Kinetics of boride layers and hardness of pure cobalt (Co) have been investigated. Powder pack boriding method was carried out at 1173 and 1273 K for 1, 3 and 6 h. X-ray diffraction analysis of boride layers on the surface of pure Co revealed the existence of CoB and Co₂B phases. The growth rate constant and activation energy for the boride layer was determined. The obtained results showed that although the boride layer thickness increases with the increasing boriding temperature and time, these parameters have no significant effect on the hardness of the boride layer or the matrix. A decrease in the value of hardness moving from the boride layer to main structure was observed. In addition, the obtained hardness values on the boride layer at some boride parameters show a hardness anomaly due to structural defects or different type of the borides.