

The Energy of Recycling

Creating a plastic bottle

What types of energy are involved in making a plastic bottle? For each step of the process, choose the energy type or types being used from the word bank below.



Step 1: Plastic pellets

New or recycled plastic pellets are added to the system.

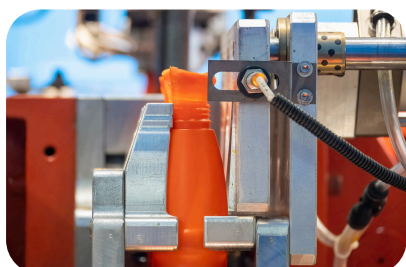
What energy is used?



Step 2: Preform injection moulding

The plastic is heated to liquid and injected into a mould to make a template bottle.

What energy is used?



Step 3: Blow moulding

The template is placed into a mould, heated and air is blown into the bottle, so it pushes out into the correct shape.

What energy is used?



Step 4: Cooling and packaging

The bottle is cooled, excess plastic is trimmed and they are packaged to be sent to suppliers.

What energy is used?

Energy word bank

heat chemical light mechanical thermal



COOL
.ORG

Recycling plastic process

What types of energy are involved in recycling plastic? For each step of the process, choose the energy type or types being used from the word bank below.



Step 1: Waste arrives at the facility

Step 2: Optical, air and manual sort

Waste is sorted using light, blasts of air, and manual labour.

What energy is used?



Step 3: Plastic shredding

The separated plastic is shredded using mechanical metal rollers.

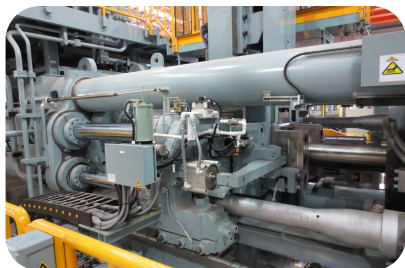
What energy is used?



Step 4: Washing and sterilising

The shredded plastic is washed and sterilised with either heat or UV light.

What energy is used?



Step 5: Extrusion

The shredded plastic is heated to liquid and extruded (or pushed) through small holes to make long thin strands.

What energy is used?



Step 6: Pelletising

The thin strands of plastic are chopped into small pellets, their final form used in manufacturing.

What energy is used?

Energy word bank

heat chemical light mechanical thermal



COOL
.ORG

Producing New Plastic Process

What types of energy are involved in making new plastic? For each step of the process, choose the energy type or types being used from the word bank below.



Step 1: Pump crude oil from the ground

A bore is drilled into the ground and oil is forced above ground, either under its own pressure or by pumping water underground.

What energy is used?



Step 2: Transport to refinery

The oil is pumped through pipelines to refineries.

What energy is used?



Step 3: Distillation process

Crude oil is heated, separating into different components.

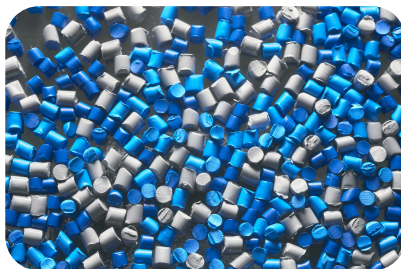
What energy is used?



Step 4: High heat cracking and polymerisation

Heat and a catalyst is used to 'crack' the oil into even smaller fractions. Polymerisation uses a catalyst to join molecules together in long chains.

What energy is used?



Step 5: Plastic pellets

The plastic is cooled and chopped into pellets.

What energy is used?

Energy word bank

heat chemical light mechanical thermal



COOL
.ORG