

# Iron and Steel Powders for Sintered Components



TYPICAL DATA - Sintered properties at P=600 MPa, T=1120° C, t=30 min, Atm=90/10N<sub>2</sub>/H<sub>2</sub>, dT/dt=0.8° C/s)

Powder properties	Sponge iron powder grades			Atomized iron powder grades			Astaloy atomized prealloyed powder grades					Distaloy diffusion alloyed powder grades						Premixed grades	
	NC100.24	SC100.26	MH80.23	AHC100.29	ASC100.29	ABC100.30	85 Mo	Mo	CrL	CrM	LH	AB	AE	DC	DH	HP	LH	PNC60	PASC60
AD, g/cm <sup>3</sup>	2,43	2,68	2,30	2,99	2,99	3,02	3,00	3,00	2,85	2,78	3,00	3,04	3,04	3,05	3,03	3,08	3,04	2,65	3,14
Flow, s/50 g	31	29	34	24	24	24	25	25	27	27	26	24	24	25	25	25	25	30	25

Chemistry	Sponge iron powder grades			Atomized iron powder grades			Astaloy atomized prealloyed powder grades					Distaloy diffusion alloyed powder grades						Premixed grades	
Ni, %											0,90	1,75	4,00	2,00		4,00	0,90		
Mo, %							0,85	1,50	0,20	0,50	0,90	0,50	0,50	1,47	1,47	1,41	0,90		
Cu, %												1,50	1,50		2,00	2,00	2,00		
Mn, %										0,20							0,20		
Cr, %									1,50	3,00									
P, %																		0,60	0,60

Green properties	Sponge iron powder grades			Atomized iron powder grades			Astaloy atomized prealloyed powder grades					Distaloy diffusion alloyed powder grades						Premixed grades	
0,8 % Zn-st																			
GD 600 MPa, g/cm <sup>3</sup>	7,00	7,11	6,75	7,15	7,20	7,26	7,15	7,10	7,03	6,95	7,05	7,17	7,18	7,10	7,10	7,08	7,08	6,88	7,08
GD 4,2 t/cm <sup>2</sup> , g/cm <sup>3</sup>			6,28																
GS 600 MPa, N/mm <sup>2</sup>	21	15	29	13	14	13	13	13	17	15	20	13	14	13	12	13	16	20	16

Sintered properties	Sponge iron powder grades			Atomized iron powder grades			Astaloy atomized prealloyed powder grades					Distaloy diffusion alloyed powder grades						Premixed grades	
							Sinterhardened (dT/dt=2,5° C/s) tempered 200° C, 30 min.					dT/dt=1,5° C/s							
% C, as sintered	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,45	0,65	0,5	0,5	0,5	0,5	0,5	0,6	-	-
% Cu	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	-	1,5	-	-	-	-	-	-	-	-
SD, g/cm <sup>3</sup>	6,80	6,90	6,67	6,96	7,02	7,02	7,05	7,00	6,92	6,90	-	7,12	7,10	7,10	7,02	7,08	7,01	7,14	7,25
DC g-s, %	0,12	0,17	-0,05	0,10	0,10	0,11	0,33	0,30	0,21	-0,12	0,25	-0,08	-0,16	-0,22	0,12	-0,15	0,28	-1,00	0,68
HV10	170	180	155	180	185	185	390	415	370	400	35 HRC	180	200	190	210	250	85 HRB	130	150
YS, MPa	410	395	360	450	460	470	720	910	810	920	945	375	420	510	500	530	530	280	300
TS, MPa	530	520	440	570	585	590	845	1025	850	1030	1075	620	750	720	660	890	650	380	450
A, %	2,0	2,5	1,9	1,8	2,0	2,4	0,4	0,4	0,3	0,3	0,3	3,0	2,8	2,5	1,8	2,3	1,3	11,0	15,0
IE, J							14	18	10	14	16	27	30	30	14	26	14	32	45

Applications	Sponge iron powder grades	Atomized iron powder grades	Astaloy atomized prealloyed powder grades	Distaloy diffusion alloyed powder grades	Premixed grades
	<ul style="list-style-type: none"> <li>- Low to medium density parts</li> <li>- Self-lubricating bearings, especially MH80.23 and NC100.24</li> <li>- Parts with complicated geometry where high green strength is essential in order to avoid green cracks</li> <li>- Shock absorber parts, bearings</li> </ul>	<ul style="list-style-type: none"> <li>- Medium to high density parts</li> <li>- Soft magnetic applications, especially ABC100.30</li> <li>- Clutch and pulleys</li> </ul>	<ul style="list-style-type: none"> <li>- Medium to high strength parts as sintered</li> <li>- High strength and wear resistant parts when sinterhardened</li> <li>- Powder forging</li> <li>- Gears, synchronizing and oil pump parts</li> </ul>	<ul style="list-style-type: none"> <li>- High strength applications in sintered and sinterhardened condition</li> <li>- High strength and wear resistance when sinterhardened, especially Distaloy DC and Distaloy DH</li> <li>- Parts where good dimensional control is critical</li> <li>- Gears, synchronizing and oil pump parts</li> </ul>	<ul style="list-style-type: none"> <li>- High ductility parts</li> <li>- Medium strength parts when C is added</li> <li>- Lock and safety parts</li> <li>- Soft magnetic applications (PASC 60)</li> </ul>