The study of thermal and mechanical properties of pure nickel as an alternative automotive body material is presented in this report. Nickel a transition metal which is hard, malleable and ductile. Current automotives are mainly use steel as a body material. Due to the increasing demand of high performance and related issues researchers are trying to find alternative material to replace steel. This report present the detailed study on mechanical properties, corrosion test, composition analysis and crystallography analysis with different annealing temperatures of Nickel to alternate the current body. The hardness values of both non - heat treated and annealed pure nickel do not change which in the range of 118 to 123 HV. As the annealed temperature increase, the ultimate tensile strength, yield strength and young modulus decreases, which shows the ductility increase. The highest ultimate tensile strength of pure nickel at 300°C annealed temperature which is 758.78 MPa. For corrosion test, the corrosion rate of both non-heat treated and annealed pure nickel have minor changes with the annealed temperature which in the range of 0.0266 to 0.048 mm/year.

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