

Technologies for Recycling Used Plastic Parts

Features

- Development of technologies for the recycling and repeated use of plastic parts recovered from used household appliances.
- Recycling a ton of polypropylene resin reduces 7,500 kg of CO₂ emissions.

Overview

(Technical principles, actions, etc.)

Sharp's closed-loop plastic material recycling technologies recover plastic parts from used consumer electronics and recycle them for new consumer electronics (see fig. 1).

The physical properties of plastic parts recovered from used consumer electronics are usually close to the initial physical properties of them, but their remaining service lives are very short due to the long-time use of the parts.

Sharp developed the following technologies to enable plastic parts to maintain stable characteristics for over 10 years for the promotion of closed-loop plastic material recycling (see fig. 2).

- Disassembly and recovery technology
- Characteristic improvement technology for recycled materials
- Quality control technology for recycled materials

With the development of these technologies, the physical properties and lives of used plastic parts as recycled materials is maintained equivalent or superior to those of virgin materials. Therefore, it is possible to supply plastic pellets as durable consumer parts on the condition that quality control items are set for the plastic pellets with consideration to action assignments required for recycled materials.

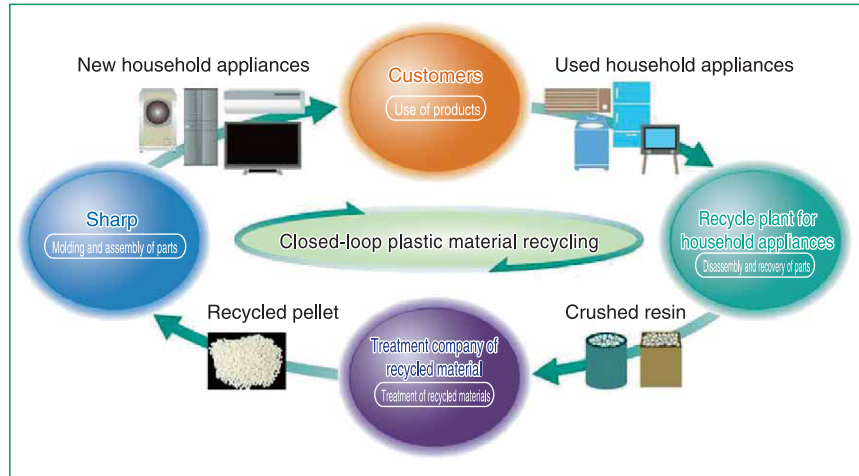


Fig. 1 Entire flow of closed-loop plastic material recycling

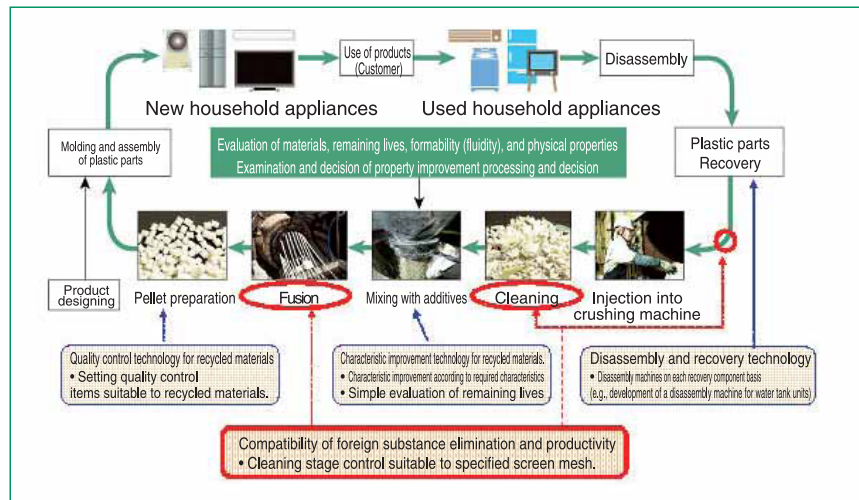


Fig. 2 Treatment process of recycled materials and positioning of element technology in closed-loop plastic material recycling

Introductory Track Record

(i) Polypropylene (PP) Became available for use in 2001.

[Recovered (raw) materials] Washing/draining tubs of washing machines, refrigerator vegetable cases, etc.

[Adopted (recycled) materials] Washing tubs/plinths of washing machines, interior parts of refrigerators, carry handles, etc.

(ii) Polycarbonate + acrylonitrile-butadiene-styrene copolymer (PC+ABS) Became available for use in 2013.

[Recovered (raw) materials] Flat-panel TV back cabinets

[Adopted (recycled) materials] Interior parts of plasmacluster ion generators.

Effects

Environment maintenance and CO₂ reduction effects

The following table shows the comparison in carbon dioxide emission between use of virgin materials and use of recycled materials five times repeatedly.

	CO ₂ emissions (kg-CO ₂ /t-resin)	CO ₂ emissions (kg-CO ₂ /t-resin)
Virgin materials	11,420	▲7,510
Recycled materials	3,910	