



Winning With SmartCAN[®]

the circular-use benefits of PET rigid containers

re·cy·cla·ble /rē'sīk(ə)ləb(ə)/ *adjective*: able to be recycled."recyclable plastic"

re·cy·cled /rē'sīk(ə)/ *verb*: convert (waste) into reusable material."old bottles were recycled into new bottles" Reuse, reclaim, recover, return (material) to a previous stage in a cyclic process.

Recycling is key in the effort to improve environmental sustainability. Over 400 consumer product companies have pledged to make their packaging 100% recyclable, reusable or compostable by 2025 in response to public pressure and the influence of the [New Plastics Economy Global Commitment](#) initiative from the Ellen MacArthur Foundation.

These corporate recyclability goals, which include aggressive use of recycled content, will drive demand, create new market opportunities, and spur much needed improvements in the US recycling infrastructure.

When we evaluate the benefits of recycling, it's important to follow the *entire* recyclability chain from end-user disposal all the way to material reprocessing and reuse. While paper is widely recyclable, we cannot assume that a paper-based package will actually be recycled. In fact, when a consumer makes that assumption and places it in their curbside bin, their paper-based package may still very well end up in a landfill or incinerator.

At Ring Container, this distinction between recyclable and recycled is essential. We are actively addressing and reducing material usage and waste to support a circular economy for packaging materials. For us, it isn't just about what's theoretically possible -- it's about the measurable impact we are truly making. It's about results.

To that end, we engaged a third party, Three Peaks Consulting, to conduct a study on two different food containers -- a paper-based composite canister and our mono-layer PET SmartCAN container -- to objectively assess the collection and recycling pathway. What we learned reinforced the benefits of SmartCAN and the predictable reprocessing that SmartCAN enables.

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Introduction

Recycling is an economic process. It requires material that can readily be converted into reusable material. Recyclable materials are just that: able to be recycled. This does not guarantee that they *will* be recycled, nor does it promise to assist in the recycling process. Given enough effort and energy, most packaging materials *can* technically be recycled, but for many package forms the energy to separate or extract those materials to a state in which they can be reused is both energy and cost prohibitive. Ring’s objective is to create efficiency in material usage to both limit the amount of natural resources consumed in the initial package and to limit the amount of resources required to reuse the materials in that package. An ideal material can be used and reused multiple times, if not an infinite number of times. PET is one such material^{1,2}, and the PET SmartCan follows Federal Trade Commission (FTC) guidelines for a “Widely Recycled” How2Recycle label.

How2Recycle is a standardized labeling system that clearly communicates recycling instructions to the public. The approved label is based on compatibility with the entire recycling process, including acceptance in collection programs and sortation, reprocessing, and end-market demand. This is aligned with FTC Green Guides for what environmental marketing claims are allowed, preventing consumer deception. A label could be adjusted from “Widely Recycled” to “Check Locally” based on ongoing monitoring of the process. National collection of a material may be above the 60% FTC threshold but still end up at a landfill or incinerator, creating enough uncertainty to require a “Check Locally” disclaimer per FTC guidance.

This will continue to shine light on the greater need for efficient and cost-effective reprocessing approaches and capabilities at material recovery facilities (MRFs, pronounced “murfs”). This will also drive packaging designers to further consider not only

¹ <https://www.plasticstoday.com/packaging/flipping-value-plastic-waste-on-its-head/48476251961058>

² <https://www.bottledwater.org/rpet-facts>

the materials used for the package but also the means by which those materials can be separated and reprocessed.

Too often, materials such as paper and mixed paper containers are promoted as recyclable, when in fact they are diverted at the recycling facility into the landfill stream. Why is this, when paper is considered highly recyclable and has a reputation with the general public for being earth friendly? The answer comes down to economics and the value of the materials that are collected. PET is infinitely recyclable³. Paper is not; the pulp degrades as the material is processed, limiting reuse to lesser quality applications.

The reality of recycling

With all the information swirling around about sustainability, it can be difficult to separate the actions that make a positive impact versus actions that represent a limited view and fail to move the needle for sustainability. Three Peaks Consulting engaged with recycling managers in 12 large cities across the U.S. to assess collection of both the composite canister and the rigid PET SmartCAN container. Seattle, which is widely recognized as a leader in the recycling community, accepting and processing a wide range of materials, was included in this list for that reason.

Curbside collection is the most effective and efficient means of collecting post-consumer material. Municipalities manage curbside collection, delivering the material to a MRF for processing (sorting and baling). The MRF sells sorted bale material to re-processors, who in turn supply packaging manufacturers with post-consumer raw material.

Many curbside recycling programs accept a broad array of materials, which can be confusing for consumers. The consumer may feel a false sense of satisfaction when filling their curbside bin with bottles, cartons, and canisters. They would be surprised and likely dismayed to learn that the MRF receiving these materials will sort much of it out, diverting it to either a landfill or a waste-to-energy incinerator.

MRFs watch their costs just like any other business and they sort for what they believe they can sell. Rigid plastic, such as PET and HDPE, are highly valued in the market, and MRFs are well equipped to sort and bale these materials. The value of post-consumer mixed paper (which includes fiber-based packaging, such as containerboard and paperboard) at time of publication is -\$2 per ton. If they collect this material, it will be at a loss. The value of post-consumer PET is \$216 per ton. While the value of both materials

³ <https://www.plasticstoday.com/packaging/flipping-value-plastic-waste-on-its-head/48476251961058>

varies over time, with significant drops most recently due to the collapse of the export market, the difference in value is clear.⁴

⁴ <https://resource-recycling.com/recycling/2019/10/15/recycled-hdpe-prices-soar-but-pet-and-metals-see-declines/>

From the 2020 State of Curbside Recycling report:

“Of the total decrease from a peak of \$5.3 billion in March 2017 to \$2.7 billion in November 2019, theoretical market value of single-family household mixed paper and cardboard alone dropped \$2.1 billion to \$.1 billion, a decline of \$2 billion. But fiber is not the only material experiencing market challenges. As of November 2019, according to The Recycling Partnership’s analysis of material prices, aluminum dropped 33 percent, steel cans 54 percent, colored HDPE 34 percent, and PET 45 percent in theoretical total values from their highs within this two-year period.”

Value of Recycled Materials (as of Apr. 2020)*	
material	cents per pound
Aluminum Cans	43.13
HDPE (natural)	33.44
PET	9.25
Grade A Film	8.25
PP	5.69
HDPE (colored)	4.28
Grade B Film	4.25
Grade C Film	1.38
Steel Cans	0.049
Corrugated	0.0365
Sorted Residential Papers	0.005
Mixed Paper	(0.0009)

*source: <https://resource-recycling.com/plastics/2020/04/15/prices-fall-for-key-curbside-plastics/>

MRFs struggle with the shifting value of the materials they collect, and they struggle with the variable nature of the materials they receive. Plastics have benefited from design guides, developed by APR, which identify ways to support effective and efficient sorting through a MRF. This guidance addresses things like the use of labels, closures, and the impact of mixed materials in an effort to prevent contamination of valuable material streams. A similar guide on paper-based packaging does not yet exist.⁵

⁵ <https://astrx.org/wp-content/uploads/2019/06/ASTRX-Review-of-Material-Flow-at-MRFs-and-Reprocessors.pdf>

Paper mills find there isn't enough recoverable paper and too many contaminants in the mixed paper bales they receive from MRFs. Many paper-based packages are actually mixed material, particularly in food packaging; the paper is coated with polyfilm to provide barrier and rigidity. This polyfilm causes separation issues for the MRF. This polycoating sticks to processing dryers and creates a lower grade of paper for which MRFs do not have buyers.²

An overarching concern by MRFs is the movement toward more complex, mixed material packaging and away from "core" materials that represent reliable sources of income. Core materials include: PET (especially bottles), HDPE (especially bottles), cardboard, aluminum cans and steel cans.²

When we indicate that a material is recyclable, that is only part of the story. We need to consider the combination of package materials, which category the material falls into for acceptance into a recycling program, what value that material has in the market, and which processing route the material is likely to take.

Three Peak’s study included the assessment of a paper-based composite canister (Image 1) and the SmartCAN rigid PET container (Image 2). The 12 municipalities selected for this study were asked to review both of these containers for acceptability through their recycling program. Ten cities responded; the other two cities were verified via their websites that indicate what is accepted through their facilities. The results indicate that SmartCAN is readily accepted. Paper-based composite canisters would be excluded from recycling programs and seen as contamination.

CITY	POPULATION	COMPOSITE CAN-ISTER	SmartCAN	Response
New York City, NY	8,801,186	Would be diverted	Recyclable	email
Los Angeles, CA	4,057,851	Would be diverted	Recyclable	phone
Chicago, IL	2,679,044	Would be diverted	Recyclable	phone
Houston, TX	2,359,480	Would be diverted	Recyclable	phone
Phoenix, AZ	1,711,356	Would be diverted	Recyclable	phone
Philadelphia, PA	1,576,929	Would be diverted	Recyclable	website review
San Antonio, TX	1,565,929	Would be diverted	Recyclable	phone
San Diego, CA	1,453,775	Would be diverted	Recyclable	email
Dallas, TX	1,379,735	Would be diverted	Recyclable	website review
San Jose, CA	1,033,519	Would be diverted	Recyclable	email
Seattle, WA	744,955	Would be diverted	Recyclable	email
Memphis, TN (location of Ring Headquarters)	651,591	Would be diverted	Recyclable	phone

Here is a closer look at why SmartCAN is accepted, while composite canisters are diverted to landfill:

IMAGE OF COMPOSITE CANISTER (Image 1)	IMAGE OF PET CANISTER (Image 2)
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PRODUCT →	MATERIAL →	CATEGORY →	EASILY SEPARATED →	MARKET VALUE →	PROCESS ROUTE
Mixed Nuts Canister	Polycoated Paperboard	Mixed Materials	No	Low	Landfill
Mixed Nuts Canister	Rigid mono-material	#1 PET	Yes	High	Recycled

Only the PET canister is accepted curbside as recyclable, but even if both canisters arrive at the facility, only the PET canister will actually be sent for reprocessing. There is a cost to separate the materials in the composite canister. The resulting pulp is of low value and cannot be used in a similar quality container format due to the degradation of the pulp fibers during processing. Current demand for this material is extremely low, and many MRFs simply do not process this packaging. The SmartCAN canister, on the other hand, represents easily separable materials; the cap and the shrink sleeve label are both easily separated from the mono-material PET container. A MRF’s focus is on high-demand, high-value, highly-recyclable (easily separable and sortable) materials like HDPE and PET.

The value of PET

It doesn’t seem to make sense that recyclers are struggling to source sufficient post-consumer recycled PET material to meet an increasing demand for recycled plastic when we keep hearing about the excess of plastic in the environment. Education and infrastructure are needed to increase availability of single-stream, high-quality waste. It is not only technologically possible, but economically viable to produce plastic products from 100% recycled material. PET containers made from up to 50% post-consumer resin are as clear as a container made from virgin material and just as strong⁶.

As more companies set their recycled-content goals to meet environmental sustainability initiatives, the demand for post-use PET material will continue to grow.

⁶ <https://www.plasticstoday.com/packaging/flipping-value-plastic-waste-on-its-head/48476251961058>

The unseen cost of recycling

Phoenix, Arizona is considering cancelling its recycling program altogether due to costs.⁷ If we continue to feed non-recycled material into the collection stream, albeit inadvertently, the cost burden of that contamination will lead to further closures of recycling facilities.

“The sales price, especially mixed, has gone to basically zero and then it costs to sort and that’s significant and then it’s a negative equation on process. We’re going to see municipalities getting charged for their residential recycling programs whereas a couple years ago they were getting [some revenue].”

- Paper Mill

As How2Recycle as stated recently, “Recycling in the U.S. is complex. In addition, our recycling industry is in transition, adjusting from the loss of China’s markets and building to meet the needs of recent brand commitments for recycled content. Continued attention to designing packaging for recyclability will be critical to build strong recycling streams for these materials into the future.”

SmartCAN makes your recycling strategy and messaging very simple.

Conclusion

It is true that some materials are easier to recycle than others. It is our obligation, as packaging suppliers, to understand which materials and packaging formats will support a circular-use economy and which will not.

In an effort to strengthen and clarify our sustainability strategy, Ring hired an outside consultant to approach the recycling managers of 12 major US cities and validate whether Ring’s SmartCAN PET containers would indeed be accepted in their curbside programs. Ring went further to validate whether MRFs would accept and bale Ring’s SmartCAN containers for sale to reprocessing facilities. Ring has confirmed that SmartCAN rigid PET containers are overwhelmingly preferred over composite canisters because of the focus on single polymers and widely recycled material. Recycling of single-polymer plastics is well established in the US and the demand for material continues to grow.

As a member of How2Recycle, Ring is committed to helping our customer base meet their recyclability goals and is focused on developing packaging solutions that are recyclable as defined by the Federal Trade Commission’s Green Guides.

⁷ <https://www.wastetodaymagazine.com/article/phoenix-considers-changes-to-recycling-program/>

To learn how Ring Container can help boost your organization's sustainability program, contact Ring or visit the Ring website to learn more: www.ringcontainer.com

About

Ring Container

Ring Container Technologies is a privately held, multinational corporation headquartered in Oakland, Tennessee. Focused on finding sustainable solutions for the consumer packaging industry for more than 50 years, our company has grown to be one of the largest plastic container manufacturers in North America.



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Definitions⁸

Sorted Residential Papers

Consists of sorted newspapers, junk mail, magazines, printing and writing papers and other acceptable papers generated from residential programs (such as residential household and apartment collections and drop-off centers) sorted and processed at a recycling facility.

Mixed Paper

Consists of all paper and paperboard of various qualities not limited to the type of fiber content, sorted and processed at a recycling facility.

Film Grades⁹

A: This grade consists of 95% clean, clear, dry LDPE or LLDPE film. There is an allowance for up to 5% color, print, or label contamination with this film grade. Recyclers will also often accept up to 2% HDPE bags or 1% of pallet strapping. However, contaminants such as metal, food waste, and oils are not permissible.

B: Recyclers typically only expect 80% clear, clean LDPE or LLDPE film with this grade, and will allow up to 20% color contamination. Total contaminants should not exceed approximately 10% of this load and should be limited to items such as PP film, injection grade tubs, loose paper, or minimal amount of HDPE.

C: This is one of the lowest LDPE film grades and consists of only 50% clear, clean LDPE or LLDPE films. Recyclers typically allow up to 50% of this load to be colored film, and HDPE or PP films typically are also accepted. Total contaminants should not exceed approximately 15%.

⁸ <https://www.recyclingmarkets.net/secondaryfiber/definitions.html>

⁹ <https://northstarrecycling.com/plastic-film-recycling/>