

## **STUDI PEMBUATAN *PISTON* BERBASIS MATERIAL *PISTON* BEKAS YANG DIKUATKAN DENGAN PENYISIPAN *STAINLESS STEEL***

### ***Study of Piston Making Based on Waste Piston Material Reinforced With Stainless Steel Insert***

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#### **ABSTRACT**

The use of aluminum in the automotive industry continued to increase since the year 1980, in particular aluminum alloy used for the manufacture of pistons, engine blocks, cylinder heads and valves. In this study uses the former gasoline engine piston waste recycled into the piston Daihatsu Hi-Jet 1000 with the addition of ADC 12 and insert ST 60 and cast iron. Former Piston who has the composition 84.19 wt% Al, 10,7 wt% Si, plus material ADC 12 with insert stainless steel which is used as a ring groove piston with gravity casting process in the pouring temperature of 700°C

The specimens obtained from the casting material above which is a prototype of the piston with insert. The results include the test composition, microstructure, macro-and micro-hardness, shear test. The results of the most high-Si alloy composition on the composition of 25% piston former plus 75% ADC 12 and ADC 12 pure. Show the bonding of microstructure morphology best at the lowest temperature pouring with insert stainless steel that has the smallest layer interface and a good bond. Macro and micro hardness ADC 12 hardness highest on the composition of pure and pouring temperature of 700°C with hardness 156,1 HVN and 81,4HRB. The highest shear strength of 28,50 MPa at stainless steel pouring temperature of 700°C..

**Keywords:** waste piston material, and new piston with stainless steel insert.