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Snug as a Bug

Every year, 380 billion plastic grocery bags are used in the USA, and billions of plastic bottles are used. Most are put into landfills where the chemicals leech into our soil and our water and take many lifetimes to degrade. Insulation is an easy way to save money and energy. However, the most common insulate used is fiberglass insulation, which is very harmful to our environment and possibly to our health. If we could use recycled plastic products as insulation for our homes, then we would be saving landfill space and eliminating the effects of fiberglass. I wanted to test the R-value, or retain value, of plastic bottles and plastic bags to see if they could be a viable and competitive option instead of fiberglass insulation. I built a small cube with wood walls, a roof and an inner "room" out of drywall to simulate a home. I filled the four inches between the room and outer walls with different insulates, and then I blew hot air using a blow-dryer into my "home". I then used a temperature probe to graph and compare the total heat increase and heat retained over a ten minute period. From my data I was able to conclude that the fiberglass insulation had the highest average R-value followed within $\frac{1}{2}$ of a degree by the plastic bag insulation. Overall, I concluded that fiberglass insulate had the best ability for heat retention, but plastic bags may still be a resourceful alternative.