PLASTICS DESIGN FOR RECYCLABILITY WEBINAR SERIES

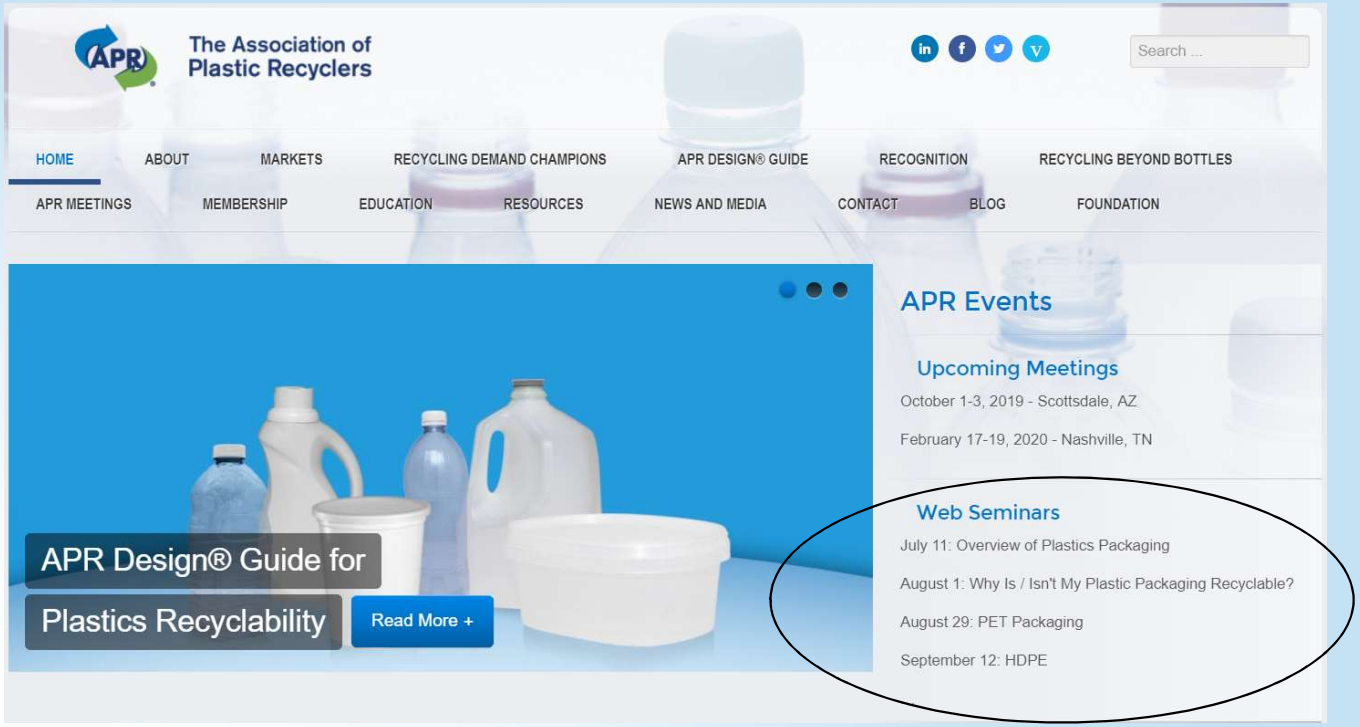
Part 4: HDPE and PP Packaging

Hosted by:

Walmart

The Association of Plastic Recyclers

Registration links, presentation slides and recordings will be available on the APR Website and the Walmart Sustainability Hub



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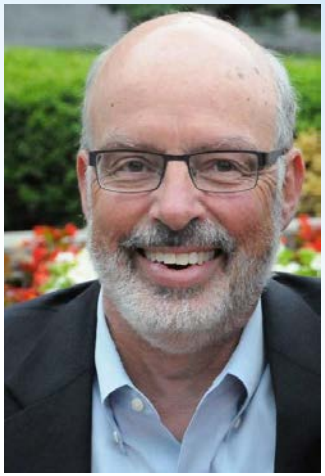
TODAY'S PRESENTERS



Steve Alexander

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Curt Cozart

President, Common Sense Solutions, Inc

Kara Pochiro

VP of Communications & Public Affairs, APR

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AGENDA

1. Reminders:
   a. What Is This Series?
   b. Walmarts goals
   c. Who is APR and what makes something recyclable.
2. Overview of HDPE and PP – what packaging uses it and why?
3. When HDPE/PP are not recyclable
4. Designing for Recyclability
5. Resources
6. Questions

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WHAT IS THIS SERIES?

A series of webinars hosted by Walmart, and presented by The Association of Plastic Recyclers, discussing design for plastics recyclability and communicating the common messages within the Walmart Recyclability Playbook and the APR Design® Guide for Plastics Recyclability.

July 11	Overview of Plastics Packaging
August 1	Why Is/Isn't My Plastic Recyclable?
August 29	PET Packaging
September 12	HDPE and PP Packaging
October 10	Flexible Packaging (Bags/Wraps/Films)
October 31	Using More PCR

All webinars begin at 2:30 PM EST.

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OUR SUSTAINABILITY PRIORITIES

Key Focus Areas for Walmart Sustainability in FY20

PROJECT GIGATON

Working with suppliers to reduce 1 billion metric tons of GHGs by 2030

ProjectGigaton™

JOIN US!
WALMARTSUSTAINABILITYHUB.COM

PACKAGING & PLASTICS

Use less plastic.

Make it recyclable.

Label it for the customer.

USE SUSTAINABLE MATERIAL
SPECS AND LABEL PACKAGING

SUSTAINABLE PRODUCTS

Identify sustainability priorities based on your product category

ADVANCING EDLTC
ACROSS ALL PRODUCT CATEGORIES

OUR SUSTAINABLE PACKAGING COMMITMENTS

For Private Brands, Encouraged for National Brands

USE LESS PLASTIC	MAKE IT RECYCLABLE		LABEL IT
Reduce the use of plastic when possible	20% Recycled content in plastic packaging	100% Recyclable, reusable, or industrially compostable	100% Packaging labeled for recyclability
Remove unnecessary packaging	**Increased recycled content**	**Make packaging recyclable**	**Apply the How2Recycle label**

INNOVATE TOGETHER

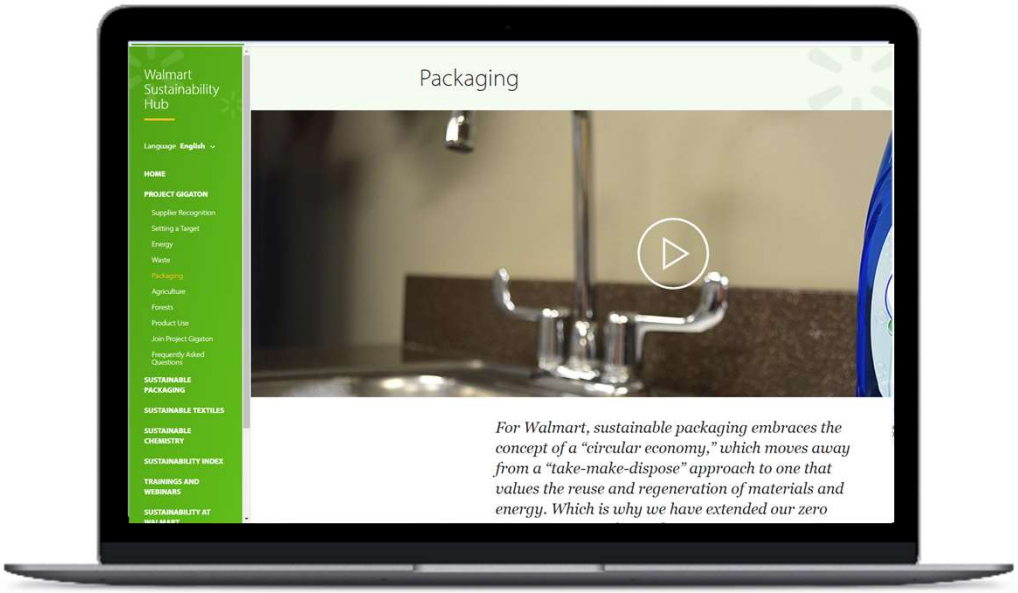
ProjectGigaton™

Project Gigaton is designed so that every supplier can participate in at least one pillar

Energy	Agriculture	Waste	Packaging	Product Use	Forests
Renewable Energy	*Fertilizer Optimization*	*Food and Solid Waste Reduction*	*Recycled Content*	*More Energy Efficient Products*	*Avoid Deforestation*
Energy Efficiency	*Animal Agriculture*		*Recyclability*	*Low-GWP Refrigerants*	*Restoration*
Fleet Efficiency			*Optimization*		

The Sustainability Hub, a one-stop shop

- ✓ Learn how to design for recyclability
- ✓ Download the recycling playbook
- ✓ Find webinar recordings
- ✓ Link to other resources



walmartsustainabilityhub.com

WHO IS APR?

International trade association

The Voice of Plastics Recycling®

Companies committed to the success of plastics recycling

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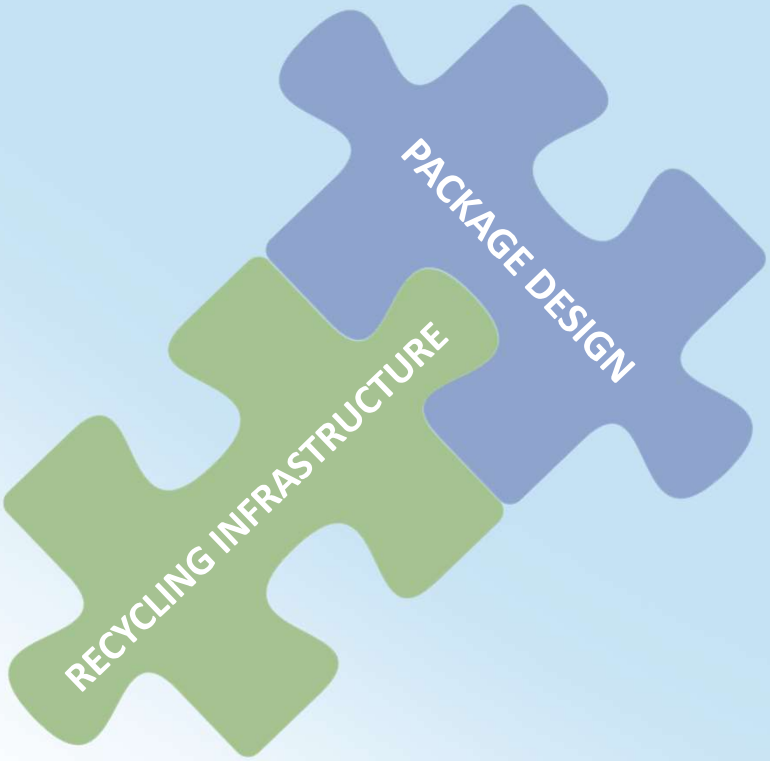
WHO IS APR? ENSURING PACKAGE DESIGN FITS WITH RECYCLING INFRASTRUCTURE

- APR Design® Guide for Plastics Recyclability
- Test Methods
- Training
- Communication
- Advocacy



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APR's DEFINITION OF RECYCLABLE

60% consumer access

Processed by existing infrastructure

- sort
- clean

Can be manufactured into identifiable product

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TYPES OF PLASTIC PACKAGING: HDPE/PP

Widely plastics <u>if designed correctly!</u>

- Strong
- Light
- Versatile
- Good moisture barrier

PP is also:

- Stiff, impact and heat resistant.
- Can be used in hot filling and retort
- Good for hinged closure

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The HDPE/PP recycling processes are nearly identical

TYPES OF PLASTIC PACKAGING: HDPE

Can be Used For:

- Room temperature filled food products packaging
- Cleaning and laundry products packaging
- Personal care packaging
- Frozen food packaging
- Non-stretch grocery bags
- Many household goods not needing high temperature capability
- Drums , pails, pipe

Can't be Used For:

- Soft drinks
- Clear handleware bottles
- Products that hot fill over 150°F (65C)
- Oxygen-sensitive products
- Ovenable packaging
- Some automotive chemicals

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TYPES OF PLASTIC PACKAGING: PP

Can be Used For:

- Food bottles with or without handles and need to be hot filled up to 212°F (100°C)
- Personal care packaging –clear bottle
- Dishwasher-safe food bowls
- Whenever a 'living hinge' is needed
- Fibers and non-woven fabrics
- Rope, prescription bottles, car batteries, paint cans, medical equipment

Can't be Used For:

- Soft drinks
- Oxygen-sensitive products without special barriers
- Full sunlight applications without special additives, such as outdoor carpet
- Some automotive chemicals

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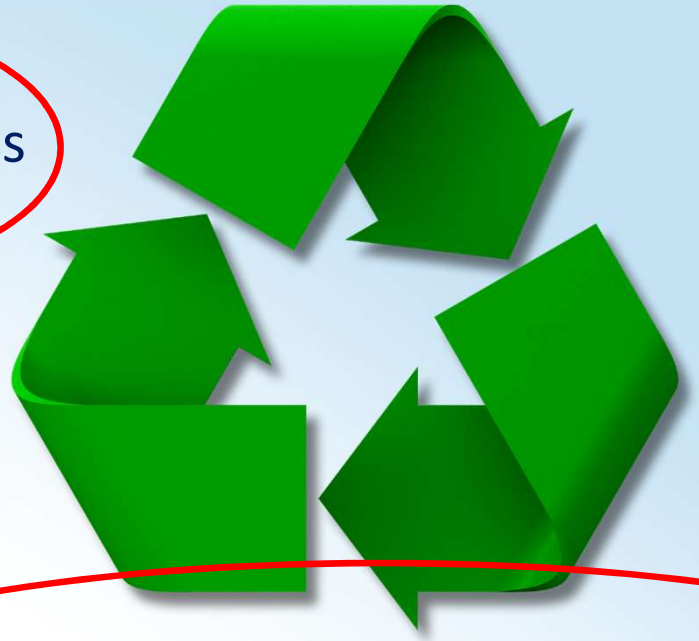
HDPE and PP PACKAGING MEETS 2 CRITERIA

60% consumer access



Processed by existing infrastructure

- sort
- clean

✓ HDPE
✓ PP

Can be manufactured into identifiable product

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SPONSORED BY:

SUSTAINABLE PACKAGING COALITION®
A PROJECT OF GREENBLUE

American Chemistry Council

2015-16 CENTRALIZED STUDY ON AVAILABILITY OF PLASTIC RECYCLING

PREPARED BY:

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MOORE RECYCLING ASSOCIATES INC.
Recycling Implementation Specialists

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION 1985

FEDERAL REGISTER

Vol. 77 Thursday,
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Part VII

Federal Trade Commission

16 CFR Part 260
Guides for the Use of Environmental Marketing Claims; Final Rule

INFRASTRUCTURE COMPATIBILITY IS CRITICAL

60% consumer access

Processed by existing infrastructure

- sort
- clean

Can be manufactured into identifiable product

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NOT RECYCLABLE IN THE SORTING SYSTEM - small

Less than 2” x 2” must be tested

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Definitions and test methods at www.plasticsrecycling.org

NOT RECYCLABLE IN THE SORTING SYSTEM - dark

Most blacks and near blacks cannot be detected

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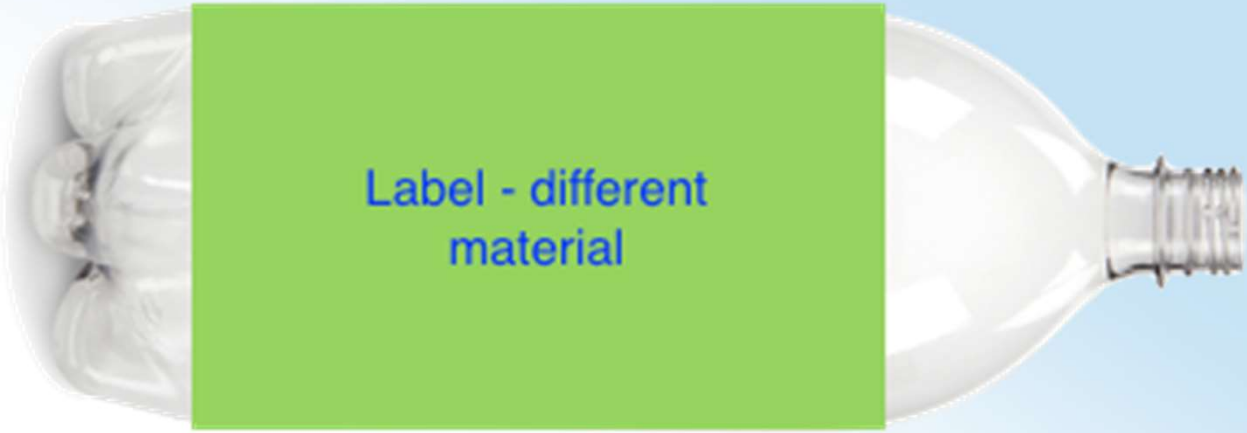
Definitions and test methods at www.plasticsrecycling.org

NOT RECYCLABLE IN THE SORTING SYSTEM – wrong full body labels

Thick labels covering more than 85% of the object might cause incorrect sorting



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NOT RECYCLABLE IN THE SORTING SYSTEM – metal

Large metal components are rejected

Design seals to be completely removed before use

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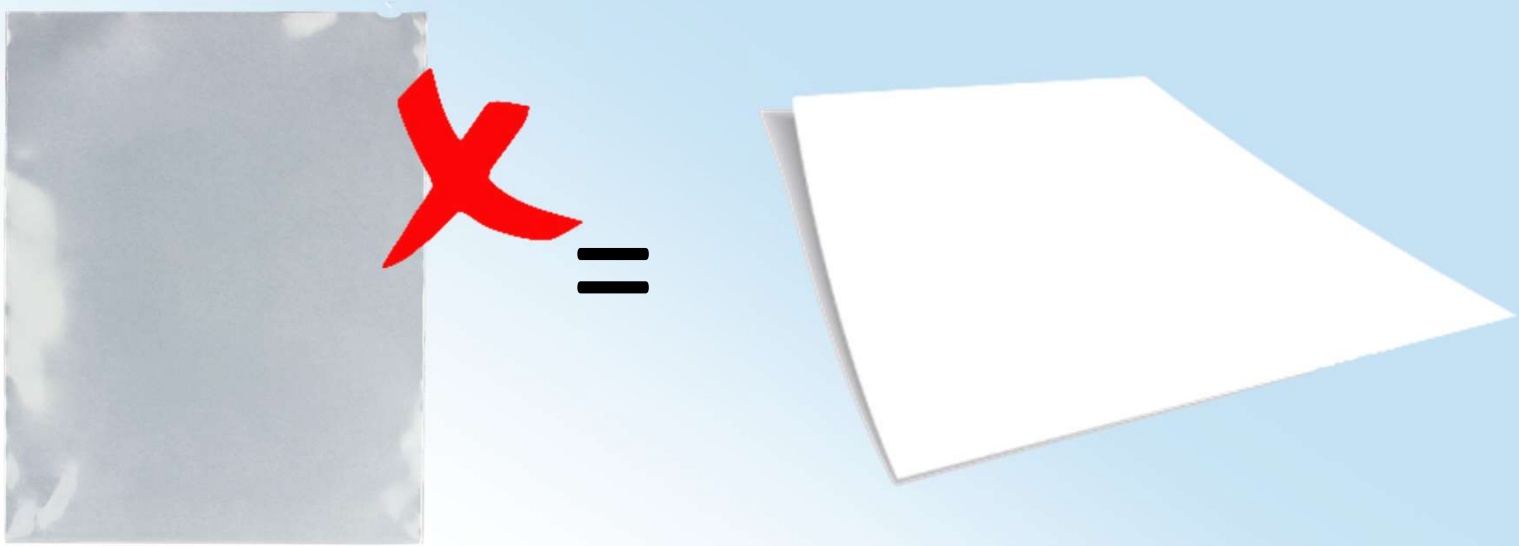
NOT RECYCLABLE IN THE SORTING SYSTEM – 2 dimensional

Flat items sort like paper in the sorting system – Make lids securely attach to container



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In Addition to Sorting…Design Features that make HDPE/PP NOT RECYCLABLE

- ***Too many fillers*** – minerals, colorants, additives if they make the HDPE/PP sink
  - Calcium Carbonate
- ***Degradable additives*** – render non-recyclable
- ***PVC Components*** – even slight contamination ruins final product quality

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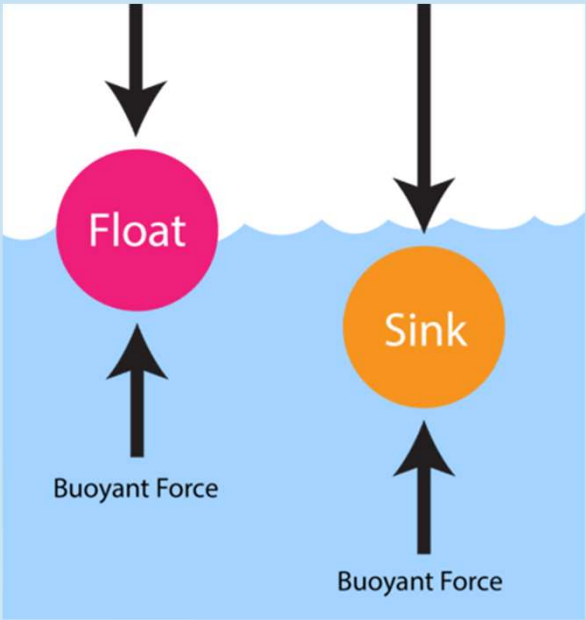
Definitions and test methods at www.plasticsrecycling.org

Too many fillers:



ISSUES

- HDPE & PP float while most contaminates sink (dirt, glass, metal etc)
- Most fillers are very heavy

ACTION

- Verify the material floats

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Most common issues affecting HDPE and PP quality/yield)

1. PP caps and spouts on HDPE containers
2. Paper Labels
3. Barrier Layers

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PP Caps and Spouts on HDPE Containers

ISSUES

- PP is brittle and limits the hdpe markets, particularly for pipe (the largest market!)

ACTION

- Innovate: - use PP on PP containers and HDPE on HDPE containers

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Paper Labels

ISSUES

- Paper is difficult to remove completely
- Creates burnt smell in final product
- Causes frequent filter changes in the extruder

ACTION

- Use commercially-available APR-recognized adhesives, labels and printing processes that wash off during recycling

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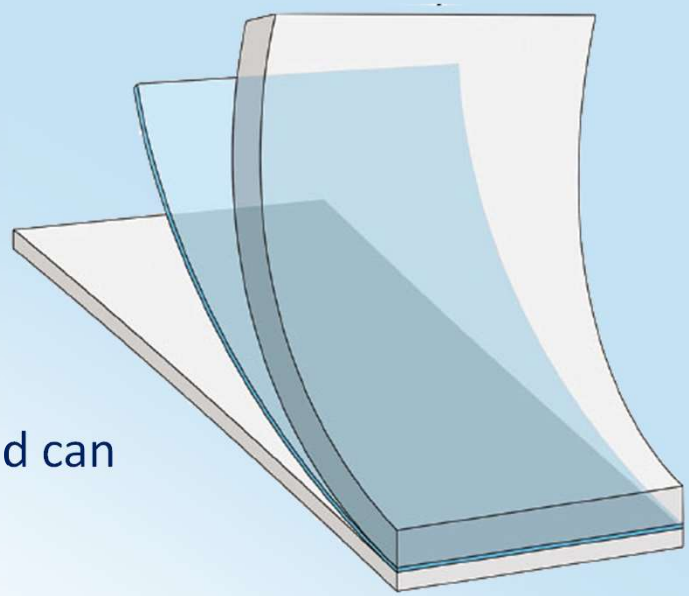
Barrier Layers:

Extend Shelf life



ISSUES

- Stay adhered to material and can change properties

ACTION

- Use barrier technologies listed In the APR Design Guide for Plastics Recyclability

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APR Approved Solutions –

Refer your Design Team to:

The APR Design Guide for Plastics Recyclability- HDPE/PP – “barrier layers, coatings and additives”

- EVOH

“Workhorse Additives”

- Thermal Stabilizers
- UV Stabilizers
- Nucleating Agents
- Antistatic Agents
- Clarifying Agents
- Lubricants
- Fillers
- Pigments:
- Impact modifiers
- Chemical blowing agents

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DESIGNING FOR RECYCLABILITY – HDPE/PP

DO NOT use

- PVC components
- Degradable additives
- Large amounts of heavy fillers

TEST

- Small items
- Dark colors
- Flat items
- Large labels
- Metal attachments

USE APR approved

- Pressure sensitive labels
- Barrier layers
- Shrink sleeve labels

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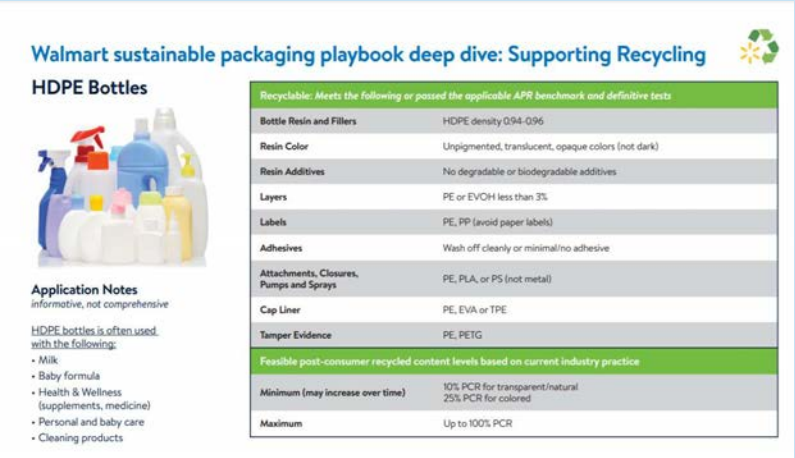
DESIGNING FOR RECYCLABILITY – HDPE/PP

- Leverage the Walmart Recycling Playbook and APR Design Guide for Plastics Recyclability
- Use the How2Recycle label for consumer messaging



Walmart sustainable packaging playbook deep dive: Supporting Recycling

HDPE Bottles

Application Notes
informative, not comprehensive

HDPE bottles is often used with the following:
- Milk
- Baby formula
- Health & Wellness (supplements, medicine)
- Personal and baby care
- Cleaning products

Recyclable: Meets the following or passed the applicable APR benchmark and definitive tests	
Bottle Resin and Fillers	HDPE density 0.94-0.96
Resin Color	Unpigmented, translucent, opaque colors (not dark)
Resin Additives	No degradable or biodegradable additives
Layers	PE or EVOH less than 3%
Labels	PE, PP (avoid paper labels)
Adhesives	Wash off cleanly or minimal/no adhesive
Attachments, Closures, Pumps and Sprays	PE, PLA, or PS (not metal)
Cap Liner	PE, EVA or TPE
Tamper Evidence	PE, PETG
Feasible post-consumer recycled content levels based on current industry practice	
Minimum (may increase over time)	10% PCR for transparent/natural 25% PCR for colored
Maximum	Up to 100% PCR

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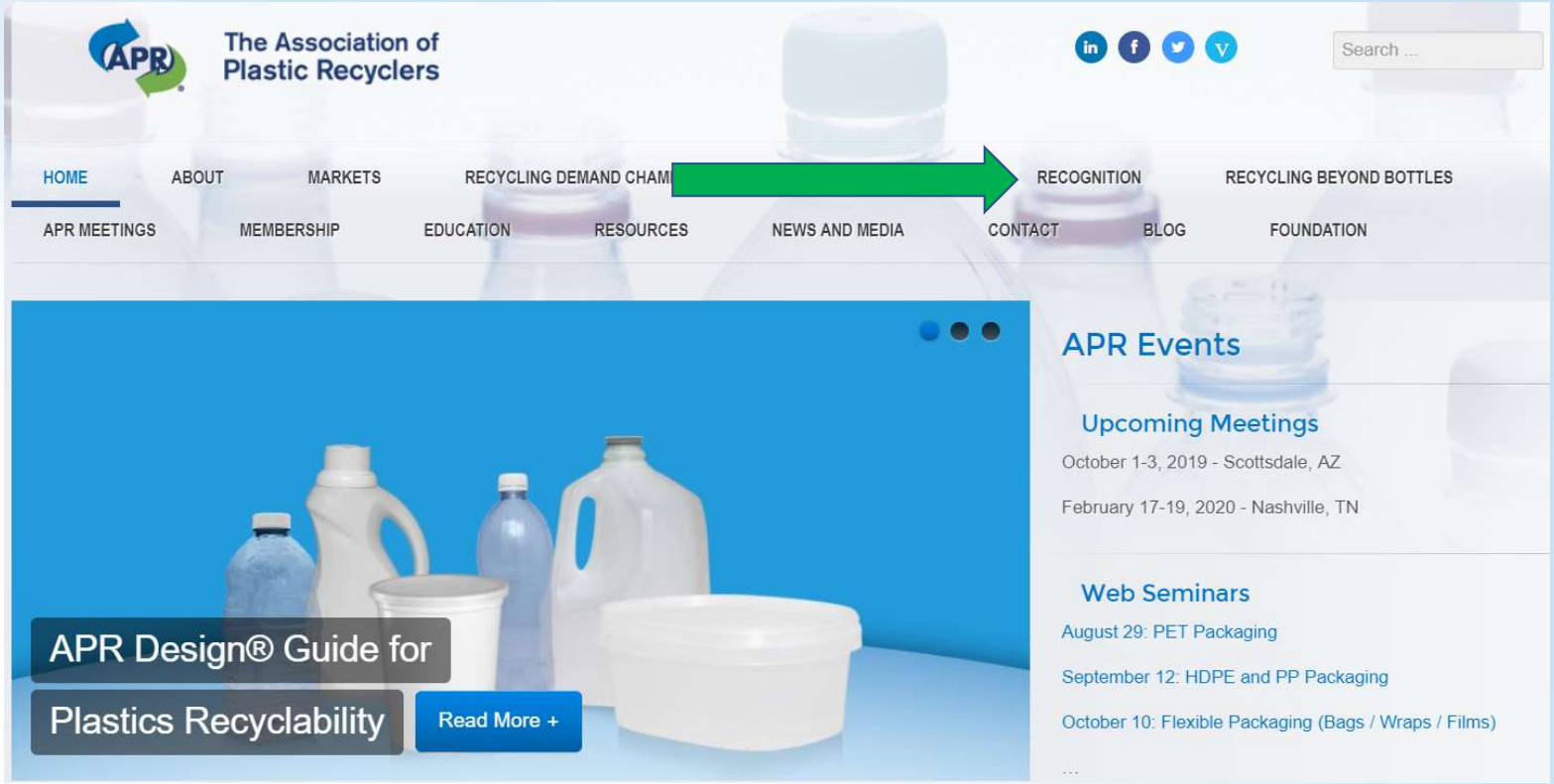
APR CRITICAL GUIDANCE RECOGNITION - TESTING



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Click this banner on the APR homepage to register now!
Limited to 50 participants.

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QUESTIONS

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October 10	Flexible Packaging (Bags/Wraps/Films)
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