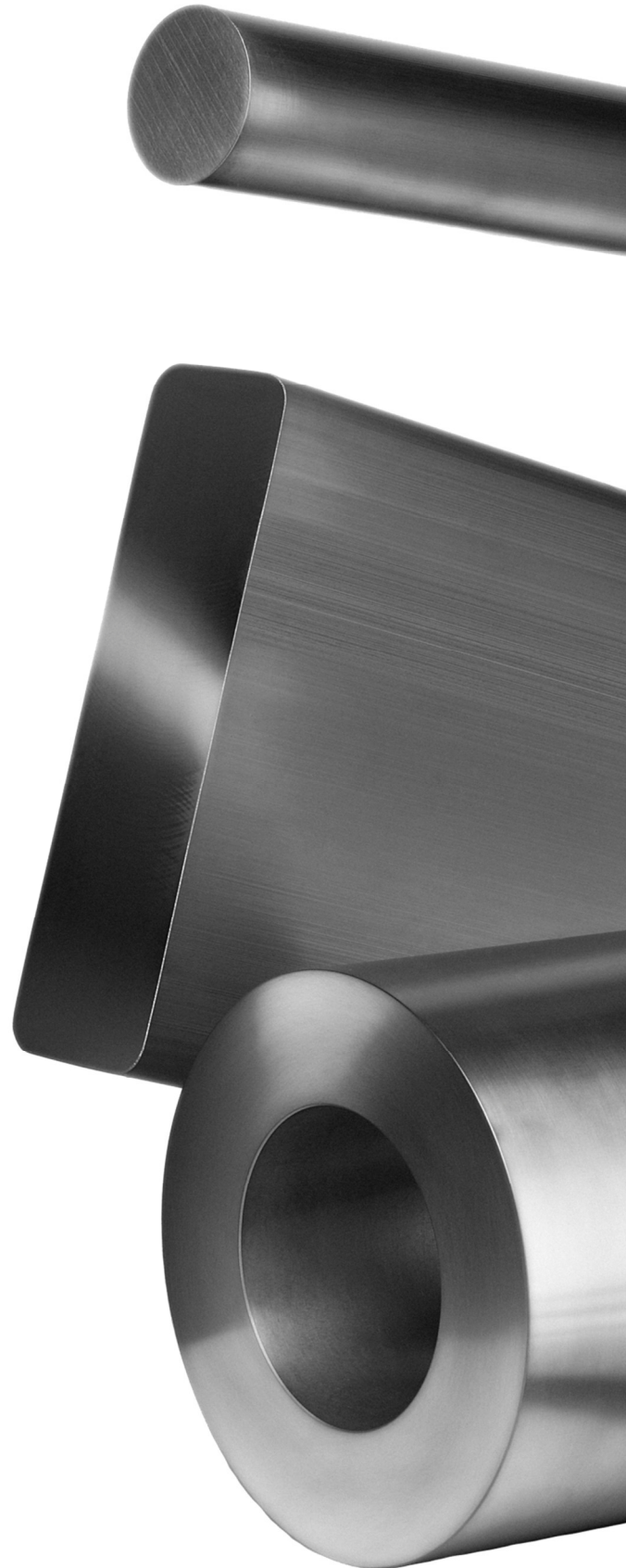
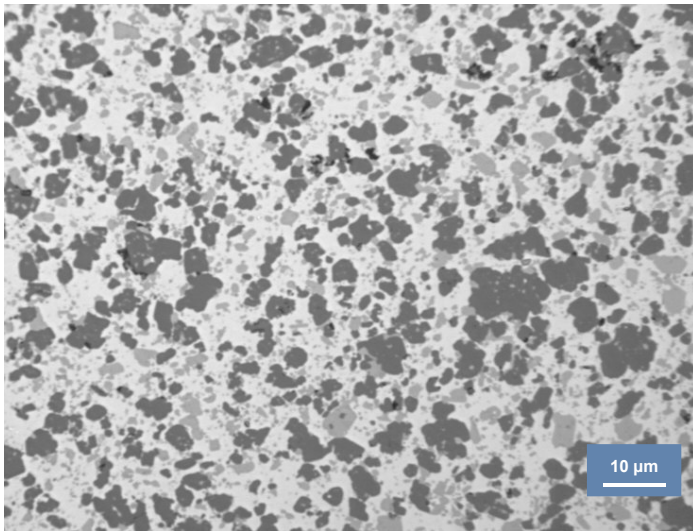


DATA SHEET: GPM-4.3.0-DB-026 Rev. 00 (replaced P-4.3-DB-026)

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The physical and mechanical properties depend on geometry and the production process. All mechanical properties are preliminary minimal values (average minus 3 Sigma) taken from specimen Ø30mm and for all other geometries only for reference.



PHYSICAL PROPERTIES (At 20°C)

Property	Unit	Value
Density	g/cm ³	2.79 ± 5%
Electrical conductivity	MS/m	10.1 ± 0.5
	%IACS	17.4 ± 0.9
Heat capacity	J/gK	0.82 ± 0.02

THERMAL CONDUCTIVITY

Temperature (°C)	30	100	200	300	400
Value (W/mK)	98.4	96.3	94.9	93.7	89.6

COEFFICIENT OF THERMAL EXPANSION

Property	Unit	Value
CTE-value 20 to 100°C	10 ⁻⁶ /K	15.7 ± 0.5
CTE-value 20 to 200°C	10 ⁻⁶ /K	16.2 ± 0.5
CTE-value 20 to 300°C	10 ⁻⁶ /K	16.8 ± 0.5

THERMAL DATA'S

Solidus temperature = (539.3 ± 3)°C

Liquidus temperature = (773.9 ± 3)°C

MECHANICAL PROPERTIES

HEAT TREATMENT CONDITION F: (minimum values)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
Tensile strength, Rm	MPa	370		398	296	252	193
Yield strength, Rp0,2	MPa	240		260	220	167	120
Elongation, A5	%	0.8		1.6	1.8	3.0	6.5
Young's modulus, E	GPa	90		89	81	78	68
Hardness	HV30	160	-	-	-	-	-

EXEMPLARY VALUES IN CONDITION F: (mean values)

Shear modulus, G	GPa	41	40	39	38	37	36
Poisson's ratio, μ		0.284	0.286	0.288	0.289	0.291	0.292

FATIGUE STRENGTH IN CONDITION F: (P50% rotary bending values for 5x10⁷ cycles)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
σ_{bW}	MPa	214.0		115.3		102.2	90.7

MECHANICAL PROPERTIES

HEAT TREATMENT CONDITION T4¹: (minimum values)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
Tensile strength, Rm	MPa	439					
Yield strength, Rp0,2	MPa	335					
Elongation, A5	%	0.3					
Young's modulus, E	GPa	98					
Hardness	HV30	180	-	-	-	-	-

EXEMPLARY VALUES IN CONDITION T4¹: (mean values)

Shear modulus, G	GPa						
Poisson's ratio, μ							

FATIGUE STRENGTH IN CONDITION T4¹: (P50% rotary bending values for 5x10⁷ cycles)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
σ bW	MPa						

¹ Quenching in water at room temperature.**MECHANICAL PROPERTIES:****HEAT TREATMENT CONDITION T4²: (minimum values)**

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
Tensile strength, Rm	MPa	385					
Yield strength, Rp0,2	MPa	279					
Elongation, A5	%	0.7					
Young's modulus, E	GPa	96					
Hardness	HV30	175	-	-	-	-	-

EXEMPLARY VALUES IN CONDITION T4²: (mean values)

Shear modulus, G	GPa						
Poisson's ratio, μ							

FATIGUE STRENGTH IN CONDITION T4²: (P50% rotary bending values for 5x10⁷ cycles)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
σ bW	MPa						

² Quenching in water at 80°C to avoid stress cracking for large sections.**MECHANICAL PROPERTIES****HEAT TREATMENT CONDITION T6¹: (minimum values)**

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
Tensile strength, Rm	MPa	480					
Yield strength, Rp0,2	MPa	470					
Elongation, A5	%	0.15					
Young's modulus, E	GPa	100					
Hardness	HV30	230	-	-	-	-	-

EXEMPLARY VALUES IN CONDITION T6¹: (mean values)

Shear modulus, G	GPa						
Poisson's ratio, μ							

FATIGUE STRENGTH IN CONDITION T6¹: (P50% rotary bending values for 5x10⁷ cycles)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
σ bW	MPa						

¹ Quenching in water at room temperature.

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MECHANICAL PROPERTIES:**HEAT TREATMENT CONDITION T6²: (minimum values)**

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
Tensile strength, Rm	MPa	425					
Yield strength, Rp0,2	MPa	373					
Elongation, A5	%	0.2					
Young's modulus, E	GPa	99					
Hardness	HV30	200	-	-	-	-	-

EXEMPLARY VALUES IN CONDITION T6²: (mean values)

Shear modulus, G	GPa						
Poisson's ratio, μ							

FATIGUE STRENGTH IN CONDITION T6²: (P50% rotary bending values for 5x10⁷ cycles)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
σ bW	MPa						

² Quenching in water at 80°C to avoid stress cracking for large sections.

MECHANICAL PROPERTIES:**HEAT TREATMENT CONDITION T6(SB): (minimum values)**

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
Tensile strength, Rm	MPa	486		447	370	264	
Yield strength, Rp0,2	MPa	356		325	281	160	
Elongation, A5	%	0.9		1.5	2.6	3.2	
Young's modulus, E	GPa	97		89	82	80	
Hardness	HV30	185	-	-	-	-	-

EXEMPLARY VALUES IN CONDITION T6(SB): (mean values)

Shear modulus, G	GPa						
Poisson's ratio, μ							

FATIGUE STRENGTH IN CONDITION T6(SB): (P50% rotary bending values for 5x10⁷ cycles)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
σ bW	MPa	246.2		146.2		117.4	