



## Food Contact Materials: Hazards and Alternatives

**Key:**

**FCMs** = Food Contact Materials  
**MPs** = Microplastics  
**PFAS** = per- and poly-fluoroalkyl substances (so-called “forever chemicals”)  
**NIAS** = Non-intentionally added substances  
**EDCs** = Endocrine (hormone) Disrupting Chemicals  
**BPA** = Bisphenol A, an EDC (BPS is a close cousin)  
**PET, PP, PE** = Polyethylene terephthalate, Polypropylene and Polyethylene  
**LDPE** = Low-Density Polyethylene  
**CHC** = Chemicals of High Concern

**Does it contain MPs or PFAS?**

**Y = Yes**

**N = No**

**? = We don't know**

**P = Probably**

FCMs	MPs	PFAS	What's the Concern?	Replacement, Alternative, Best Practice
<b>Metal</b>	<b>P</b>	<b>N</b>	Cans lined with plastic, aluminum may leach, often BPA substitute	Choose glass, bulk items; use fresh, frozen, or dried. use Amy's/Eden brands; avoid aluminum; use bee's wrap
<b>Paper</b>	<b>?</b>	<b>P</b>	Lined with PFASs/plastic; additives, adhesives, NIAS; MPs	Avoid takeout containers; use metal/glass containers; remove pizza ASAP from box
<b>Glass</b>	<b>N</b>	<b>N</b>	Potential contamination from recycled sources; colorants; lead	Avoid leaded crystal; test for lead; beware of recycled content
<b>Plastic #1 PET</b>	<b>Y</b>	<b>?</b>	Leaches antimony, phthalates, EDCs, potential PFASs, NIAS; MPs	Avoid single-use bottles; use stainless steel or glass reusable bottles; buy in glass
<b>Plastic #2 HDPE</b>	<b>Y</b>	<b>?</b>	Leaches EDCs; potential PFASs; NIAS; MPs	Buy in glass for acidic/fatty foods
<b>Plastic #3 PVC</b>	<b>Y</b>	<b>?</b>	Leaches phthalates, EDCs, NIAS; MPs; worst plastic	Avoid, especially liquid foods; avoid clingwrap and use bee's wrap instead; beware PVC lids
<b>Plastic #4 LDPE</b>	<b>Y</b>	<b>?</b>	Leaches EDCs; PFASs; NIAS; MPs	Avoid; transfer food to glass/steel, reduce contact time (good rule for all plastics)
<b>Plastic #5 PP</b>	<b>Y</b>	<b>?</b>	Leaches EDCs; possible PFASs; NIAS; possible phthalates; MPs	Buy in glass; cook from scratch
<b>Plastic #6 PS</b>	<b>Y</b>	<b>?</b>	Leaches styrene (a probable carcinogen); EDCs, NIAS; MPs	Avoid; use own containers; repackaging at home
<b>Plastic #7 Other</b>	<b>Y</b>	<b>?</b>	Leaches bisphenols, EDCs, NIAS; MPs, CHCs	Use glass/stainless steel; caution with water filters
<b>Melamine</b>	<b>Y</b>	<b>N</b>	Leaches formaldehyde, cyanuric acid, melamine; MPs	Use glass, ceramic, or steel. Avoid microwaving
<b>Plastic Wrap/Cling Wrap</b>	<b>Y</b>	<b>N</b>	PVC clingwrap leaches phthalates; EDCs; NIAS, MPs	Avoid store cling wrap; use other containers; use bee's wrap
<b>Vacuumed Plastic</b>	<b>Y</b>	<b>N</b>	PVC leaches phthalates; PET, PE, PP – EDCs; NIAS; MPs	Avoid; buy fresh; frozen loose bags better than vacuumed
<b>Silicone</b>	<b>N</b>	<b>N</b>	Leaches siloxanes, plasticizers, EDCs, NIAS, metals, additives	Replace with glass, steel, bee's wrap; cloth bags; okay if no contact
<b>Multilayer Pouch/Carton</b>	<b>Y</b>	<b>?</b>	Lining can be PET, LDPE, PP – EDCs, NIAS, MPs	Buy fresh; use glass or steel; reduce contact time
<b>Microwavable Popcorn</b>	<b>N</b>	<b>Y</b>	Most microwave popcorn bags contain PFASs	Use hot-air popper or oil in covered pot
<b>Compostable/Biobased</b>	<b>?</b>	<b>?</b>	May be lined with PFASs or PLA	Look for BPI certified; “chemical-free” biobased products
<b>Ink Thermal Labels</b>	<b>?</b>	<b>N</b>	Leaches BPS and color developer compounds; CHC	Avoid thermal labels on plastic film; avoid cling-wrapped foods
<b>Straws (plastic or paper)</b>	<b>Y</b>	<b>P</b>	Paper straws may be lined with PFASs; plastic with MPs	Use stainless steel or glass straws

**References:**

- [PET leaching](#)
- [HDPE leaching phthalates](#)
- [HDPE EDCs](#)
- [Biobased plastics are equally toxic](#)
- [EA from styrene and #7 Tritan/hard plastics](#)
- [Occurrence and migration of phthalates in adhesive materials to fruits and vegetables](#)
- [Phthalates and lids](#)
- [Nanoplastics and reproductive health](#)
- [Melamine](#)
- [Multiple Plastic Products Leach Chemicals That Induce In Vitro Toxicity under Realistic Use Conditions PLA and biobased plastics Show Hormone activity](#)
- [Popcorn Bags and PFASs](#)
- [Straws and PFASs](#)