Types of Coatings

COATINGS	TiN Titanium Nitride	TiCN Titanium-Carbonitride	ZrN Zirconium Nitride	CrN Chromium Nitride	TiAlN Titanium Aluminum Nitride	AlTiN Aluminum Titanium Nitride	AlTiSiN Aluminum Titanium Silicon Nitride	AlTiCrN Aluminum Titanium Chromium Nitride	Quantum Titanium Nitride Alloy	X-LC Molybdenum Disulfide	DLC Diamond Like Carbon
Hardness [HV]	2400	3500	2400	1800	3400	3600	4500	3400	2400	600	2000
Friction Coefficient	0.4	0.2	0.3	0.3	0.5	0.5	0.45	0.55	0.3	< 0.1	0.1
Thickness [Microns]	1 - 5	1 - 4	1 - 4	1 - 4	1 - 4	1 - 4	1 - 4	1 - 4	1 - 4	1	0.5
Color	Gold	Silver Grey	Light Gold	Silver Grey	Blue Grey	Dark Grey	Dark Grey	Dark Grey	Off Gold	Black	Metallic Black
Max. Working Temperature	600 C 1100 F	400 C 750 F	550 C 1050 F	700 C 1300 F	800 C 1475 F	900 C 1650 F	1200 C 2200 F	850 C 1550 F	660 C 1100 F	200 C 400 F	400 C 750 F
Special Characteristics	Good wear and corrosion characteristics for general purpose use; biocompatible	High hardness; added carbon for lubricity; good wear resistance	Biocompatible; corrosion resistance; good wear; decorative color	Good adhesion; high toughness; corrosion resistant	High hardness and good corrosion resistance	High hardness and good corrosion resistance; very high oxidation resistance	Highest hardness and good corrosion resistance; high thermal threshold	High oxidation and wear resistance; high hardness; extreme thermal stability	High wear resistance; good lubricity; corrosion resistance	Dry lubricant film; excellent adhesion; low coefficient of friction	Dry lubricant film; smooth surface; low coefficient of friction
Applications	Machining of iron based materials; metal and plastic forming; standard coating for general purpose; medical implants	Machining of difficult to machine steel alloys; milling and tapping; excellent for stamping, punching and forming	Reduces the build-up on edges when machining; aluminum and titanium alloys; decorative industry	Machining copper and non-ferrous materials; non-cutting applications like molds and dies; machining parts	Universal high-performance coating for drilling, milling, reaming and turning; dry machining; high speed tooling	Machining hardened steel; dry and high speed machining; excellent for stainless steel and nickel-based high-temperature alloys	Excellent for machining hard, dry milling, abrasive materials; high speed operations	Machining metal where other coatings reach their limits of thermal stability; high speed milling under dry or semi-dry conditions	Excellent for milling & turning titanium; Inconel materials	Machining aluminum; for ball bearings, plastic parts, plastic injection molds, engine components, shafts, gears, fasteners, wear plates; vacuum/space applications	Milling, tapping, punching and stamping; prevents built-up edges; optimizes release during forming applications