In this paper, the tool life and wear mechanism of uncoated carbide tool and PVD TiAlN coated carbide are analyzed when end milling of AlSi/AlN metal matrix composite (MMC) with cutting speeds in the range of 240 m/min to 400 m/min. The results show that at all cutting speed conditions, wear mechanism is dominated by abrasion and adhesion due to the hard particles that adhere temporarily or permanently on the flank face of cutting tool and scratch the surface. As a result, the formation of grooves is observed, and particles of cemented tungsten carbide are pulled-out due to the collision between AlN and carbide at the higher cutting speed of 400 m/min. This high cutting speed had caused cracking on the cutting edge. BUE was formed and deposited on the rake face. In this study, it was found that cutting speed is the most significant factor which contributed 76% to the cutting tool life compared to the depth of cut (13.86%) and feed rate (5.63%). This is believed to be due to the reaction between cutting tool and AlSi/AlN MMC that will cause the increasing of cutting temperature and resulting in the tool wear of cutting tool.