Three aluminium alloys from AA3003 series modified by zirconium were prepared by twin-roll casting. The role of composition, heat treatment and deformation by cold-rolling or equal channel angular pressing on evolution of microstructure and mechanical properties were studied. High density of α-Al(Mn,Fe)Si precipitates formed during annealing between 300 °C and 500 °C. Coherent Al_3Zr particles precipitated during annealing at 450 °C with slow heating rate. Recrystallization resistance of deformed alloys was enhanced by either Al_3Zr precipitates formed before deformation or by α-Al(Mn,Fe)Si particles nucleating simultaneously with recrystallization.