

# A Lifecycle Analysis of Bags

## RAW MATERIALS ACQUISITION

## MANUFACTURING, PROCESSING, AND FORMULATION

## DISTRIBUTION AND TRANSPORTATION

## USE, RE-USE, AND MAINTENANCE

## RECYCLING

## WASTE MANAGEMENT

### MATERIALS

Crude oil and natural gas mined from the earth to create the LDPE plastic from naphtha and ethane.

Ethane or Naphtha are steam cracked and turned into ethene, which is melted and then blown into a LDPE film. 130 million kg ethane produced annually, 80% of which goes to polyethylene.

"88% of the oils extracted from earth is used as a fuel for transport systems, heating appliances or for generation of electricity"

No additional materials required for product usage. No maintenance or re-use.

Recycled LDPE melted down and turned into:  
Shipping envelopes  
Garbage cans and bags  
Furniture, tile, and paneling  
Timber

LDPE that is not recycled becomes landfill waste. If not properly disposed of, LDPE can become litter or an aquatic hazard.

### EMBODIED ENERGY

Greenhouse gas (GHG) emissions and wastewater from oil drilling and hydraulic fracking

Naphtha steam cracking uses 30-36 GJ per tonne of ethylene  
78.08 MJ to make 1 kg of LDPE  
Fuel production/delivery: 9.14 MJ  
Delivered fuel: 16.64 MJ  
Transport: 0.67 MJ  
Feedstock energy: 51.63 MJ

Fossil fuels used to power transport vehicles.  
Petroleum fuel consumption by US domestic transportation  
Combination trucks 14.2%  
Single-Unit Trucks 5.1%  
Freight RR 2.1%

No additional energy required for product usage. No maintenance or re-use.

Energy needed to recycle LDPE is similar to initial production, as the plastic must be re-melted and formed.

Further transportation energy used to bring waste from disposal point to landfill. Additional energy required to power clean up missions if bags are disposed of as litter.

### WASTES

Greenhouse gas (GHG) emissions and wastewater from oil drilling and hydraulic fracking

Greenhouse gas emissions from machinery operation and wastewater from dyes and inks. Plastic waste is recycled.

Greenhouse gas emissions from burning fuel to power trucks, boats, and airplanes.

No wastes produced during product usage.

Greenhouse gas emissions from fuel for machines used in the recycling process.

Ziploc bags do not biodegrade. They are an environmental hazard to land and aquatic life when not properly disposed of.