

WHEN PERFORMANCE IS EVERYTHING

Premium metal powders for protective
surface enhancements and coatings



The materials to advance manufacturing

When products and equipment are subjected to harsh conditions and environments, manufacturers need enhanced surface properties to protect against corrosion, oxidation, and other severities.

A global leader in metal powders, Carpenter Additive has the capabilities and capacity to provide materials solutions for your design challenges. Our alloys have the consistent chemistries and high quality required for a range of surface enhancement processes:

- Thermal spraying: flame and plasma, cold, high velocity oxygen-fuel (HVOF), vacuum plasma, and low pressure plasma
- Plasma transferred arc (PTA), hard-facing, and weld overlay
- High-temperature brazing for joining and repair
- Plasma powder arc welding (PPAW)
- Laser cladding for wear and corrosion resistance
- Tool steel powders and near-net shapes
- Metal injection molding (MIM) and hot isostatic pressing (HIP)
- Additive manufacturing

Powders engineered for surface enhancements

- Reduced costs vs. solids
- Selected area enhancements
- Industry-leading wear, corrosion and oxidation resistance
- Functionally graded surfaces
- Dimensional restoration
- Ease of coating application

Supply chain security

Carpenter Additive is the only major metal powder manufacturer with production facilities in both North America and Europe, delivering the materials you need in time and on budget.

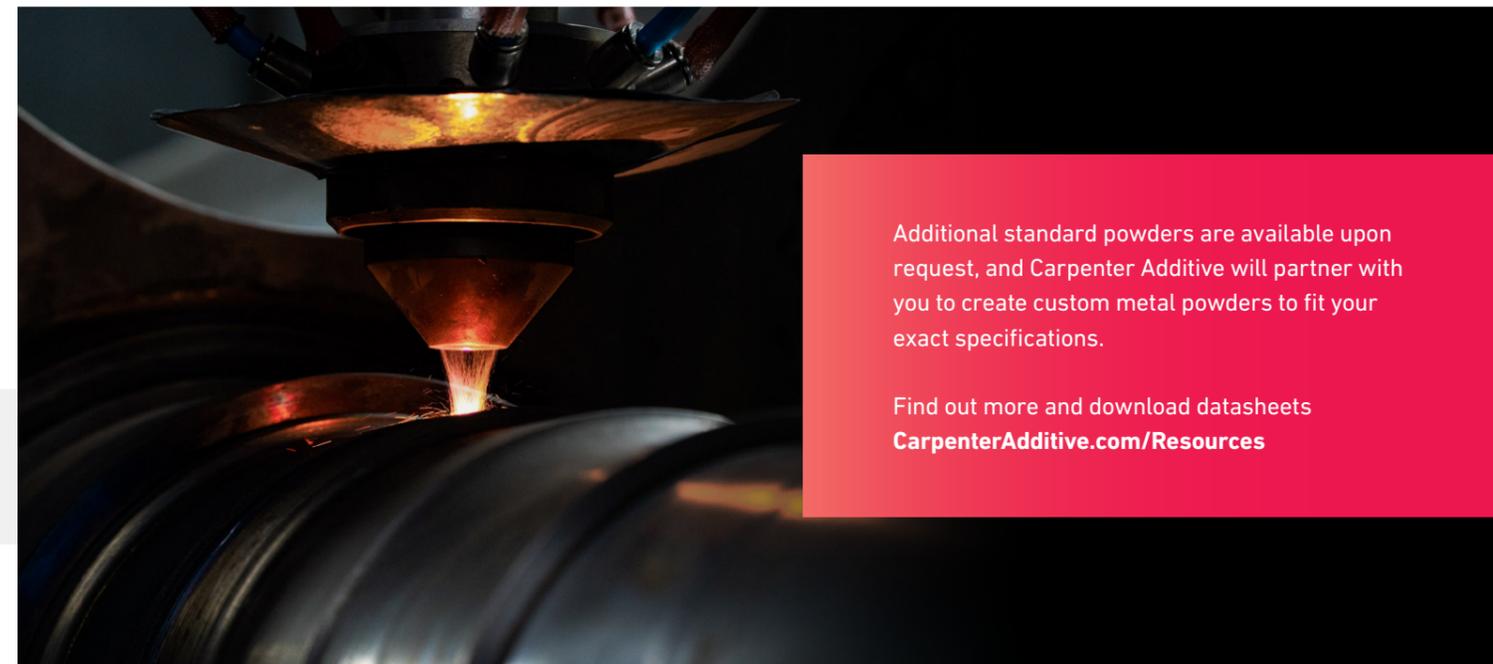
The form to match your function

Our high-performance alloys are also available in billet and block.

Superior metal powder for superior performance
CarpenterAdditive.com/Metal-Powders

Premium metallurgy powders

NOMINAL CHEMICAL COMPOSITION (TYPICAL VALUES IN WT.%)														
ALLOY	UNS NO.	C	CR	NI	MO	FE	CO	SI	MN	N	S	CU	V	OTHERS
Duplex / super duplex stainless steel														
2205	S32205	0.030 max	22.50	5.50	3.20	Bal	—	1.00 max	2.00 max	0.17	—	—	—	—
2505		0.030 max	26.00	6.00	3.00	Bal	—	1.00 max	1.00 max	0.27	—	2.00	—	—
Stainless steel														
17-4	S17400	0.070 max	15.00-17.50	3.00-5.00	—	Bal	—	1.00 max	1.00 max	0.10 max	0.030 max	3.00-5.00	—	P: 0.040 max, Nb/Ta: 0.15-0.45, O: 0.10
316L	S31683	0.030 max	16.00-18.00	10.00-14.00	2.00-3.00	Bal	—	1.00 max	2.00 ax	—	0.030 max	—	—	P: 0.045 max
2906	S32906	—	—	—	—	—	—	—	—	—	—	—	—	—
654SMO		0.020 max	24.50	22.00	7.50	Bal	—	0.50 max	3.00	0.50	—	0.45	—	—
Tool steel														
23	T11323	1.30	4.20	—	5.00	Bal	—	0.35	0.30	—	—	—	3.10	W: 6.30
30		—	—	—	—	—	—	—	—	—	—	—	—	—
60		—	—	—	—	—	—	—	—	—	—	—	—	—
A11	T30111	2.45	5.30	—	1.30	Bal	—	0.90 max	0.50 max	—	0.080 max	—	9.50	—
A11LVC		1.70-1.85	4.75-5.75	—	1.30	Bal	—	0.75-1.10 max	0.35-0.60 max	—	—	—	9.00	—
D7		2.30	12.50	—	1.10	Bal	—	0.40 max	0.40 max	—	—	—	4.00	—
M4	T11304	1.45	4.50	—	4.50	Bal	—	0.40 max	0.40 max	—	0.130 max	—	4.00	W: 5.75
T15	T12015	1.60	4.25	—	—	Bal	5.00	0.35 max	0.30 max	—	0.070 max	—	5.00	W: 12.25
TF1		0.80	6.20	—	3.00	Bal	3.00	0.30	0.30	—	—	—	1.10	Nb: 1.00
Cobalt-base														
50Nb		1.90	28.00	7.00	3.75	1.75	Bal	0.75	1.00 max	—	—	1.60	—	Nb: 5.50
Nickel-base														
600	N06600	0.10 max	14.00-17.00	72.00	—	6.00-10.00	—	0.50 max	1.00 max	—	0.015 max	0.50	—	—



Additional standard powders are available upon request, and Carpenter Additive will partner with you to create custom metal powders to fit your exact specifications.

Find out more and download datasheets
CarpenterAdditive.com/Resources

Your premium specialty metal powder partner

Carpenter Additive is a recognized leader in high-performance alloys for powder metallurgy applications. Our powder technology capabilities support a range of next-generation products and manufacturing techniques, including powder forging, metal injection molding (MIM) and hot isostatic pressing (HIP).

HVOF, PLASMA SPRAY, AND FLAME SPRAY POWDERS						
ALLOY	UNS #	HVOF	PLASMA	FLAME	VPS	X-REF
Iron-base						
309L	S30983	✓	✓	✓	✓	
Stainless steel						
316L	S31683	✓	✓	✓	✓	41C
410	S41080	✓	✓	✓		
410L		✓	✓	✓		
420	S42080	✓	✓	✓		
431	S43100		✓	✓		42C
Tool steel						
A11LVC		✓	✓			
H13	T20813	✓	✓			
Cobalt-base						
6	R30006	✓				
CCM Plus		✓				21
CCW		✓				
T-400		✓	✓	✓	✓	
T-800		✓	✓	✓	✓	
Nickel-base						
600	N06600	✓	✓	✓	✓	44
622		✓	✓	✓	✓	
625	N06625	✓	✓	✓	✓	IN625
690		✓				Alloy 52

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