

GREENROAD Panel

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This project consists of two parts, the waterproofing and thermocouples, which are responsible for generating energy, the waterproofing is mainly made of recycled rubber, to promote the recycling of this material, the thermocouples used were type "J", these are responsible for the absorption of thermal energy and its conversion to electric energy. For the fulfillment of this project several experiments were made, starting with the experimentation of the waterproofing, which consisted of the use of recycled rubber and binder components. This material was probed in different substrates to analyze its adherence and water absorption. Thermocouple tests were started, the use of type "J" for accessibility and costs was decided, experimenting with different connections, the most optimum result was obtained by serial connections, with this connection 200mv were obtained and $58\text{mA} \pm 5\text{mA}$, being the connection with better results. By combining these two experiments, a composite material, the GREENROAD Panel, was obtained, this material was tested according to the ASTM D5147 "Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material" to determine thermal dimensional stability and water absorption. GREENROAD Panel was exposed to a 30°C temperature and generated $200\text{mV} \pm 10\text{mV}$ voltage.