SURFACING ALLOYS

TECH-PTA / LASER SELECTOR CHART

COLMONOY®
(nickel-based)

WALLCOLMONOY
SURFACING ALLOYS

ALLOY	NOMINAL COMPOSITION (%)									ROCKWELL HARDNESS (C-scale)	SUPPLIED AS	DESCRIPTION AND GENERAL USES
	C	Cr	B	Si	Fe	Ni	Mo	W	Others			
25	-	-	1.8	2.5	0.4	Bal	-	-	-	25-31	Atomised Powder	Nickel-based alloy alloy widely used in the glass container industry for repair and/or protection of castings or moulds. Also, used in the oil and gas industry for down hole tooling such as non-magnetic stabilisers, sleeves and steering pads.
30	0.15	3.5	1.3	3.2	1.3	Bal	-	-	-	22-30	Atomised Powder	Suitable for application by Plasma Transferred Arc (PTA) and laser techniques. Colmonoy® 30 is widely used in the glass industry for the protection of moulds.
3200	0.3	4.5	1.0	4.1	1.5	Bal	-	-	-	28-35	Atomised Powder	Versatile Nickel-based hard surfacing alloy suitable for Plasma Transferred Arc (PTA) and Laser deposition. Applications include cladding of steel industry transporter rolls, drill bits and pumps within the oil and gas sector plus the repair of aluminium bronze castings in the glass industry.
33	0.3	5.8	1.0	4.1	1.5	Bal	-	-	-	30-35	Atomised Powder	Versatile Nickel-based hard surfacing alloy suitable for Plasma Transferred Arc (PTA) and Laser deposition. Applications include cladding of steel industry transporter rolls, drill bits and pumps within the oil and gas sector plus the repair of aluminium bronze castings in the glass industry.
42	0.5	10.0	1.9	3.3	2.3	Bal	-	-	-	35-43	Atomised Powder	Better ductility and toughness than Colmonoy® 52. Less hardness and slightly less abrasion and corrosion resistance. Finished by carbide tools and grinding.
52	0.5	12.0	2.3	3.3	4.5	Bal	-	-	-	45-53	Atomised Powder	Similar to Colmonoy® 62 but has increased ductility with slightly lower abrasion resistance and similar corrosion resistance. Finished by grinding.
56	0.9	18.0	1.9	5.3	5.3	Bal	-	-	-	53-58	Atomised Powder	Better ductility and impact resistance than Colmonoy® 6. Finished with carbide tools and grinding. Used for valve seats, ball valves, and marine engine valves.
57	0.5	11.5	2.5	3.5	3.5	Bal	-	16.0	-	52-57	Atomised Powder	Specifically formulated for overlaying the flights of new and rebuilt extrusion or injection moulding screws. Other potential applications where resistance to abrasion and corrosion are important include food processing industry feed screws, air locks and scraper blades. Finished with carbide tools, wet grinding, or dry lapping.
62	0.7	16.0	3.0	4.5	4.5	Bal	-	-	-	55-63	Atomised Powder	Hard nickel-chromium-boron alloy containing chromium carbides. Excellent abrasion and corrosion resistance. Recommended for hardfacing parts to resist wear, corrosion, heat and galling. Typical applications: shafts, sleeves, pump plungers, sucker rod couplings, bed knives, camshafts, bushings, mill guides, mixer blades, seal rings, brick manufacturing equipment, and conveyor screws. Finished by carbide tools and grinding.
69	0.7	14.0	3.2	4.5	4.0	Bal	2.2	-	Cu: 2.0	57-63	Atomised Powder	Additions of chromium and molybdenum for better corrosion resistance. Wide plastic range makes overlays easier to fuse without sagging. For marine and petro-chemical applications. Finished by grinding.
72	0.6	12.0	3.2	4.5	4.0	Bal	-	13.0	-	57-62	Atomised Powder	Tungsten content strengthens the nickel matrix, giving this alloy excellent resistance to low-stress abrasion and scouring action. Wear resistance often superior to Colmonoy 6®. For pump parts. Finished by grinding.
84	1.1	29.0	1.4	2.3	1.0	Bal	-	7.5	-	40-45	Atomised Powder	Tungsten content strengthens the nickel matrix, giving this alloy excellent resistance to low-stress abrasion and scouring action. Wear resistance often superior to Colmonoy 6®. For pump parts. Finished by grinding.
88	0.8	17.0	3.0	4.0	4.0	Bal	-	17.0	-	59-64	Atomised Powder	Unique alloy containing chromium and tungsten borides and carbides for maximum abrasion and corrosion resistance. For high-temperature, highly abrasive applications, glass mould plungers, pump plungers and sleeves, valve seats, plastics extrusion screws. Finished by grinding or CBN tools.

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ALLOY	NOMINAL COMPOSITION (%)									ROCKWELL HARDNESS (C-scale)	SUPPLIED AS	DESCRIPTION AND GENERAL USES
	C	Cr	B	Si	Fe	Ni	Mo	W	Others			
Superalloy												
276	-	15.5	-	0.9	5.5	Bal	16.0	3.8	-	101 HRB (Nominal)	Atomised Powder	Very good resistance to intergranular corrosion, stress crack corrosion and knifecut-crevice corrosion. The alloy shows excellent corrosion resistance to oxidising media such as nitric, phosphoric and sulphuric acid. Typical applications include paper, chemical and fertiliser industry components, hot shear blades, trimming tools, stampers, valve seats, pump components in the chemical industry.
625	-	21.5	-	0.4	2.5	Bal	9.0	-	Nb 3.7	97 HRB (Nominal)	Atomised Powder	Hard surfacing alloy with high fatigue strength and toughness. For use as a buffer layer for non-magnetic down-hole tools, marine, processing, aerospace and nuclear applications.
686	-	21.0	-	0.5	-	Bal	16.0	3.8	Ti: 0.05	99 HRB (Nominal)	Atomised Powder	High levels of chromium, molybdenum and tungsten, achieving one of the highest ratings possible for pitting corrosion resistance. Coatings made using this alloy also offer outstanding general and crevice corrosion resistance and have a low coefficient of friction. Successfully used in Marine Engineering, Chemical Processing, Pollution Control equipment, Nuclear Reactors, Automotive, Oil & Gas Industry, Aerospace Engineering and Waste to Energy.
with Aluminium												
215	0.15	3.0	1.2	3.0	1.0	Bal	-	-	Al: 1.0	22-30	Composite Powder	Designed to hardface grey cast iron moulds for the glass industry. The alloy contains aluminium to help absorb the gas produced during the welding process. Finished with carbide or CBN tools.
211	-	2.7	1.4	2.7	0.5	Bal	-	-	Al: 1.0	27-34	Composite Powder	Designed to hardface grey cast iron moulds for the glass industry. The alloy contains aluminium to help absorb the gas produced during the welding process. Finished with carbide or CBN tools.
315	0.3	4.7	1.0	3.3	1.3	Bal	-	-	Al: 1.0	30-35	Composite Powder	Designed to hardface grey cast iron moulds for the glass industry. The alloy contains aluminium to help absorb the gas produced during the welding process. Finished with carbide or CBN tools.
with Tungsten Carbide												
7331-60	2.5	2.3	0.4	1.7	0.7	Bal	-	57.4	-	30-35 (Matrix)	Composite Powder	A blended two-part hard surfacing powder containing 60% tungsten carbide particles in a nickel based matrix affording excellent abrasion resistance and moderate impact resistance. Typical applications include, mixers, extruders, blender parts, down hole oil tools, ground engaging tools.
83	1.9	20.0	1.1	1.6	1.0	Bal	-	34.0	-	40-45 (Matrix)	Composite Powder	A blended two-part hard surfacing powder containing 30% tungsten carbide particles in a nickel based matrix used for excellent abrasive wear protection. Excellent edge retention.
7621-60	2.7	6.1	1.2	1.8	1.8	Bal	-	57.4	-	55-63 (Matrix)	Composite Powder	A blended two-part hard surfacing powder containing 60% tungsten carbide particles in a nickel based matrix used for protection from severe sliding abrasion. Used on screw conveyors and augers. Finished by grinding.

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WALLEX®
(cobalt-based)

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ALLOY	NOMINAL COMPOSITION (%)									ROCKWELL HARDNESS (C-scale)	SUPPLIED AS	DESCRIPTION AND GENERAL USES
	C	Cr	B	Si	Fe	Ni	Mo	W	Others			
21	0.25	27.0	-	0.5	1.5	2.8	5.5	-	Co: Bal	28-35	Atomised Powder	A cobalt-chromium-molybdenum based alloy with excellent high temperature properties. Combined resistance to galling, cavitation, erosion and corrosion with toughness and work hardening properties.
6	1.2	29.0	-	1.2	1.5	-	-	4.5	Co: Bal	38-46	Atomised Powder	A cobalt-chromium based alloy powder providing resistance to impact, abrasion, erosion, corrosion and oxidation at high temperatures. Uses include valves and seats, edger rolls, hot shear knives and blades, hot trim dies and swaging mandrels.
F	1.8	26.0	-	1.3	1.5	22.0	-	12.0	Co: Bal	40-45	Atomised Powder	Designed specifically for the hardfacing of internal combustion engine valves to give enhanced resistance to corrosion and erosion. Slightly higher hardness and fluidity than Wallex® 6, offering good resistance to wear and oxidation.
12	1.5	29.0	-	1.5	1.5	-	-	8.5	Co: Bal	43-53	Atomised Powder	A cobalt-chromium-tungsten based alloy powder with high heat, abrasion, wear and corrosion resistance. It has a low coefficient of friction and is non-galling. For veneer pressure bars, bushings, control plates, knives and saw teeth.
1	2.5	30.0	-	1.5	1.5	-	-	12.0	Co: Bal	50-58	Atomised Powder	Good corrosion resistance and low coefficient of friction gives good metal on metal wear protection (low impact). Applications include bushings, knives, cams, seal-rings, wear pads.
20	2.5	32.5	-	0.5	1.5	-	-	17.0	Co: Bal	55-59	Atomised Powder	A cobalt-chromium-tungsten based alloy powder with high heat, abrasion, wear and corrosion resistance. It has a low coefficient of friction and is non-galling. For veneer pressure bars, bushings, control plates, knives and saw teeth.

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