

Designation	Ti	EN	UNS (ASTM)	AISI	LMSA
		3.7025	R50250	-	F160

Chemical composition (Weight %)

Ti	Fe	N	O	H	C	Residuals, each	Residuals, total
Balance	≤ 0.20	≤ 0.03	≤ 0.18	≤ 0.015	≤ 0.08	≤ 0.1	≤ 0.4

In order to achieve maximum homogeneity and consistent quality, the actual tolerances on both alloy components and impurities, are significantly tighter and more precisely defined than the standard analysis indicated.

Main Technological Properties

Titanium Grade 1 is the highest purity grade commercially available. The mechanical properties of titanium are greatly influenced by oxygen, nitrogen, hydrogen and iron. They increase the material's hardness, tensile strength and yield stress while simultaneously reducing elongation. Additionally, hydrogen triggers embrittlement that's its amount is kept as low as possible. Pure Titanium Grade 1 contains the lowest oxygen, hydrogen and iron levels, producing the most formable grade of the four ASTM commercially pure grades. Titanium Grade 1 should be used where maximum formability is required such as in dome loudspeaker, bursting discs and plate type heat exchangers. Its excellent cold deformability allows Lamineries MATTHEY SA to produce very thin strip, to approximately 5 microns.

It exhibits excellent corrosion resistance in highly oxidizing to mildly reducing environments, including chlorides. It has good impact properties at low temperatures. In addition, Titanium Grade 1 can be easily welded, machined, cold worked and hot worked. It is nonmagnetic.

On request, Lamineries MATTHEY SA can deliver cold-rolled products for medical Applications, respecting ASTM F67.

Typical manufacturing range

		Thickness (mm)	Width (mm)	Length (mm)
Rolled products	Strips in coils ¹⁾	0.005 - 1.000	1.5 - 210.0	-
	Strips, sheets in ¹⁾	0.005 - 1.500	10.0 - 210.0	100 - 3000

1) All our production possibilities are not presented here. Other dimensions or other product forms upon request. Certain combinations of thicknesses and widths are not possible.

Mechanical properties of strips

Temper			R _{p0.2} (N/mm ²)	R _m (N/mm ²)	A _{50mm} (%)	H _v (N/mm ²)
R240	H80	annealed	170-310	240-420	> 24	80-140
R400	H120	½ hard	> 350	400-700		120-220
R650	H200	hard	> 500	> 650		> 200

Typical uses

Dome loudspeaker, bursting discs, medical devices, plate type heat exchangers, detector windows, windows for electron beam, etc.

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Physical properties

Modulus of elasticity	kN/mm ²	105 at 20°C, 80 at 400°C
Poisson ratio		0.33
Density	kg/dm ³	4.51
Annealing temperature (typical)	°C	700
Stress relief temperature (typical)	°C	400-600
Linear dilatation coefficient	10 ⁻⁶ / °C	8.4 (20-100°C); 9.3 (20-200°C) ; 9.5 (20-300°C), 9.7 (20-400°C), 9.8 (20-500°C), 10 (20-600°C)
Thermal conductivity at 20°C	W/m K	16
Specific heat (25°C)	J/kg K	524
Electrical resistivity	μΩcm	45
Electrical conductivity	MS/m	2.17
Electrical conductivity	% IACS	3.7
Magnetical properties		Non magnetic

Tolerances

Thickness	Thickness (mm)		EN Standard		Lamineries MATTHEY SA		
	≥	<	10140 Precision	10258 Precision	LMSA Standard	LMSA Precision	LMSA Extreme
<p>The table shown is an outline of our typical thickness tolerances available, which are tighter than industry standards.</p> <p>Upon request: our "LMSA Precision" and "LMSA Extreme" tolerances are also available.</p>	0.025	0.025	-	-	-	-	± 0.001
	0.050	0.050	-	-	± 0.003	± 0.002	± 0.0015
	0.065	0.065	-	± 0.003	± 0.003	± 0.0025	± 0.002
	0.100	0.100	-	± 0.004	± 0.004	± 0.0035	± 0.003
	0.125	0.125	± 0.005	± 0.006	± 0.005	± 0.004	± 0.003
	0.150	0.150	± 0.005	± 0.006	± 0.005	± 0.005	± 0.004
	0.250	0.250	± 0.010	± 0.008	± 0.008	± 0.006	± 0.004
	0.300	0.300	± 0.010	± 0.009	± 0.009	± 0.007	± 0.005
	0.400	0.400	± 0.010	± 0.010	± 0.010	± 0.007	± 0.005
	0.500	0.500	± 0.015	± 0.012	± 0.012	± 0.008	± 0.006
	0.600	0.600	± 0.015	± 0.014	± 0.014	± 0.010	± 0.007
	0.800	0.800	± 0.015	± 0.015	± 0.015	± 0.010	± 0.007
	1.000	1.000	± 0.015	± 0.018	± 0.018	± 0.012	± 0.009
	1.200	1.200	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
	1.250	1.250	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
1.500	1.500	± 0.020	± 0.020	± 0.020	± 0.015	± 0.014	

Width Our width tolerance is + 0.2 -0.0 mm (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.

Camber	Width (mm)		Camber max. (mm/m)			
	>	≤	LMSA standard		LMSA extreme	
			≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
<p>Our tolerance "standard" respects the EN Standard 1654 (Length of measurement 1000 mm).</p> <p>Other tolerances upon request.</p>	3	6	12	-	6	-
	6	10	8	10	4	5
	10	20	4	6	2	3
	20	250	2	3	1	1.5

Surface Special surface qualities upon request

Flatness Special requirement on the longitudinal or transversal flatness upon request

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