



alform® N SERIES

Normalized-rolled steels with excellent cold formability

Normalized-rolled alform® steels achieve the listed mechanical properties, even in as-delivered condition and after being additionally normalized. Compliance with narrowest manufacturing requirements yields perfect processing results. Depending on their respective strength class, these steels are employed for deep drawing, profiling and edging, etc., in a wide variety of applications.

These steel grades comply with all requirements of comparable steels pursuant to EN 10025-2.

Convincing advantages:

- » Very good suitability for cutting, punching and forming
- » Very good weldability because of low carbon equivalent
- » Improved properties with narrower limits than those of comparable standard steels



Premium quality
with reduced carbon footprint

alform®
greentec steel

Chemical composition

Ladle analysis in weight percent and carbon equivalent

alform®	C max.	Si max.	Mn max.	P max.	S max.	Al min.	Cr max.	Ni max.	Mo max.	Cu max.	V max.	Nb max.	Ti max.	B max.	CEV max.
180 N	0.08	0.05	0.35	0.025	0.020	0.020	0.3	0.3	0.08	0.3	0.02	0.02	0.02	0.004	0.15
200 N	0.10	0.05	0.45	0.025	0.020	0.020	0.3	0.3	0.08	0.3	0.02	0.02	0.02	0.004	0.20
240 N	0.16	0.05	0.70	0.025	0.020	0.020	0.3	0.3	0.08	0.3	0.02	0.02	0.02	0.004	0.25
280 N	0.16	0.05	1.20	0.025	0.015	0.020	0.3	0.3	0.08	0.3	0.05	0.05	0.05	0.004	0.40
340 N	0.18	0.30	1.60	0.025	0.015	0.015	0.3	0.3	0.08	0.3	0.05	0.05	0.05	0.004	0.43
355 N	0.18	0.30	1.60	0.025	0.012	0.015	0.3	0.3	0.08	0.3	0.05	0.05	0.05	0.004	0.43
380 N	0.18	0.30	1.60	0.025	0.012	0.015	0.3	0.3	0.08	0.3	0.05	0.05	0.05	0.004	0.43

When these steel grades are to be **galvanized as Class 1**, the following restrictions apply:
 Si 0.03% max. and P 0.018% max.; CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15

Mechanical properties: Tensile test

Tensile test transverse to rolling direction

R_{p0.2} applies for the yield strength in case of missing R_{eH} and in arbitrary cases

A₈₀ for thicknesses < 3 mm

A₅ for thicknesses ≥ 3 mm

alform®	Yield strength R _{eH} [MPa]	Tensile strength R _m [MPa]	Elongation [%] min.	
			A ₈₀	A ₅
180 N	180 – 290	280 – 360	28	34
200 N	200 – 320	320 – 400	26	32
240 N	240 – 360	360 – 470	23	28
280 N	280 – 420	430 – 530	21	26
340 N	340 – 485	460 – 570	20	25
355 N	355 – 500	470 – 580	20	25
380 N	380 – 520	510 – 610	19	24

Mechanical properties: Notch impact energy, edging radii

alform®	Notch impact energy ¹⁾ A _v [Joule]		Edging radii ²⁾ Ri min. at 90° edging		
	N Test temperature -20 °C	NE Test temperature -40 °C	s < 3 mm	s 3-6 mm	s > 6 mm
	180 N	-	-	0.25 s	0.5 s
200 N	-	-	0.25 s	0.5 s	1.0 s
240 N	27	-	0.25 s	0.5 s	1.0 s
280 N	40	-	0.25 s	0.5 s	1.0 s
340 N (NE)	40	27 ³⁾	0.25 s	0.5 s	1.0 s
355 N (NE)	40	27 ³⁾	0.25 s	0.5 s	1.0 s
380 N (NE)	40	27 ³⁾	0.25 s	0.5 s	1.0 s

¹⁾ A_v, minimum mean value from three samples (ISO-V, longitudinal) as related to full-size specimen (10 x 10 mm).

²⁾ Smallest permissible inside radius at 90° edging, Ri min

³⁾ Values at -40 °C are guaranteed for limited dimension ranges and material is labeled **NE** upon request.

Notch impact energy can be measured from a plate thickness ≥ 3 mm upon request.

Note: Notch impact energy tests in thicknesses < 6 mm do not conform with applicable Euronorm standards.

Example dimensions

Maximum width per thickness

alform®	Thickness [mm]						
	2.0	2.5	3.0	3.5	4.0	6.0	12.0
180 N	1600	1620	1620	1620	1620	1620	1620
200 N	1600	1620	1620	1620	1620	1620	1620
240 N	1600	1620	1620	1620	1620	1620	1620
280 N	1480	1620	1620	1620	1620	1620	1620
340 N	1270	1380	1500	1610	1620	1620	1620
355 N	1270	1380	1500	1610	1620	1620	1620
380 N	1270	1380	1500	1610	1620	1620	1620

Additional dimensions upon request.

Depending on the dimensions and strength, we also supply pickled, oiled and trimmed.

Steel strip	Slit steel strip	Cut sheets	Cut shapes
Width: 900 - 1620 (1750) mm	Thickness: up to 12 mm	Thickness: up to 20 mm	upon request
Weight/Width: 18 - 20 kg/mm	Strip widths: beginning at 30 mm	Length: up to 12 m (18 m)	



Premium quality with reduced carbon footprint



Hot-rolled steel strip – greentec steel Edition

Max. carbon footprint 1.95 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.

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