Stainless steel powders

for sintered components

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POWDER THAT EMPOWERS®

Stainless Steel Powders for Sintered Components

Typical data – Sintered Properties at P=600 MPa, t=45 min, dT/dt=0,8°C/s

	Austentic							
	304LHD				304L			
Powder properties								
AD, g/cm^3	2.69				2.70			
Flow, s/50g	28				34			
Chemistry								
C, %	0.02				0.02			
Ni, %	11.6				11.2			
Fe, %	base				base			
Cr, %	19				18.5			
Si, %	0.9				0.9			
O, %	0.35				0.22			
N, %	0.04				0.05			
Mo, %								
Nb, %								
Sieve analysis (µm)								
+150, %	0.6				1			
-45, %	43				40			
Green properties								
GD 600 MPa with lubr., g/cm^3	6.38				6.57			
GS 600 MPa with lubr., MPa	10.6				7.5			
Lubricant = 1% Acrawax								
Sintered properties								
Sintering atmosphere	H2		DA		H2		DA	
Sintering temperature	1150°C	1250°C	1150°C	1250°C	1150°C	1250°C	1150°C	1250°C
SD, g/cm^3	6.48	6.72	6.44	6.70	6.71	6.78	6.69	6.77
DC d-s, %	-0.48	-1.62	-0.23	-1.32	-0.91	-1.22	-0.66	-0.80
DC g-s, %	-0.7	-1.79	-0.51	-1.57	-1.06	-1.37	-0.70	-0.90
HV10	78	81	141	166				
HRB	31	32	67	72	36	46	59	64
UTS, MPa	204	282	336	486	290	360	350	450
YS, MPa	157	163	301	361	180	205	260	330
Elongation, %	4.3	13	1.0	5.6	22	30	8	16
IE, J	10	65	4	29				
Characteristics & Application examples	• High corrosion resistance • Non-magnetic • Used for lock parts and in appliances							

Austentic

316LHC	316LHD	316L	Cold 100
3.01	2.69	2.69	2.69
25	29	33	29
0.02	0.02	0.02	0.015
12.7	12.7	13.0	19.1
base	base	base	base
17	17	16.8	20
0.8	0.8	0.85	0.9
0.26	0.26	0.20	0.20
0.08	0.06	0.04	0.03
2.3	2.2	2.2	6.3
0.9	0.5	1	0.7
36	45	41	43
6.55	6.46	6.70	6.45
7.0	11.7	8.5	11.1

H2		H2		DA		H2		DA		H2	
1150°C	1250°C	1150°C	1250°C	1150°C	1250°C	1150°C	1250°C	1150°C	1250°C	1150°C	1250°C
6.66	6.80	6.79	6.95	6.71	6.92	6.89	6.94	6.83	6.93	6.63	6.84
-0.42	-1.11	-0.83	-1.53	-0.53	-1.50	-0.92	-1.12	-0.63	-1.01	-0.60	-1.73
-0.62	-1.31	-0.98	-1.66	-0.69	-1.66	-1.05	-1.28	-0.76	-1.16	-0.81	-1.93
78	79	83	86	132	142					102	101
n/a	n/a	n/a	n/a	66	69	37	45	62	64	53	42
267	337	292	365	409	520	350	400	380	520	317	344
182	185	194	197	324	357	198	240	290	360	262	196
11	20	12	20	2.1	10	27	35	5	12	3.7	10
34	65	41	78	7	43					13	46

- 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 owater pump components

Stainless Steel Powders for Sintered Components

Typical data – Sintered Properties at P=600 MPa, t=45 min, dT/dt=0,8 °C/s

	Ferritic				Ferritic /martensitic	
Powder properties	**409LE**		**434L**		**410L**	
AD, g/cm^3	2.75		2.78		2.76	
Flow, s/50g	32		33		32	
Chemistry						
C, %	0.02		0.02		0.02	
Ni, %						
Fe, %	base		base		base	
Cr, %	12		16.8		12.4	
Si, %	0.8		0.8		0.8	
O, %	0.26		0.27		0.24	
N, %	0.03		0.04		0.03	
Mo, %			1.0			
Nb, %	0.51					
Sieve analysis (µm)						
+150, %	1		1		1	
-45, %	45		42		44	
Green properties						
GD 600 MPa with lubr., g/cm^3	6.55		6.40		6.54	
GS 600 MPa with lubr., MPa	14.0		12.0		13.0	
Lubricant = 1% Acrawax						
Sintered properties						
Sintering atmosphere	H2		H2		H2	
Sintering temperature	1150°C	1250°C	1150°C	1250°C	1150°C	1250°C
SD, g/cm^3	6.62	6.90	6.82	6.90	6.87	7.08
DC d-s, %	-1.00	-1.93	-2.20	-2.65	-2.39	-3.54
DC g-s, %	-1.14	-2.06	-2.36	-2.92	-2.14	-3.42
HV10						
HRB	24	41	51	58	36	45
UTS, MPa	240	365	318	368	308	320
YS, MPa	197	245	225	243	190	210
Elongation, %	5	20	18	23	12	20
IE, J						
Characteristics & Application examples	• 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)	