Stainless Steel Powders for Sintered Components

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

	AUSTENTIC																		FERRITIC				FERRITIC /MARTENSITIC		
	304LHD				304L				316LHC		316LHD		316L				Cold 100		409LE		434L		410L		
Powder properties																									**Powder properties**
AD, g/cm³	2,69				2,70				3,01		2,69		2,69				2,69		2,75		2,78		2,76		AD, g/cm³
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/cm³	6,38				6,57				6,55		6,46		6,70				6,45		6,55		6,40		6,54		GD 600 MPa with lubr., g/cm³
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		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	Sintering temperature
SD, g/cm³	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/cm³
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	- High corrosion resistance - Non-magnetic - Used for lock parts and in appliances								- 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								- Superior corrosion resistance - Non-magnetic - Used for submerged water pump components		- Medium corrosion resistance - Ferro-magnetic - Weldable - Used for automotive exhaust flanges and hot exhaust gas oxygen (HEGO) sensor bosses.		- Medium corrosion resistance, higher than other 400-series - Excellent magnetic properties - Used for automotive exhaust flanges		- 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**