Refrigerator/Freezer Recycling Program Process

Pickup process

- Trained professionals will remove the secondary fridge or freezer from your home (even from basements).
- To assure units turned in for recycling will not be resold or reused, they will be disabled on the truck.
- Appliances will be transported to the nearest JACO Environmental demanufacturing facility.

Recycling process

- Test for insulation
  Drill a 1-inch core sample to determine the type of insulation contained in the refrigerator.
- Chemical and oil recycling
  Puncture cooling circuit to evacuate refrigerant (CFC-12 or HFC-134a) and refrigerant-contaminated compressor oils. Heat oils to distill refrigerant and ship refrigerant to qualified handler; oils can be recycled for use in other industrial equipment.
- Capacitor removal
  Remove capacitors suspected of containing PCBs and ship them for destruction by an approved hazardous waste incinerator.
- Refrigerator unit
  Cut appliance into multiple pieces so metal, plastic and foam can be separated. Ship separated plastics and metals to a local handler for resale in recycled commodities markets. Place foam in large plastic bags and seal to prevent escape of gasses.
- Polyurethane foam insulation
  Bagged polyurethane foam insulation is shipped to nearby waste-to-energy incinerators (an electricity generation facility) for complete and safe destruction. Each refrigerator contains approximately 10 lbs. of polyurethane foam and approximately 1 lb. of CFC-11, a foam blowing agent. In general, each bag incinerated will produce approximately 15 kilowatt-hours of electricity back to the grid.
- Metal recycling
  Metal is sent to a metal recycler.
- Plastic recycling
  Plastic is chipped and shipped to a recycling center.
- Glass recycling
  Glass shelves are crushed and sent to a glass recycler for use as an aggregate in concrete.
- Mercury-containing devices
  Mercury-containing switches and thermostats are removed and shipped to a qualified handler for recycling.

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Glossary of Terms

CFC-11

This chlorofluorocarbon was used as a blowing agent for polyurethane foam insulation for refrigerators and freezers manufactured between 1965 and 1993.

CFC-12

Commonly known by its trade name Freon,® this chlorofluorocarbon was used as a refrigerant in the sealed cooling system for units manufactured before 1993.

HFC-134a

Hydrofluorocarbon replaced CFC-12 as the refrigerant after 1993, in accordance with the U.S. schedule for phase-out under the guidelines of the Montreal Protocol.

HCFC-141b

Hydrochlorofluorocarbon replaced CFC-11 as the blowing agent for polyurethane foam insulation for units manufactured after 1993.

PCBs

Polychlorinated biphenyls are hazardous materials sometimes found in capacitors used in large refrigerators and freezers manufactured before 1979, when PCBs were banned.

ABS

Acrylonitrile butadiene styrene is a flexible molded plastic commonly used for interior linings, shelves and drawers of appliances.

HIPS

High impact polystyrene is also used for the same purpose as ABS but is about 50 percent less expensive.

LEXAN®

Lexan is a trade name for a clear or tinted plastic used for drawers in some refrigerators.

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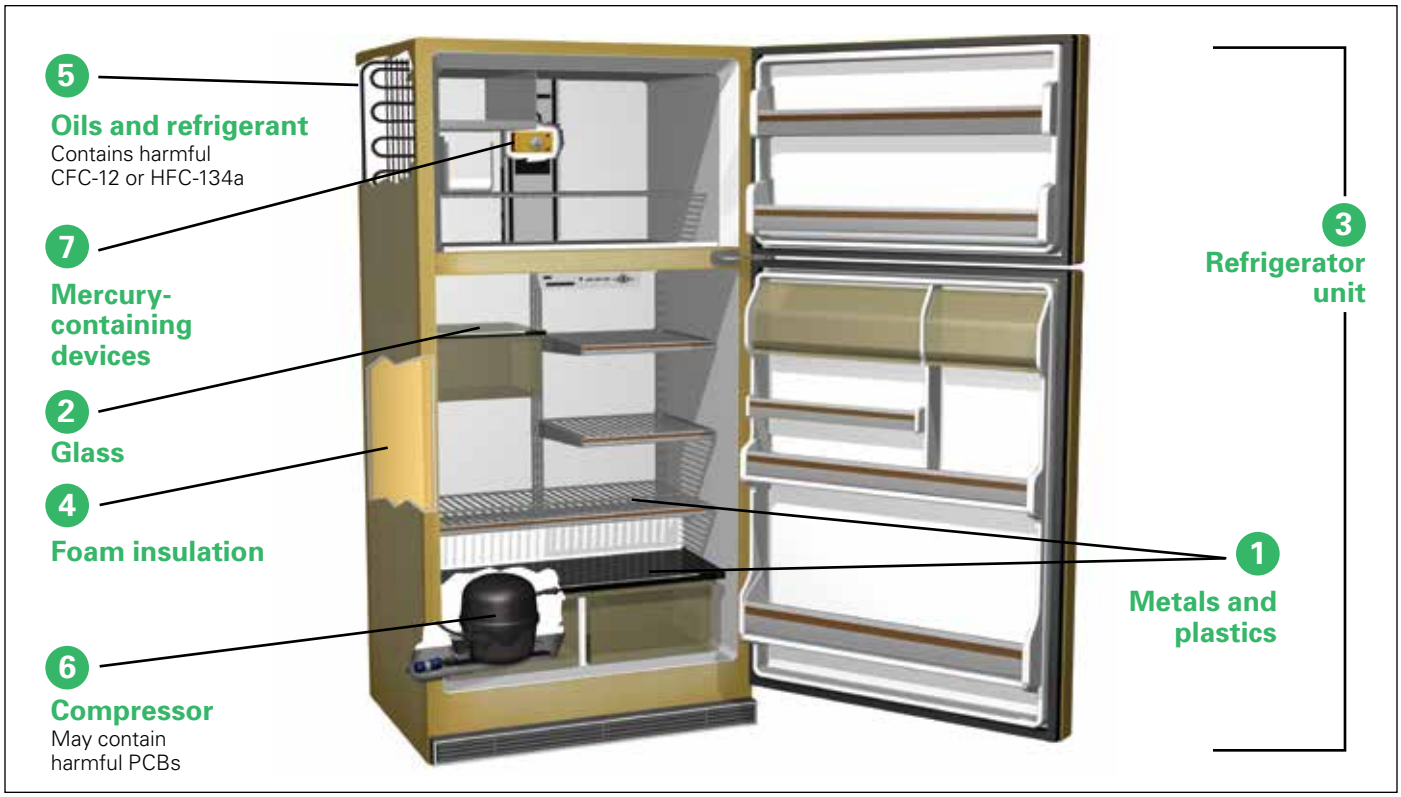
Why Recycle Refrigerators?



1 **Metals and plastics –** Remove interior metal and plastic (crispers and shelves) and recycle. Approximately 150 lbs. of metal and 25 lbs. of plastic is recycled.

2 **Glass –** Remove and crush glass shelving and ship to nearby glass recycler. On average, 3 lbs. of glass is contained in each refrigerator. Glass is typically used as aggregate material in concrete as it is tempered and cannot be mixed with typical container glass waste streams.

3 **Refrigerator unit –** Cut appliance into multiple pieces so metal, plastic and foam can be separated. Ship separated plastics and metals to a local handler for resale in recycled commodities markets. Place foam in large plastic bags and seal to prevent escape of gasses.

4 **Polyurethane foam insulation –** Bagged polyurethane foam insulation is shipped to nearby waste-to-energy incinerators for complete and safe destruction. Each refrigerator contains approximately 10 lbs. of polyurethane foam and approximately 1 lb. of CFC-11.

5 **Oils and refrigerant –** Puncture cooling circuit to simultaneously evacuate refrigerant (CFC-12 or HFC-134a) and refrigerant-contaminated compressor oils. Heat oils to distill refrigerant. Refrigerant is shipped to qualified handler, while the oils can be recycled for use in other industrial equipment.

6 **Compressor –** Remove capacitor for recycling. Capacitors suspected of containing PCBs are shipped to qualified handler for proper destruction.

7 **Mercury-containing devices –** Remove mercury-containing switches and thermostats and ship to a qualified handler for recycling.

Note: Approximately 95 percent of each unit is recycled.

Composition of an Average Refrigerator

Component	Quantity per Refrigerator (lbs.)	
Metal	150	
Plastic	25	
Glass	3	
CFC-12 Refrigerant	.5	(pre-1996)
HFC-134a Refrigerant	.25	(post-1996)
CFC-11 Foam Blowing Agent	1	(pre-1996)
HCFC-141b Foam Blowing Agent	.8	(post-1996)
Oil (which may be contaminated with refrigerant)	.5	
Mercury	.002	
PCBs	Small quantities in the capacitor manufactured before 1980	

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What's Made From a Recycled Refrigerator

Examples of new products made from recycled refrigerators

metal = nails

plastic = computers

metal = rebar

metal = cans

plastic = mobile phones

glass = concrete mixture

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