Permalloys with nickel contents ranging from 60 to 90 % were boronized in a solid medium using the powder pack method. In this method, commercial Ekabor-II powders were thoroughly mixed with ferro-silicon powders to form the boronizing medium. The samples were boronized in an electrical resistance furnace for 5 h at 1173 K under atmospheric pressure. The results showed that borosilicide and boride layers were formed on the surface of boronized permalloys, with average hardness of 900-1000 HV0.1. The average thickness of the multilayer coating was 90 m, and did not show significant change with Ni content within the range studied. The saw-tooth morphology of the boride layers were smoothened with increasing nickel content.