greentec steel

PREMIUM QUALITY WITH REDUCED CARBON FOOTPRINT

HOT-ROLLED STEEL STRIP

Range of supply
September 2024

voestalpine Steel Division
www.voestalpine.com/steel

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ONE STEP AHEAD.

STRUCTURAL STEELS

Steel grade	Standards and specifications	Test direction	Yield strength R_{eH} min. [MPa]		Tensile strength R_m [MPa]		Total elongation min. [%]				Notch impact energy KV_2 [1]	
							A_{80}			A_5	Test temperature [°C]	KV_2 [Joule]
			≤ 16 mm	> 16 mm	< 3 mm	≥ 3 mm	1.80 - 2.00 mm	2.01 - 2.50 mm	2.51 - 2.99 mm	≥ 3 mm		
Unalloyed structural steels / Edging grades												
EN 10025-2			**≤ 16 mm**	**> 16 mm**	**< 3 mm**	**≥ 3 mm**	**1.80 - 2.00 mm**	**2.01 - 2.50 mm**	**2.51 - 2.99 mm**	**≥ 3 mm**	**Test temperature [°C]**	**KV_2 [Joule]**
S185	EN 10025-2	Transverse	185	175	310 - 540	290 - 510	10	11	12	16	-	-
S235JR [2) 3)]	EN 10025-2	Transverse	235	225	360 - 510	360 - 510	17	18	19	24	20	27
S235J0 [2) 3)]	EN 10025-2	Transverse	235	225	360 - 510	360 - 510	17	18	19	24	0	27
S235J2 [2) 3)]	EN 10025-2	Transverse	235	225	360 - 510	360 - 510	17	18	19	24	-20	27
S275JR [2) 3)]	EN 10025-2	Transverse	275	265	430 - 580	410 - 560	15	16	17	21	20	27
S275J0 [2) 3)]	EN 10025-2	Transverse	275	265	430 - 580	410 - 560	15	16	17	21	0	27
S275J2 [2) 3)]	EN 10025-2	Transverse	275	265	430 - 580	410 - 560	15	16	17	21	-20	27
S355JR [2) 3)]	EN 10025-2	Transverse	355	345	510 - 680	470 - 630	14	15	16	20	20	27
S355J0 [2) 3)]	EN 10025-2	Transverse	355	345	510 - 680	470 - 630	14	15	16	20	0	27
S355J2 [2) 3)]	EN 10025-2	Transverse	355	345	510 - 680	470 - 630	14	15	16	20	-20	27
S355K2 [2) 3)]	EN 10025-2	Transverse	355	345	510 - 680	470 - 630	14	15	16	20	-20	40
E295	EN 10025-2	Transverse	295	285	490 - 660	470 - 610	12	13	14	18	-	-
E335	EN 10025-2	Transverse	335	325	590 - 770	570 - 710	8	9	10	14	-	-
E360	EN 10025-2	Transverse	360	355	690 - 900	670 - 830	5	6	7	10	-	-
Weather-resistant structural steels												
EN 10025-5			**≤ 16 mm**	**> 16 mm**	**< 3 mm**	**≥ 3 mm**	**1.80 - 2.00 mm**	**2.01 - 2.50 mm**	**2.51 - 2.99 mm**	**≥ 3 mm**	**Test temperature [°C]**	**KV_2 [Joule]**
S355J2W [3)]	EN 10025-5	Transverse	355	345	510 - 680	470 - 630	14	15	16	20	-20	27
S355J0W [3)]	EN 10025-5	Transverse	355	345	510 - 680	470 - 630	14	15	16	20	0	27

[1)] KV_2 minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)
[2)] Code letter "C" stands for bendability and roll-formability
[3)] As-delivered condition: +N (normalized-rolled), +AR (as-rolled)

MILD STEELS

Steel grade	Standards and specifications	Test direction	Thickness [mm]	Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m max. [MPa]	Total elongation min. [%] A_{80}	Total elongation min. [%] A_5	Bending test transverse Bending mandrel Angle = 180° Sheet thickness = s	Period of validity
Mild unalloyed steels for cold forming									
EN 10111			**Thickness**	**$R_{p0.2}$**	**R_m**	**A_{80}**	**A_5**	**Mandrel diameter**	**Months**
DD11	EN 10111	Transverse	1.8 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 360 170 - 340 170 - 340	440	23 24 -	- - 28	-	-
DD12	EN 10111	Transverse	1.8 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 340 170 - 320 170 - 320	420	25 26 -	- - 30	-	6 months
DD13	EN 10111	Transverse	1.8 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 330 170 - 310 170 - 310	400	28 29 -	- - 33	-	6 months
DD14	EN 10111	Transverse	1.8 < 2.0 2.0 < 3.0 ≥ 3.0	170 - 310 170 - 290 170 - 290	380	31 32 -	- - 36	-	6 months

CARBON STEELS

Steel grade	Standards and specifications	As-rolled condition (standard value) Yield strength $R_{p0.2}$ [MPa]	As-rolled condition (standard value) Tensile strength R_m [MPa]	Soft-annealed (max. value) Tensile strength R_m [MPa]	Chemical composition Ladle analysis in weight percent									
Case-hardening steels														
EN ISO 683-3 [1)]		$R_{p0.2}$	R_m	R_m	C	Si max.	Mn	P max.	S max.	Cr	Ni max.	Mo max.	Cu max.	other
C10E	EN ISO 683-3	300	400	380	0.07 - 0.13	0.40	0.30 - 0.60	0.025	0.035	0.40	0.40	0.10	0.30	-
C15E	EN ISO 683-3	330	470	450	0.12 - 0.18	0.40	0.30 - 0.60	0.025	0.035	0.40	0.40	0.10	0.30	-
16MnCr5	EN ISO 683-3	400	600	480	0.14 - 0.19	0.40	1.00 - 1.30	0.025	0.035	0.80 - 1.10	-	-	0.40	-
Unalloyed heat-treatable steels														
EN ISO 683-1		$R_{p0.2}$	R_m	R_m	C	Si min.	Mn	P max.	S max.	Cr. max.	Ni max.	Mo max.	Cu max.	Cr+Mo+Ni
C35E	EN ISO 683-1	450	680	500	0.32 - 0.39	0.10 - 0.40	0.50 - 0.80	0.025	0.035	0.40	0.40	0.10	0.30	0.63
C45E	EN ISO 683-1	460	750	600	0.42 - 0.50	0.10 - 0.40	0.50 - 0.80	0.025	0.035	0.40	0.40	0.10	0.30	0.63
C50E	EN ISO 683-1	490	830	600	0.47 - 0.55	0.10 - 0.40	0.60 - 0.90	0.025	0.035	0.40	0.40	0.10	0.30	0.63
C55E	EN ISO 683-1	500	840	600	0.52 - 0.60	0.10 - 0.40	0.60 - 0.90	0.025	0.035	0.40	0.40	0.10	0.30	0.63
C60E	EN ISO 683-1	520	860	650	0.57 - 0.65	0.10 - 0.40	0.60 - 0.90	0.025	0.035	0.40	0.40	0.10	0.30	0.63
Alloyed heat-treatable steels														
EN ISO 683-2 [1)]		$R_{p0.2}$	R_m	R_m	C	Si max.	Mn	P max.	S max.	Cr	Ni max.	Mo	Cu max.	other
25CrMo4	EN ISO 683-2	650	850	550	0.22 - 0.29	0.40	0.60 - 0.90	0.025	0.035	0.90 - 1.20	-	0.15 - 0.30	0.40	-
34CrMo4	EN ISO 683-2	770	970	650	0.30 - 0.37	0.40	0.60 - 0.90	0.025	0.035	0.90 - 1.20	-	0.15 - 0.30	0.40	-
42CrMo4	EN ISO 683-2	790	990	660	0.38 - 0.45	0.40	0.60 - 0.90	0.025	0.035	0.90 - 1.20	-	0.15 - 0.30	0.40	-
51CrV4	EN ISO 683-2	850	1050	680	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
20MnB5	EN ISO 683-2	530	680	570	0.17 - 0.23	0.40	1.10 - 1.40	0.025	0.035	-	-	-	0.40	B=0.0008 - 0.0050
27MnCrB5-2	EN ISO 683-2	490	670	520	0.24 - 0.30	0.40	1.10 - 1.40	0.025	0.035	0.30 - 0.60	-	-	0.40	B=0.0008 - 0.0050
Spring steels														
EN 10089 [1)]		$R_{p0.2}$	R_m	R_m	C	Si max.	Mn	P max.	S max.	Cr	Ni max.	Mo max.	V	
51CrV4	EN 10089	850	1050	680	0.47 - 0.55	0.40	0.70 - 1.10	0.025	0.025	0.90 - 1.20	-	-	0.10 - 0.25	

[1)] Please inquire about any deviations from the indicated melt analyses or narrower limit values.

CARBON STEELS

Steel grade	Standards and specifications	As-rolled condition (standard value) Yield strength $R_{p0.2}$ [MPa]	As-rolled condition (standard value) Tensile strength R_m [MPa]	Soft-annealed (max. value) Tensile strength R_m [MPa]	Chemical composition Ladle analysis in weight percent									
Alloyed heat-treatable steels and special steels														
EN 10132-4 (chemistry) and voestalpine special grade [1) 2)]		$R_{p0.2}$	R_m	R_m	C	Si	Mn	P max.	S max.	Cr	Ni	Mo	Cu max.	other
D6A	voestalpine	980	1250	650	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
58CrV4	voestalpine	870	1070	680	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
63NiNb4	voestalpine	700	1000	680	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
68NiCrMo3	voestalpine	700	1000	680	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	-
72NiCrMo4-2	voestalpine	700	1000	680	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	-
75Cr1	voestalpine	700	1000	680	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	-
75CrNiMo	voestalpine	840	1140	680	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	-
C67S [2)]	EN 10132-4	550	950	660	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	-	-
C75S [2)]	EN 10132-4	550	950	680	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	-	-
75Ni8 [2)]	EN 10132-4	740	1100	680	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	-
80CrV2 [2)]	EN 10132-4	990	1300	720	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

[1)] Please inquire about any deviations from the indicated melt analyses or narrower limit values.
[2)] Raw material for steel grades EN10132-4 (standard for cold-rolled strip)

CARBON STEELS

Steel grade	Standards and specifications	As-rolled condition (standard value) Yield strength $R_{p0.2}$ [MPa]	As-rolled condition (standard value) Tensile strength R_m [MPa]	Soft-annealed (max. value) Tensile strength R_m [MPa]	Chemical composition Ladle analysis in weight percent									
Boron-containing heat-treatable steels														
EN ISO 683-2 and voestalpine special grade		$R_{p0.2}$	R_m	R_m	C	Si max.	Mn	P max.	S max.	Cr	Ni max.	V	Cu max.	other
durostat B2	voestalpine	< 550	< 700	-	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
durostat B4	voestalpine	< 600	< 800	-	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
20MnB5	EN ISO 683-2	500	650	550	0.18 - 0.23	0.40	1.10 - 1.40	0.025	0.035	0.10 - 0.40	0.25	-	0.25	B=0.0008 - 0.0050
20MnB9	voestalpine	600	750	580	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
26MnB5	voestalpine	500	700	540	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
26MnB5+V	voestalpine	600	750	590	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
27MnCrB5-2	EN ISO 683-2	500	700	540	0.24 - 0.30	0.40	1.10 - 1.40	0.035	0.035	0.30 - 0.60	0.25	-	0.25	B=0.0008 - 0.0050
34MnB5	voestalpine	500	700	580	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
40MnB5	voestalpine	500	700	620	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

Steel grade	Standards and specifications	Hardness [1] [HB]	Standard values Yield strength $R_{p0.2}$ [MPa]	Standard values Tensile strength R_m [MPa]	Standard values Fracture elongation A_5 [%]	Edging radii Ri min. at 90° edging (Sheet thickness = s) Location of bending edge in direction of rolling Long.	Edging radii Ri min. at 90° edging (Sheet thickness = s) Location of bending edge in direction of rolling Trans.	Chemical composition Ladle analysis in weight percent											
Wear-resistant steel grades																			
Special voestalpine grade		HB	$R_{p0.2}$	R_m	A_5	Long.	Trans.	C max.	Si max.	Mn max.	P max.	S max.	Al min.	Cr max.	Mo max.	Ti max.	B max.	CEV max.	CET max.
durostat 400	voestalpine	360 - 440	1100	1250	10	4 s	3 s	0.15	0.60	2.30	0.025	0.010	0.020	0.50	0.20	0.050	0.005	0.59	0.38
durostat 450	voestalpine	410 - 490	1200	1400	9	4 s	3 s	0.20	0.60	2.30	0.025	0.010	0.020	0.50	0.20	0.050	0.005	0.62	0.42
durostat 500	voestalpine	460 - 540	1300	1550	8	4.5 s	3.5 s	0.24	0.60	2.30	0.025	0.010	0.020	0.50	0.20	0.050	0.005	0.66	0.46

CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15
CET = C + (Mn+Mo)/10 + (Cr+Cu)/20 +Ni/40

[1] Hardness measurements are conducted pursuant to EN ISO 6506. Test condition HBW2.5 | 187.5 is applied to plate thicknesses ≤ 3 mm

MICRO-ALLOYED STRUCTURAL STEELS

Steel grade	Standards and specifications	Test direction	Yield strength R_{eH} [MPa]	Tensile strength R_m [MPa]	Total elongation min. [%]		Notch impact energy KV_2 [1] [Joule]		Edging radii Ri min. at 90° edging Sheet thickness = s		
					A_{80}	A_5	Test temperature -20 °C	Test temperature -40 °C	< 3 mm	3 - 6 mm	> 6 mm
Normalized rolled steels [2]											
Special voestalpine grade			R_{eH}	R_m	A_{80}	A_5	**-20 °C / N**	**-40 °C / NE**	**< 3 mm**	**3 - 6 mm**	**> 6 mm**
alform 180 N	voestalpine	Transverse	180 - 290	280 - 360	28	34	-	-	0.25 s	0.5 s	1 s
alform 200 N	voestalpine	Transverse	200 - 320	320 - 400	26	32	-	-	0.25 s	0.5 s	1 s
alform 240 N	voestalpine	Transverse	240 - 360	360 - 470	23	28	27	-	0.25 s	0.5 s	1 s
alform 280 N	voestalpine	Transverse	280 - 420	430 - 530	21	26	40	-	0.25 s	0.5 s	1 s
alform 340 N/NE	voestalpine	Transverse	340 - 485	460 - 570	20	25	40	27	0.25 s	0.5 s	1 s
alform 355 N/NE	voestalpine	Transverse	355 - 500	470 - 580	20	25	40	27	0.25 s	0.5 s	1 s
alform 380 N/NE	voestalpine	Transverse	380 - 520	510 - 610	19	24	40	27	0.25 s	0.5 s	1 s
Thermomechanically rolled steels											
Special voestalpine grade [3]			R_{eH}	R_m	A_{80}	A_5	**-20 °C / M**	**-40 °C / ME**	**≤ 3 mm**	**3 - 6 mm**	**> 6 mm**
alform 280 M	voestalpine	Longitudinal	280 - 400	370 - 470	24	28	40	-	0.25 s	0.5 s	0.8 s
alform 315 M	voestalpine	Longitudinal	315 - 440	390 - 490	22	26	40	-	0.25 s	0.5 s	0.8 s
alform 340 M	voestalpine	Longitudinal	340 - 470	420 - 520	20	24	40	-	0.25 s	0.5 s	0.8 s
alform 355 M/ME	voestalpine	Longitudinal	355 - 480	430 - 530	20	24	40	27	0.25 s	0.5 s	0.8 s
alform 380 M/ME	voestalpine	Longitudinal	380 - 510	450 - 550	20	24	40	27	0.25 s	0.5 s	0.8 s
alform 420 M/ME	voestalpine	Longitudinal	420 - 550	480 - 600	18	22	40	27	0.5 s	1.0 s	1.0 s
alform 460 M/ME	voestalpine	Longitudinal	460 - 590	520 - 640	16	19	40	27	0.5 s	1.0 s	1.4 s
alform 500 M/ME	voestalpine	Longitudinal	500 - 650	550 - 680	13	16	40	27	0.8 s	1.2 s	1.6 s
alform 550 M/ME	voestalpine	Longitudinal	≥ 550	600 - 740	14	17	40	27	0.8 s	1.2 s	1.6 s
alform 600 M/ME	voestalpine	Longitudinal	≥ 600	650 - 800	13	16	40	27	0.8 s	1.2 s	1.6 s
alform 650 M/ME	voestalpine	Longitudinal	≥ 650	700 - 850	12	15	40	27	0.8 s	1.2 s	1.6 s
alform 700 M/ME	voestalpine	Longitudinal	≥ 700	750 - 930	11	14	40	27	0.8 s	1.2 s	1.6 s
EN10149-2			R_{eH}	R_m	A_{80}	A_5	**-20 °C [4]**	**-40 °C [4]**	**≤ 3 mm**	**3 - 6 mm**	**> 6 mm**
S315MC	EN10149-2	Longitudinal	315	390 - 510	20	24	40	27	0.25 s	0.5 s	1.0 s
S355MC	EN10149-2	Longitudinal	355	430 - 550	19	23	40	27	0.25 s	0.5 s	1.0 s
S420MC	EN10149-2	Longitudinal	420	480 - 620	16	19	40	27	0.5 s	1.0 s	1.5 s
S460MC	EN10149-2	Longitudinal	460	520 - 670	14	17	40	27	0.5 s	1.0 s	1.5 s
S500MC	EN10149-2	Longitudinal	500	550 - 700	12	14	40	27	1.0 s	1.5 s	2.0 s
S550MC	EN10149-2	Longitudinal	550	600 - 760	12	14	40	27	1.0 s	1.5 s	2.0 s
S600MC	EN10149-2	Longitudinal	600	650 - 820	11	13	40	27	1.0 s	1.5 s	2.0 s
S650MC	EN10149-2	Longitudinal	650	700 - 880	10	12	40	27	1.5 s	2.0 s	2.5 s
S700MC	EN10149-2	Longitudinal	700	750 - 950	10	12	40	27	1.5 s	2.0 s	2.5 s
S900MC	EN10149-2	Longitudinal	900	930 - 1200	7	8	40	-	-	4.0 s	-

[1] KV_2 minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)
[2] These steel grades comply with all requirements of comparable steels pursuant to EN 10025-2.
[3] These steel grades comply with all requirements of comparable steels pursuant to EN 10149-2.
[4] Option to be agreed upon at the time of the order

MICRO-ALLOYED STRUCTURAL STEELS

Steel grade	Standards and specifications	Test direction	Yield strength R_{eH} [MPa]	Tensile strength R_m [MPa]	Total elongation min. [%]		Notch impact energy KV_2 [1] [Joule]		Edging radii [2] Ri min. at 90° edging Sheet thickness = s			Mandrel diameter BgD min. (transverse test specimens) Sheet thickness = s
					A_{80}	A_5	MU Test temperature -20 °C	MU Test temperature -40 °C	≤ 3 mm	3 - 6 mm	> 6 mm	
Thermomechanically rolled steels with improved formability												
Special voestalpine grade			R_{eH}	R_m	A_{80}	A_5	-20 °C	-40 °C	≤ 3 mm	3 - 6 mm	> 6 mm	Mandrel diameter
alform 355 MU	voestalpine	Longitudinal	355 - 480	430 - 530	20	24	40	27	0.25 s	0.5 s	0.8 s	0 s
alform 380 MU	voestalpine	Longitudinal	380 - 510	450 - 550	20	24	40	27	0.25 s	0.5 s	0.8 s	0.5 s
alform 420 MU	voestalpine	Longitudinal	420 - 550	480 - 580	18	22	40	27	0.5 s	1.0 s	1.0 s	0.5 s
alform 460 MU [3]	voestalpine	Longitudinal	460 - 590	520 - 640	16	19	40	27	0.5 s	1.0 s	1.4 s	1.0 s
alform 500 MU	voestalpine	Longitudinal	500 - 650	550 - 680	15	18	40	27	0.8 s	1.2 s	1.6 s	1.0 s
alform 550 MU [3]	voestalpine	Longitudinal	≥ 550	600 - 740	14	17	40	27	0.8 s	1.2 s	1.6 s	1.5 s

[1] KV_2 minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)
[2] Smallest permissible inside radius at 90° edging, Ri min.
[3] Upon request

MICRO-ALLOYED STRUCTURAL STEELS

Steel grade	Standards and specifications	Test direction	Yield strength R_{eH} [MPa]	Tensile strength R_m [MPa]	Total elongation min. [%]		Notch impact energy KV_2 [1] [Joule]			Edging radii Ri [2] min. at 90° edging Sheet thickness = s		
					A_{80}	A_5	Longitudinal Test temperature -20 °C	Transverse Test temperature -20 °C	Longitudinal Test temperature -40 °C	< 3 mm	3 - 6 mm	> 6 mm
Ultra-high-strength thermomechanically rolled steels [3]												
Special voestalpine grade			R_{eH}	R_m	A_{80}	A_5	-20 °C	-20 °C	-40 °C	< 3 mm	3 - 6 mm	> 6 mm
alform 900 x-treme	voestalpine	Longitudinal	≥ 900	940 - 1100	-	10	40	30	30	-	2.5 s	3.0 s
alform 960 x-treme	voestalpine	Longitudinal	≥ 960	980 - 1150	-	10	40	30	30	-	2.5 s	3.0 s
alform 1100 x-treme	voestalpine	Longitudinal	≥ 1100	1160 - 1350	-	8	27	27	27	-	3.5 s	5.0 s

[1] KV_2 minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)
[2] Smallest permissible inside radius at 90° edging for sheet thickness s, bending axis in longitudinal direction
[3] 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.

HOT-ROLLED STEEL STRIP FOR THE AUTOMOTIVE INDUSTRY

Steel grade	Standards and specifications	Test direction	Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Total elongation min. [%]		n value min. $n_{10-20/Ag}$	BH_2 value min. [MPa]
					A_{80}	A_5		
Hot-rolled steel strip for the automotive industry								
VDA239-100 and voestalpine special grade			$R_{p0.2}$	R_m	A_{80}	A_5	$n_{10-20/Ag}$	BH_2
HR0	VDA239-100	Longitudinal	240 - 350	310 - 460	22	28	0.12	-
HR2	VDA239-100	Longitudinal	180 - 290	270 - 400	30	34	0.16	-
HR300LA / LAS	VDA239-100	Longitudinal	300 - 400	380 - 500	24	28	0.14	-
HR340LA / LAS	VDA239-100	Longitudinal	340 - 440	420 - 540	22	26	0.13	-
HR380LA / LAS	VDA239-100	Longitudinal	380 - 480	450 - 570	20	24	-	-
HR420LA / LAS	VDA239-100	Longitudinal	420 - 520	480 - 600	18	22	-	-
HR460LA / LAS	VDA239-100	Longitudinal	460 - 560	520 - 640	16	20	-	-
HR500LA	VDA239-100	Longitudinal	500 - 620	560 - 700	14	17	-	-
HR550LA	VDA239-100	Longitudinal	550 - 670	610 - 750	12	16	-	-
HR600LA	VDA239-100	Longitudinal	600 - 730	650 - 800	11	15	-	-
HR700LA / LAS	VDA239-100	Longitudinal	700 - 850	750 - 950	10	13	-	-
HR440Y580T-FB	VDA239-100	Longitudinal	440 - 600	580 - 700	16	15	-	30
HR660Y760T-CP	VDA239-100	Longitudinal	660 - 820	760 - 960	10	13	-	30
HR750Y980T-CP	VDA239-100	Longitudinal	750 - 950	950 - 1150	7	9	-	-
HR900Y1180T-MS	VDA239-100	Longitudinal	900 - 1150	1180 - 1400	8	5	-	-
DP600LCT [1)]	voestalpine	Longitudinal	> 300	580 - 670	18	22	0.13	30

[1)] Upon request

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]
Pole sheets								
EN 10265			$R_{p0.2}$	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
Ultra-high-strength pole sheets								
Special voestalpine grade			$R_{p0.2}$	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

STEELS FOR ENAMELLING

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
Steels for enamelling									
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 SYSTEM SOLUTIONS

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

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.

greentec steel

Premium quality with reduced carbon footprint

Hot-rolled steel strip – greentec steel Edition
Max. carbon footprint 1.95 kg CO_2e 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.

DIMENSIONS

Available dimensions: wide strip (coil)

Thickness [1] [mm]	Width max. [mm]	Outside diameter max. [mm]	Inside diameter [mm]
1.80 - 20.00	900 - 1750	2200	500, 600, 720 - 780

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

[1] Thicknesses smaller than 1.80 mm upon request

Available dimensions: slit (slit strip)

Thickness [1] [mm]	Strip width [mm]	Outside diameter [mm]	Inside diameter [mm]
1.80 - 12.00	min. 50	900 - 2020	500 [2] / 600 / 760

» Longitudinally slit in coils with cut edge

[1] Thicknesses smaller than 1.80 mm upon request
[2] 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

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