



SURFACING ALLOYS TECH-PTA / LASER SELECTOR CHART

WALLCOLMONOY
SURFACING ALLOYS

COLMONOY® (nickel-based)

ALLOY	NOMINAL COMPOSITION (%)									ROCKWELL HARDNESS (C-scale)	SUPPLIED AS	DESCRIPTION AND GENERAL USES
	B	C	Cr	Fe	Mo	Si	W	Ni	Others			
with chromium												
21A	0.9	0.3	5.8	1.5		4.1		Bal		28-32	Atomized Powder	Used primarily on glass container moulds and related parts, to fill in defects and worn areas. Contains chromium for resistance to wear and sulfur-containing media. Also used as cushion for harder overlays such as Colmonoy 56PTA. Also available for Laser Cladding.
4	1.4	0.6	13.0	4.0		3.9		Bal		37-44	Atomized Powder	Optimized Colmonoy 4 formulation for plasma transferred arc (PTA) application. Has greater impact resistance and workability than Colmonoy 5. For dies, moulds, valves, and plungers. Finished with carbide tools and grinding.
45	2.3	0.5	12.0	3.5		3.0		Bal		44-48	Atomized Powder	Optimized Colmonoy 45 formulation for plasma transferred arc (PTA) application. Used for riser pins, gate valves and seats. Has potential use for parts in the glass industry.
5	1.6	0.7	14.3	4.9		4.8		Bal		47-52	Atomized Powder	Optimized Colmonoy 5 formulation for plasma transferred arc (PTA) application. Has greater ductility, better impact resistance and workability than Colmonoy 6. For wear rings, plungers, dies. Finished with carbide tools and grinding.
56	1.9	0.9	18.0	5.4		5.3		Bal		53-58	Atomized Powder	Specifically designed for protecting and restoring plastics extrusion screws using plasma transferred arc (PTA) application. Between Colmonoy 6 and 5 in chemistry and hardness. Better ductility and impact resistance than Colmonoy 6. Finished with carbide tools and grinding.
6	2.1	1.1	20.0	5.7		5.6		Bal		56-62	Atomized Powder	The original, nickel-based hard-surfacing alloy designed for plasma transferred arc (PTA) application. Optimized formulation to offset dilution and alloy loss from the arc. Extremely resistant to wear, especially under corrosive conditions. Low coefficient-of-friction. Can be hot-formed. Finished by grinding.
with chromium and Tungsten												
84	1.4	1.1	29.0	3.0		2.4	7.5	Bal		40-45	Atomized Powder	A nickel-based alternative to cobalt surfacing alloys, for service temperatures up to 1500° F. Boron and silicon content provide better weldability at lower application temperatures.
57	2.5	0.5	11.5	3.5		3.5	16.0	Bal		52-57	Atomized Powder	Specifically formulated for overlaying the flights of new and rebuilt extrusion or injection molding 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. Also available for Laser Cladding.
88	3.0	0.7	15.0	3.5		4.0	15.5	Bal		59-64	Atomized 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.
with Tungsten Carbide												
7303-60	0.4	3.7	2.3	0.6		1.6	56.3	Bal		30-35	Composite Powder	Specifically designed for overlays that require a combination of high impact resistance and abrasion resistance. Typical applications include mining and drilling equipment, impact hammers, earth moving and aggregate processing equipment and die plates. Also available for Laser Cladding.
7403-60	0.6	3.8	5.2	1.6		1.6	56.3	Bal		40-45	Composite Powder	Very similar to 7303-60P4 but is harder, more wear resistant and slightly less ductal. Also available for laser cladding.
83	1.0	1.9	20.3			1.7	34.1	Bal		45-55	Composite Powder	A tough nickel-chromium-tungsten-boron matrix alloy containing chromium carbides with the addition of extremely hard tungsten-carbide particles for excellent abrasive wear protection. Excellent edge retention. Specifically for plasma transferred arc (PTA) application. Also available for Laser Cladding.
WALLEX™ (cobalt-based)												
40	2.0	0.6	16.2	2.0		1.9	7.6	23.5	Co: Bal	41-46	Atomized Powder	A cobalt-nickel alloy powder that forms deposits similar to those of Wallex 50, but softer. Finished with carbide tools and grinding. Developed as a lower temperature alternative for many cobalt-6 applications. Also available for laser cladding.

The information provided herein is given as a guideline to follow. It is the responsibility of the end user to establish the process information most suitable for their specific application(s). Wall Colmonoy Corporation assumes no responsibility for failure due to misuse or improper application, or for any incidental damages arising out of the use of this material or process.