

# **PolyMIM GmbH - Product Portfolio**

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*- Water soluble debinding feedstock*

# Product portfolio – polyMIM (Water Soluble Binder System)

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Material Designation	Shrinkage Factor	Alloy Composition	Condition	YS Rp0,2 [Mpa]	UTM Rm [Mpa]	Elongation [%]	Hardness [HV]	Density min [g/cm <sup>3</sup> ]	Remarks
<b>Low Alloys</b>									
<b>polyMIM FN02</b> MIM 2200	1.2160	Mo 0,5% max Ni 1,5-2,5% C 0,1% max Fe Balance	Sintered	>150	>260	>20	>85 (45 HRB)	>7,5	
<b>polyMIM FN0205</b>	1.2160	Ni 1,5-2,5% C 0,4-0,6% Fe Balance	Sintered	>255	>415	>15	>110 (62 HRB)	>7,55	case hardenable
			Heat treated	>700	>1100	>5 >3	490-590 (48-55 HRC)		
<b>polyMIM FN08</b> MIM 2700	1.1863	Ni 6,5-8,5% C 0,1% max Fe Balance	Sintered	>210	>380	>20	>120 (69 HRB)	>7,6	
<b>polyMIM FN0805</b>	1.2160	Ni 6,5-8,5% C 0,4-0,7% max Fe Balance	Sintered	>400	>700	>5	>150 (79 HRB)	>7,6	case hardenable
			Heat treated	>700 (>1100)	>800 (>1300)	>3	300 (30HRC)		
<b>polyMIM 4605</b>	1.2160 1.1863	Ni 1,5-2,5% Mo 0,2-0,5% Si 1,0% max C 0,4-0,6% Fe Balance	Sintered	>255	>415	>15	>110 (62 HRB)	>7,55	case hardenable
			Heat treated				490 (48HRC)		
<b>polyMIM 8620</b> 1.6523	1.1669 1.1863	S 0,03% max. P 0,03% max. Mn 0,7-0,9% Ni 0,4-0,7% Mo 0,15-0,25% Cr 0,4-0,6% C 0,12-0,23% Fe Balance	Sintered	>400	>650	>3	>190 (90 HRB)	>7,4	case hardenable
			Heat treated				650-800 (58-64 HRC)		

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<b>Low Alloys</b>									
<b>polyMIM 8740</b> 1.6546	1.2160 1.1863	Ni 0,5-0,8% Mo 0,25-0,4% Cr 0,4-0,6% Si 0,3-0,55% Mn 0,1% max C 0,45-0,55% S 0,01% max P 0,01% max Fe Balance	Sintered	>550	>700	>14	>200 (92 HRB)	>7,5	heat treatment
			Heat treated	>1600	>1665	>0,3	>510 (50 HRC)		
<b>polyMIM 42CrMo4</b> 1.7225 MIM 4140	1.2160 1.1863	Si 0,4% max Mn 0,9% max Mo 0,15-0,3% Cr 0,9-1,2% C 0,35-0,5% Fe Balance	Sintered	>400	>700	>3	>130 (71 HRB)	>7,45	heat treatment
			Heat treated	>1250	>1450	>2	>450 (45 HRC)		
<b>polyMIM 4340</b> 1.6944	1.1669 1.1863	Ni 1,65-2,0% Mo 0,2-0,3% Cr 0,6-0,9% C 0,35-0,45% Fe Balance	Sintered	>500	>700	>11	>130 (71 HRB)	>7,5	heat treatment
			Heat treated	>1400	>1620	>2	>450 (45 HRC)		
<b>polyMIM 1006 mod.</b>	1.1669 1.2160	S 0,04% max P 0,04% max Mn 0,25% max Si 0,25% max C 0,06% max Fe Balance	Sintered	>125	>275	>40		>7,5	
<b>polyMIM 100Cr6</b> 1.3505	1.2160 1.1863 1.1669	Cr 1,35-1,65% C 0,8-1,05% Fe Balance	Sintered	>500	>900	>5	>230 (97 HRB)	>7,4	heat treatment, wear resistant
			Heat treated				>700 (60 HRC)		



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<b>Soft magnetic Steel</b>									
polyMIM Fe3Si	1.1669	Si 2,5-3,1% C 0,1% max Fe Balance	Sintered	>300	>500	>20	>120	>7,55	Hc ~ 62A/m (ρ=7.60 g/cm <sup>3</sup> ) Br ~ 1.325 T (ρ=7.60 g/cm <sup>3</sup> ) Js (4 kA/m) ~ 1590 T (ρ=7.60 g/cm <sup>3</sup> ) μmax = 8.674 (ρ=7.60 g/cm <sup>3</sup> )

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<b>Stainless Steels</b>									
polyMIM 17-4PH polyMIM 17-4PH (MA) (Master Alloy)	1.1515 1.1570 1.1669  (MA) 1.1669	Cr 15,0-17,5% Ni 3,0-5,0% Mn 1,0% max Si 1,0% max Cu 3,0-5,0% C 0,07% max Fe Balance	Sintered	>660	>800	>3	>320 (32 HRC)	>7,65	hardenable ferromagnetic
1.4542			Heat treated				>370 (38 HRC)		
polyMIM 420A	1.1669	Si 1,0% max Mn 1,0% max Cr 12,0-14,0% C 0,18-0,23% Fe Balance	Sintered					>7,45	Hardenable, martensitic stainless steel
			Heat treated	>1300	>1600	>2	460 (48 HRC)		

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<b>Stainless Steels</b>									
<b>polyMIM 304L</b>  1.4306	1.1669 1.1570	Cr 18,0-22,0% Ni 8,0-12,0% Mn 2,0% max Si 1,0% max S 0,03% max P 0,045% max C 0,03% max Fe Balance	Sintered	>180	>480	>25	>120	>7,78	non-magnetic, austenitic, corrosion resistant
<b>polyMIM 316L</b>  <b>polyMIM 316L (MA)</b> (Master Alloy)  1.4404	1.1515 1.1570 1.1669  (MA) 1.1669	Cr 16,0-18,5% Ni 10,0-14,0% Mo 2,0-3,0% Mn 2,0% max Si 1,0% max S 0,03% max P 0,045% max C 0,03% max Fe Balance	Sintered	>140	>450	>40	>120	>7,9	non-magnetic, austenitic, corrosion resistant
<b>polyMIM 410L</b>  1.4024	1.1669	Cr 12,0-14,0% Ni 0,3% max Si 0,2-1,0% Mn 0,5% max Mo 0,4% max C 0,06% max Fe Balance	Sintered	>170	>335	>20	>200	>7,55	Martensitic stainless steel, good corrosion resistance

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<b>Stainless Steels</b>									
<b>polyMIM 430</b> 1.4016	1.1570	Cr 16,0-18,0% S 0,03% max P 0,04% max Mn 1,0% max Si 1,0% max C 0,12% max Fe Balance	Sintered	>200	>350	>30	>100	>7,5	Martensitic stainless steel, good corrosion resistance
<b>polyMIM 440C mod.</b> mod. 1.4125	1.1570	Nb 1,0-2,0% Mo 0,75% max Ni 0,6% max Cr 16,0-18,0% Mn 1,0% max Si 1,0% max S 0,03% max P 0,04% max C 0,85-1,0% Fe Balance	Sintered		>780	>15	>350 (35 HRC)	>7,6	Martensitic stainless steel
	1.1669		Heat treated						
<b>polyMIM Nitronic 50</b> ASTM XM-19; UNS S20910	1.1570 1.1610 1.1669	Si 1,0% max N 0,2-0,4% V 0,1-0,3% Mo 1,5-3,0% Cr 20,5-23,5% Mn 4,0-6,0% Ni 11,5-13,5% S 0,03% max P 0,04% max C 0,06% max Fe Balance	Sintered	>380	>570	>16	>200 (190 HB)	>7,8	Austenitic stainless steel, non magnetic, good corrosion resistance

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<b>Super Alloy</b>									
polyMIM F75	1.1570 1.1669	Ni 0,5% max Fe 0,75% max Mn 1,0% max Si 1,0% max Mo 5,0-7,0% Cr 27,0-30,0% C 0,35% max Co Balance	Sintered	>450	>640	>8	>260 (24 HRC)	>8,1	non-magnetic, good corrosion resistance
			Hipped	>420	>680	>8	>8,2		
			Heat treated	>540	>950	>5	>360	>8,2	

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<b>Tool Steels</b>									
polyMIM M2	1.1669 1.1450	Si 0,2-0,45% Mn 0,15-0,4% S 0,03% max P 0,03% max V 1,75-2,2% W 5,5-6,75% Ni 0,3% max Mo 4,5-5,5% Cr 3,75-4,5% C 0,78-1,05% Fe Balance	Sintered	>800	>1200	>1	>520 (50 HRC)	>7,95	
			Heat treated				820HV (64 HRC)		



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<b>Tungsten Carbide Cobalt (hard metals)</b>									
polyMIM WC0,8Co13,5	1.3000	Co 13,0-14,0% WC Balance	Sintered				>1440	>13,9	hard metal >210 Oe >240 *10 <sup>-7</sup> T*m <sup>3</sup>
polyMIM WC0,8Co10	1.3000	Co 9,5-10,5% WC Balance	Sintered	>4000	>6600		>1570	>14,35	hard metal
polyMIM WC0,8Co6	1.3000	Co 6,0% WC Balance	Sintered	>2400	>3500		>1770	>14,9	hard metal

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<b>Tungsten Heavy Alloys</b>									
polyMIM W-22Fe33Ni	1.2480	Fe 1,9-2,5% Ni 3,0-3,6% W Balance	Sintered					>17,5	heavy-metal-alloy

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<b>Special Alloys</b>									
<b>polyMIM IN713C</b>	1.1515	Nb 1,8-2,8% Ti 0,5-1,0% Al 5,5-6,5% Mo 3,8-5,2% Cr 12,0-14,0% Mn 0,25% max Si 0,5% max P 0,015% max S 0,015% max Fe 2,5% max B 0,005-0,015% Co 1,0% max Cu 0,5% max Zr 0,05-0,15% C 0,08-0,2% Ni Balance	Sintered 20°C	>820	>1300	>15	>340	>7,8	Turbo charger grade (1050°C)
			650°C	>715	>995				
			850°C	>335	>490				
			1000°C	>130	>165				
<b>polyMIM IN718C</b>	1.1515	Ni 50,0-55,0% Nb 4,7-5,5% Ti 0,65-1,15% Al 0,2-0,8% Mo 2,8-3,3% Cr 17,0-21,0% Cu 0,3% max Si 0,22% max Mn 0,12% max B 0,006% max C 0,03-0,06% Fe Balance	Sintered 20°C	>450	>830	>20	200	>8,0	heat resistance 1050°C
			Heat treated	>1040	>1210	>6	>390		

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<b>Titanium Alloys</b>									
<b>polyMIM Ti grade 2</b>  3.7035	1.1515 1.1450	N 0,03% max H 0,015% max Fe 0,3% max O 0,25% max C 0,08% max Ti Balance	Sintered	>270	>340	>20		>4,3	
<b>polyMIM Ti6Al4V</b>  3.7165	1.1515 1.1450	Fe 0,3% max O 0,25% max Al 5,5-6,5% V 3,5-4,5% N 0,05% max H 0,015% max C 0,08% max Ti Balance	Sintered	>750	>850	>6		>4,2	

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<b>Copper Alloy</b>									
<b>polyMIM Cu999</b>	1.1570	O 0,05% max Fe 0-0,1% Cu Balance	Sintered	>50	>210	>40	40 HB	>8,58	Conductivity >56,5 MS/m
<b>polyMIM CuNi15Sn8</b>	1.1570	Ni 14,5-15,5% Sn 7,5-8,5% Other 0-0,3% Cu Balance	Sintered	>320	>470	10	>210	>8,7	
			Heat treated		>500	7	>260		
<b>polyMIM CuNi9Sn6</b>	1.1570	Ni 8,5-9,5% Sn 5,5-6,5% Other 0-0,15% Cu Balance	Sintered	>200	>360	18	>105	>8,6	
			Heat treated		>410	10	>210		