. [%]	
				$A_{80}$	$A_5$
Thermomechanically rolled steels with improved formability					
Special voestalpine grade		$R_{eH}$	$R_m$	$A_{80}$	$A_5$
alform 355 MU	voestalpine	355 - 480	430 - 530	20	24
alform 380 MU	voestalpine	380 - 510	450 - 550	20	24
alform 420 MU	voestalpine	420 - 550	480 - 580	18	22
alform 460 MU <sup>3)</sup>	voestalpine	460 - 590	520 - 640	16	19
alform 500 MU	voestalpine	500 - 650	550 - 680	15	18
alform 550 MU <sup>3)</sup>	voestalpine	≥ 550	600 - 740	14	17

<sup>1)</sup> KV<sub>2</sub> minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)

<sup>2)</sup> Smallest permissible inside radius at 90° edging, Ri min.

<sup>3)</sup> Upon request

Notch impact energy KV <sub>2</sub> <sup>1)</sup> [Joule]		Edging radii <sup>2)</sup> Ri min. at 90° edging Sheet thickness = s			Mandrel diameter BgD min. (transverse test specimens) Sheet thickness = s
MU Test temperature -20 °C	MU Test temperature -40 °C	< 3 mm	3 - 6 mm	> 6 mm	
-20 °C	-40 °C	< 3 mm	3 - 6 mm	> 6 mm	Mandrel diameter
40	27	0.25 s	0.5 s	0.8 s	0 s
40	27	0.25 s	0.5 s	0.8 s	0.5 s
40	27	0.5 s	1.0 s	1.0 s	0.5 s
40	27	0.5 s	1.0 s	1.4 s	1.0 s
40	27	0.8 s	1.2 s	1.6 s	1.0 s
40	27	0.8 s	1.2 s	1.6 s	1.5 s

# MICRO-ALLOYED STRUCTURAL STEELS

Steel grade	Standards and specifications	Yield strength $R_{eH}$ [MPa]	Tensile strength $R_m$ [MPa]	Total elongation min. [%]	
				$A_{80}$	$A_5$
Ultra-high-strength thermomechanically rolled steels <sup>2)</sup>					
Special voestalpine grade		$R_{eH}$	$R_m$	$A_{80}$	$A_5$
alform 900 x-treme	voestalpine	≥ 900	940 - 1100	-	10
alform 960 x-treme	voestalpine	≥ 960	980 - 1150	-	10
alform 1100 x-treme	voestalpine	≥ 1100	1160 - 1350	-	8

<sup>1)</sup> KV<sub>2</sub> minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)

<sup>2)</sup> The analysis limits, yield strengths and tensile strengths of the respective steel grades comply with EN 10025-6. These steel grades comply with all requirements of comparable steels pursuant to EN 10149-2.



Notch impact energy KV <sub>2</sub> <sup>1)</sup> [Joule]			Edging radii Ri min. at 90° edging Sheet thickness = s		
Longitudinal Test temperature -20 °C	Transverse Test temperature -20 °C	Longitudinal Test temperature -40 °C	< 3 mm	3 - 6 mm	> 6 mm
-20 °C	-20 °C	-40 °C	< 3 mm	3 - 6 mm	> 6 mm
40	30	30	-	2.5 s	3.0 s
40	30	30	-	2.5 s	3.0 s
27	27	27	-	3.5 s	5.0 s

# HOT-ROLLED STEEL STRIP FOR THE AUTOMOTIVE INDUSTRY

Steel grade	Standards and specifications	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]
Hot-rolled steel strip for the automotive industry			
<b>VDA239-100 and voestalpine special grade</b>		<b><math>R_{p0.2}</math></b>	<b><math>R_m</math></b>
HR0	VDA239-100	240 - 350	310 - 460
HR2	VDA239-100	180 - 290	270 - 400
HR300LA / LAS	VDA239-100	300 - 380	380 - 500
HR340LA / LAS	VDA239-100	340 - 440	420 - 540
HR380LA / LAS	VDA239-100	380 - 480	450 - 570
HR420LA / LAS	VDA239-100	420 - 520	480 - 600
HR460LA / LAS	VDA239-100	460 - 560	520 - 640
HR500LA	VDA239-100	500 - 620	560 - 700
HR550LA	VDA239-100	550 - 670	610 - 750
HR700LA / LAS	VDA239-100	700 - 850	750 - 950
HR440Y580T-FB	VDA239-100	440 - 600	580 - 700
HR660Y760T-CP	VDA239-100	660 - 820	760 - 960
HR900Y1180T-MS	VDA239-100	900 - 1150	1180 - 1400
DP600LCT	voestalpine	> 300	580 - 670

Total elongation min. [%]		n value min. $n_{10-20/Ag}$	BH <sub>2</sub> value min. [MPa]
A <sub>80</sub>	A <sub>5</sub>		
A <sub>80</sub>	A <sub>5</sub>	$n_{10-20/Ag}$	BH <sub>2</sub>
22	28	0.12	-
30	34	0.16	-
24	28	0.14	-
22	26	0.13	-
20	24	-	-
18	22	-	-
16	20	-	-
14	17	-	-
12	16	-	-
10	13	-	-
15	17	-	30
10	13	-	30
8	5	-	30
18	22	0.13	30

# POLE SHEETS

Steel grade	Standards and specifications	Test direction	Yield strength $R_{p0.2}$ min. [MPa]	Tensile strength $R_m$ min. [MPa]	Total elongation min. [%]		Magnetic polarization [Tesla] Minimum value at field intensity	
					$A_{80}$	$A_5$	5000 [A/m]	15000 [A/m]
<b>Pole sheets</b>								
<b>EN 10265:1995</b>			$R_{p0.2}$	$R_m$	$A_{80}$	$A_5$	5000 [A/m]	15000 [A/m]
250-TG-180	EN 10265:1995	Transverse	250	350	22	26	1.60	1.80
300-TG-180	EN 10265:1995	Transverse	300	400	20	24	1.60	1.80
350-TG-179	EN 10265:1995	Transverse	350	450	18	22	1.55	1.79
400-TG-179	EN 10265:1995	Transverse	400	500	16	19	1.55	1.79
450-TG-179	EN 10265:1995	Transverse	450	550	14	17	1.54	1.79
500-TG-179	EN 10265:1995	Transverse	500	600	12	14	1.53	1.79
550-TG-178	EN 10265:1995	Transverse	550	650	12	14	1.52	1.78
600-TG-178	EN 10265:1995	Transverse	600	700	10	12	1.50	1.78
650-TG-178	EN 10265:1995	Transverse	650	750	10	12	1.48	1.78
700-TG-178	EN 10265:1995	Transverse	700	800	10	12	1.46	1.78
<b>Ultra-high-strength pole sheets</b>								
<b>Special voestalpine grade</b>			$R_{p0.2}$	$R_m$	$A_{80}$	$A_5$	5000 [A/m]	15000 [A/m]
750-VA-175	voestalpine	Long. + Trans.	750	800	10	12	1.46	1.75
900-VA-175	voestalpine	Long. + Trans.	900	940	-	10	1.46	1.75

# ENAMELING STEELS

Steel grade	Standards and specifications	Standard data in as-delivered condition				Minimum values according to simulation annealing at 830 °C			
		Yield strength $R_{p0.2}$ min. [MPa]	Tensile strength $R_m$ [MPa]	Total elongation min. [%]		Yield strength $R_{p0.2}$ min. [MPa]	Tensile strength $R_m$ [MPa]	Total elongation min. [%]	
				$A_{80}$	$A_5$			$A_{80}$	$A_5$
<b>Enameling steels</b>									
Special voestalpine grade		$R_{p0.2}$	$R_m$	$A_{80}$	$A_5$	$R_{p0.2}$	$R_m$	$A_{80}$	$A_5$
DD11CCE	voestalpine	200 - 300	300 - 400	25	30	170	250	25	30
DD15CCE	voestalpine	140 - 240	260 - 360	28	33	100	250	28	33
S240CCE	voestalpine	240 - 360	360 - 450	22	27	240	360	22	27
S355CCE	voestalpine	600 - 770	650 - 800	-	14	355	500	-	16
S380CCE	voestalpine	620 - 790	670 - 820	-	12	380	550	-	15

# SURFACES AND SERVICES

Surface					
Product variant	Unoiled	Slightly oiled	Oiled	Oiled edges	Heavily oiled
Pickled (+ skin-passed)	✓	✓	✓	✓	✓
Unpickled	Unpickled material is only supplied in unoiled condition				

» Types of oil: Corrosion protection oil, rolling oil

Selected services			
Special coil labeling	Customer-specific special steels	Narrowest thickness tolerances	Test certificate pursuant to EN 10204

**System solutions: alform® welding system**  
 alform® welding system is the world's first custom-matched system of steels and consumables and allows optimized utilization of material potential.



Premium quality with reduced carbon footprint

Hot-rolled steel strip – greentec steel Edition

Max. carbon footprint 1.95 kg CO<sub>2</sub>e per kg of steel <sup>1)</sup>

<sup>1)</sup> 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.

# DIMENSIONS

Available dimensions: wide strip (coil)			
Thickness [mm]	Width max. [mm]	Outside diameter max. [mm]	Inside diameter [mm]
1.50 - 20.00	900 - 1750	2200	500, 600, 720 - 780

» Non-slit in coils, with mill edge or cut edge

Available dimensions: slit (slit strip)			
Thickness [mm]	Strip width [mm]	Outside diameter [mm]	Inside diameter [mm]
1.50 - 12.00	50 - 1650	900 - 2020	500 <sup>1)</sup> / 600 / 760

» Longitudinally slit in coils with cut edge

<sup>1)</sup> Only up to 7 mm in thickness

Available dimensions: cut-to-length (sheet)			
Thickness [mm]	Width [mm]	Length [mm]	Package weight max. [t]
2.0 - 20.00	900 - 1750	1250 - 18000	10

» Cut-to-length sheet with mill edge or cut edge

Indicated references are standard values. The available combinations of widths and thicknesses and supply forms vary depending on the steel grade. Limitations are possible depending on thickness. Cut-to-length sheets in < 3.0 mm thickness and slit strip in < 4.5 mm thickness can be preprocessed upon request in the slitting and cut-to-length lines for cold-rolled materials.

All listed dimensions and grades are available as greentec steel.

This document provides an overview of the hot-rolled steel strip products supplied by the voestalpine Steel Division. Other grades are available upon request. Please find further information and downloads under the following link:

[www.voestalpine.com/Produktinformationsportal](http://www.voestalpine.com/Produktinformationsportal)

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ONE STEP AHEAD.