

Laser Cladding | Powder Selection

Product name	Chemistry (wt%)								Hardness*	Typical properties and applications	
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Ni-based powders

	Ni	C	Si	B	Fe	Cr	Mo	Others	Typical HRC	Typical HV	
1520-00	Bal.	0,03	2,4	1,4	0,4	-	-	-	20	230	- For surface welding on cast iron and bronze - Ideal for glas moulds
1535-30	Bal.	0,25	3,0	1,0	2,4	5,6	-	Al=1,0	32	310	- For surface welding on cast iron and bronze - Ideal for glas moulds and oil & gas mud motor bearings
1538-40	Bal.	Max 0,07	3,0	2,1	Max 0,8	-	-	-	38	380	- Used as buffer layer/build up alloy - Matrix material for composites - Ideal for oil & gas stabilizers
1540-00	Bal.	0,25	3,5	1,6	2,5	7,5	-	-	42	425	- For wear resistant coatings - Medium to hard welds achievable - Used as matrix material for composites - Ideal for oil & gas and mining & construction applications
1550-00	Bal.	0,45	3,9	2,3	2,9	11,0	-	-	52	550	
1.53 53-180µm	Bal.	0,90	5,3	2,05	5,4	17,8	-	-	54	590	
1559-40	Bal.	Max 0,06	3,0	2,9	0,2	-	-	-	49	510	
1560-00	Bal.	0,75	4,3	3,1	3,7	14,8	-	-	62	810	
1562-10	Bal.	0,60	3,7	2,8	3,5	14,2	-	W=9,5	60	720	
In 625	Bal.	Max 0,03	0,40	-	1,4	21,5	9,0	Nb=3,8	-	200	- Excellent corrosion protection - Used as buffer layer
Amperweld® NiSA 625	Bal.	Max 0,03	Max 0,15	-	Max 1,5	21,5	9,0	Nb = 3,65	-	200	- Resistant to aqueous environments - Good oxidation resistance - Typical applications in aerospace, chemical process, marine and automotive industries - Used as buffer layer
Amperweld® NiSA 718	Bal.	0,05	Max 0,35	Max 0,006	Max 1,5	19,0	3,05	Nb=5,15 Ti=0,9 Al=0,5 Co=0,5	-	Depending on post heat treatment	- Age hardenable, high-temperature and corrosion resistance - Ideal for aerospace and stationary gas turbines, oilfield applications
C276-m	Bal.	0,12	0,5	-	3	15,5	16	W=4,5 Mn=1,2 V=0,5	-	230	- Excellent corrosion protection - Used as buffer layer - Ideal for boiler tubes
Amperweld® NiSA C276	Bal.	Max 0,01	Max 0,08	-	5,0	15,5	16	W=3,75 Co=1,25	-	230	- Resists highly aggressive aqueous environments and localized corrosion - Used for chemical process, pollution control, oil and gas recovery - Used as buffer layer of metal matrix composites

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Co-based powders

	Co	C	Si	Fe	Cr	Ni	Mo	W	Typical HRC	Typical HV	
2528-00	Bal.	0,25	1,0	1,5	27,0	2,8	5,5		35	340	• Similar to Stellite™ alloy 21** forming dies • Used as buffer layer • Work hardening alloy
2537-00	Bal.	1,1	1,0	1,5	28,5	1,5	-	4,4	41	400	• Similar to Stellite™ alloy 6** • All-rounder to combat corrosion, galling, erosion, cavitation or mechanical wear
2537-10	Bal.	1,3	1,0	1,5	28,5	1,5	-	4,4	43	440	• Similar to Stellite™ alloy 6** with higher hardness
2541-00	Bal.	1,4	1,1	1,0	28,5	1,5	-	8,0	44	440	• Similar to Stellite™ alloy 12** • Increased abrasion, corrosion and sliding wear resistance, higher high-temperature hardness
2541-10	Bal.	1,85	1,0	Max 1,5	30,0	Max 1,0	-	8,5	46	480	• Similar to Stellite™ alloy 12** with higher hardness
2548-00	Bal.	2,4	1,1	--	30,0	--	-	12,5	56	620	• Similar to Stellite™ alloy 1** • High abrasion and corrosion resistance • Ideal for pump sleeves, rotary seal rings, wear pads, expeller screws and bearing sleeves • Thermal stability of hardness up to 760°C
HB400	Bal.	Max 0,05	2,8	0,5	9,7	0,5	29,5	-	53	560	• Similar to Tribaloy™ T-400 ** • Excellent high temperature, oxidation and wear resistance • Ideal for marine valves
HG met	Bal.	Max 0,10	0,3	0,7	26,0	9,5	5,0	W=2,0 Mn=0,8	-	320	• Similar to Ultimet®*** • Excellent corrosion resistance • Work hardening alloy • Ideal for oil & gas applications, such as oil & gas tensioner rods

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Fe-based powders

	Fe	C	Si	Cr	Ni	Mo	Mn	Others	Typical HRC	Typical HV	
3.33 LC	Bal.	0,2	1,2	28	16	4,5	1	-	26	270	• Abrasive wear and corrosion at elevated temperatures • Ideal for engine valves
3533-00	Bal.	1,75	1,3	28,0	16,0	4,5	0,8	-	38	330	
3533-10	Bal.	2,1	1,2	28,0	11,5	5,5	1,0	-	43	415	
316L	Bal.	Max 0,03	0,8	17,0	12,0	2,5	1,5	-	-	180	• Used as buffer layer/build up alloy • Good corrosion protection • Austenitic stainless steel
316HSi	Bal.	Max 0,03	1,6	17,0	12,0	2,5	1,5	-	-	180	
410L	Bal.	Max 0,03	0,5	12,5	-	-	0,1	-	17	230	• Applied for corrosion resistant coatings
420S	Bal.	0,25	0,5	13	<1	-	1,2	-	55	590	• Reasonable wear resistance • Martensitic stainless steel • Ideal for rollers and flanges
431HC	Bal.	0,2	0,75	16	1,8	-	<1	-	53	560	
Rockit® 401	Bal.	0,15	-	18,0	2,5	0,5	-	Max 4,0	56	610	• Excellent for hard chrome replacement • Patent filed
H13	Bal.	0,35	1	5,0	-	1,5	0,3	V=1	53	560	• Tool steel
Rockit® 606	Bal.	2,0	0,9	5,0	-	-	-	V=6,0 Others = Max 4,0	64	980	• High hardness and good abrasive wear resistance • Ideal for mining& construction applications • Patent filed

Product name	Chemistry (wt%)	Standard particle sizes (µm/µm)	Hardness in HV _{0,1}	Typical properties and applications
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Hard phase powders (carbides and cermets, blend components)

	C (%)	Co (%)	Others (%)			
Amperweld® CTC	4	-	W bal.	150/53	2300-2700	• Equivalent to Höganäs material 4570 • Cast and crushed eutectic tungsten carbide • Irregular particle form • Blend component • For highly wear resistant surface weldings and overlays
4590	4	-	-	150/53	2700 – 3100	• Spherodized eutectic tungsten carbide (sCTC) • Spherical particles with higher hardness • Blend component
Amperweld® Macroline®	4,3 – 6,2 (depending on particle size)	-	-	From 425/200 to 45/15	2300-2700	• Cast and crushed eutectic tungsten carbide, coated with pure tungsten carbide • Combines the advantages of WC with those of CTC • Patents granted • Blend component
4580	6,1	-	-	150/53	2000 – 2200	• Macrocrystalline tungsten carbide (WC) • Compared to CTC, reduced dissolution in NiSF, but lower wear resistance
Amperweld® VC	18	-	-	160/63 90/45 45/5	1800-2400	• Pure vanadium carbide • For advanced compositions • Ideal for filled wires, electrodes and meltpool doping
Amperweld® TiC	19	-	-	From 200/106 to 45/5	>3000	• Pure titanium carbide • For advanced compositions • Ideal for filled wires, electrodes and meltpool doping
Amperweld® CrB and CrB₂	-	-	17 resp. 29% B	400/63	CrB ₂ 1900-2300	• Pure chromium borides • For advanced compositions • Ideal for filled wires, electrodes and meltpool doping

Blends

Product name	Blend composition (wt%)	Matrix	Hard particle
1540-00-60% 4590	40% NiSF 60% sCTC	1540-00	4590
1559-40-65% 4590	35% NiSF 65% sCTC	1559-40	4590
1559-40-60% 4570	40% NiSF 60% CTC	1559-40	Amperweld® CTC (4570)
1559-40-40% 4570	60% NiSF 40% CTC	1559-40	Amperweld® CTC (4570)