



The Power of Powder

Metal powder offers entirely new possibilities to create more effective, lighter products with a reduced environmental impact. By combining the right alloy with a suitable morphology of the powder grains, new opportunities open up to match your challenges. Contact us and together we will release the power.

Metal powders are traditionally used to manufacture sintered components for vehicles. But there is a lot more to them. By fortifying food with elemental iron, anaemia can be reduced. By coating with nickel, glass bottle production life is prolonged with wear and temperature resistance. By employing new iron based powders, high temperature brazing of heat exchangers is possible. By utilizing the three dimensional magnetic flux of encapsulated metal powders, smaller electrical motors can now be produced. And so on.

In fact, the possibilities of metal powder technology are almost endless. To take advantage of the inherent Power of Powder, please contact your nearest Höganäs office.



www.hoganas.com

Sweden	Höganäs AB Höganäs Phone +46 42 33 80 00 Fax +46 42 33 81 50
Brazil	Höganäs Brasil Ltda Mogi das Cruzes Phone +55 11 4736 7711 Fax +55 11 4736 7734
China	Höganäs (China) Ltd Shanghai Phone +86 21 692 101 12 Fax +86 21 692 131 94
France	Höganäs France S.A. Villefranche-sur-Saône Cedex Phone +33 474 02 97 50 Fax +33 474 60 63 61
Germany	Höganäs GmbH Düsseldorf Phone +49 211 99 17 80 Fax +49 211 991 78 35
India	Höganäs India Ltd Pune Phone +91 20 66 03 01 71 Fax +91 20 26 13 01 88
Italy	Höganäs Italia S.r.l. Rapallo (Genoa) Phone +39 0185 23 00 33 Fax +39 0185 27 04 77
Japan	Höganäs Japan K.K. Tokyo Phone +81 3 3582 8280 Fax +81 3 3584 9087
Rep. of Korea	Höganäs Korea Ltd Seoul Phone +82 2 511 43 44 Fax +82 2 548 25 92
Spain	Höganäs Ibérica S.A. Madrid Phone +34 91 708 05 95 Fax +34 91 708 05 94
Taiwan	Höganäs Taiwan Ltd Taipei Phone +886 2 2543 1618 Fax +886 2 2543 1511
United Kingdom	Höganäs (Great Britain) Ltd Tonbridge, Kent Phone +44 1732 377 726 Fax +44 1732 770 262
United States	North American Höganäs, Inc. Hollsopple, PA Phone +1 814 479 3500 Fax +1 814 479 2003

Höganäs 



**Stainless Steel Powders
for Sintered Components**

Stainless Steel Powders for Sintered Components

TYPICAL DATA - Sintered Properties at P=600 MPa, t=45 min, dT/dt=0,8° C/s

	AUSTENITIC																FERRITIC				FERRITIC /MARTENSITIC										
	304LHD				304L				316LHC		316LHD				316L		Cold 100		409LE		434L		410L								
Powder properties																									Powder properties						
AD, g/cm ³	2,69				2,70				3,01		2,69				2,69		2,69		2,75		2,78		2,76		AD, g/cm ³						
Flow, s/50g	28				34				25		29				33		29		32		33		32		Flow, s/50g						
Chemistry																									Chemistry						
C, %	0,02				0,02				0,02		0,02				0,02		0,015		0,02		0,02		0,02		C, %						
Ni, %	11,6				11,2				12,7		12,7				13,0		19,1								Ni, %						
Fe, %	base				base				base		base				base		base		base		base		base		Fe, %						
Cr, %	19				18,5				17		17				16,8		20		12		16,8		12,4		Cr, %						
Si, %	0,9				0,9				0,8		0,8				0,85		0,9		0,8		0,8		0,8		Si, %						
O, %	0,35				0,22				0,26		0,26				0,20		0,20		0,26		0,27		0,24		O, %						
N, %	0,04				0,05				0,08		0,06				0,04		0,03		0,03		0,04		0,03		N, %						
Mo, %									2,3		2,2				2,2		6,3				1,0				Mo, %						
Nb, %																			0,51						Nb, %						
Sieve analysis (µm)																									Sieve analysis (µm)						
+150, %	0,6				1				0,9		0,5				1		0,7		1		1		1		+150, %						
-45, %	43				40				36		45				41		43		45		42		44		-45, %						
Green properties																									Green properties						
GD 600 MPa with lubr., g/cm ³	6,38				6,57				6,55		6,46				6,70		6,45		6,55		6,40		6,54		GD 600 MPa with lubr., g/cm ³						
GS 600 MPa with lubr., MPa	10,6				7,5				7,0		11,7				8,5		11,1		14,0		12,0		13,0		GS 600 MPa with lubr., MPa						
Lubricant = 1% Acrawax																									Lubricant = 1% Acrawax						
Sintered properties																									Sintered properties						
Sintering atmosphere	H2		DA		H2		DA		H2		H2		DA		H2		DA		H2		H2		H2		H2		Sintering atmosphere				
Sintering temperature	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	1150° C	1250° C	Sintering temperature				
SD, g/cm ³	6,48	6,72	6,44	6,70	6,71	6,78	6,69	6,77	6,66	6,80	6,79	6,95	6,71	6,92	6,89	6,94	6,83	6,93	6,63	6,84	6,62	6,90	6,82	6,90	6,87	7,08	SD, g/cm ³				
DC d-s, %	-0,48	-1,62	-0,23	-1,32	-0,91	-1,22	-0,66	-0,80	-0,42	-1,11	-0,83	-1,53	-0,53	-1,50	-0,92	-1,12	-0,63	-1,01	-0,60	-1,73	-1,00	-1,93	-2,20	-2,65	-2,39	-3,54	DC d-s, %				
DC g-s, %	-0,7	-1,79	-0,51	-1,57	-1,06	-1,37	-0,70	-0,90	-0,62	-1,31	-0,98	-1,66	-0,69	-1,66	-1,05	-1,28	-0,76	-1,16	-0,81	-1,93	-1,14	-2,06	-2,36	-2,92	-2,14	-3,42	DC g-s, %				
HV10	78	81	141	166					78	79	83	86	132	142					102	101							HV10				
HRB	31	32	67	72	36	46	59	64	n/a	n/a	n/a	n/a	66	69	37	45	62	64	53	42	24	41	51	58	36	45	HRB				
UTS, MPa	204	282	336	486	290	360	350	450	267	337	292	365	409	520	350	400	380	520	317	344	240	365	318	368	308	320	UTS, MPa				
YS, MPa	157	163	301	361	180	205	260	330	182	185	194	197	324	357	198	240	290	360	262	196	197	245	225	243	190	210	YS, MPa				
Elongation, %	4,3	13	1,0	5,6	22	30	8	16	11	20	12	20	2,1	10	27	35	5	12	3,7	10	5	20	18	23	12	20	Elongation, %				
IE, J	10	65	4	29					34	65	41	78	7	43					13	46							IE, J				
Characteristics & Application examples	<ul style="list-style-type: none"> - High corrosion resistance - Non-magnetic - Used for lock parts and in appliances 																<ul style="list-style-type: none"> - Very high corrosion resistance, particularly resistant to attacks by solutions containing chloride ions - Non-magnetic - Most commonly used grade for P/M stainless steel parts in different areas, as small gears, cams and connectors 				<ul style="list-style-type: none"> - Superior corrosion resistance - Non-magnetic - Used for submerged water pump components 				<ul style="list-style-type: none"> - Medium corrosion resistance - Ferro-magnetic - Weldable - Used for automotive exhaust flanges and hot exhaust gas oxygen (HEGO) sensor bosses. 		<ul style="list-style-type: none"> - Medium corrosion resistance, higher than other 400-series - Excellent magnetic properties - Used for automotive exhaust flanges 		<ul style="list-style-type: none"> - Medium corrosion resistance - Ferro-magnetic - Used for ABS sensor rings - Can be converted to martensitic 410/420 by graphite addition (Hard and wearresistant) 		Characteristics & Application examples