Among the Ni-based superalloys, Alloy 718 stands apart with the ability to be precipitation hardened after welding, by the slow formation of nano-scale γ'' (Ni3Nb) particles. This slow formation gives it a very low crack susceptibility, which has made it widely applied since its introduction in the aircraft industry in the 1960’s. Five powder metallurgical Ni-based superalloys containing 35-45 wt % Cr and 4-6 wt % Nb were designed with the aim of maintaining the hardening mechanism found in Alloy 718, while drastically increasing the hot corrosion resistance. The alloys were manufactured and the actual precipitation of γ'' was verified with TEM. The mechanical properties of the hardened P/M alloys are comparable to those of Alloy 718.