PHUONGDONG
INDUSTRY

METAL POWDER CATALOGUE

2025

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IRON BASE POWDER

No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
1	316L		Cr 16-18, Ni: 10-14, Mo 2-3, Si ≤1, Mn ≤2, C≤0.03, P≤0.045, Fe: Bal	Stainless steel, suitable for valve bodies, valve seats, and marine components Restoration of stainless steel parts in chemical environments	★★★★★ Available
2	17-4PH	28-35	Cr: 15.0 – 17.5, Ni: 3.0 – 5.0, Cu: 3.0 – 5.0, Nb: 0.15 – 0.45, Mn: ≤ 1.0, Si: ≤ 1.0, C: ≤ 0.07, P: ≤ 0.04, S: ≤ 0.03, Fe: Bal	Stainless steel, suitable for shaft repair and restoration of steam turbine components Cladding for molds, rotating shafts, and parts requiring high hardness and corrosion resistance	★★★★★ Available
3	2209	24–30	Cr 22–23, Ni 8–9, Mo 3–3.5, N ~0.2, Fe: Bal	Duplex stainless steel alloy powder – widely used for protective cladding against corrosion, wear, and mechanical stress, especially in harsh environments such as chemical, oil & gas, and marine industries.	★★★★★ Available
4	420	50–55	Cr 12–14, C 0.3–0.4, Fe: Bal	Restoration of blades, molds, and cutting tools High wear resistance in manufacturing industry	★★★★★ Available
5	LYF 11	40-45	C 0.43, Cr 17.23, Si 1.01, Ni 4.12, Mo 0.83, Fe Bal	Suitable for repairing hydraulic support shafts and similar applications	★★★★★ Available
6	LYF 20	50-55	C 0.25; Cr 16.16; Si 0.89; Ni 3.39; Mn 0.46; Mo 1.18; B 0.74; Fe Bal	Suitable for repairing hydraulic support shafts and similar applications	★★★★★ Available
7	Fe2Z	18-22	Fe: ~80, Cr: ~10–12, C, Si, Mn	Medium wear-resistant cladding layer for machine shafts and gears	★★★
8	Fe3Z	28-32	Fe: ~75, Cr: ~12–15, C: 1.5–2.5, B, Si	Surface hardening and light to medium wear resistance	★★★
9	Fe35	34-36	Ni: 6; Cr: 17.3; Mn: 0.62; Si: 1.85; B: 1.12; V: 0.12; C: 0.32; Fe:Bal	Cladding for shafts, rolls, gears, and bushings Mechanical parts with low chemical corrosion Working environments with mechanical friction but not overly harsh	★★★★ Available

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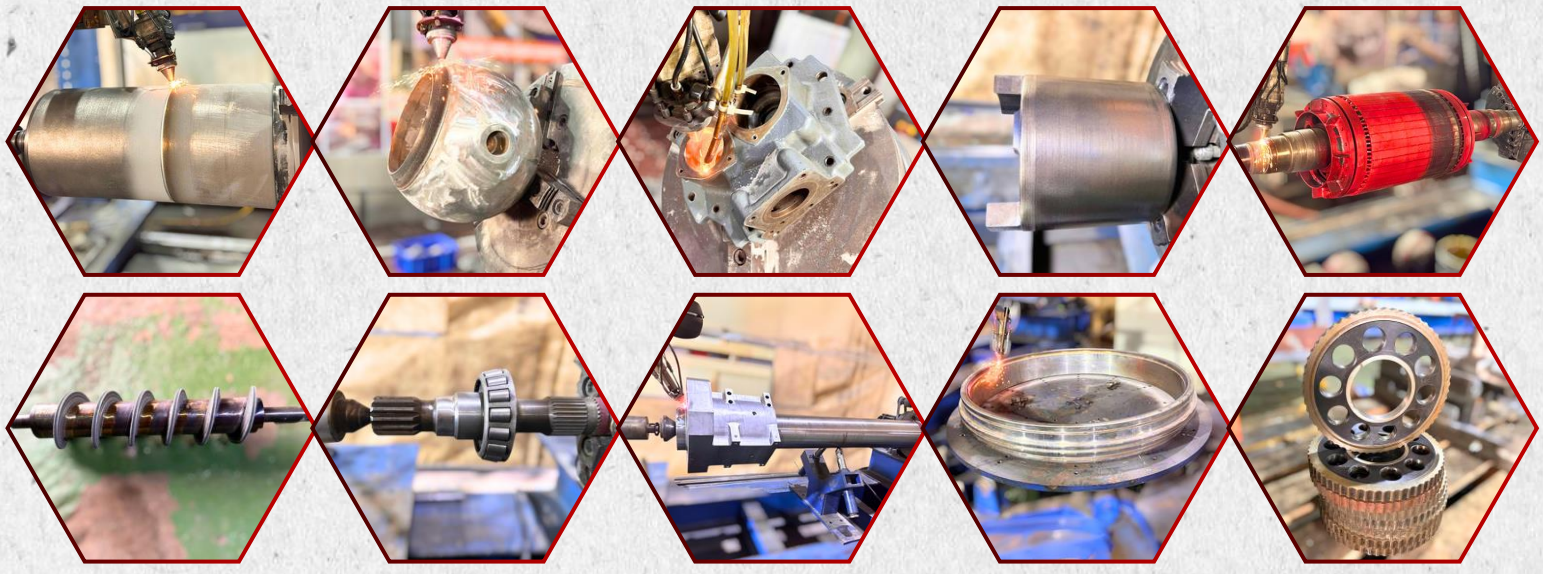
No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
10	Fe4Z	38-42	Fe: ~70, Cr: ~15–18, B: 2–3, C: 2	Hardfacing for strong wear resistance in heavy-duty mechanical applications	★★★★
11	Fe45	44-46	C: 0.6, Si: 3; B: 2; Cr: 12; Ni: 20; W: 3; Fe Bal	Industrial rollers, cutting tools, pump shafts Components operating in high-wear and mildly corrosive environments Applicable in cement, mining, and metallurgy industries	★★★★★ Available
12	Fe5Z	48-52	Fe: ~65, Cr: ~18–22, B: 3–4, C: 2.5–3	Grinding blades, drive shafts, agitator blades in high-wear environments	★★★★
13	Fe55	54-56	C: 1.2, Si: 3.5; B: 2.6; Cr: 22; Ni: 15; W: 3; Fe Bal	Surface cladding for components under extreme wear Wear-resistant pipes, grinding shafts, and screw conveyors in cement and mining industries Dry working environments with minimal impact	★★★★★ Available
14	Fe6Z	60-65	C: 1.2, Si: 3.5; B: 2.6; Si: 1.95; Cr: 15.26; Mn: 0.55; Ni: 0.15; C: 0.21; Fe Bal	Ultra wear-resistant for mining equipment and crusher blades	★★★★ Available
15	Fe60A	58–62	Ni<2.0; Cr 13-18; Mn<1; Si: 1-4; B: 1-3; W≤ 2; Mo<0.8; O<0.2; C<1; Fe: Bal	Ultra-hard coating for anti-slip and high wear resistance	★★★★★ Available
16	H13	38-45	C 0.38 Si 1.0 Mn 0.4 Cr 5.2 Mo 1.3 V 1.0 Fe Bal	Cladding or thermal spraying for components operating at high temperatures with wear and thermal shock resistance	★★★★
17	M2	60–62	Fe: Bal, W: 5–6, Mo: 4–5, Cr: 4–5, V, C high	Used for cutting tool steels, drill bits, turning tools, and molds	★★★★

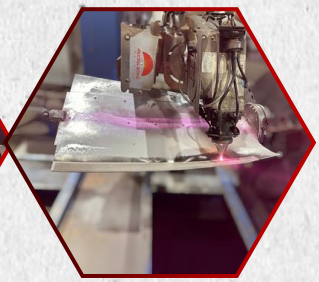


NICKEL BASE POWDER

No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
1	Ni625	20-25	Fe: 5; Mo: 9; P: 0.015; S: 0.015; Cr: 21.5; Nb: 3.62; Mn: 0.5; Cu: 0.07; Al: 0.4; Ti: 0.4; Si: 0.5; Co:1; Al: 0.4; Cu: 0.07; Ni: Bal	High corrosion resistance and excellent heat resistance – used in petrochemical and highly corrosive environments	★★★★★ Available
2	Ni718	20-25	Fe: 14; Mo: 3.05; P: 0.015; S: 0.015; Cr: 19; Nb: 5.12; Mn: 0.35; Cu: 0.3; Al: 0.5; Ti: 0.9; Si: 0.35; B: 0.006; Co:1; Mg: 0.01; C: 0.08; Ni: Bal	High mechanical strength and heat resistance – used in aerospace, gas turbines, and high-temperature molds	★★★★★ Available
3	Ni276	20–30	Fe: 0.72; Mo: 12.8; Cr: 12.4; Si: 0.4; Co:1.6; C: 0.32; W:3.12; TiC:20; Ni: Bal	Resistant to strong acid corrosion – applied in the chemical industry	★★★★
4	C22	25–30	Ni: ~56, Cr: 21–23, Mo: 13–14, Fe: 3–6, W: 3	Extreme corrosion resistance – used in petrochemical industry and acidic environments	★★★★
5	Ni15A	13-17	C: 0.1; Cr: 0.5; Si: 2; Fe≤ 5.0; B: 1.2; Ni: Bal	Moderate hardness, easy to machine – used for parts requiring light grinding and medium wear resistance	★★★
6	Ni20A	18-22	C: 0.1; Cr: 1; Si: 3; Fe≤ 6.0; B: 1.0; Ni: Bal	Resistant to wear and mild corrosion – used for pump shafts and light-duty gears	★★★
7	Ni20B	18-22	C: 0.1; Cr: 5; Si: 3; Fe≤ 15.0; B: 1.0; Ni: Bal	Increased hardness – used for parts requiring higher wear resistance	★★★
8	Ni22A	20-24	C: 0.1; Cr: 1; Si: 3; Fe≤ 0.1; B: 1.0; Ni: Bal	Good wear and heat resistance	★★★
9	Ni25A	23-27	C: 0.1; Cr: 1; Si: 3; Fe≤6.0; B: 1.0; Ni: Bal	Used for moderate wear resistance and machine part restoration	★★★
10	Ni25B	23-27	C: 0.3; Cr: 5; Si: 3; Fe≤15.0; B: 1.0; Ni: Bal	Used for moderate wear protection and machine part restoration	★★★
11	Ni35A	33-37	C: 0.3; Cr: 14; Si: 3; Fe≤5.0; B: 2.2; Ni: Bal	Surface hardening and cladding for restoring shafts, screw shafts, and screw conveyors	★★★
12	Ni35	33-37	C: 0.3; Cr: 14; Si: 3; Fe≤15.0; B: 2.2; Ni: Bal	Surface hardening and cladding for restoring shafts, screw shafts, and screw conveyors	★★★★
13	Ni40A	38-42	C: 0.3; Cr: 14; Si: 3; Fe≤5.0; B: 2.5; Ni: Bal	Hard and highly wear-resistant – used for cutting tools and agitator blades	★★★



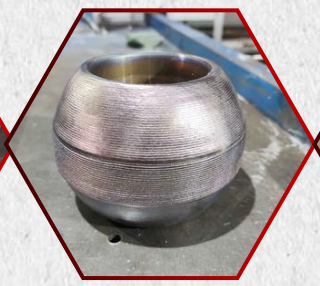




NICKEL BASE POWDER

No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
14	Ni45A	43-47	C: 0.4; Cr: 15; Si: 3; Fe≤5.0; B: 2.8; Ni: Bal	Excellent wear resistance – used for molds and pump impellers	★★★★★ Available
15	Ni45	43-47	C: 0.4; Cr: 15; Si: 3; Fe≤15.0; B: 2.8; Ni: Bal	Excellent wear resistance – used for molds and pump impellers	★★★
16	Ni50A	48-52	C: 0.5; Cr: 16; Si: 3; Fe≤5.0; B: 3; Ni: Bal	Very hard – used in high-wear areas with light impact	★★★
17	Ni50	48-52	C: 0.5; Cr: 16; Si: 3; Fe≤15.0; B: 3; Ni: Bal	Very hard – used in high-wear areas with light impact	★★★
18	Ni55A	53-57	C: 0.6; Cr: 16; Si: 4; Fe≤5.0; B: 3; Ni: Bal	Extremely high hardness – typically used for outer protective coatings	★★★
19	Ni55	53-58	C: 0.6; Cr: 16; Si: 4; Fe≤15.0; B: 3; Ni: Bal	Extremely high hardness – typically used for outer protective coatings	★★★
20	Ni60A	58–62	C: 0.7; Cr: 17; Si: 4; Fe≤5.0; B: 3.2; Ni: Bal	High durability – used for equipment requiring very hard surfaces and long service life	★★★★★
21	Ni60AA	58–62	C: 0.7; Cr: 17; Si: 4; Fe≤2.4; B: 3.2; Ni: Bal	High durability – used for equipment requiring very hard surfaces and long service life	★★★★★ Available
22	Ni60B	58–62	C: 0.7; Cr: 17; Si: 4; Fe≤15.0; B: 3.2; Ni: Bal	High durability – used for equipment requiring very hard surfaces and long service life	★★★
23	Ni65	63-67	C: 1.1; Cr: 18; Si: 4; Fe≤15.0; B: 4; Ni: Bal	Very hard – applied in extremely high wear environments, difficult to machine	★★★
24	Ni60CuMo	58–62	C: 0.7; Cr: 17; Si: 4; Fe≤15.0; Cu:3.2; Mo:3; B: 4; Ni: Bal	Combines wear resistance and mild corrosion resistance – used in oil and chemical industries	★★★
25	Ni60CuMoW	58–62	C: 0.8; Cr: 17; Si: 4; Fe≤5.0; Cu:3.2; Mo:3; W: 3; B: 3.2; Ni: Bal	Improves heat resistance – used for components operating at high temperatures	★★★
26	Ni6325A	57-62	C: 0.7; Cr: 18; Si: 4; Fe≤5.0; Cu:3.2; Mo:3; Mn≤ 5; B: 3.4; Ni: Bal	Corrosion and wear resistant – used in oil and chemical industries	★★★





COBALT BASE POWDER

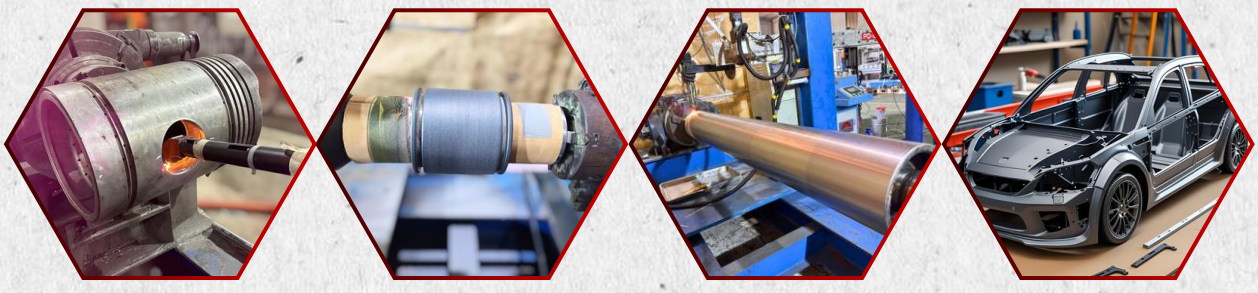
No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
1	Stellite 1	48-54	Co Bal, Cr 30.0–33.0, W 12.0–14.5, C 2.4–3.0, Ni ≤ 3.0, Fe ≤ 3.0, Si ≤ 2.0, Mn ≤ 1.0	Light corrosion- and wear-resistant coating – applied in industrial valves and light-duty molds	★★★★
2	Stellite 6	38-44	Co Bal, Cr 27.0–32.0, W 4.5–6.0, C 0.9–1.4, Ni ≤ 3.0, Fe ≤ 3.0, Si ≤ 2.0, Mn ≤ 1.0	Most common type – resistant to wear, corrosion, and heat up to ~800°C. Used for valve blades, sliding surfaces, and hammers	★★★★★ Available
3	Stellite 12	42-48	C 1.8–2.5, Cr 28–32, W 7–9, Ni ≤3.0, Fe ≤3.0, Si ≤1.2, Mn ≤1.0, Co Bal	Higher hardness than Co6 – suitable for cutting edges, rotating shafts, and cutting tools in high-temperature environments	★★★★★ Available
4	Stellite 21	20	Co Bal, Cr 26.0–30.0, Mo 5.0–6.0, Ni 2.0–3.0, C 0.2–0.3, Fe ≤ 3.0, Mn ≤ 1.0, Si ≤ 1.0	Good crack resistance – used for agitator shafts, valves, and surfaces subject to mechanical impact	★★★★
5	Stellite 20	52–57	Co Bal, Cr 32.0–36.0, W 12.0–16.0, C 2.45–3.0, Ni ≤ 3.0, Fe ≤ 3.0, Si ≤ 2.0, Mn ≤ 1.0	Resistant to impact load, wear, and mild corrosion – suitable for pump shafts and compressed components	★★★★
6	Stellite X40	34	Co Bal, Cr 25.0–30.0, W 7.0–10.0, Mo 5.0–8.0, C 0.5–0.6, Ni ≤ 3.0, Fe ≤ 3.0	Used in the oil and gas industry, high-temperature zones & highly corrosive environments	★★★★
7	Stellite T400	50–60	Co Bal, Mo 28.0, Cr 8.5, Si 2.85, C ~0.05	Wear- and chemical corrosion-resistant coating – used in mining and petrochemical equipment	★★★★
8	Stellite T800	52–48	Co Bal, Mo 33.0, Cr 17.0, Si 3.2, C ~0.05	Ultra high-temperature applications (~1100°C) – gas turbines, burner nozzles, and components exposed to direct flame	★★★★

COPPER BASE POWDER

No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
1	CuSn10	8–15	Cu: 88–90, Sn: 10, Pb < 0.1, Zn < 1, P < 0.1	Bearings, bushings, and gears under medium load	★★★★★
2	CuSn12	10–18	Cu: 87–88, Sn: 12, Pb < 0.1, Zn < 1, P < 0.1	Sliding bearings and high-friction components	★★★★
3	CuSn15	12–16	Cu ~85, Sn ~14 – 16;Pb < 0.1, Zn < 1, P < 0.1	Bushings and plain bearings Electrical components and marine environments thanks to good wear and corrosion resistance	★★★★
4	CuAl10	12–22	Cu: 89, Al: 10, Fe < 1.5, Ni < 1, Mn < 1	Pump impellers, valves, and mechanical parts exposed to corrosion	★★★★★ Available

ALUMINUM BASE POWDER

No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
1	AlSi10	~5–10	Al ~89.5, Si 10, Fe 0.5	Cladding aluminum parts with complex geometries (housings, casings, impellers) – Creating anti-corrosion and oxidation-resistant coatings for mechanical, shipbuilding, and plastic mold industries	★★★★★
2	AlSi10Mg	~10–13	Al ~88.5, Si 10, Mg 0.3–0.5, Fe 0.4	Metal 3D printing (SLM/DMLS) for aerospace, automotive, and racing industries – Cladding and repairing lightweight structures requiring high precision – Manufacturing lightweight load-bearing parts with good fatigue strength	★★★★★ Available
3	Al6061	~8–10	Al ~97.9, Mg 1.0, Si 0.6, Cu 0.28, Cr 0.2	Cladding or restoring aluminum mechanical parts (robotic arms, CNC machine frames) – Combined CNC machining or 3D printing – Used in automation, defense, and sports bicycle industries	★★★★★ Available
4	Ni5Al	20-30	Ni 5, Al 95	Parts exposed to wear in high-temperature environments, especially in aerospace, oil & gas, and machinery manufacturing industries	★★★★★



TUNGSTEN CARBIDE ALLOY POWDER

No.	Product Name	Hardness (HRC)	Main Composition	Typical Application	Popularity
1	Ni25WC35	>45	65%Ni25A+35% WC	Suitable for shafts, rolling molds, and components with moderate wear resistance Ideal for parts requiring light impact resistance and easy post-machining	★★★
2	Ni45WC35	>45	65%Ni45A+35% WC	Balanced wear resistance and impact toughness Pump impellers, screw shafts, and mechanical parts in friction environments Applicable for both wet and dry working conditions	★★★
3	Ni60WC25	>60	5%Ni45A+25%W C	Low WC → softer, easier to machine, but lower wear resistance Used as buffer or intermediate layer before applying hard surfacing Suitable for components with moderate hardness requirements	★★★
4	Ni60WC35	>60	65%Ni60A+35% WC	Good balance between hardness and crack resistance Steel drawing rollers, gears, shafts, valve surfaces Applied in oil & gas, mining, and steel manufacturing industries	★★★
5	Ni60WC40	>60	60%Ni60A+40% WC	Increased WC → higher hardness, better wear resistance, reduced impact toughness For parts exposed to high wear and strong friction Press screws, molds, mining tools	★★★
6	Ni60WC50	>65	50%Ni60A+50% WC	High WC → excellent hardness and wear resistance, but brittle and difficult to machine Drill bits, cutting tools, grinding equipment Suitable for extremely hard-wearing dry applications	★★★
7	Ni60WC60	>65	40%Ni60A+60% WC	Extremely hard, superior wear resistance, not suitable for high-impact loads Mining equipment, stone crushers, grinding mechanisms Ideal for harsh, abrasive environments	★★★
8	Ni60WC75	>65	25%Ni60A+75% WC	Very high WC → almost like composite coatings Ultra-hard but brittle, difficult to machine For extreme abrasion areas without impact load (e.g., cutting blades, ultra-fine grinding components) Used as final top layer in multi-layer coating systems	★★★
9	WC-12Co	80-90	88% WC + 12% Co	For components exposed to high impact and friction in mining, oil & gas, and machinery manufacturing	★★★★
10	WC- 27NiCr	70-80	73% WC và 27% NiCr	For parts subjected to wear, impact, and high temperatures in industrial machinery, mining, and oil & gas applications	★★★★

BABBITT POWDER

No.	Product Name	Hardness	Main Composition	Typical Application	Popularity
1	B83	24–30 HB	Sn 83; Sb 11–15, Cu 2–4.5; Pb < 0.35, Fe < 0.08; As < 0.10, Bi < 0.10; Al < 0.002	Sliding bearings in hydro turbines, generators, large motors, compressors, industrial pumps, rolling mills. Ideal for restoring worn components in medium to high-load rotating equipment. Suitable for mechanical repair, marine, mining, and machinery manufacturing industries requiring strong adhesion to steel or copper, low friction, and good wear resistance.	★★★★★ Available
2	B86	24–28 HB	Sn 89.5; Sb 7.5; Cu 3; Pb, Fe, As, Bi, Al <0.1	Sliding bearings in generators, small to medium electric motors, pumps, compressors, industrial fans, and high-speed rotating turbines. Used in precision repair requiring low friction, high rotational speed, light to medium loads, and stable operation under intermittent lubrication. Common in textile, food processing, shipbuilding industries.	★★★

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