

A PACKAGING FORMAT'S JOURNEY TO RECYCLABILITY

Plastic Squeeze Tubes

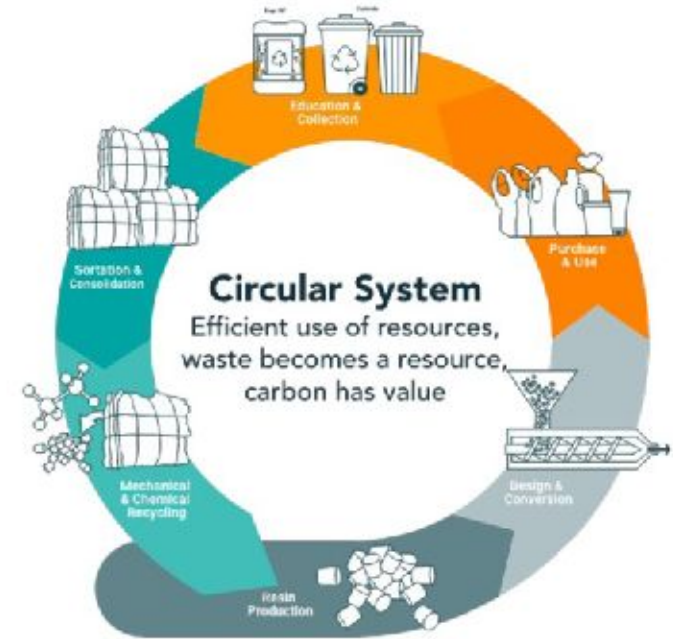


About Stina Inc.

Stina strives to provide better data for better decision-making, fosters collaborative problem-solving, and raises awareness through web-based tools to drive us toward an efficient, circular system.



STINA™



Info Exchange



Tube History 101



- 1954 - First extruded plastic squeeze tubes are introduced
- 1961 - Laminated plastic tubes are patented
- 1980s - Innovation to improve barrier properties leads to products like toothpaste being packaged in tubes
- 2019 – First tube with EVOH barrier passes APR Critical Guidance Testing; major step to eliminating aluminum barrier layers.

Plastic & Laminate Tubes Are:

- In almost every household
- An efficient, functional format likely to remain in use
- Used by engaged brands/converters that want to design for recycling
- Potential additional supply for reclaimers



Goal: To work with engaged companies, recycling organizations and other stakeholders to provide the data and information needed and work through obstacles to make plastic squeeze tubes a format accepted for recycling.

Focus: Maximize recycling of valuable material and minimize contamination to the system

North American – US/Canada Focus:

Initial work began in 2015, focused on understanding and working through the barriers to plastic squeeze tube recycling

Europe Focus:

Project started in 2020 with interest in the path to recyclability for tubes in Europe brought together companies from across the production value chain to collaborate with key stakeholders.



Elements of Recyclability Guide Project Work

Both technical recyclability and collection for recycling are needed for a package or product to be recycled: collected, sorted, and processed into a feedstock for new items.

When considering the “recyclability” of a package or product a few key questions arise:



Colgate-Palmolive's Recyclable Tube Work

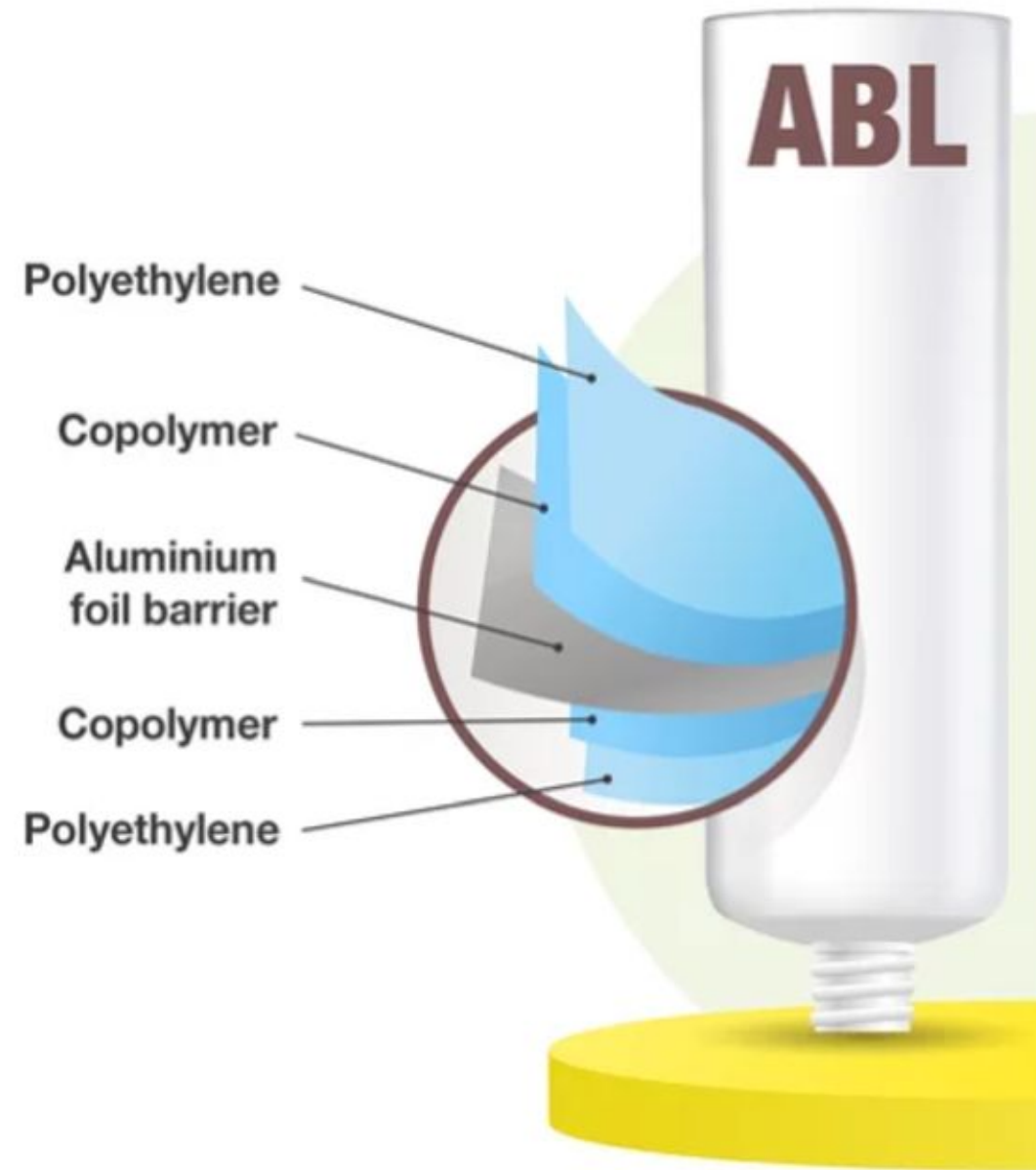


Colgate[®]

Squeeze tubes are one of the most widely used forms of packaging.

Globally, up to 20 billion
toothpaste tubes were *NOT*
recycled every year

Most toothpaste tubes were traditionally made with a mix of materials, making them not recyclable.

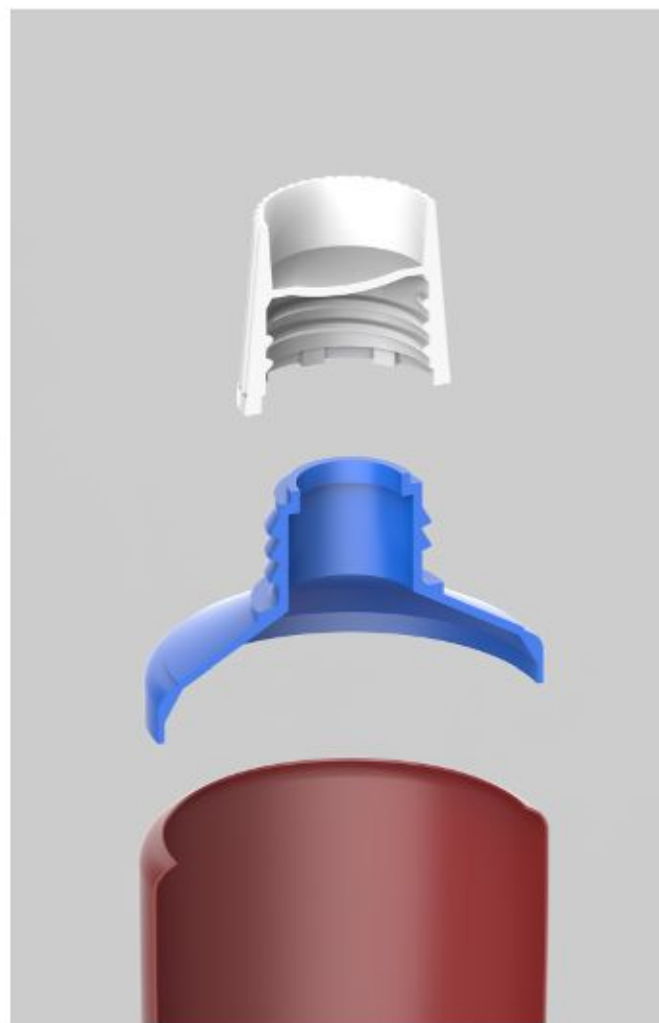


Objective: ALL TUBES Recyclable in Practice & Scale



After 5 years of R&D, Colgate-Palmolive introduced a **first-of-its-kind recyclable tube** in 2019

Recyclable Tube Structure



	Aluminum Laminate Tubes	Recyclable HDPE Tube
Cap	PP	No Immediate Change HDPE Caps under evaluation
Shoulder	HDPE high melt flow	HDPE low melt flow [MFI=1.0]
Laminate	Aluminum Foil + LLDPE/LDPE	HDPE Plastic Laminate Includes 5% EVOH

We are openly sharing

- Presented at over 85 packaging forums and 1-on-1 meetings to promote the transition to recyclable tubes to build market prevalence
- Helped to initiate The Recycling Partnership's Pathway to Circularity Recyclability Framework
- Closely working with Stina on outreach & education



Brands and Converters Innovate and More Tubes that Are Compatible for Recycling Become Available

Key Areas of Consideration to Design Tubes for Recycling

Resin Type and Material Composition

Density and Melt Flow

Color/Pigments

Size and Dimensions



Barrier Layers

Print, Labels and Decoration

Wall Thickness

Closures

Brands have been working in earnest for years to convert to compatible designs.

APR and RecyClass Provide Key Design Guidance for Tubes For North America and Europe



The Association of Plastic Recyclers

APR releases Plastic Squeeze Tube Design Resource Document



APR working group develops tube-specific design for recycling guidance, and APR releases the Plastic Squeeze Tube Design Resource Document in Summer 2020 to help companies produce tubes that are designed for recycling and are compatible with current rigid PE and PP recycling streams.

2010

2020

RecyClass Releases Design Book

RecyClass

CASE STUDIES

MONO-MATERIAL TUBE SOLUTIONS



RecyClass releases a new Design Book, which includes specific reference to proper design details for plastic squeeze tubes.

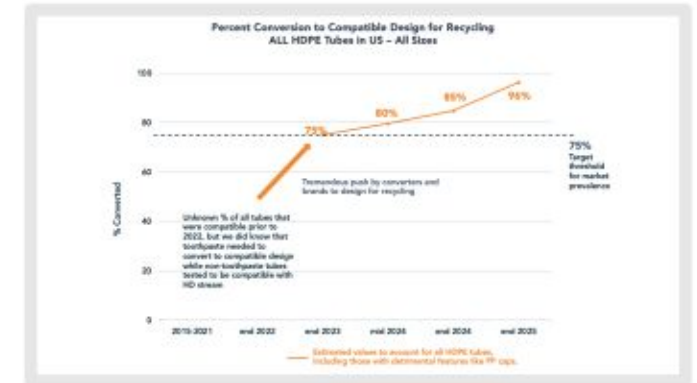
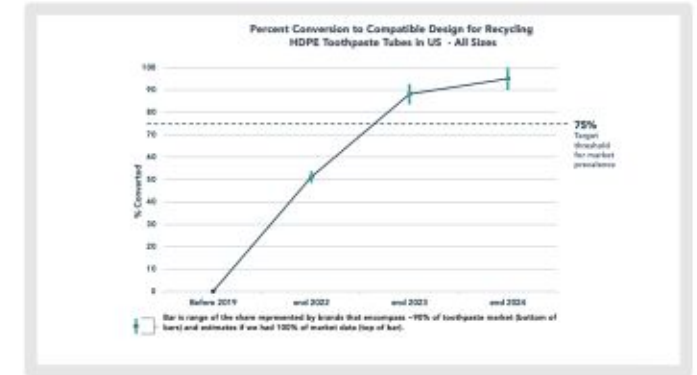
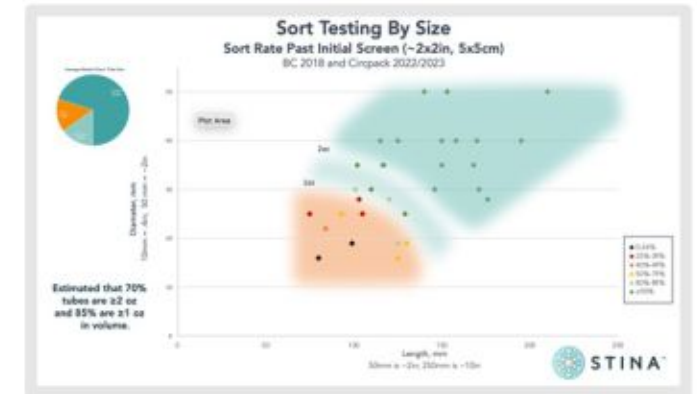
2020

2022

2030

What We Know Today

- Plastic squeeze tubes are still primarily polyethylene (PE) with a PP cap with some polypropylene (PP) tubes.
- Market share indicates many tubes contain products similar to the bottle stream. 90% are lotions/creams, shampoo/soaps and toothpaste.
- Facility sort tests showed tubes of sufficient size (generally containing 1-2 oz of product and larger) can be sorted to the correct stream. Market share data indicates 85% of tubes contain more than 1 ounce.
- Bale Audit data indicates tubes are present in Colored HDPE and PP bales.
- The vast majority of PP tubes are already compatible with the PP rigid stream.
- Data shows 90% of toothpaste tubes and over 75% of all tubes on the market were converted to designs compatible with the color HDPE bottle stream as of the early 2024.



Bale Specification Milestone (2022)

Tubes Seen in Bale Audit
Samples & MRF container lines



- PE squeeze tubes added as “Check with your Buyer” in to Colored HDPE Bottles in 2022 update
- PP tubes would be included “Any polypropylene (PP) containers, packaging or products” in PP Small Rigid” or Mixed Small Rigid

Community Communication Asset Available



Did you know?

You can recycle your squeeze tubes!

Just put them into the  bin with your bottles.

The infographic features a dark blue background. On the right side, there is a blue recycling bin with a white recycling symbol. Inside the bin, several items are shown: a green tube, a brown bottle, a yellow bottle, a pink tube, and a white jug. The text is in white and light blue.

Tube Demonstration Project - Mazza Recycling, New Jersey



PlasticTubeRecycling.org

Celebrating the innovation and efforts for design for recycling!

NEW Tubes Webpage

- Tell the tubes story on the Journey to Recyclability – insight for other packaging formats - **it starts with design for recycling**
- Reiterate the need to Close the Loop – **use of recycled content is essential for recyclability!**
- Landing place for communities, MRFs, and other stakeholders to get the key information and background data

Ultimate goal is for more recyclable items to be recycled by consumers.

Packaging for similar products being recycled together should lead to less consumer confusion.

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Packaging Used in Our Everyday Lives

Plastic squeeze tubes are an effective packaging type for many items used in our daily lives like lotion, shampoo and conditioner, toothpaste, food, and other household products.

The companies producing tubes and the brands using them have been working for years to innovate new tubes that are not only functional, but also compatible with recycling streams.



There has been a tremendous amount of work in recent years to understand the barriers and work through solutions to make plastic squeeze tubes, as a packaging format, accepted for recycling. This site illustrates the critical elements of recyclability and the ongoing journey to make that a reality.

Work with engaged companies, recycling organizations, and other stakeholders was critical to provide the data and information needed to make progress.

Updates on progress will be documented here and it is always important to check what your local program accepts.



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