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(54) Title: WEAR RESISTANT HARD COATING FOR A WORKPIECE AND METHOD FOR PRODUCING THE SAME

(57) Abstract: The present invention provides an optimized hard coating and a workpiece, especially a cutting tool coated with a hard coating to increase tooling performance with difficult to machine materials such as high speed steels, titanium alloys, nickel alloys, austenitic steels and especially hard materials like hardened tool steel having a hardness of higher 50, preferably of higher 55 HRC. This is achieved by a workpiece coated with a wear resistant multilayered comprising at least a first supporting layer and a second nanocrystalline layer, whereas the first layer comprises a coating material of the following composition $(\text{Ti}_a\text{Al}_{1-a})\text{N}_{1-x-y}\text{C}_x\text{O}_y$ with $0.4 < a < 0.6$, and $0 < x$ and $y < 0.3$, or $(\text{Al}_b\text{Cr}_{1-b})\text{N}_{1-x-y}\text{C}_x\text{O}_y$ with $0.5 < b < 0.7$, and $0 < x$ and $y < 0.3$. The second layer comprises a coating material of the following composition $(\text{Al}_{1-c-d-e}\text{Cr}_c\text{Si}_d\text{M}_e)\text{N}_{1-x-y}\text{C}_x\text{O}_y$ whereas M stands for at least one element of the transition metals of group 4, 5, 6 of the periodic system except Chromium and $0.2 < c < 0.35$, $0 < d < 0.20$, $0 < e < 0.04$.



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