ROVALMA
THE STEEL INNOVATOR

ROVALMA® MAM FULLY CALIBRATED MATERIALS LIST

CATALOG 2025

Summary table

Properties*	Unit	FASTCOOL® Grades				Structural Steel Grades		Comment
		Hot Stamping	High Pressure Die Casting	Plastic Injection Molding – Technical parts	Plastic Injection Molding – Non-Technical parts	Mild Steel	Carbon High Strenght	
Hardness	HRc	52	42	52	36			
Mechanical resistance	MPa	1807	1282	1849		750	2126	
Yield strenght 0,2%	MPa	1692	1201	1694		600	1538	
Elongation A	%	6,5	12,4	8,8		15	10	
Density	g/cm^3	7,82	7,82	7,82	7,82			
Elastic Modulus	GPa	212	211	212	210			
Thermal diffusivity	mm^2/s	13,5	16,2	14,1	17,4			
Thermal conductivity	W/m·K	50,8	60,2	52,4	64,6			Values calculated on the basis of thermal diffusivity. Values measured by laser flash
Charpy test (CVN)	J					42	34	
Fatigue (10^6 cycles R=0,1 Kt=1)	MPa						>700	
Fracture Toughness (K_{ic})	MPa· $\sqrt{m}$						70,8	

**The values given in the table are typical values (neither maximum nor minimum values).The herein presented properties can be tailored to specific application and customer requirements*

Structural Steel for Advanced and Extreme Applications

AISI 4340 MOD

Tensile test

Rm > **2100 MPa** A5 > **10%**

Parameter	Value	Unit
Specimen Reference	1	—
Test Temperature	22	°C
Specimen Diameter, *d*	6.05	mm
Original Cross-Sectional Area	28.75	mm^2
Yield Strength (Offset 0.2%)	1538	MPa
Tensile Strength	2126	MPa
Elongation After Fracture (Gauge length 5d)	10.0	%
Final Diameter	4.80	mm
Reduction of Area, *Z*	37.1	%
Strain Hardening Exponent, *n*	0.2	—
Strength Coefficient, *K*	4017	MPa
Remarks	—	—
Test Standards	UNE-EN ISO 6892-1	—
Test Equipment	50-059.01	—

Fracture Toughness test

KIC > **70 MPa · √m**

Parameter	Value	Unit
Type	Straight Notch C(T) (LT)	—
Initial Slope Method	1	—
Kq	**70.80**	**$MPa \cdot m^{1/2}$**
Pq	10.946	kN
Pmax/Pq	1.028	—
Kapp	72.70	$MPa \cdot m^{1/2}$
Pmax	11.249	kN
a_o	10.030	mm
dK/dt	0.494	$MPa \cdot m^{1/2}/s$
Width	20.400	mm
Thickness	10.200	mm
Net Thickness	15.180	mm
Yield Stress	1538	MPa

Fatigue test

Fatigue (R=0.1; Kt = 1; 10^6 cycles) > **700 MPa**

Parameter	Value	Unit
Test Standard	ASTM E466-21	—
Test Equipment	50-059.12	—
Control Type	Load	—
Wave Type	Sine	—
Stress Intensity Factor (KT)	1	—
Load Ratio (R)	0.1	—
Run-Out Limit	—	—
Test Temperature	20	°C

Specimen Reference	INNO-0021-07	INNO-0021-07	INNO-0021-07
Diameter / Thickness, *d*	5.06	5.06	5.06
Width, *w*	—	—	—
Original Cross-Sectional Area	20.11	20.11	20.11
Specimen Orientation	—	—	—
Max. Stress Applied	600	700	750
Min. Stress Applied	60	70	75
Test Frequency	20	20	20
Total Number of Cycles	1,000.000	1,000.000	362.368
Result	Pass	Pass	Fail
Breakage Zone	—	—	—
Remarks	—	—	—

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Further materials calibration for MAM

R&D ongoing activities

"Further metal calibrations, such as Aluminium 6061, are ongoing within our 2025 R&D programs.

Any metal can be calibrated under request (even ceramics with at least 10% of metal). Please contact our sales representatives for more information"

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