

Typical Properties of Copper and Copper Alloy Powders for Powder Metallurgy

Nippon Atomized Metal Powders Corp.

Grade	Particle shape	Mesh Size	AD (Mg/m ³)	FR (sec/50g)	Particle Size Distribution (mass%)							Composition (mass%)							Note
					70-80	80-100	100-150	150-200	200-250	250-325	-325	Cu	Sn	Pb	Zn	P	Al	Oxygen	
					180-200um	150-180um	106-150um	75-106um	63-75um	45-63um	-45um								
COPPER POWDERS																			
LCR-150	irregular	-150	1.9~2.6	<40	-	-	<0.5	5~15	5~15	15~25	40~60	>99.8	<0.2	<0.1	-	<0.05	-	<0.20	
Cu-B	irregular	-100	2.1~2.5	<35	-	<0.5	5~15	20~35	10~25	10~25	15~25	>99.8	<0.2	<0.1	-	<0.03	-	<0.20	
Cu-A	irregular	-200	2.8~3.2	-	-	-	tr.	<5	10~30	70~90	>99.8	<0.2	<0.1	-	<0.05	-	<0.30		
Cu-325	irregular	-325	2.5~3.5	-	-	-	-	-	-	1	>99	>99.8	<0.2	<0.1	-	<0.05	-	<0.30	
HP3010-15	irregular	300/250	2.0~2.55	<45	<1.0	15-30	10~25	40~55	8.0~15.5	<1.0	<0.5	Bal.	<0.015	<0.02	-	<0.03	-	<0.25	
BRONZE POWDERS (PRE-ALLOYED)																			
TS91	irregular	-70	2.4~2.7	<30	<2.5	<5	10~30	15~30	7~22	10~25	13~30	Bal.	8.5~10.0	<0.1	-	<0.05	-	<0.20	
L91	irregular	-70	2.1~2.55	<35	<5	<7	5~25	15~30	8~23	10~25	12~35	Bal.	8.5~9.5	<0.1	-	<0.05	-	<0.20	
LA91	porous structure	-70	2.1~2.4	<35	<5	2~10	10~20	15~30	10~25	15~30	15~30	Bal.	8.5~9.5	<0.1	-	<0.05	-	<0.20	
LR-3	irregular	-70	2.25~2.65	<35	<5	1~10	5~20	15~40	8~23	13~32	12~30	Bal.	8.5~9.7	<0.1	-	<0.05	-	<0.20	
S91-120	irregular	-120	3.3~3.6	<25	-	<0.5	<15	10~20	8~18	15~30	35~55	Bal.	8.5~10.0	<0.1	-	<0.05	-	<0.20	
S91	irregular	-325	2.9~3.6	-	-	-	-	-	tr.	<1	>99	Bal.	8.5~10.0	<0.1	-	-	-	<0.20	
S8515	irregular	-325	2.65~3.35	-	-	-	-	-	tr.	<1	>99	Bal.	14.5~15.5	<0.1	-	-	-	<0.20	
S8317	irregular	-325	2.65~3.35	-	-	-	-	-	tr.	<1	>99	Bal.	16.5~17.5	<0.1	-	-	-	<0.20	
S8020	irregular	-325	2.55~3.25	-	-	-	-	-	tr.	<1	>99	Bal.	19.5~20.5	<0.1	-	-	-	<0.20	
S7723	irregular	-325	2.55~3.25	-	-	-	-	-	tr.	<1	>99	Bal.	22.5~23.5	<0.1	-	-	-	<0.20	
S6733	irregular	-325	2.55~3.25	-	-	-	-	-	tr.	<1	>99	Bal.	32.0~34.0	<0.1	-	-	-	<0.20	
S6238	irregular	-325	2.8~3.3	-	-	-	-	-	tr.	<1	>99	Bal.	37.0~39.0	<0.1	-	-	-	<0.20	
S5050	irregular	-325	3.35~4.05	-	-	-	-	-	tr.	<1	>99	Bal.	49.0~51.0	<0.1	-	-	-	<0.20	
BRASS POWDERS (PRE-ALLOYED)																			
BS8020	irregular	-100	3.05~3.35	15~30	-	<0.5	<15	10~25	5~15	15~30	35~50	Bal.	<0.3	<0.1	18.5~21.5	<0.05	-	<0.30	
BS7030	irregular	-100	2.9~3.2	18~24	-	<0.5	2~10	10~30	5~20	10~30	30~45	Bal.	<0.3	<0.1	28.0~31.0	<0.05	-	<0.30	
BS6040	irregular	-100	2.5~2.9	22~28	-	<0.5	2~15	10~25	10~25	10~25	35~50	Bal.	<0.3	<0.1	38.5~41.5	<0.05	-	<0.30	
TIN POWDER																			
Sn-325	irregular	-325	2.3~2.6	-	-	-	-	-	tr.	<1	>99	-	>99.8	<0.1	-	-	-	<0.50	
BRONZE POWDERS (PRE-ALLOYED)																			
PBC-2A	irregular	-100	-	-	-	<1	5~20	10~30	5~20	10~30	10~50	Bal.	10~12	<0.1	-	0.15~0.35	-	<0.20	
	irregular	-325	-	-	-	-	-	-	tr.	<1	>99	Bal.	10~12	<0.1	-	0.15~0.35	-	<0.20	
COPPER BASED POWDERS (PRE-ALLOYED)																			
CuSnAl	irregular	-325	-	-	-	-	-	-	tr.	<1	>99	Bal.	27.0~29.0	-	-	-	4.5~5.5	<0.20	
PHOSPHOROUS COPPER POWDERS (PRE-ALLOYED)																			
P8Cu	irregular	-325	-	-	-	-	-	-	tr.	<1	>99	Bal.	-	<0.1	-	7.5-8.8	-	<0.20	
	irregular	-200	1.8~2.4	-	-	-	-	-	<5	5~25	75~95	Bal.	-	<0.1	-	-	-	<0.20	

The above data are not guaranteed values.

Typical Properties of Super Fine Powder vol.1

Nippon Atomized Metal Powders Corp.

Grade	Particle size	Particle shape	Tap Density (Mg/m ³)	Particle Size Distribution D50 (μm)	Compositions (mass%)					Note
					Cu	Sn	Zn	Ni	Oxygen	
COPPER POWDERS										
SF-Cu	5μm	irregular	4.4	5.8	≥99.9	-	-	-	< 0.3	
	10μm	irregular	4.5	9.0	≥99.9	-	-	-	< 0.3	
SFR-Cu	2.5μm	spherical	4.3	2.5	≥99.9	-	-	-	< 0.4	
	5μm	spherical	4.9	5.0	≥99.9	-	-	-	< 0.4	
	10μm	spherical	5.0	8.0	≥99.9	-	-	-	< 0.4	
	1.5μm	spherical	4.1	1.5	≥99.9	-	-	-	< 0.5	
HXR-Cu	2.5μm	spherical	4.5	2.5	≥99.9	-	-	-	< 0.3	
	5μm	spherical	5.0	5.5	≥99.9	-	-	-	< 0.3	
AFS-Cu	3μm	flake	5.2	3.4	≥99	-	-	-	< 0.3	C < 0.3 mass%
	7μm	flake	5.3	7.2	≥99	-	-	-	< 0.3	C < 0.3 mass%
BRONZE POWDERS										
SF-BR9010	5μm	irregular	3.7	5.5	Bal.	10	-	-	< 0.35	
	10μm	irregular	4.0	10.0	Bal.	10	-	-	< 0.35	
SF-BR8020	5μm	irregular	3.7	5.5	Bal.	20	-	-	< 0.35	
	10μm	irregular	4.0	10.0	Bal.	20	-	-	< 0.35	
SF-BR7030	5μm	irregular	3.7	5.5	Bal.	30	-	-	< 0.35	
	10μm	irregular	4.0	10.0	Bal.	30	-	-	< 0.35	
TIN POWDERS										
SFR-Sn	2.5μm	spherical	3.6	2.5	-	≥99.5	-	-	< 0.25	
	5μm	spherical	4.0	5.5	-	≥99.5	-	-	< 0.2	
	10μm	spherical	4.5	10.0	-	≥99.5	-	-	< 0.15	
BRASS POWDERS										
SF-BS6040	10μm	irregular	3.7	11.0	Bal.	-	40	-	< 0.6	
COPPER ALLOY POWDERS										
SFR-CuNi(90-10)	2.5μm	spherical	4.4	2.5	Bal.	-	-	10	< 0.5	
SFR-CuNi(90-10)	5μm	spherical	5.0	5.5	Bal.	-	-	10	< 0.5	

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Typical Properties of Super Fine Powder vol.2

Nippon Atomized Metal Powders Corp.

Grade	Particle size	Particle shape	Tap Density (Mg/m ³)	Particle Size Distribution D50 (μm)	Compositions (mass%)					Note
					Fe	Si	Cr	Ni	Oxygen	
SOFT MAGNETIC POWDERS										
SFR-FeSiCr(90.5-5.5-4)	5μm	spherical	3.9	5.4	Bal.	5.5	4	-	< 0.25	
	10μm	spherical	4.2	11.5	Bal.	5.5	4	-	< 0.25	
	15μm	spherical	4.5	15	Bal.	5.5	4	-	< 0.25	
	50μm	spherical	3.6	52	Bal.	5.5	4	-	< 0.25	
SFR-FeSiCr(92-3.5-4.5)	5μm	spherical	3.9	5.4	Bal.	3.5	4.5	-	< 0.25	
	10μm	spherical	4.2	11.5	Bal.	3.5	4.5	-	< 0.25	
SFR-FeSiCr(90.5-3-6.5)	5μm	spherical	3.9	5.4	Bal.	3	6.5	-	< 0.25	
	10μm	spherical	4.2	11.5	Bal.	3	6.5	-	< 0.25	
	15μm	spherical	4.5	15	Bal.	3	6.5	-	< 0.25	
SFR-FeSi(93.5-6.5)	5μm	spherical	4	5.4	Bal.	6.5	-	-	< 0.7	
NICKEL POWDERS										
SFR-Ni	2.5μm	spherical	4.37	2.5	-	-	-	≥99.5	< 0.6	
	5μm	spherical	4.9	5.5	-	-	-	≥99.5	< 0.6	
	10μm	spherical	5.2	10	-	-	-	≥99.5	< 0.6	

Grade	Particle size	Particle shape	Tap Density (Mg/m ³)	Particle Size Distribution D50 (μm)	Compositions (mass%)					Note
					Ag	Cu	Pt	Au	Oxygen	
SILVER POWDERS										
SFR-Ag	5μm	spherical	4.8	5.5	≥99.9	-	-	-	< 0.15	
HXR-Ag	2.5μm	spherical	4.8	2.5	≥99.9	-	-	-	< 0.15	
	5μm	spherical	5.3	5.5	≥99.9	-	-	-	< 0.15	
SILVER ALLOY POWDERS										
SFR-AgCu(72-28)	5μm	spherical	4.9	5	Bal.	28	-	-	< 0.15	
	10μm	spherical	5.0	9	Bal.	28	-	-	< 0.15	
NOBLE METALS POWDERS										
HXR-Pt	-	spherical	-	7	-	-	-	-	< 0.15	
HXR-Au	-	spherical	-	6	-	-	-	-	< 0.15	

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