



Energy Efficiency of Plastic Materials and Products

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Q: Can plastics actually help save energy?

A: Yes. Plastics are energy-efficient materials. Only about 4 percent of the United States' energy consumption is actually used to produce plastic raw materials, including feedstocks. This is quite a small percentage in comparison to energy's other uses. In addition, it often takes less energy to convert plastics from a raw material into a finished product than comparable products.^{1,2} For instance:

- During their life cycle, plastic bags require about one-third less energy to make than paper bags.*
- Foam polystyrene containers take 30 percent less total energy to make than paperboard containers.³
- Fifty-three billion kilowatt hours of electricity are saved annually by improvements in major appliance energy efficiency, made possible by plastic applications. Without the benefits provided by plastics insulation, these appliances would use up to 30 percent more energy.⁴

Q: What would happen to energy consumption if plastic packaging were replaced with alternatives?

A: Without plastics, the energy used to produce packaging would double. A 1992 study found that by using plastic packaging rather than alternatives such as glass, paper or metal, American manufacturers saved 336 trillion Btu. This is a difference equivalent to 58 million barrels of oil, 325 billion cubic feet of natural gas or 32 billion pounds of coal.^{5,2}

1. **"Characterization of Municipal Solid Waste in the United States: 1995 Update,"** U.S. Environmental Protection Agency, 1995.
2. **"Waste Prevention Through Packaging Efficiency,"** Editors of The Use Less Stuff Report, March 1995.
3. **"Plastic Packaging: Opportunities and Challenges,"** R.F. Testin, Ph.D., and P.J. Vergano, Sc.D., 1992.
4. **"Resource and Environmental Profile Analysis of Polyethylene Milk Bottles and Polyethylene-Coated Paperboard Milk Cartons,"** Franklin Associates, Ltd., 1990.
5. **"Packaging Without Plastics: Ecological and Economic Consequences from a Packaging Material Market Without Plastics,"** The Society for Research into the Packaging Market (Germany), 1992.

* This is when neither is being recycled. Both types of bags would need to achieve a 60 percent recycling rate before paper bags would be as energy efficient as plastic bags.

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