



UNIFORM COLOR

An **AUDIA**® Company

A Spectrum of Solutions™



 **WASHINGTON PENN**

 **AUDIA ELASTOMERS**

 **UNIFORM COLOR**

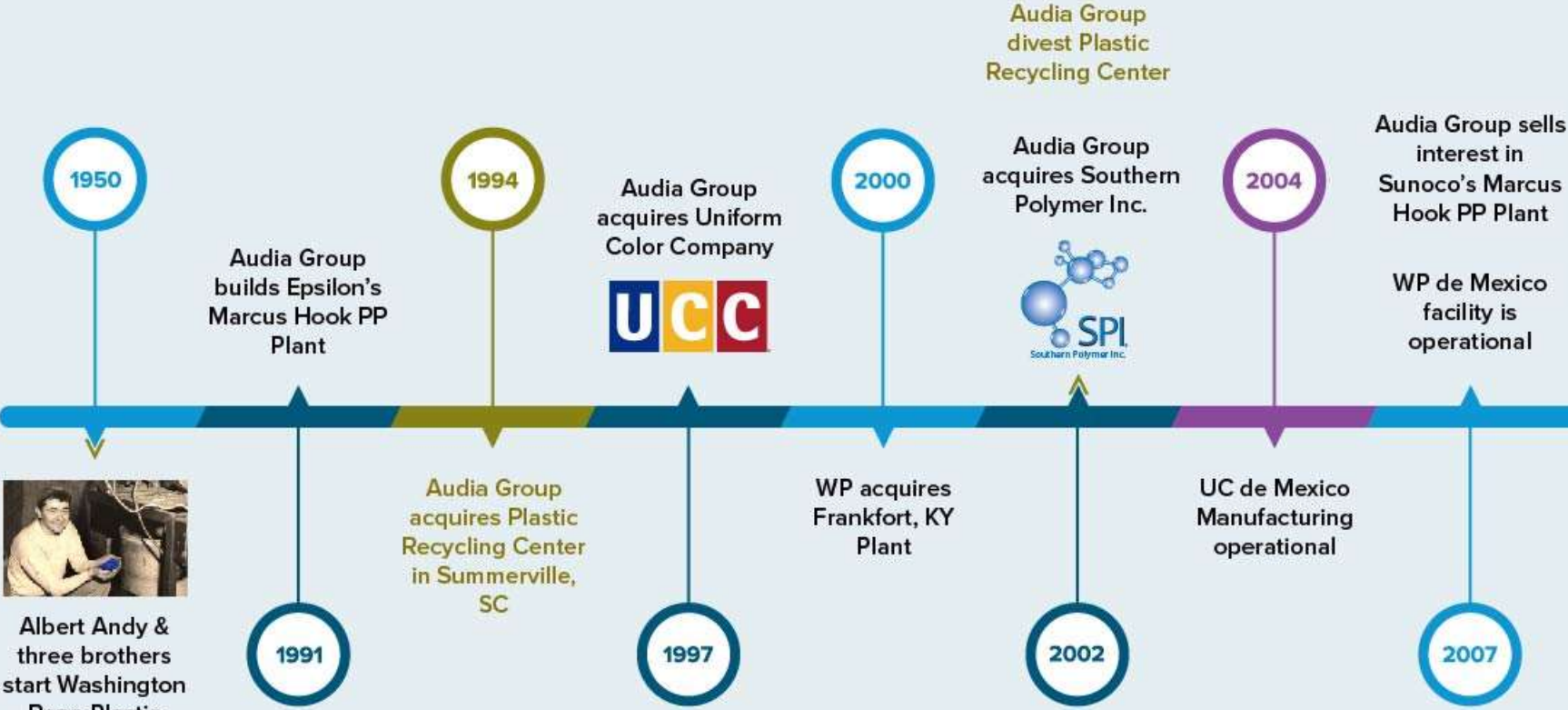
 **SOUTHERN POLYMER**

COMPOUNDING

COLOR

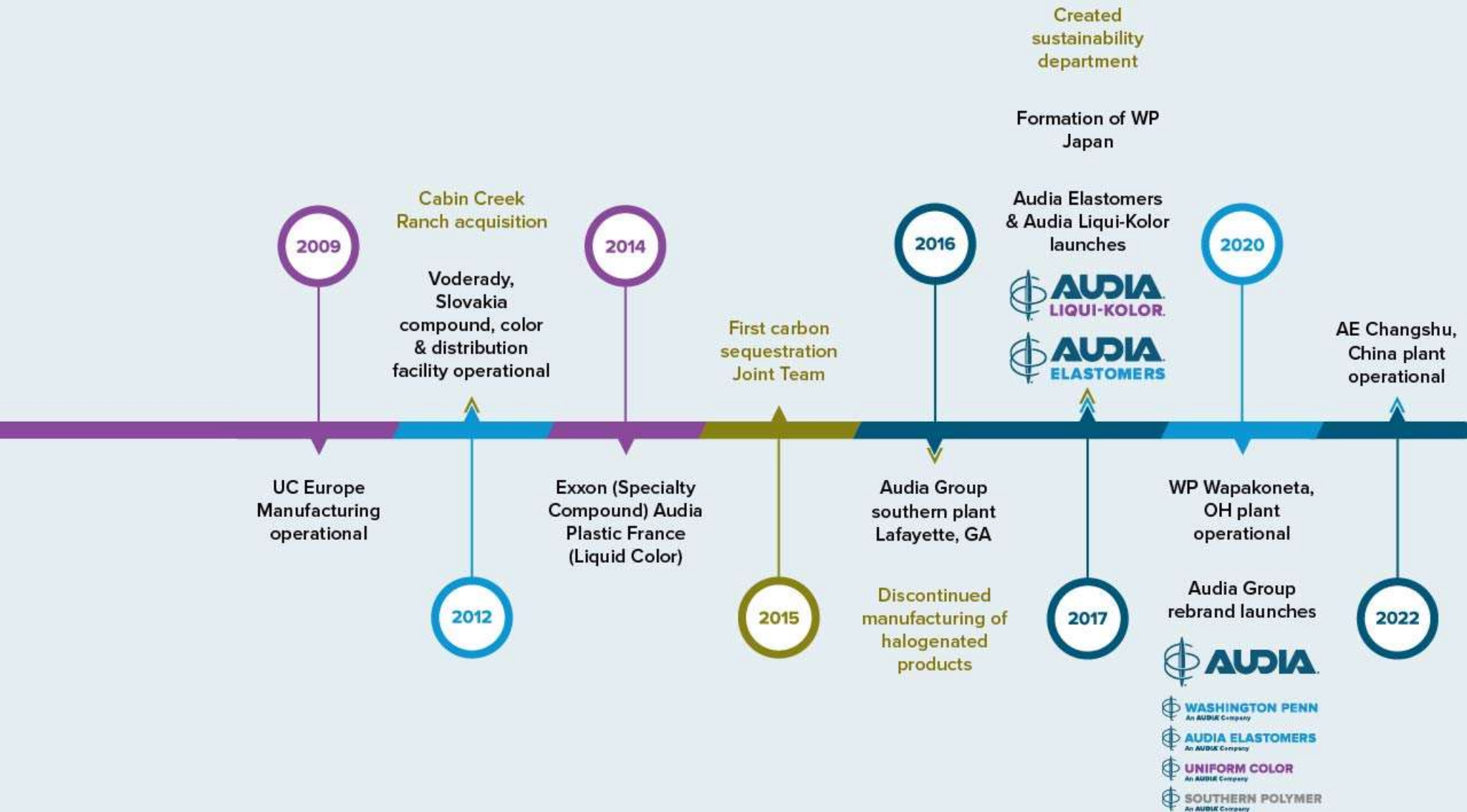
DISTRIBUTION

Our History



Albert Andy & three brothers start Washington Penn Plastic

Founded from a tire company to reduce the plastic packaging waste going to landfills



Wherever you are, we're there.



Compounding		WP
		AE
Distribution		SP
Color		UC
Audia HQ		
My Green Earth™		

HQ = Headquarters
M = Manufacturing
D = Distribution
S = Sales Office

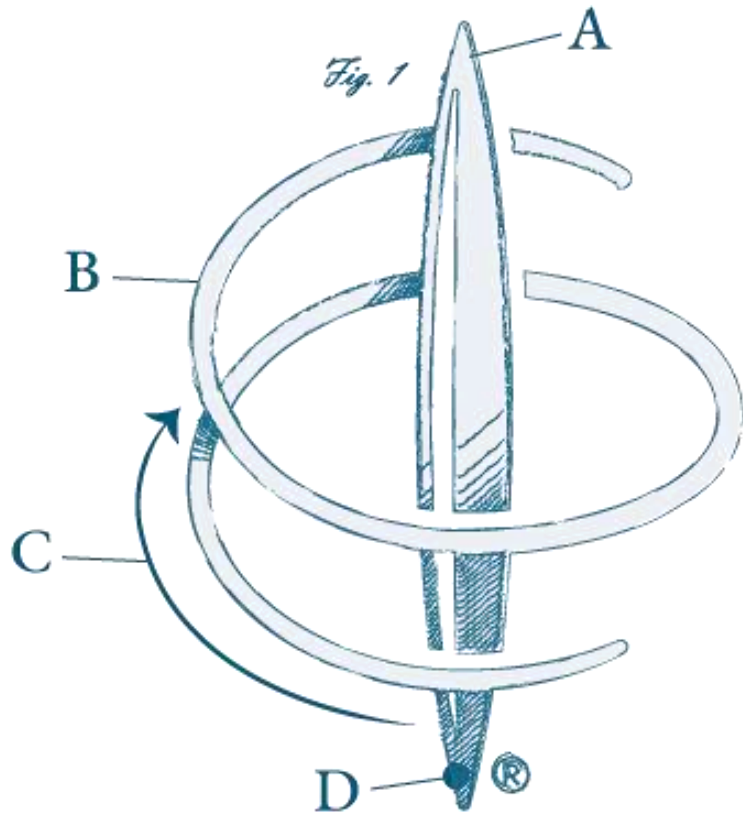
Wherever you are, we're there.



UNIFORM COLOR
An **AUDIA** Company

HQ = Headquarters
M = Manufacturing

The Anatomy of the “Audia Spire”



- A.** Center pillar represents the strength and stability over time
- B.** Spiral represents our core values including safety, quality, sustainability, and ethics
- C.** Swirl upwards represents continuous improvement
- D.** “Audia Blue” represents trust, wisdom, kindness and truth

A world of custom solutions.



Automotive



Appliance



**Building &
Construction**



**Houseware &
Disposable**



Furniture



Packaging

Laboratory & Development



A2LA Laboratory
Rheology, FTIR,
DSC & TGA
Xenon Weathering



Color Science &
Design Experts
Training Seminars
OEM Mastering



Fast Development
Calibrated Light Rooms
Formulation &
Measurement Systems

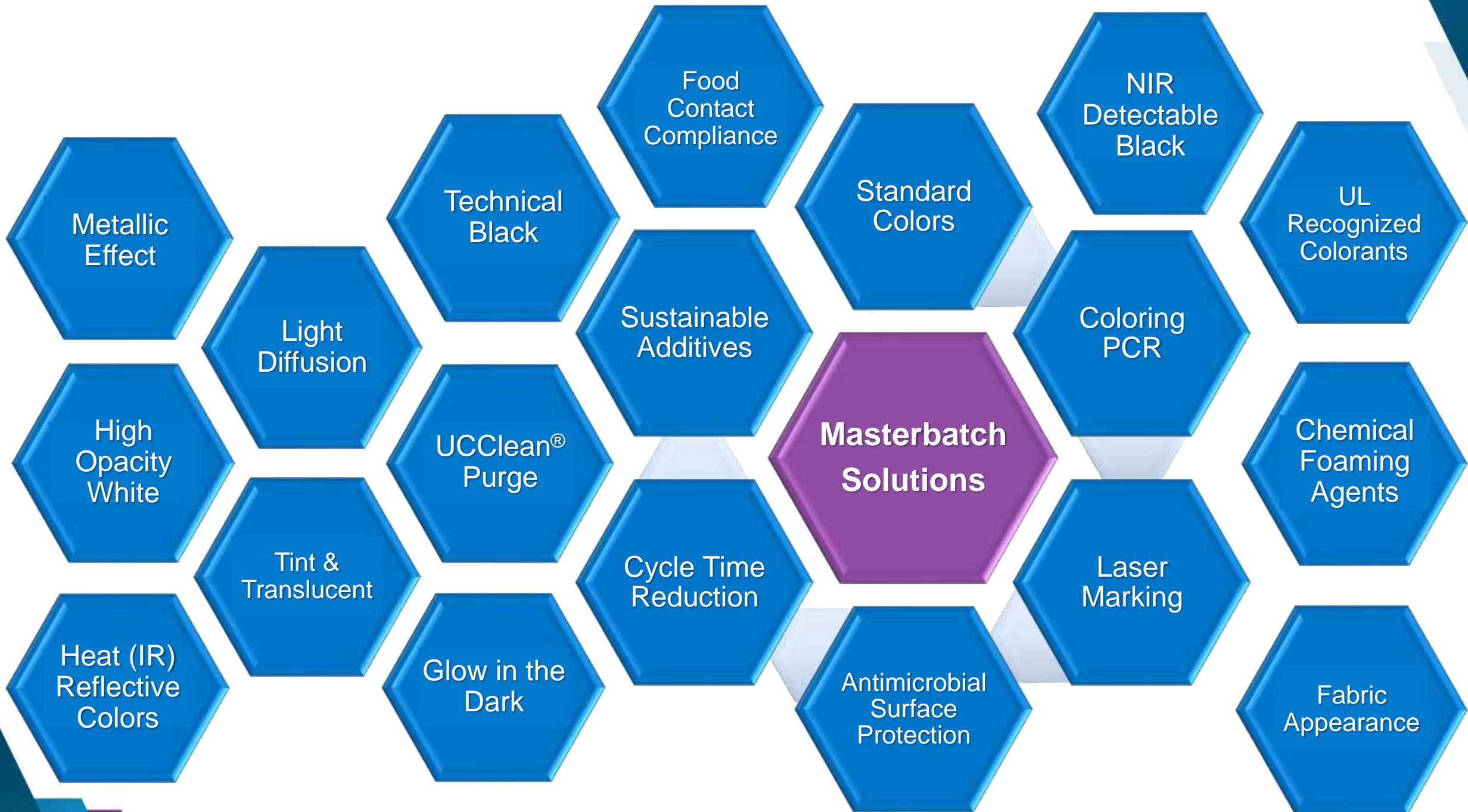


UNIFORM COLOR

An **AUDIA**® Company

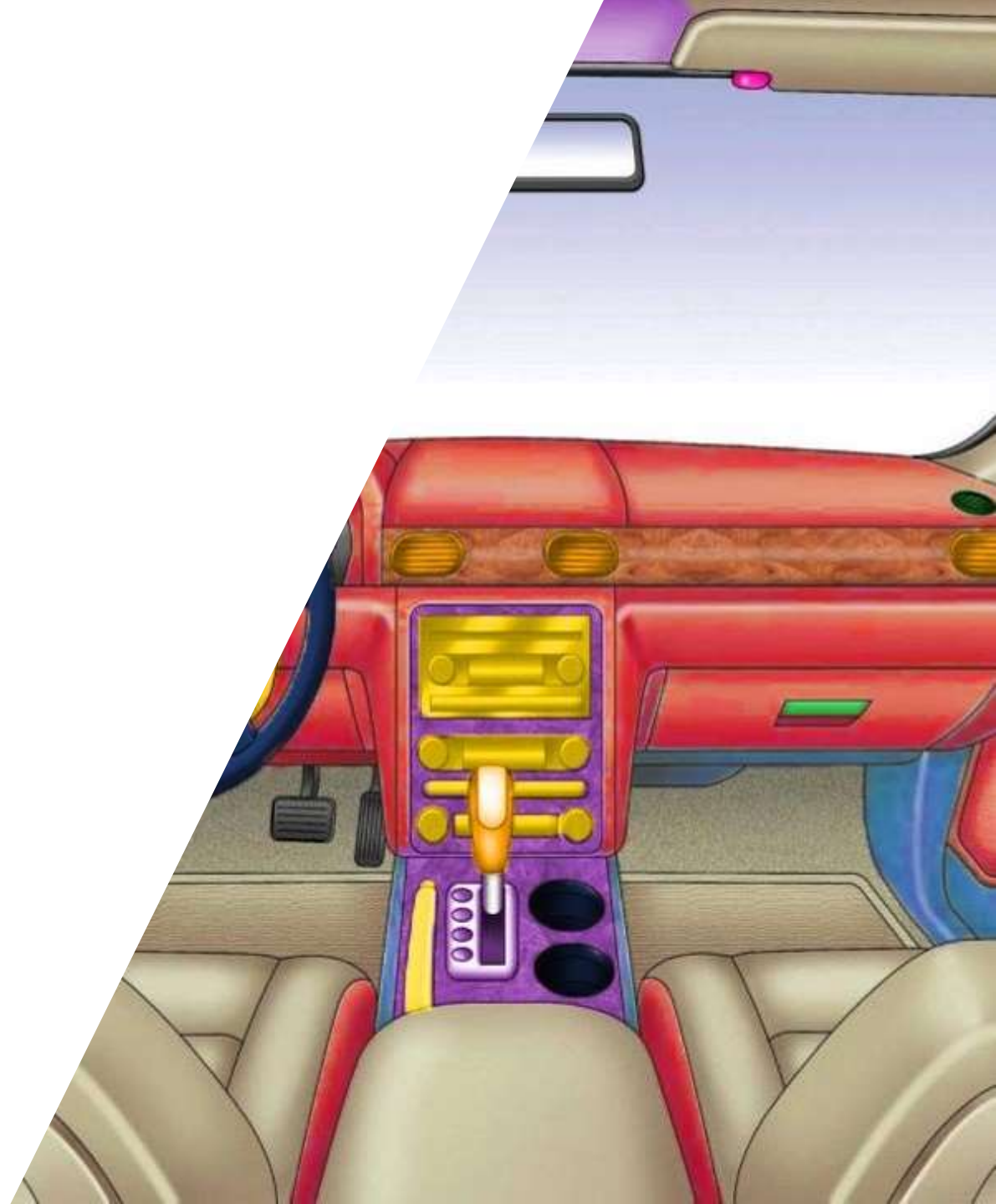
Solutions

**Your success colors
everything we do.**



Color Harmony

- Expertise coloring 45+ polymers
- Accelerated color approval
- In-house color mastering
- Submit support for OEM Approval
- Continued technical support throughout product lifetime



Masterbatch vs Precolor Case Study

Program

Cadillac SRX - GMT265MCE

Interior 11 parts

Colors

Ebony 167A

Light Camel 830K

Light Gray 9781

Cocoa 413P

Resin

Dow 3325MT ABS

400,000 lbs/mo

Benefit

With a one time capital investment for gravimetric feeders and screws there was a 2 month payback period. The customer has since converted all other programs and no longer sources precolor.



Special Effects

- Metallic Paint Replacement
- Laser Marking
- Fiber Technology
- Granite, Marble, & Pearl
- Light Diffusion
- Glow in the Dark



High Opacity White Case Study

Program

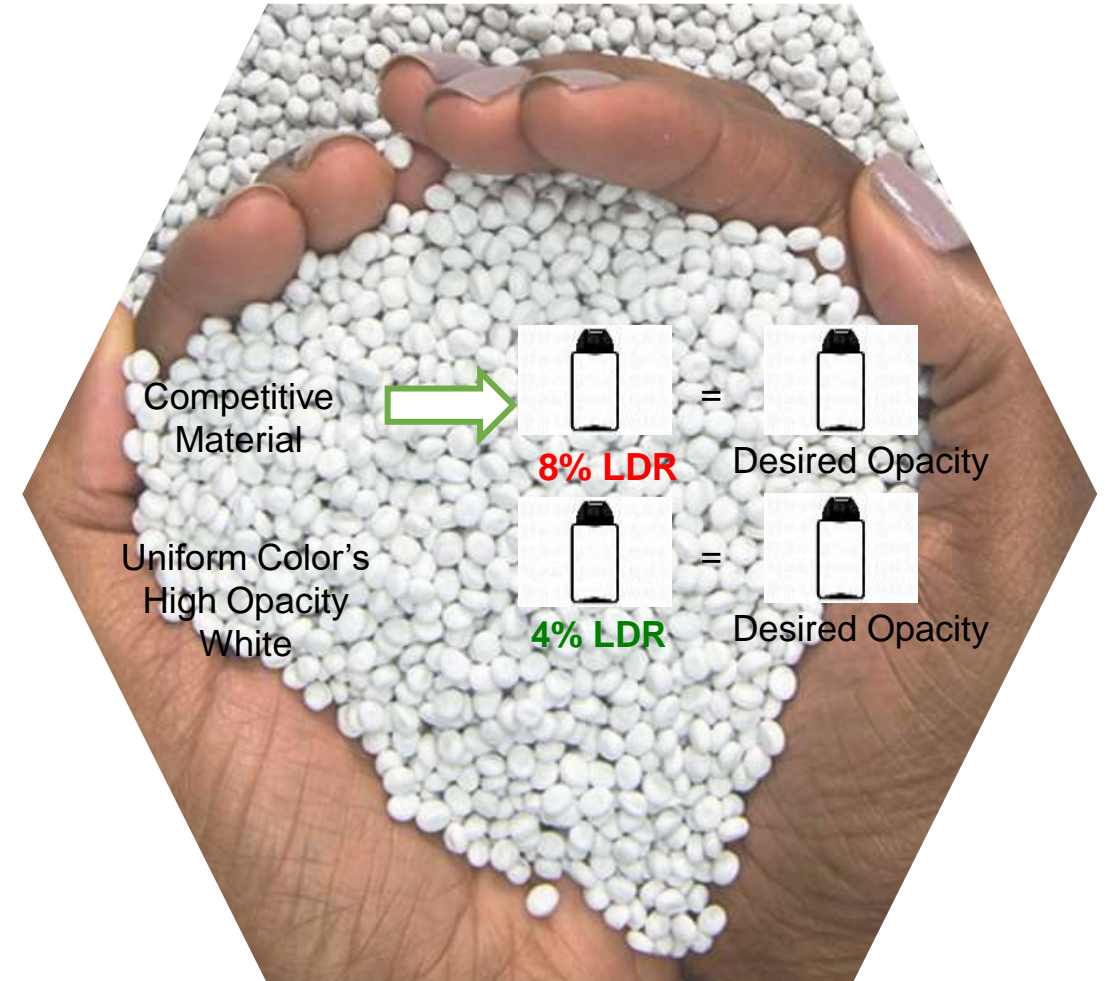
Traditional white TiO₂ masterbatch has a limited hiding power in thin wall applications that require a high level of opacity causing higher than desired let-down ratios

Benefit

UC has created our High Opacity White product to match or improve the hiding power of traditional white masterbatch at levels as low as 50% of the current let-down ratio

Case Study Application

3-layer opaque white bottle used for consumer shampoo bottle



Light Weighting

- Reduce part weight
- Reduce cycle time
- Sink elimination
- Dimensional stability
- Core-back technology



Chemical Foaming Agents

Case Study

Case 1

Application

HDPE Sheet Co-Extrusion
A/B/A Configuration

Product

ACBA20

Use Rate

0.7% LDR in Core layer

Benefit

- 24% weight reduction in final sheet
- Increase throughput 8% due to endothermic reaction
- Consistent process and thickness of gauge
- CFA is fully activated on first pass eliminating variation in regrind



Scratch & Mar

- Proprietary industry-leading technology
- Reduce WIP damage and scrap
- Improve end-application durability
- Tailor to specific part performance



Processing Additives

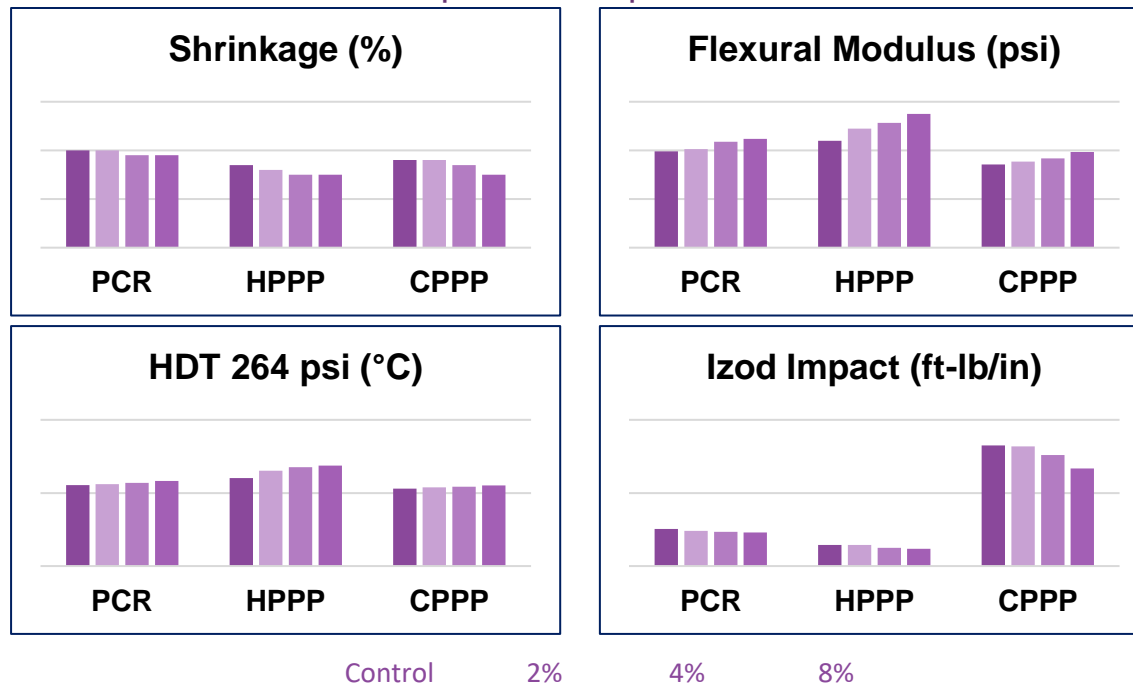
- Mold release
- Cycle time reduction
- Anti-static
- Reprocessing
- Assembly slip agent



UCCycle Time Case Study

UCCycle Time helps polyolefins run faster with better dimensional stability and improves property balance of recycled resins

Heat Transfer Promotor - Nucleator – Stiffness Enhancer
HDT Improver – Impact Retainer



Product Performance Additives

- Weather durability
- UV Light fastness
- Content protection
- Impact modifier
- Scratch & mar
- Laser marking
- Dimensional stability



Antimicrobial

- Protect against microbial growth
- Reduce up to 99% of microbes in 2 hours
- Wide range of polymer compatibility
- Long lasting efficacy



Our Key Strategic Initiatives



Climate Action



Sustainable Operations



Innovation

Our Mission

To promote sustainable growth and help build a better world contributing to the success of our customers, co-workers, communities and planet

Our Commitment

↓ **40% Emissions**
GHG intensity for scope 1, 2 and 3 by 2030 from a 2019 baseline

↓ **50% Waste**
To landfill globally by 2035 from a 2019 baseline

50% renewable
or Zero Emission energy sourced globally by 2030

Our Values



Ethics



Safety and Wellness



Quality



Sustainability



- Powerful purge
- Fast color changes
- Time & material cost savings
- Multiple resins & temperatures
- Black speck elimination
- Sustainable waste reduction
- FDA approved options



UCClean[®] G1 Case Study



Application & Process

HDPE Trash Can lid

Process

Injection Molding

Color Change

Green to tan

Benefit

Only 4 shots of UCClean[®] G1 followed by resin was required, compared to 10 shots of the previous purge

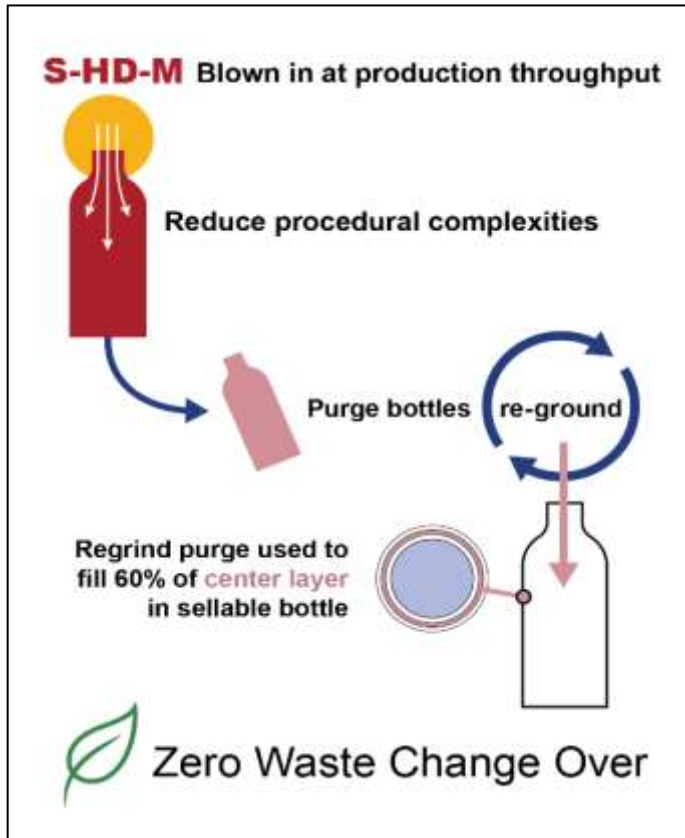


Superior Cleaning
Performance

UCClean[®] G1 vs. Competitor

Shots to Clear		
Cycle Time	 90 sec	 90 sec
Purge Material Used	 32 lb	 80 lb
Purge Material Cost	 \$80	 \$200
Machine Time/ Changeover	 6 min	 15 min
Machine Run Rate	 \$125/hr	 \$125/hr
Total Cost Per Change Color	\$93	\$231

UCClean[®] G0 Case Study



Application & Process

3 Layer Bottle

Process

Extrusion Blow Mold

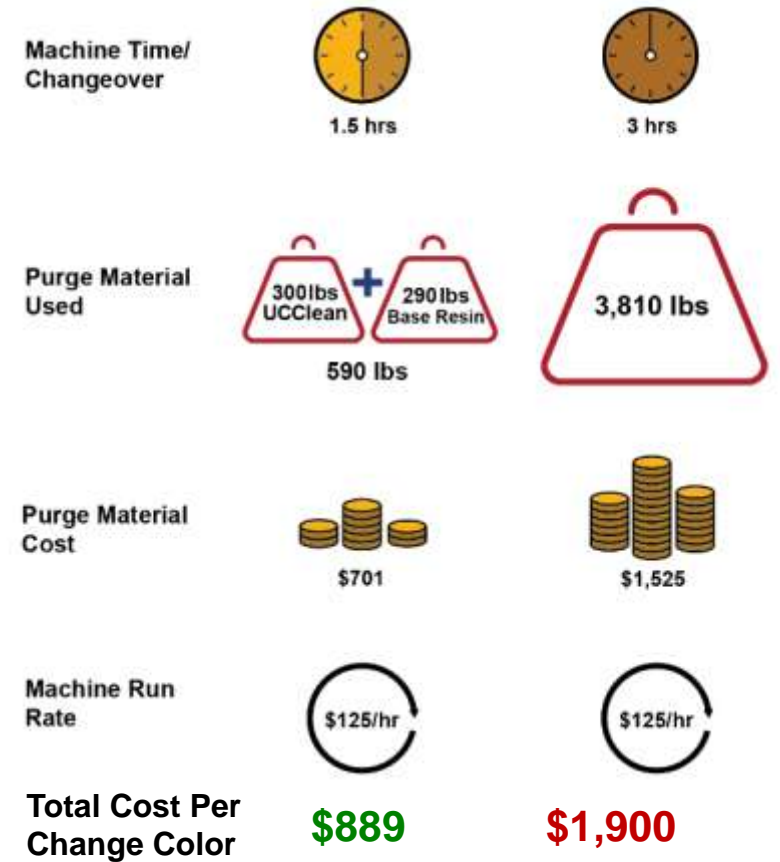
Color Change

Red to White

Benefit

UCClean[®] G0 produced zero waste material for this application by being re-ground and re-used in the feed stream

UCClean[®] G0 vs. Competitor



UCClean[®] CL Case Study

Application

PET Preforms

Process

Injection Molding

16 Cavity Hot Runner

Color Change

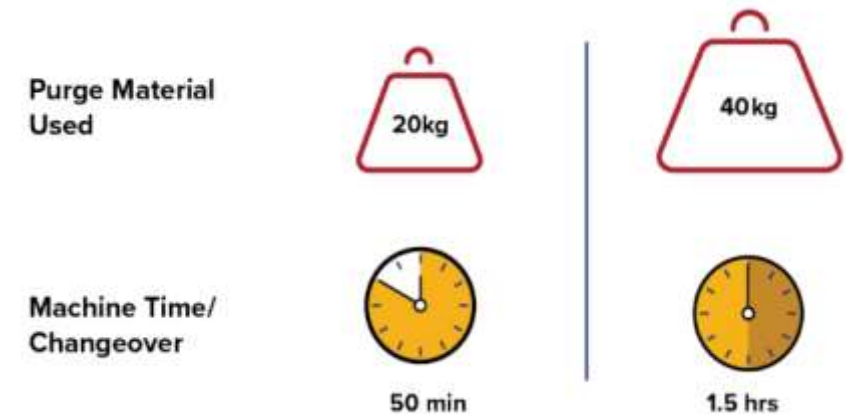
Red to Transparent

Benefit

UCClean[®] CL produced a **haze-free** preform on the 4th injection cycle



UCClean[®] CL vs. Competitor



Material Savings: **50 %**

Time Savings: **44 %**

UCClean[®] HMS Case Study

Application

Heavy Sheet Extrusion

Color Change

Black to Orange

Product

UCClean[®] HMS











Superior Cleaning
Performance

UCClean[®] HMS produced zero waste material for this application by being re-ground and re-used in the feed stream



Reduce Waste
Stream & Energy
Usage

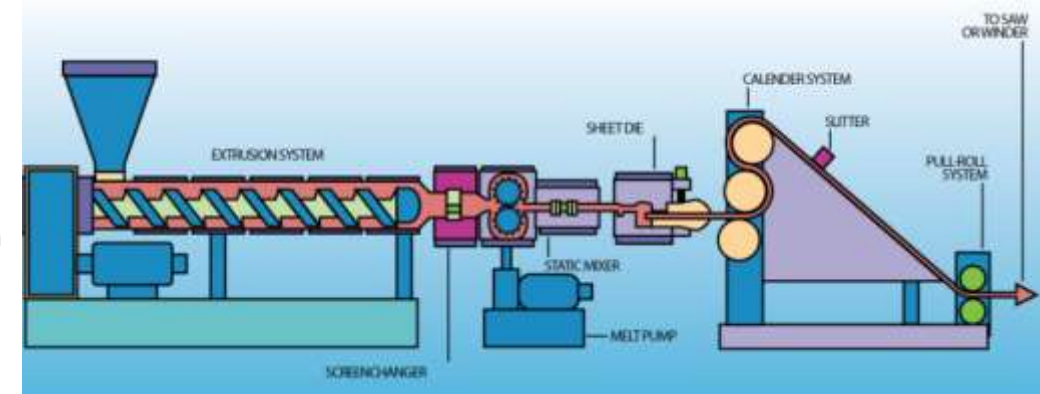
UCClean[®] HMS vs. Competitor

Machine Time/ Changeover	 20 min	 120 min
Purge Material Used	 141 lbs UCClean + 209 lbs Virgin 350 lbs	 2299 lbs
Purge Material Cost	 \$445	 \$1,237
Machine Run Rate	 \$147/hr	 \$147/hr
Total Cost Per Color Change	\$494	\$1,531

UCClean[®] HMS Trial Recommendations

UCClean[®] Dosing and Extruder Preparation:

- A. Dosing Guidelines for best overall performance:
- If thin sheet or stable sheet is not required = 100% UCClean[®]
 - If heavy sheet and stable sheet is required = start w. 60% UCClean[®] + 40% base resin
- B. Check screen pack mesh size: remove screen pack if ≥ 30 mesh



If process requires the spend purge sheet to pass through Calendar System then:

- C. Reduce gap between die head and roller as much as possible to minimize risk of sagging
- D. Reduce speed of Calendar System (Roller System). Work with plant technical staff to determine the right speed reduction.
- E. High likelihood that sheet sags in this location. Monitor this area closely.
- If sheet begins to sag then speed up the top roller to try to tighten the sheet. Collaborate with plant technical.
 - If sheet begins to tear then reduce the speed of the top roller.
- F. Determine if outer edges of sheet are trimmed and how much. The outer edges of the sheet will be the last to come clean so the cleaning time can be reduced if it is not necessary to clean the entire surface area.

Sustainability Solutions

- NIR sortable black
- Cycle time energy savings
- Chromatic PCR color options
- Thin-walling & light weighting
- Decreased degradation of recycled material



NIR Sortable Black Case Study

Problem

Black plastic uses carbon black pigment that interferes with NIR high speed sorting at recycling facilities, sending the majority of black plastic to the landfill

Benefit

UC has developed a “true black” NIR Sortable black technology that recycles as seamlessly as natural resin at 98-100% sortable. Major OEM feedback has rated this technology the best color against competitors

Case Study Application

Testing has been successful with full food contact A-H approval, non-metallic, and multiple resins.



World Class Launch Support

Assist OEM or Molder to Promote Harmony

- Resin Selection
- Tooling/Gating
- Graining/Processing

On-Site Tech Support

- New Product Launches
- Tool Relocations
- Production Troubleshooting
- 25+ Years Experience Technical Reps

Color Evaluation Training

- Color Training
- Color Acuity Testing
- Establishment of Color Control Systems

OEM Part Approval

- Submission Assistance & Management
- Excellent OEM Relationships



Technical Service

- 24/7 on-site, full technical support for your processes
- Process optimization
- Press-side PPAP color adjustment
- Color harmony reviews
- Color training
- Color quality control best practices implementation
- OEM Submission Assistance and Document Management
- CFA and purge training



HermanMiller

Steelcase



JOHN DEERE

stryker®



FCA
FIAT CHRYSLER AUTOMOBILES



Unilever

YETI®



Logo and product names are the trademarks or registered trademarks of their respective owners.



UNIFORM COLOR

An **AUDIA**® Company

Thank You