



MEF

STAINLESS STEEL AND SUPER ALLOYS

🇬🇧 Ultra-fine micrograin and Endless Black coating for high performance machining on stainless steel, HRSA and titanium alloy, carbon and low alloy steel. The unique design of the cutting geometry and the Endless Black coating are specifically developed to control the cutting friction delivering longer tool life through the reduction of the heat generation.

🇮🇹 Micrograna ultrafine e rivestimento Endless Black per la lavorazione ad alto rendimento di acciai al carbonio, acciai inossidabili, HRSA e leghe di titanio. La geometria e il rivestimento specifici consentono di generare bassi sforzi di taglio e l'abbassamento del coefficiente di attrito, garantendo una riduzione dello sviluppo del calore con conseguente rallentamento del processo di usura del tagliente.

🇩🇪 Besonders feine Mikrokörnung und Beschichtung Endless Black für Hochleistungsbearbeitungen von Kohlenstoffstahl, Edelstahl, HRSA und Titanlegierungen. Dank der speziellen Geometrie und der spezifischen Beschichtung wird ein niedriger Schneiddruck erzeugt und der Reibungsfaktor gesenkt, wodurch die Hitzeentwicklung reduziert und in Folge die Abnutzung der Schneidkante verzögert werden.

🇫🇷 Ultra Micrograin et revêtement Endless Black pour l'usage à haute performance pour les aciers au carbone, aciers inoxydables, HRSA et alliages de titane. La géométrie et le revêtement spécifiques permettent de générer peu d'efforts de coupe et de réduire le coefficient de frottement, en garantissant une diminution du développement de la chaleur et le ralentissement consécutif du processus d'usure de l'arête.

🇪🇸 Micrograno ultrafino y revestimiento Endless Black para el mecanizado a alto rendimiento de aceros al carbono, aceros inoxidables, HRSA y aleaciones de titanio. La geometría y revestimiento específicos permiten generar bajos esfuerzos de corte y reducción del coeficiente de rozamiento, garantizando una reducción del desarrollo de calor con la consiguiente ralentización del proceso de desgaste del filo.

🇷🇺 Микрoзернистая супермелкая структура твердого сплава и покрытие Endless Black служат для высокоэффективной обработки нержавеющей стали, жаропрочных и титановых сплавов, низко- и высокоуглеродистых сталей. Специальные геометрия и покрытие позволяют снизить трение и тепловыделение при резании и, тем самым, увеличить стойкость инструмента.

INFO
TYPHOON TA-HTA-4HTA
TYPHOON PU-HPU
TYPHOON SUH
TYPHOON ALH
TYPHOON HRC
TYPHOON SUH MINI
TYPHOON HL
C-SD-TA
LFTA
SUTA
HSS-HSS/CO DRILLS
G2
MDTA
HF VH/UP
MEF
ALU
MEX
UH
HSS/CO-HSSP END MILLS
CARBIDE BURRS

MEFCS2

	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4				M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC				< 45 HRC		
	ap x ae	0.5D x D			0.5D x D			0.3D x D				0.2D x D		
	Vc (m/min)	90-110			50-70			30-50				20-40		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
	1	31850	0.005	290	19110	0.004	150	12740	0.004	90	9550	0.004	70	
	2	15920	0.009	290	9550	0.008	150	6370	0.007	90	4780	0.007	70	
	3	10620	0.012	240	6370	0.010	120	4250	0.009	80	3180	0.009	60	
	4	7960	0.017	270	4780	0.015	140	3180	0.014	90	2390	0.014	70	
	5	6370	0.023	290	3820	0.020	150	2550	0.018	90	1910	0.018	70	
	6	5310	0.029	310	3180	0.024	160	2120	0.023	100	1590	0.023	70	
	8	3980	0.035	270	2390	0.029	140	1590	0.028	90	1190	0.028	70	
	10	3180	0.040	260	1910	0.034	130	1270	0.032	80	960	0.032	60	
	12	2650	0.046	240	1590	0.039	120	1060	0.037	80	800	0.037	60	
14	2270	0.052	230	1360	0.044	120	910	0.041	80	680	0.041	60		
16	1990	0.058	230	1190	0.049	120	800	0.046	70	600	0.046	60		

< D3 mm: ap = 0.1D - 0.2D

	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4				M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC				< 45 HRC		
	ap x ae	1.5D x 0.5D			1.5D x 0.5D			D x 0.3D				D x 0.1D		
	Vc (m/min)	90-110			60-80			40-60				30-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
	1	31850	0.006	350	22290	0.005	210	15920	0.004	140	12740	0.004	110	
	2	15920	0.011	350	11150	0.009	210	7960	0.009	140	6370	0.009	110	
	3	10620	0.014	290	7430	0.012	170	5310	0.011	120	4250	0.011	90	
	4	7960	0.021	330	5570	0.018	200	3980	0.017	130	3180	0.017	110	
	5	6370	0.028	350	4460	0.023	210	3180	0.022	140	2550	0.022	110	
	6	5310	0.035	370	3720	0.029	220	2650	0.028	150	2120	0.028	120	
	8	3980	0.041	330	2790	0.035	200	1990	0.033	130	1590	0.033	110	
	10	3180	0.048	310	2230	0.041	180	1590	0.039	120	1270	0.039	100	
	12	2650	0.055	290	1860	0.047	170	1330	0.044	120	1060	0.044	90	
14	2270	0.062	280	1590	0.053	170	1140	0.050	110	910	0.050	90		
16	1990	0.069	270	1390	0.059	160	1000	0.055	110	800	0.055	90		

< D3 mm: ae = 0.05D - 0.2D

	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4				M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC				< 45 HRC		
	ap x ae	D x D			D x D			0.5D x D				0.2D x D		
	Vc (m/min)	90-110			50-70			30-50				20-40		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
	1	31850	0.003	180	19110	0.002	90	12740	0.002	60	9550	0.022	420	
	2	15920	0.006	180	9550	0.005	90	6370	0.004	60	4780	0.044	420	
	3	10620	0.007	150	6370	0.006	70	4250	0.006	50	3180	0.055	350	
	4	7960	0.010	160	4780	0.009	80	3180	0.008	50	2390	0.083	400	
	5	6370	0.014	180	3820	0.012	90	2550	0.011	60	1910	0.110	420	
	6	5310	0.017	180	3180	0.015	90	2120	0.014	60	1590	0.138	440	
	8	3980	0.021	160	2390	0.018	80	1590	0.017	50	1190	0.166	390	
	10	3180	0.024	150	1910	0.021	80	1270	0.019	50	960	0.193	370	
	12	2650	0.028	150	1590	0.023	70	1060	0.022	50	800	0.221	350	
14	2270	0.031	140	1360	0.026	70	910	0.025	50	680	0.248	340		
16	1990	0.035	140	1190	0.029	70	800	0.028	40	600	0.276	330		

< D3 mm: ap = 0.1D - 0.2D

INFO

TYPHOON TA-HTA-4HTA

TYPHOON PU-HPU

TYPHOON SUH

TYPHOON ALH

TYPHOON HRC

TYPHOON SUH MINI

TYPHOON HL

C-SD-TA

LFTA

SUTA

HSS-HSS/CO DRILLS

G2

MDTA

HF VH/UP

MEF

ALU

MEX

UH

HSS/CO-HSSP END MILLS

CARBIDE BURRS

MEFCSH3

 SLOTTING	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4				M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC				< 45 HRC		
	ap x ae	0.5D x D			0.5D x D			0.3D x D				0.2D x D		
	Vc (m/min)	80-100			60-80			40-60				30-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
6	4780	0.022	220	3720	0.013	140	2650	0.012	100	2120	0.012	80		
8	3580	0.029	210	2790	0.017	140	1990	0.015	90	1590	0.016	80		
10	2870	0.036	220	2230	0.021	140	1590	0.019	90	1270	0.020	80		
12	2390	0.046	230	1860	0.027	150	1330	0.024	100	1060	0.026	80		
14	2050	0.053	230	1590	0.031	150	1140	0.028	90	910	0.030	80		
16	1790	0.065	240	1390	0.038	160	1000	0.034	100	800	0.036	90		
18	1590	0.075	250	1240	0.044	160	880	0.039	100	710	0.042	90		
20	1430	0.086	260	1110	0.051	170	800	0.045	110	640	0.048	90		

 SIDE MILLING	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4				M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC				< 45 HRC		
	ap x ae	1.5D x 0.3D			1.5D x 0.3D			1.5D x 0.2D				1.5D x 0.1D		
	Vc (m/min)	80-120			60-80			40-60				100-140		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
6	4780	0.026	260	3720	0.015	170	2650	0.014	110	2120	0.014	90		
8	3580	0.035	260	2790	0.020	170	1990	0.019	110	1590	0.019	90		
10	2870	0.043	260	2230	0.026	170	1590	0.024	110	1270	0.024	90		
12	2390	0.055	280	1860	0.033	180	1330	0.031	120	1060	0.031	100		
14	2050	0.064	270	1590	0.038	180	1140	0.036	120	910	0.036	100		
16	1790	0.078	290	1390	0.046	190	1000	0.043	130	800	0.043	100		
18	1590	0.090	300	1240	0.053	200	880	0.050	130	710	0.050	110		
20	1430	0.104	310	1110	0.061	200	800	0.058	140	640	0.058	110		

INFO

TYPHOON
TA-HTA-4HTATYPHOON
PU-HPUTYPHOON
SUHTYPHOON
ALHTYPHOON
HRCTYPHOON
SUH MINITYPHOON
HL

C-SD-TA

LFTA

SUTA

HSS-HSS/CO
DRILLS

G2

MDTA

HF VH/UP

MEF

ALU

MEX

UH

HSS/CO-HSSP
END MILLSCARBIDE
BURRS

MEFCS4

	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4				M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC				< 45 HRC		
	ap x ae	1.5D x 0.1D			1.5D x 0.1D			1.5D x 0.1D				1.5D x 0.1D		
	Vc (m/min)	90-110			60-80			40-60				30-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
3	10620	0.012	510	7430	0.010	300	5310	0.010	200	4250	0.010	160		
4	7960	0.015	480	5570	0.013	280	3980	0.012	190	3180	0.012	150		
5	6370	0.018	460	4460	0.015	270	3180	0.014	180	2550	0.014	150		
6	5310	0.023	490	3720	0.020	290	2650	0.018	200	2120	0.018	160		
8	3980	0.030	480	2790	0.026	280	1990	0.024	190	1590	0.024	150		
10	3180	0.038	480	2230	0.032	290	1590	0.030	190	1270	0.030	150		
12	2650	0.045	480	1860	0.038	280	1330	0.036	190	1060	0.036	150		
14	2270	0.052	470	1590	0.044	280	1140	0.042	190	910	0.042	150		
16	1990	0.058	460	1390	0.049	270	1000	0.046	190	800	0.046	150		
18	1770	0.066	470	1240	0.056	280	880	0.053	190	710	0.053	150		
20	1590	0.075	480	1110	0.064	280	800	0.060	190	640	0.060	150		

INFO

TYPHOON
TA-HTA-4HTATYPHOON
PU-HPUTYPHOON
SUHTYPHOON
ALHTYPHOON
HRCTYPHOON
SUH MINITYPHOON
HL

C-SD-TA

LFTA

SUTA

HSS-HSS/CO
DRILLS

G2

MDTA

HF VH/UP

MEF

ALU

MEX

UH

HSS/CO-HSSP
END MILLSCARBIDE
BURRS

MEF600

	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4			M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC			< 45 HRC		
	ap x ae	1.5D x 0.1D			1.5D x 0.1D			1.5D x 0.1D			1.5D x 0.05D		
	Vc (m/min)	100-140			70-110			50-90			50-70		
D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
6	6370	0.015	570	4780	0.013	370	3720	0.012	270	3180	0.012	230	
8	4780	0.020	570	3580	0.017	370	2790	0.016	270	2390	0.016	230	
10	3820	0.025	570	2870	0.021	370	2230	0.020	270	1910	0.020	230	
12	3180	0.030	570	2390	0.026	370	1860	0.024	270	1590	0.024	230	
14	2730	0.035	570	2050	0.030	370	1590	0.028	270	1360	0.028	230	
16	2390	0.040	570	1790	0.034	370	1390	0.032	270	1190	0.032	230	
20	1910	0.050	760	1430	0.043	490	1110	0.040	360	960	0.040	310	

INFO

TYPHOON
TA-HTA-4HTATYPHOON
PU-HPUTYPHOON
SUHTYPHOON
ALHTYPHOON
HRCTYPHOON
SUH MINITYPHOON
HL

C-SD-TA

LFTA

SUTA

HSS-HSS/CO
DRILLS

G2

MDTA

HF VH/UP

MEF

ALU

MEX

UH

HSS/CO-HSSP
END MILLSCARBIDE
BURRS

MEF901

	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4				M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC				< 45 HRC		
	ap x ae	1.5D x 0.3D			1.5D x 0.3D			1.5D x 0.2D				D x 0.1D		
	Vc (m/min)	100-140			70-90			50-70				40-60		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
4	9550	0.018	520	6370	0.015	290	4780	0.014	210	3980	0.014	170		
5	7640	0.022	670	5100	0.019	380	3820	0.018	270	3180	0.018	220		
6	6370	0.028	710	4250	0.024	400	3180	0.022	280	2650	0.022	240		
8	4780	0.035	670	3180	0.030	380	2390	0.028	270	1990	0.028	220		
10	3820	0.040	610	2550	0.034	350	1910	0.032	240	1590	0.032	200		
12	3180	0.045	570	2120	0.038	320	1590	0.036	230	1330	0.036	190		
14	2730	0.050	680	1820	0.043	390	1360	0.040	270	1140	0.040	230		
16	2390	0.057	680	1590	0.048	390	1190	0.046	270	1000	0.046	230		
20	1910	0.073	840	1270	0.062	470	960	0.058	340	800	0.058	280		

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G2

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ALU

MEX

UH

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END MILLSCARBIDE
BURRS

MEF902

	Material Group ISO 513	P1 P2 P3			P4 M1 M2			P5 M3 M4 S1 S2 S4			M5 S3 S5		
	Hardness/Rm	< 700 N/mm ²			700-1000 N/mm ²			< 35 HRC			< 45 HRC		
	ap x ae	1.5D x 0.3D			1.5D x 0.3D			1.5D x 0.2D			D x 0.1D		
	Vc (m/min)	100-120			60-80			40-60			40-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)
6	5840	0.027	620	3720	0.023	340	2650	0.021	230	2390	0.021	200	
8	4380	0.033	580	2790	0.028	320	1990	0.027	210	1790	0.027	190	
10	3500	0.038	530	2230	0.032	290	1590	0.030	190	1430	0.030	170	
12	2920	0.043	500	1860	0.036	270	1330	0.034	180	1190	0.034	160	
14	2500	0.048	590	1590	0.040	320	1140	0.038	220	1020	0.038	190	
16	2190	0.054	590	1390	0.046	320	1000	0.043	220	900	0.043	190	
20	1750	0.069	730	1110	0.059	390	800	0.055	270	720	0.055	240	

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