

# MARYLAND METRICS

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## TECHNICAL INFORMATION and DATA

## Stainless steel grades

### Mechanical properties according DIN-ISO 3506

Steel group	Steel grade	Property class		Diameter range	Bolts			Nuts		Bolts and nuts	
					Tensile strength	Stress 0,2% permanent strain	Elongation after fracture	Stress under proof load		Hardness	
								$R_m^{1)}$ N/mm <sup>2</sup> min.	$R_p 0,2^{1)}$ N/mm <sup>2</sup> min.	$A_L^{2)}$ mm min.	$S_p$ N/mm <sup>2</sup>
Austenitic	A 1 A 2, A 4 A 3, A 5	50	025	$\leq M 39$	500	210	0,6 d	500	250		
		70	035	$\leq M 24^{5)}$	700	450	0,4 d	700	350		
		80	040	$\leq M 24^{5)}$	800	600	0,3 d	800	400		
		100 <sup>4)</sup>		$\leq M 16$	1000	750	0,25 d	1000			
		12 H		$\leq M 24$						125	200
		21 H		$\leq M 24$						210	–
Martensitic	C 1	50	025		500	250	0,2 d	500	250	155	220
		70			700	410	0,2 d	700	350	220	330
		110	055		1100	820	0,2 d	1100	550	350	440
	C 3	80	040		800	640	0,2 d	800	400	240	340
	C 4	50			500	250	0,2 d	500		155	220
70		035		700	410	0,2 d	700	350	220	330	
Ferritic	F 1 <sup>3)</sup>	45	020		450	250	0,2 d	450	200	135	220
		60	030		600	410	0,2 d	600	300	180	285

1) The tensile stress is calculated on the thread stress area.

2) To be determined on the actual screw length and not on a prepared test piece. d = nominal diameter.

3) For grade F 1 diameter M 24 is maximum.

4) Not in the standard: A4 - 100 in production quantity upon request.

5) For fasteners with nominal thread diameters  $d > 24$  mm the mechanical properties shall be agreed upon between user and manufacturer.

**Note: M 22 and M 24 screws according old DIN standard have lower properties (approximately class 50).**

### Lower yield stress ( $R_{eL}$ ) and stress at 0,2% permanent strain ( $R_p 0,2$ ) at elevated temperatures in % of the values at room temperature.

Steel grade	+ 100 °C	+ 200 °C	+ 300 °C	+ 400 °C
A 2, A 4, A 3, A 5	85 <sup>1)</sup>	80 <sup>1)</sup>	75 <sup>1)</sup>	70 <sup>1)</sup>
C 1	95	90	80	65
C 3	90	85	80	60

<sup>1)</sup> This applies to property classes 70 and 80 only. For property class 50 see DIN 17440.

Fasteners of grade A1, F1 and C4 are not to be used at elevated temperatures.