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CERTIFICATE OF ANALYSIS: 34771

Revision: 2

Customer:	SANDVIK MACHINING SOLUTIONS AB		
Customer Order:	900017		
Customer Alloy Name:	316L		
Osprey Order Number:	211123/08	CALL:01	
Osprey Alloy Name:	316L		
Dispatch Number:	22D0471	Dispatch Group Ref: 22E0454	
Weight:	810.00Kg	(1786lb)	
Powder Size:	-53micron +15micron		
Atomise Gas:	Nitrogen		

Physical Test Data				Particle Size Data				Chemical Analysis(wt %)				
		Minimum	Actual	Maximum	Sieve Analysis			El	Minimum	Actual	Maximum	
Tap Density, g/cc			4.9		+53µm 1.36%			Cr	16.0	16.6 %	18.0	
App Density, g/cc			4.2		-53µm 98.64%			Ni	10.0	10.2 %	14.0	
Hall Flow, s/50g			15.7					Mo	2.0	2.2 %	3.0	
				Laser Diffraction Analysis Malvern 2000 Instrument				Mn	0.00	1.38 %	2.00	
					Minimum Actual Maximum			Si	0.00	0.70 %	1.00	
					d10 µm		21.2		P	0.00	0.02 %	0.04
					d50 µm		35.0		C	0.000	0.020 %	0.030
					d90 µm		56.7		S	0.000	0.003 %	0.030
					-15.0µm		0.6	5.0	Fe	BALANCE		

Test Type	Standard	Method	Elements
Chemical Analysis	UKAS Accredited Laboratories compliant with ISO/IEC 17025:2017 Refer to UKAS 0012/0038/1091 for details	ICP-OES	Al, As, B, Be, Ca, Cd, Co, Cr, Cu, Fe, Hf, In, Mg, Mn, Mo, Ni, Nb, P, Sb, Si, Sn, Ti, Ta, V, W, Y, Zn, Zr
		Leco, Eltra Combustion	C, H, N, O, S
	Laboratory compliant with ISO/IEC 17025:2017	GD-MS	Bi, Ga, Pb, Te, Tl

Test Type	Method	Standard
Physical Analysis	Tap Density	In house method SWP-019 (based on ISO 3953)
	Apparent Density	In house method SWP-019 (based on ASTM B703)
	Pycnometric Density	In house method SWP-228 (based on ASTM B923-16)
	Laser Particle Size Analysis	In house method SWP-015 (based on ISO 13320)
	Sieve	In house method SWP-223 (based on ASTM B214-16)
	Hall or Carney Flow	In house method SWP-019 (based on ISO 4490/ASTM B213-03)

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* Average values measured by assurance