



WHEN PERFORMANCE IS EVERYTHING

ADVANCED POWDERS FOR METAL INJECTION MOLDING

Metal Injection Molding can dramatically reduce production costs and lead times. But, the performance of complex MIM components is only as good as the materials.

Alloy selection, quality, and expertise is essential for optimizing your operations. Carpenter Powder Product's CarTech UltraFine® powders are specifically created for MIM processes. Our material solutions are engineered to deliver fine particle sizes, high packing densities, consistency, and cleanliness.

Your Solutions Partner

The leading provider of metal powders, Carpenter has both the capability and capacity to provide materials solutions for your design challenges. We help customers successfully utilize the right materials for their designs and equipment.

- Prealloyed, gas atomized, spherical metal powders
- Fine particle size distribution
- Improved mechanical properties
- Consistency within and between production lots

Strategically Located, at Your Service

As the only major powder metals manufacturer with production facilities in both North America and Europe, we supply customers in a timely and cost-effective manner.

Our materials experts can provide guidance on materials selection, machine optimization, or development of custom solutions to meet your specifications. With Carpenter, you have access to:

- Broad portfolio of metal powder grades
- Highest quality standards for performance applications
- Technical expertise to provide complete lifecycle solutions.
- A number of standard powder packaging options, including:
 - Bottles (5 kg)
 - Buckets (25 kg)
 - Drums (100-250 kg)
 - Customized packaging options

Carpenter produces hundreds of alloy grades for Metal Injection Molding. Those listed here are some of our most requested grades. Customized compositions can be developed to your specifications.

Metal Injection Molding Powders									
CarTech UltraFine® Powders	Nominal Chemical Composition (typical values in wt.%)								UNS No.
	C	Cr	Ni	Mo	Si	Mn	Fe	Others	
High Temperature Nickel Superalloys									
CarTech UltraFine 625	0.10	20.0-23.0	Bal	8.0-10.0	0.50	0.50	5.0	P: 0.15, Co: 1.0, Al: 0.40, S: 0.015, Ti: 0.40, Cb: 3.15-4.15	N06625
CarTech UltraFine 718	0.02-0.08	17.0-21.0	Bal	2.8-3.3	≤0.35	≤0.35	≤19.0	Al: 0.3-0.7, Nb: 4.75-5.5, Ti: 0.65-1.15, Co: ≤0.3	N07718
CarTech UltraFine Waspaloy	0.02-0.10	18.0-21.0	Bal	3.5-5.0	0.75	0.50	2.0	S: 0.20, Co: 12.0-15.0, Al: 1.2-1.5, Zr: 0.02-0.12, Cu: 0.10, Ti: 2.75-3.25	N07001
Cobalt-base Alloys									
CarTech UltraFine CCM®	0.10	26.0-30.0	1.0	5.0-7.0	1.0	1.0	0.75	Co: Bal, N: 0.25	
CarTech UltraFine CCM Plus®	0.10	26.0-30.0	1.0	5.0-7.0	1.0	1.0	0.75	Co: Bal, N: 0.25	
Stainless Steels									
CarTech UltraFine 304L	≤0.03	18.0-20.0	8.0-12.0	—	≤1.0	≤2.0	Bal	—	S30403
CarTech UltraFine 314	≤0.25	23.0-26.0	19.0-22.0	≤0.50	1.5-3.0	≤2.0	Bal	—	S31400
CarTech UltraFine 316L	≤0.03	16.6-17.1	10.3-10.7	2.06-2.26	0.4-0.6	1.2-1.5	Bal	—	S31683
CarTech UltraFine 347	0.04-0.08	17.0-19.0	9.0-13.0	≤0.75	≤1.0	≤2.0	Bal	—	S34700
CarTech UltraFine 410	≤0.15	11.5-13.5	—	—	≤1.0	≤1.0	Bal	—	S41000
CarTech UltraFine 420	0.40-0.45	12.0-14.0	—	—	≤1.0	≤1.0	Bal	—	S42080
CarTech UltraFine 430L	≤0.03	16.0-18.0	—	—	≤1.0	≤1.0	Bal	—	—
CarTech UltraFine 440C	1.00-1.15	18.0	—	—	≤1.0	≤1.0	Bal	—	S44004
CarTech UltraFine 706	0.06	14.5-17.5	39.0-44.0	--	0.35	0.35	Bal	P: 0.02, Ti: 2.50-3.30, S: 0.15, Cu: 0.30, Al: 0.40, B: 0.006	N09706
CarTech UltraFine 925	0.03	19.5-23.5	38.0-46.0	2.5-3.5	0.50	1.0	22.0	S: 0.03, Ti: 1.9-2.4, Al: 0.1-0.5, S: 0.5, Cu: 1.5-3.0, Cb: 0.5	N09925
CarTech UltraFine A-286	0.08	13.5-16.0	24.0-27.0	1.0-1.5	1.0	2.0	Bal	Ti: 1.90-2.30, V: 0.1-0.5, Al: 0.35, B: 0.003-0.01	S66286
CarTech UltraFine 4340	0.38-0.43	0.7-0.9	1.65-2.0	0.2-0.3	0.15-0.30	0.6-0.8	Bal	—	G43400
CarTech UltraFine 20Mo-6®	0.03	22.0-26.0	33.0-37.0	5.0-6.7	0.50	1.0	Bal	P: 0.03, Cu: 2.0-4.0, S: 0.30	N08026
CarTech UltraFine Biodur® 108	0.08	19.0-23.0	0.10	0.5-1.5	0.75	21.0-24.0	Bal	P: 0.03, Cu: 0.25, S: 0.10, N: 0.90	S29108
CarTech UltraFine 15-15HS® Max	0.04	19.0	Up to 3.50	Up to 3.0	0.50	18.0	Bal	P: Up to 0.05, N: Up to 0.70, S: Up to 0.05	
CarTech UltraFine 21Cr-6Ni-9Mn	0.03	19.0-21.5	5.5-7.5	--	1.0	8.0-10.0	Bal	P: 0.04, S: 0.03, N: 0.15-0.40	S21904
CarTech UltraFine 22Cr-13Ni-5Mn	0.06	20.5-23.5	11.5-13.5	1.5-3.0	1.0	4.0-6.0	Bal	P: 0.04, Cb: 0.10-0.30, S: 0.03, V: 0.10-0.30	S20910
CarTech UltraFine N-CORR™	0.03	29.50	15.00	2.00	0.50	6.00	Bal	P: 0.20, N: 0.85, O: 0.34	
Precipitation Hardening Stainless Steels									
CarTech UltraFine 17Cr-4Ni	≤0.07	15.5-17.5	3.5-4.5	—	≤0.5	≤0.5	Bal	Cu: 3.5-4.5, Nb: 0.15-0.45	S17400
Tool and Die Steels									
CarTech UltraFine D2	1.40-1.60	11.0-13.0	—	0.7-1.2	≤0.6	≤0.6	Bal	Co: ≤1.0, V: ≤1.10	T30402
CarTech UltraFine M2	0.78-1.05	3.75-4.5	—	4.5-5.5	0.2-0.45	0.15-0.4	Bal	W: 5.5-6.75, V: 1.75-2.20	T11302
CarTech UltraFine M4	1.35	4.3	—	4.7	0.4	0.3	Bal	W: 5.6, V: 4.1	T11304
CarTech UltraFine T15	1.50-1.60	3.75-5.0	—	≤1.0	0.15-0.4	0.15-0.4	Bal	W: 11.75-13.0, Co: 4.75-5.25, V: 4.5-5.25	T12015
CarTech UltraFine H13	0.4	5.1	—	1.3	1.0	0.35	Bal	V: 1.0	T20813
CarTech UltraFine F15	≤0.04	≤0.20	27.0-31.0	≤0.20	≤0.20	≤0.5	Bal	Co: 15-19	K94610

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