

Saving Energy Using new Materials - Application to Heat Transfer between the Home and The
Ground Using the Difference Finite Method

- This submission is research
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Today, many people do not recycle as much as they should be. As a result, our landfills are filling up with material that could have been recycled. What if all the non-recycled material could be used for another purpose without wasting it? This experiment measures the heat transfer between the home and the ground, primarily the basement, and tests different insulation materials and placements. One of the tested materials is recycled plastic.

Using a program called Heat, the objective is to predict temperature and heat transfer between the basement walls and basements floors using different insulation placements. Comparisons between several materials, traditional insulation versus recycled plastic insulation have been tested.

Based on numerical research, the best placements for insulation in both wall and floor of the basement have been tested. A comparison between traditional materials and recycled plastic has

been performed. Traditional insulation won against recycled plastic but what about if you double or even triple the plastic insulation. When doubling the plastic insulation it did decrease the heat transfer but it was still not very close to the traditional insulation. However, by tripling the plastic insulation the numbers between traditional insulation and plastic insulation became much closer.

In conclusion, based on my results, plastic insulation could replace traditional insulation when the plastic insulation is tripled. This would be optimal for basement walls where the thickness of the walls does not matter. This helps reduce the plastic waste in landfills, reduces energy consumption, and provides a green alternative to traditional insulation.