

Iron and Steel Powders for Sintered Components



Low Alloyed Steel Powders for Sintered Components

TYPICAL DATA - Sintered properties at P=600 MPa, T=1120°C, t=30 min, Atm=90/10N₂/H₂, dT/dt=0.8°C/s)

Powder properties	Astaloy® atomised prealloyed powder grades				Distaloy® diffusion alloyed powder grades						Premixed grades	
	CrA	CrM	85 Mo	Mo	AQ	AB	AE	DC	DH	HP	PNC60	PASC60
AD, g/cm ³	2.85	2.78	3.00	3.00	3.05	3.05	3.05	3.05	3.03	3.08	2.65	3.14
Flow, s/50 g	27	27	25	25	27	27	27	25	25	25	30	25
Powder chemistry												
Mo*, %		0.50	0.85	1.50	0.50	0.50	0.50	1.47	1.47	1.41		
Ni, %					0.50	1.75	4.00	2.00		4.00		
Cu, %						1.50	1.50		2.00	2.00		
Cr, %	1.80	3.00										
P, %											0.60	0.60
Green properties with 0.8% lubricant												
GD 600 MPa, g/cm ³	7.04	6.96	7.15	7.10	7.17	7.17	7.18	7.10	7.10	7.08	6.88	7.08
GD 4.2 t/cm ² , g/cm ³												
GS 600 MPa, N/mm ²	26	15	13	13	13	13	14	13	12	13	20	16
Sintered properties	•	•	•	•	••							
% C, as sintered	0.60	0.45	0.60	0.60	0.50	0.50	0.50	0.50	0.50	0.50	-	-
% Cu	2.00	-	2.00	2.00	-	-	-	-	-	-	-	-
SD, g/cm ³	6.95	6.90	7.05	7.00	7.13	7.12	7.10	7.10	7.02	7.08	7.14	7.25
DC g-s. %	0.15	-0.12	0.31	0.30	-0.02	-0.08	-0.16	-0.22	0.12	-0.15	-1.00	0.68
HV10	350	400	330	350	400	180	200	190	210	250	130	150
YS, MPa	920	920	620	810	1020	375	420	510	500	530	280	300
TS, MPa	990	1030	730	980	1130	620	750	720	660	890	380	450
A, %	0.3	0.3	0.6	0.4	0.3	3.0	2.8	2.5	1.8	2.3	11.0	15.0
IE, J	15	14	14	16	13	27	30	30	14	26	32	45
Applications	<ul style="list-style-type: none"> - Medium to high strength parts as sintered - High strength and wear resistant parts when sinterhardened - Gears, synchronizing and oil pump parts 				<ul style="list-style-type: none"> - High strength applications in sintered and sinterhardened condition - High strength and wear resistance when sinterhardened, especially Distaloy DC and Distaloy DH - Parts where good dimensional control is critical - Gears, synchronizing and oil pump parts 						<ul style="list-style-type: none"> - High ductility parts - Medium strength parts when C is added - Lock and safety parts - Soft magnetic applications (PASC 60) 	

* Distaloy DC, Distaloy DH and Distaloy HP contain pre-alloyed Mo.

- Sinterhardening (dT/dt=2.5°C/s), tempering at 200°C, 30 min in air.
- Hardening at 920°C, 20 min, C-pot 0.6%, oil quenching at 60°C, tempering at 200°C, 60 min in air.

Iron Powders for Sintered Components

TYPICAL DATA - Sintered properties at P=600 MPa, T=1120°C, t=30 min, Atm=90/10N₂/H₂, dT/dt=0.8°C/s)

Powder properties	Sponge iron powder grades			Atomised iron powder grades		
	NC100.24	SC100.26	MH80.23	AHC100.29	ASC100.29	ABC100.30
AD, g/cm ³	2.43	2.68	2.30	2.99	2.99	3.02
Flow, s/50 g	31	29	34	24	24	24
Powder chemistry						
Mo, %						
Ni, %						
Cu, %						
Cr, %						
P, %						
Green properties with 0.8% lubricant						
GD 600 MPa, g/cm ³	7.00	7.11	6.75	7.15	7.20	7.26
GD 4.2 t/cm ² , g/cm ³	6.6	6.7	6.3			
GS 600 MPa, N/mm ²	21	15	29	13	14	13
Sintered properties						
% C, as sintered	0.80	0.80	0.80	0.80	0.80	0.80
% Cu	2.00	2.00	2.00	2.00	2.00	2.00
SD, g/cm ³	6.80	6.90	6.67	6.96	7.02	7.02
DC g-s. %	0.12	0.17	-0.05	0.10	0.10	0.11
HV10	170	180	155	180	185	185
YS, MPa	410	395	360	450	460	470
TS, MPa	530	520	440	570	585	590
A, %	2.0	2.5	1.9	1.8	2.0	2.4
IE, J	12	13		12	14	14
Applications	<ul style="list-style-type: none"> - Low to medium density parts - Self-lubricating bearings, especially MH80.23 and NC100.24 - Parts with complicated geometry where high green strength is essential in order to avoid green cracks - Shock absorber parts 			<ul style="list-style-type: none"> - Medium to high density parts - Soft magnetic applications, especially ABC100.30 - Clutch and pulleys 		