**Abstract:** High entropy alloys have attracted large interest recently because of their uncommon compositions, structures and properties. In present paper an AlCrFeMnNi alloy was prepared by induction melting and annealed in inert atmosphere. Structural, mechanical and corrosion characterizations were performed on the resulted samples before and after the heat treatment process. The annealed samples revealed a homogenous chemical composition. Phase distribution changed between as-cast and annealed samples with the formation of stable structures. The X-ray analysis showed dominant BCC structures in both obtaining states. Mechanical and corrosion properties were improved after the annealing process. The decrease in porosity and residual stresses after heat treatment may contribute to the improvement of mechanical behavior. Pitting corrosion was substantially decreased by lowering the interdendritic segregation level.