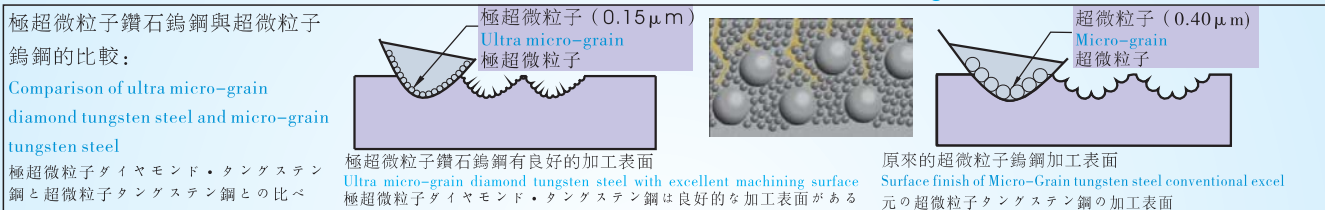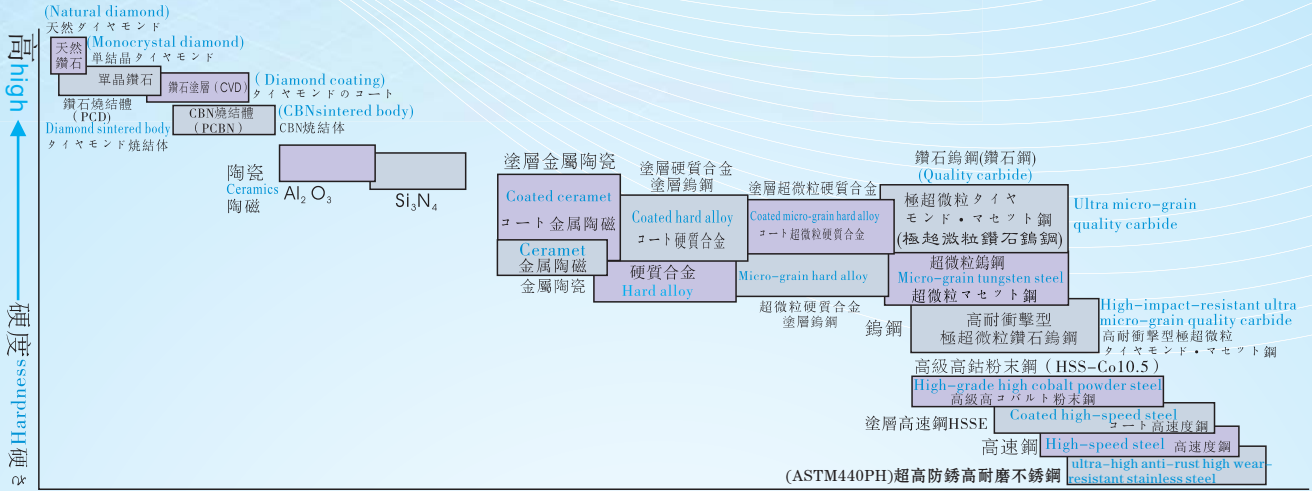# 各種刀具材料的特性及ISO公差範圍表：
Table of characteristics and ISO tolerance range for various tooling materials
各種のブレードカツタ用材料の特性及びISO公差範囲の表

★ 各種刀具材料的硬度和韌性對照:Hardness and toughness comparison of various tooling materials
各種のブレードカツタ用材料の硬さとじん性との対照

極超微粒子鑽石鎢鋼與超微粒子鎢鋼的比較：

Comparison of ultra micro-grain diamond tungsten steel and micro-grain tungsten steel

極超微粒子ダイヤモンド・タングステン鋼と超微粒子タングステン鋼との比べ

極超微粒子（0.15μm）
Ultra micro-grain
極超微粒子

超微粒子（0.40μm）
Micro-grain
超微粒子

極超微粒子鑽石鎢鋼有良好的加工表面
Ultra micro-grain diamond tungsten steel with excellent machining surface
極超微粒子ダイヤモンド・タングステン鋼は良好的な加工表面がある

原來的超微粒子鎢鋼加工表面
Surface finish of Micro-Grain tungsten steel conventional excel
元の超微粒子タングステン鋼の加工表面

ISO公差範圍表mm: (Table of ISO tolerance range)   (ISO公差範囲表mm)

φmm	φ≤3	3<φ≤6	6<φ≤10	10<φ≤18	18<φ≤30	30<φ≤50	50<φ≤65	65<φ≤80
e7	−0.014 / −0.024	−0.020 / −0.032	−0.025 / −0.040	−0.032 / −0.050	−0.040 / −0.061	−0.050 / −0.075	−0.060 / −0.090	−0.060 / −0.090
e8	−0.014 / −0.028	−0.020 / −0.038	−0.025 / −0.047	−0.032 / −0.059	−0.040 / −0.073	−0.050 / −0.089	−0.060 / −0.106	−0.060 / −0.106
e9	−0.014 / −0.039	−0.020 / −0.050	−0.025 / −0.061	−0.032 / −0.075	−0.040 / −0.092	−0.050 / −0.112	−0.060 / −0.134	−0.060 / −0.134
h5	0 / −0.004	0 / −0.005	0 / −0.006	0 / −0.008	0 / −0.009	0 / −0.011	0 / −0.013	0 / −0.013
h6	0 / −0.006	0 / −0.008	0 / −0.009	0 / −0.011	0 / −0.013	0 / −0.016	0 / −0.019	0 / −0.019
h7	0 / −0.010	0 / −0.012	0 / −0.015	0 / −0.018	0 / −0.021	0 / −0.025	0 / −0.030	0 / −0.030
h8	0 / −0.014	0 / −0.018	0 / −0.022	0 / −0.027	0 / −0.033	0 / −0.039	0 / −0.046	0 / −0.046
h9	0 / −0.025	0 / −0.030	0 / −0.036	0 / −0.043	0 / −0.052	0 / −0.062	0 / −0.074	0 / −0.074
h10	0 / −0.040	0 / −0.048	0 / −0.058	0 / −0.070	0 / −0.084	0 / −0.100	0 / −0.120	0 / −0.120
h11	0 / −0.060	0 / −0.075	0 / −0.090	0 / −0.110	0 / −0.130	0 / −0.160	0 / −0.190	0 / −0.190
h16	0 / −0.600	0 / −0.750	0 / −0.900	0 / −1.100	0 / −1.300	0 / −1.600	0 / −1.900	0 / −1.900
js14	+0.125 / −0.125	+0.150 / −0.150	+0.180 / −0.180	+0.215 / −0.215	+0.260 / −0.260	+0.310 / −0.310	+0.370 / −0.370	+0.370 / −0.370
js16	+0.300 / −0.300	+0.375 / −0.375	+0.450 / −0.450	+0.550 / −0.550	+0.650 / −0.650	+0.800 / −0.800	+0.950 / −0.950	+0.950 / −0.950
k11	+0.060 / 0	+0.075 / 0	+0.090 / 0	+0.110 / 0	+0.130 / 0	+0.160 / 0	+0.190 / 0	+0.190 / 0
k12	+0.100 / 0	+0.120 / 0	+0.150 / 0	+0.180 / 0	+0.210 / 0	+0.250 / 0	+0.300 / 0	+0.300 / 0
m6	+0.008 / +0.002	+0.012 / +0.004	+0.015 / +0.006	+0.018 / +0.007	+0.021 / +0.008	+0.025 / +0.009	+0.030 / +0.011	+0.030 / +0.011
m7	+0.012 / +0.002	+0.016 / +0.004	+0.021 / +0.006	+0.025 / +0.007	+0.029 / +0.008	+0.034 / +0.009	+0.041 / +0.011	+0.041 / +0.011
z9	+0.051 / +0.026	+0.065 / +0.035	+0.078 / +0.042	+0.103 / +0.060	+0.140 / +0.088	+0.198 / +0.136	+0.246 / +0.172	+0.284 / +0.210
H5	+0.004 / 0	+0.005 / 0	+0.006 / 0	+0.008 / 0	+0.009 / 0	+0.011 / 0	+0.013 / 0	+0.013 / 0
H6	+0.006 / 0	+0.008 / 0	+0.009 / 0	+0.011 / 0	+0.013 / 0	+0.016 / 0	+0.019 / 0	+0.019 / 0
H7	+0.010 / 0	+0.012 / 0	+0.015 / 0	+0.018 / 0	+0.021 / 0	+0.025 / 0	+0.030 / 0	+0.030 / 0
H8	+0.014 / 0	+0.018 / 0	+0.022 / 0	+0.027 / 0	+0.033 / 0	+0.039 / 0	+0.046 / 0	+0.046 / 0
H9	+0.025 / 0	+0.030 / 0	+0.036 / 0	+0.043 / 0	+0.052 / 0	+0.062 / 0	+0.074 / 0	+0.074 / 0
H10	+0.040 / 0	+0.048 / 0	+0.058 / 0	+0.070 / 0	+0.084 / 0	+0.100 / 0	+0.120 / 0	+0.120 / 0
H11	+0.060 / 0	+0.075 / 0	+0.090 / 0	+0.110 / 0	+0.130 / 0	+0.160 / 0	+0.190 / 0	+0.190 / 0
P6	−0.006 / −0.012	−0.009 / −0.017	−0.012 / −0.021	−0.015 / −0.026	−0.018 / −0.031	−0.021 / −0.037	−0.026 / −0.045	−0.026 / −0.045
P7	−0.006 / −0.016	−0.008 / −0.020	−0.009 / −0.024	−0.011 / −0.029	−0.014 / −0.035	−0.017 / −0.042	−0.021 / −0.051	−0.021 / −0.051
P9	−0.006 / −0.031	−0.012 / −0.042	−0.015 / −0.051	−0.018 / −0.061	−0.022 / −0.074	−0.026 / −0.088	−0.032 / −0.106	−0.032 / −0.106