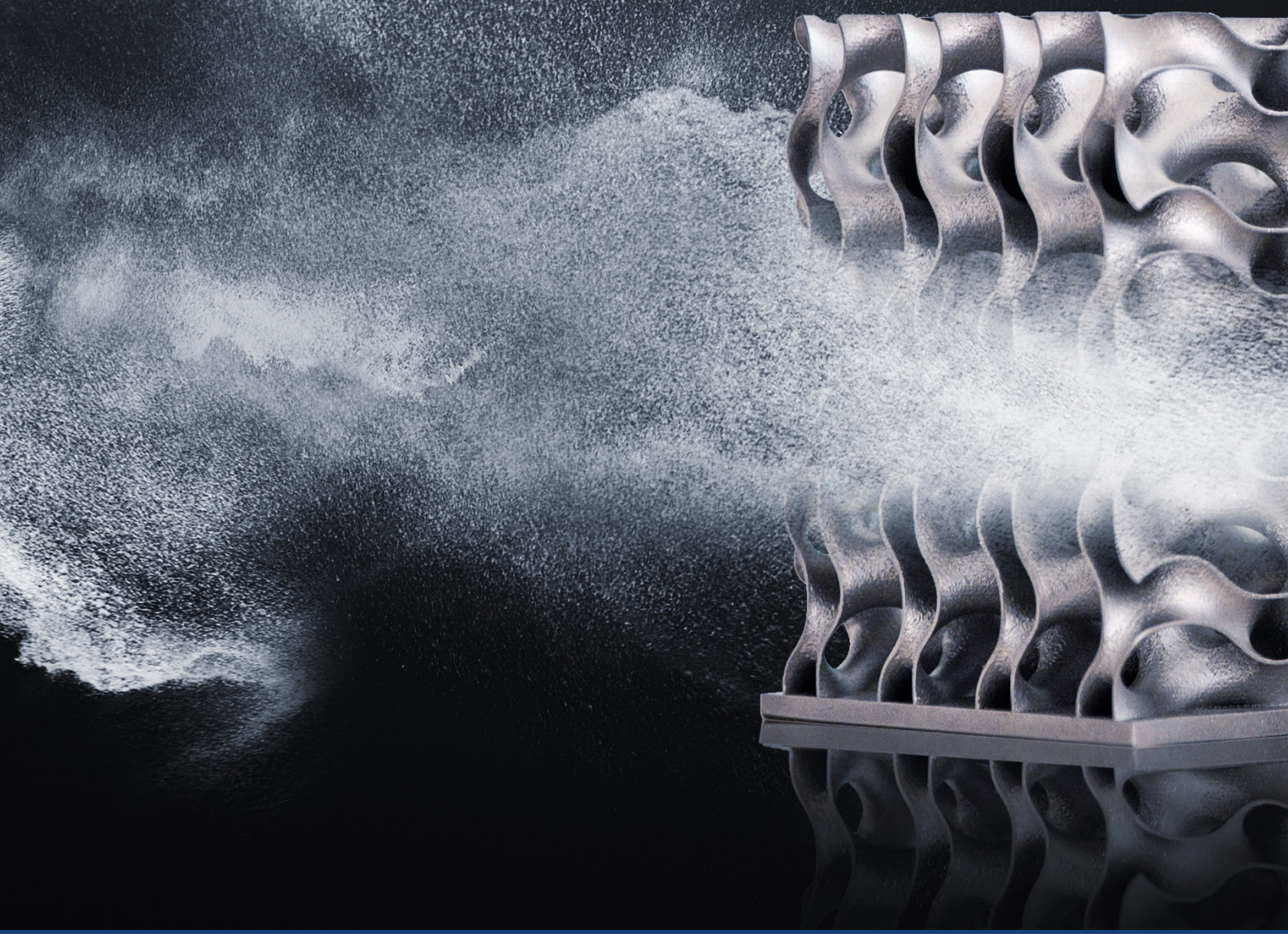
Höganäs portfolio for additive manufacturing



Every particle counts

Höganäs

Amperprint®

Co Alloys

Amperprint® 0037 CoCrMo (F 75)								
Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	27.0	30.0	Ti		0.10
			Mo	5.0	7.0	C		0.02
			Si		1.00	P		0.02
			Mn		1.00	B		0.010
			Fe		0.75	S		0.01
			W		0.20	O		0.05
			Ni		0.10	N		0.25
			Al		0.10	Co Balance		

Ni Alloys

Amperprint® 0233 Haynes®282®								
Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	18.0	22.0	Si		0.20
			Co	9.0	11.0	P		0.015
			Mo	8.0	9.0	S		0.015
			Ti	1.9	2.3	B		0.010
			Al	1.3	1.7	O		0.030
			C	0.04	0.08	N		0.020
			Fe		1.5			
			Mn		0.30	Ni Balance		

Amperprint® 0211
Ni-SA 230

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	20.0	24.0	Co		3.00
			W	13.0	15.0	Cu		0.20
			Mo	1.0	3.0	Nb		0.20
			Mn	0.30	1.00	Ta		0.20
			Si	0.25	0.75	Ti		0.10
			Al	0.20	0.50	B		0.015
			C	0.05	0.15	P		0.03
			La	0.005	0.050	S		0.010
			Fe		3.000	Ni Balance		

Amperprint® 0221
Ni-SA 247 LC

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	W	9.3	9.7	Fe		0.20
			Co	9.0	9.5	Cu		0.10
			Cr	8.0	8.5	Mn		0.10
			Al	5.3	5.8	Si		0.20
			Ta	3.0	3.4	P		0.015
			Hf	1.2	1.6	S		0.010
			Ti	0.6	0.9	H		0.005
			Mo	0.4	0.6	O		0.020
			C	0.05	0.1	N		0.020
			B	0.01	0.02			
			Zr	0.005	0.020	Ni Balance		

Amperprint® 0153
Ni-SA 625 (Inconel® 625, 2.4856)

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	20.0	23.0	Mn		0.10
			Mo	8.0	10.0	C		0.05
			Nb	3.15	4.15	Ta		0.05
			Fe		2.5	P		0.030
			Co		1.00	S		0.015
			Si		0.50	B		0.010
			Cu		0.50	O		0.025
			Ti		0.40	N		0.025
			Al		0.40	Ni Balance		

Amperprint® 0181
Ni-SA 718 (Inconel® 718, 2.4668)

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Ni	50.0	55.0	Mn		0.35
			Cr	17.0	21.0	Cu		0.30
			Nb	4.75	5.50	Ta		0.05
			Mo	2.8	3.3	P		0.015
			Ti	0.6	1.2	S		0.015
			Al	0.2	0.8	B		0.006
			C	0.02	0.08	O		0.030
			Co		1.0	N		0.025
			Si		0.35	Fe Balance		

Amperprint® 0151
Ni-SA 738 LC

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	15.7	16.3	B	0.007	0.012
			Co	8.0	9.0	Fe		0.50
			Al	3.2	3.7	Mn		0.20
			Ti	3.2	3.7	Si		0.10
			W	2.4	2.8	S		0.015
			Mo	1.5	2.0	P		0.015
			Ta	1.5	2.0	O		0.030
			Nb	0.6	1.10	N		0.020
			C	0.06	0.13			
			Zr	0.015	0.08	Ni Balance		

Amperprint® 0152
Ni-SA 939

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	21.0	23.0	Si		0.20
			Co	18.0	20.0	Zr		0.100
			Ti	3.0	4.5	P		0.030
			W	1.0	3.0	B		0.01
			Al	1.5	2.5	S		0.010
			Ta	1.0	2.0	Bi		0.0020
			Nb	0.5	1.5	Pb		0.0010
			C		0.25	Cd		0.0005
			Mn		0.20	Ni Balance		

Amperprint® 0228
NiCrFeMo (HX 2.4665)

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	20.5	23.0	Al		0.50
			Fe	17.0	20.0	Ti		0.50
			Mo	8.0	10.0	S		0.015
			Co	0.5	2.5	P		0.015
			W	0.2	1.0	B		0.009
			C	0.05	0.10	O		0.030
			Si		1.0	N		0.020
			Mn		1.0	Ni Balance		

Fe Alloys

Amperprint® 1556
FeNiCoMo (18Ni30, 1.2709)

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Ni	17.0	19.0	C		0.03
			Co	8.5	10.0	P		0.010
			Mo	4.50	5.20	S		0.010
			Ti	0.50	1.00	O		0.035
			Al	0.05	0.15	N		0.02
			Mn		0.15			
			Si		0.10	Fe Balance		

Amperprint® 0638
FeCrMoSiVCMn (1.2343)

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	4.80	5.50	C	0.33	0.41
			Mo	1.10	1.50	Mn	0.25	0.50
			Si	0.80	1.20	P		0.030
			V	0.30	0.50	S		0.020
						Fe Balance		

Amperprint® 0634
FeCrMoSiVCMn (1.2344)

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	4.80	5.50	C	0.35	0.42
			Mo	1.20	1.50	Mn	0.25	0.50
			Si	0.80	1.20	P		0.030
			V	0.85	1.15	S		0.020
						Fe Balance		

Amperprint® 0717
316L, 1.4404

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	16.5	18.5	P		0.045
			Ni	10.0	14.0	S		0.015
			Mo	2.0	3.0	O		0.05
			Mn	0.15	2.0	N		0.03
			Si		1.0			
			C		0.03	Fe Balance		

Amperprint® 0742
15-5 PH, 1.4540

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	14.0	15.5	C		0.07
			Ni	3.50	5.50	P		0.04
			Cu	2.50	4.50	S		0.03
			Nb	0.15	0.45	O		0.06
			Mn		1.00	N		0.03
			Si		1.00	Fe Balance		

Amperprint® 0711
17-4 PH, 1.4542

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	15.0	17.5	C		0.07
			Ni	3.00	5.00	P		0.040
			Cu	3.00	5.00	S		0.030
			Nb+Ta	0.15	0.45	O		0.06
			Mn		1.00	N		0.02
			Si		1.00	Fe Balance		

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AM 316L
1.4404

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	16,0	18,0	C		0,030
			Ni	11,0	14,0	Si	0,5	1,0
			Mo	2,0	3,0	Mn	1,0	2,0
						Fe Balance		

AM 420
420A, 1.4021

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	12,0	13,5	Si	0,4	0,6
			Mn	1,0	1,4	C	0,2	0,25
						Fe Balance		

AM H13
1.2344

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	4,75	5,50	Mn	0,2	0,4
			Mo	1,25	1,75	Si	0,8	1,2
			V	0,80	1,20	C	0,30	0,40
						Fe Balance		

AM 4130
1.7218, 25CrMo4

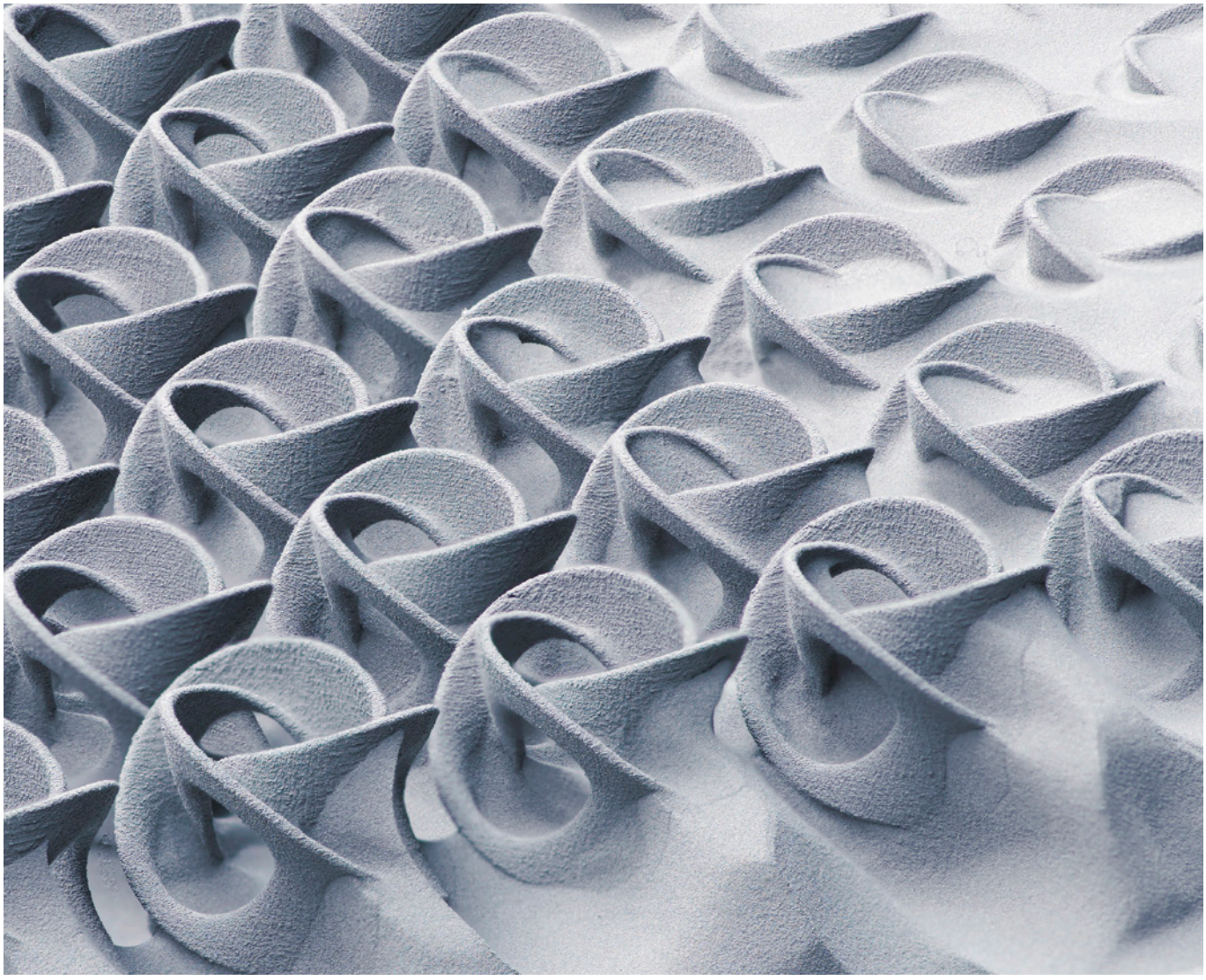
Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	0,7	1,2	C	0,27	0,34
			Mn	0,3	0,7	P		0,035
			Mo	0,1	0,4	S		0,040
			Si	0,2	0,5			
						Fe Balance		

AM 4140
1,7225, 42CrMo4

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	0,7	1,2	C	0,37	0,44
			Mn	0,7	1,1	P		0,035
			Mo	0,1	0,4	S		0,040
			Si	0,2	0,5			
						Fe Balance		

AM 16MnCr5
1.7131

Process			Chemical Composition (wt %)					
Selective Laser Melting	Electron Beam Melting	Laser Metal Deposition	Element	Min	Max	Element	Min	Max
✓	✓	✓	Cr	0,75	1,15	C	0,13	0,20
			Mn	0,95	1,35	P		0,035
			Si	0,2	0,5	S		0,040
						Fe Balance		



Inspire industry to make more with less

Höganäs vision is to inspire industry to make more with less. Metal powder technology provides endless opportunities; not only does it enable our customers to reduce their material and energy consumption, but it also helps them use new and better techniques that make final products more efficient and less expensive. In short, metal powders are a resource-efficient alternative, suitable for many industries – that's one of our contributions to a sustainable world.

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