



## alform® Laser

### Cut sheets made of hot-rolled steel strip with special laser cutability

The steel grades of the alform® Laser series are thermomechanically rolled or normalized hot-rolled steels with excellent cold formability and are especially well suited to laser cutting. Minimum yield strengths of 200 to 420 MPa are available for supply.

**The alform® Laser series is characterized by:**

- » Narrow flatness and thickness tolerances.
- » More favorable forming properties than comparable steels pursuant to EN 10111, EN 10149-2 and EN 10025-2.
- » Optimized laser cutting with regard to cutting speed and grade through limited phosphorus and sulfur content and a maximum silicon content of 0.03%.
- » Optimized surface quality achieved by a thin, uniform layer of scale resulting from thermo mechanical or normalized rolling.
- » Surfaces are also available in pickled condition.

The use of alform® Laser steels has proven successful in applications where high-precision cuts, burr-free cut edges and components free of distortion are required.

**Convincing advantages:**

- » Best laser cutting quality
- » Excellent weldability
- » Uniform mechanical properties



Premium quality  
with reduced carbon footprint

**alform®**  
greentec steel

## Chemical composition

Steel grade	C max.	Si max.	Mn max.	P max.	S max.	Al max.	Nb <sup>1)</sup> max.	V <sup>1)</sup> max.	Ti <sup>1)</sup> max.
alform® laser 200 N	0,10	0,03	0,45	0,018	0,020	0,020	-	-	-
alform® laser 240 N	0,16	0,03	0,70	0,018	0,020	0,020	-	-	-
alform® laser 355 M	0,10	0,03	1,20	0,018	0,010	0,020	0,05	0,05	0,05
alform® laser 420 M	0,10	0,03	1,40	0,018	0,010	0,020	0,05	0,05	0,05

<sup>1)</sup> The total of Nb, V and Ti may not exceed 0.22%.

## Mechanical properties: Tensile and folding tests

Steel grade	Sample direction in tensile Test	Yield strength [MPa]	Tensile strength [MPa]	Total elongation [%] min.		Folding test 180° transverse, s = thickness
		ReH	Rm	A80	A5	Bending mandrel Ø
alform® laser 200 N	Transverse	200 – 320	320 – 400	26	32	0,0 s
alform® laser 240 N	Transverse	240 – 360	360 – 470	23	28	0,0 s
alform® laser 355 M	Longitudinal	355 – 480	430 – 530	20	24	0,0 s
alform® laser 420 M	Longitudinal	420 – 550	480 – 580	18	22	0,5 s

## Notch impact energy, edging radii, bending mandrel diameter

Notch impact energy, edging radii	Notch impact energy <sup>1)</sup> ISO-V / 20 °C [J] min.	Edging radii Ri min. at 90° edging (s = sheet thickness)		
		s < 3 mm	s = 3–6 mm	s > 6 mm
alform® laser 200 N	<sup>2)</sup>	0,25 s	0,5 s	1,0 s
alform® laser 240 N	27	0,25 s	0,5 s	1,0 s
alform® laser 355 M	40	0,25 s	0,5 s	0,8 s
alform® laser 420 M	40	0,5 s	1,0 s	1,0 s

<sup>1)</sup> Av minimum mean value from three samples (ISO-V, longitudinal), full samples (10 x 10 mm)  
Upon agreement, notch impact energy can be determined for thicknesses of 6 mm and higher.

<sup>2)</sup> No guarantee.

## Example dimensions

### Maximum width per thickness

Sheet thickness [mm]	Maximum sheet thickness (mm) for alform® Laser (minimum width 900)			
	200 N	240 N	355 M	420 M
1,80 – 1,99	1.575	1.575	1.375	1.255
2,00 – 2,99	1.600	1.600	1.500	1.350
3,00 – 12,00	1.600	1.600	1.600	1.750

Additional dimensions upon request.

### Dimension and shape tolerances pursuant to EN10051

Flatness tolerance up to 3 mm/meter can be specified by the customer in the order. Thickness tolerances up to half the standard tolerance can be specified by the customer in the order. Further restrictions upon request.

Please find further information and downloads under the following link:  
[www.voestalpine.com/alform/en](http://www.voestalpine.com/alform/en)



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**voestalpine**  
ONE STEP AHEAD.