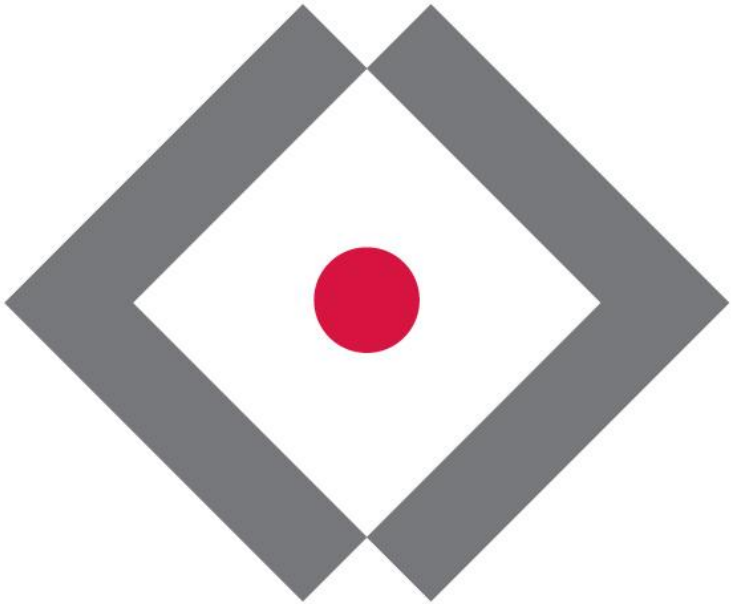

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VISION & PURPOSE

GIVING OUR CUSTOMERS THE OPPORTUNITY TO SUCCEED BY:

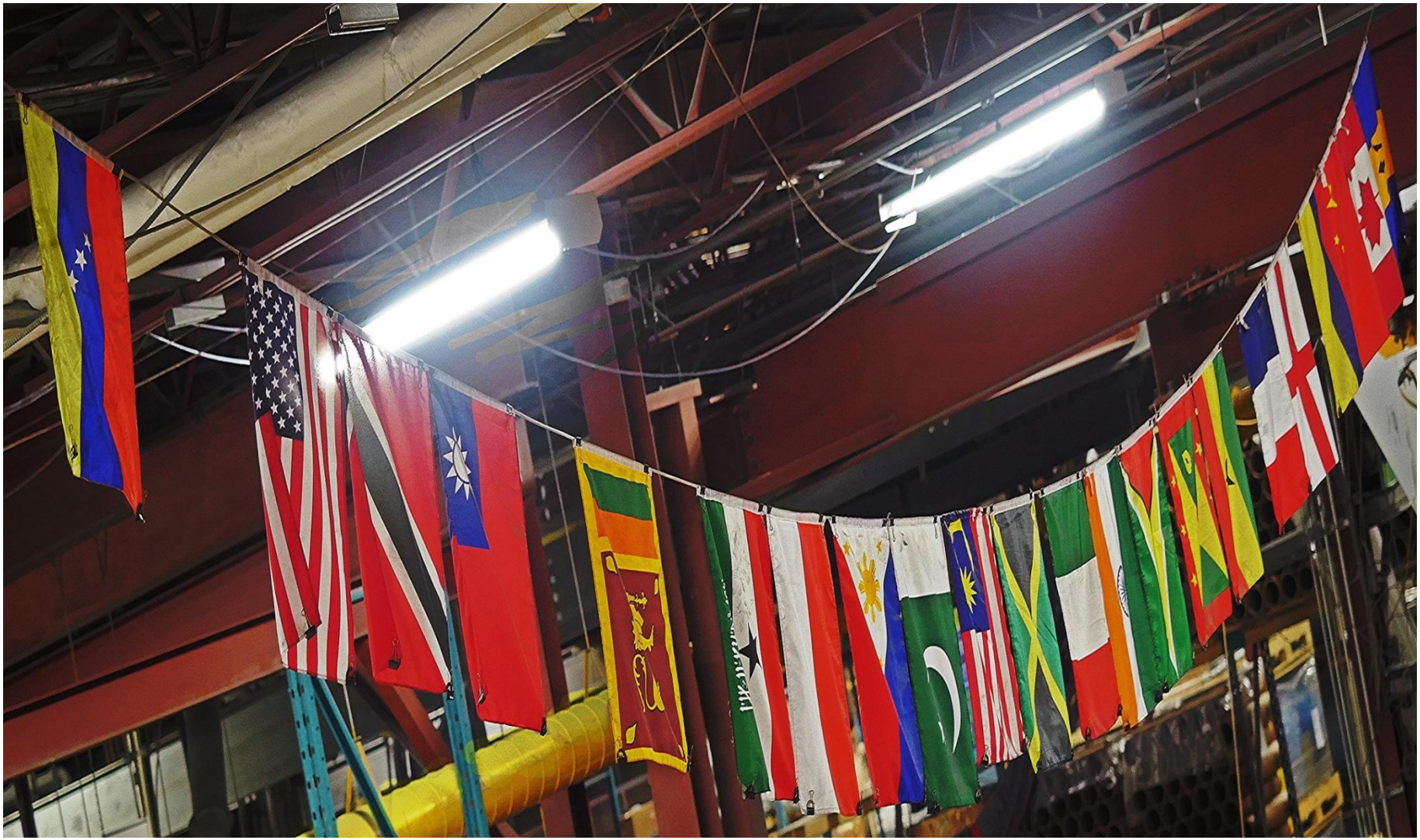
- Nurturing a highly educated self-directed workforce
- Creating value through innovation
- Providing the converting industry's best customer service
- Leading the market with quickest response to changing customer needs

OUR CREDO

We care about people:

- **The Celplast team and its families**
- **Our customers, suppliers and partners**
- **Our industry and our communities**

MANY NATIONS..ONE CULTURE



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INDUSTRY COMMITMENT

- FPA (Flexible Packaging Association)
- AIMCAL (Association for International Metallizers, Coaters and Laminators)
- TAPPI IFPED (International Flexible Packaging & Extrusion Division)
- SPE (Society of Plastics Engineers)
- RIMA (Reflective Insulation Manufacturer Association)
- PAC (The Packaging Association)
- EMC (Excellence in Manufacturing Consortium)
- Institute of Packaging Professionals
- Guelph Food Technology Centre

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DURAMET®

THE NEXT GENERATION OF HIGH BARRIER METALLIZED FILMS

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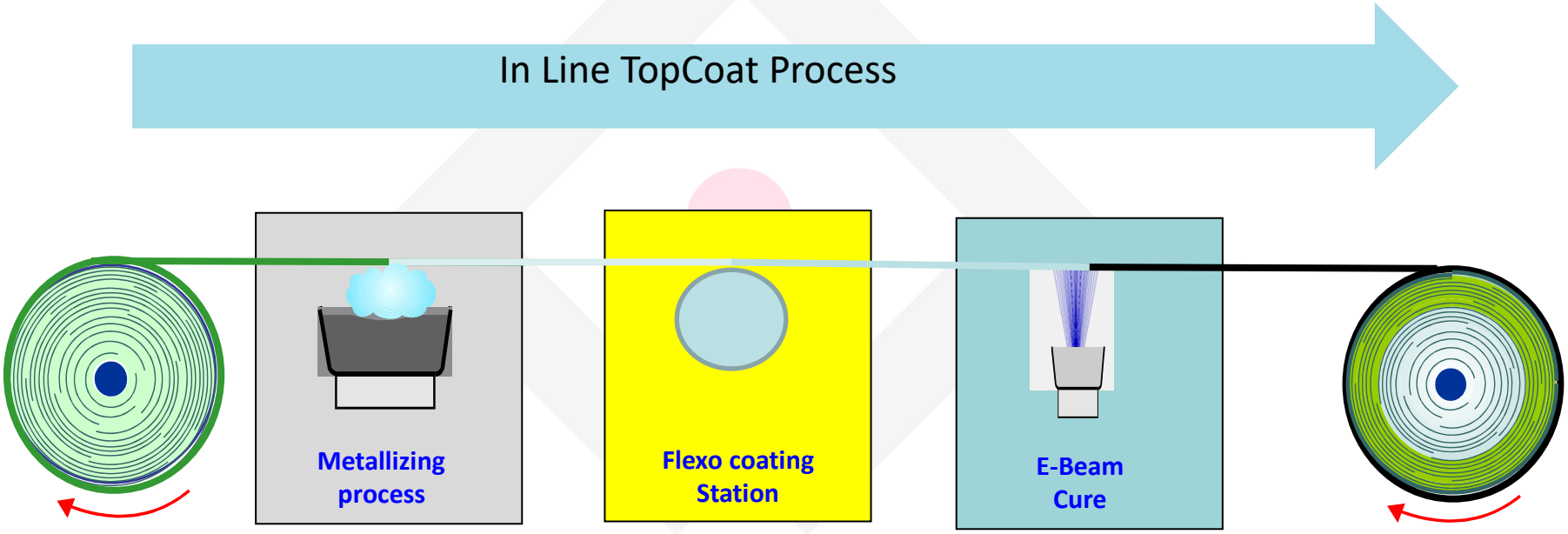
THE IN-LINE METALLIZING & TOP-COATING PROCESS



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COMMERCIAL MACHINE OPERATING IN TORONTO, CANADA

- Annual capacity: 12 million lbs/year
- Coating width: up to 99”
- Coating speed: up to 1200-1500 fpm

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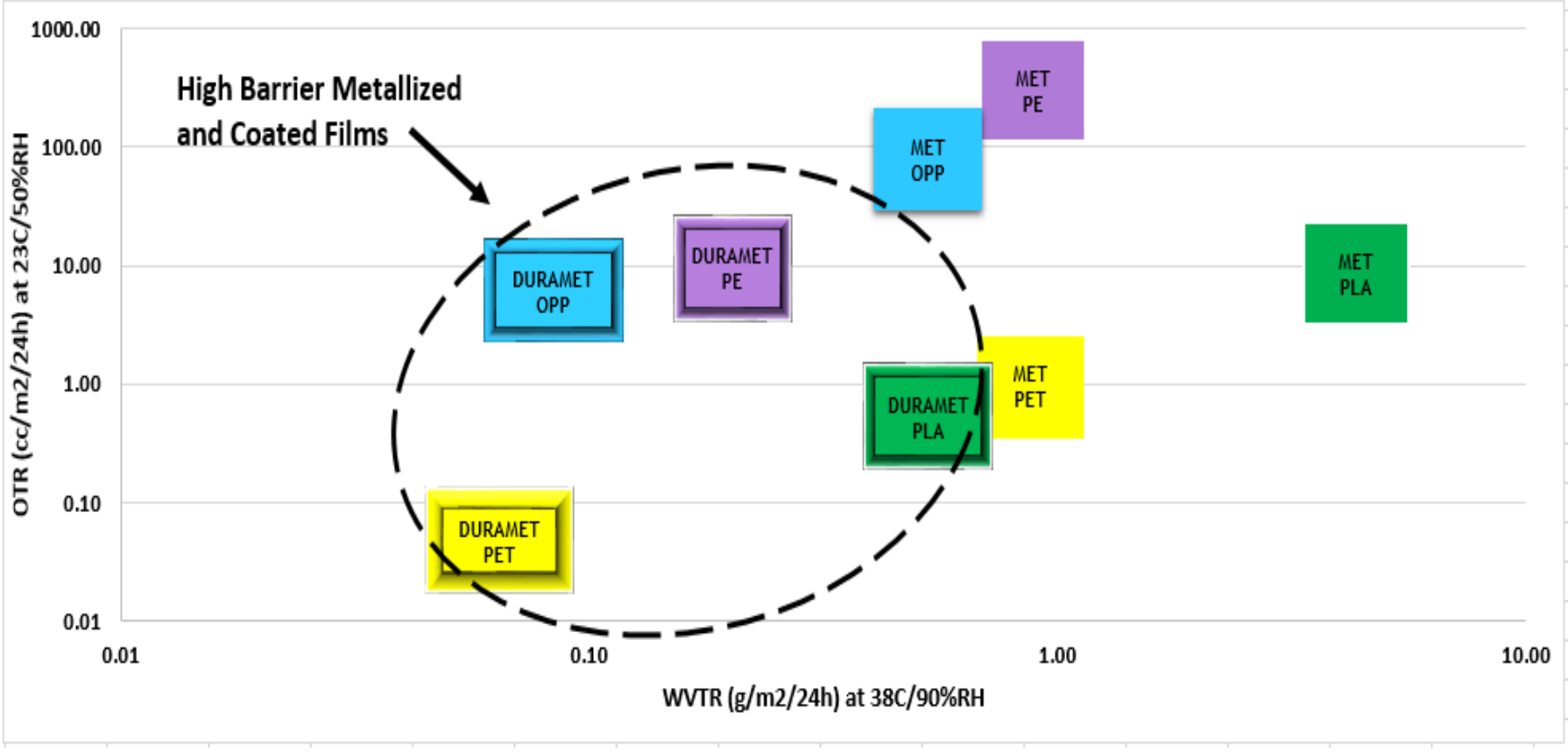
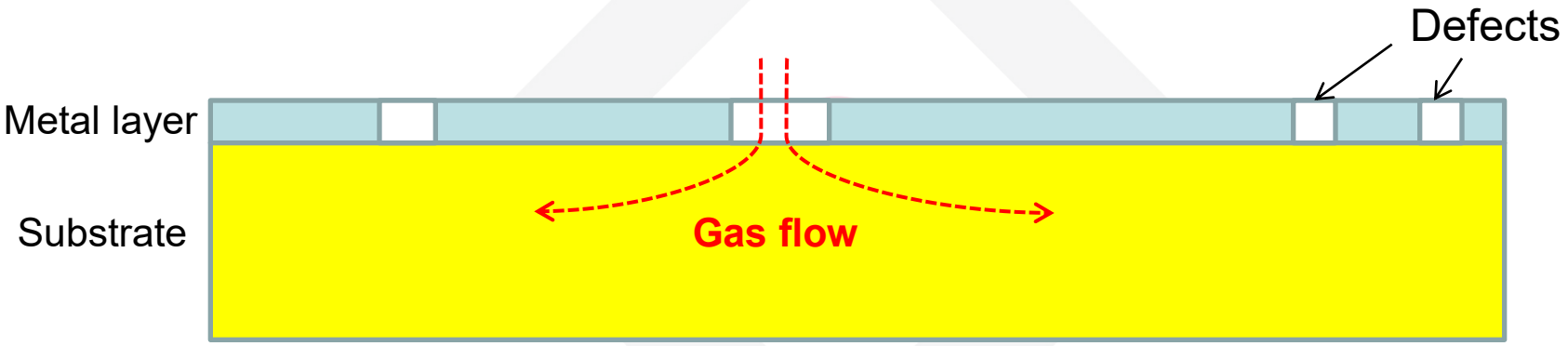
Flat Sheet Barrier Properties

- By applying the top-coating immediately after metallizing, before the metal surface touched another roll, barrier properties can be significantly improved



PINHOLE THEORY

- Gas transmission rate through a metallized film is controlled by the number of defects in the metal layer



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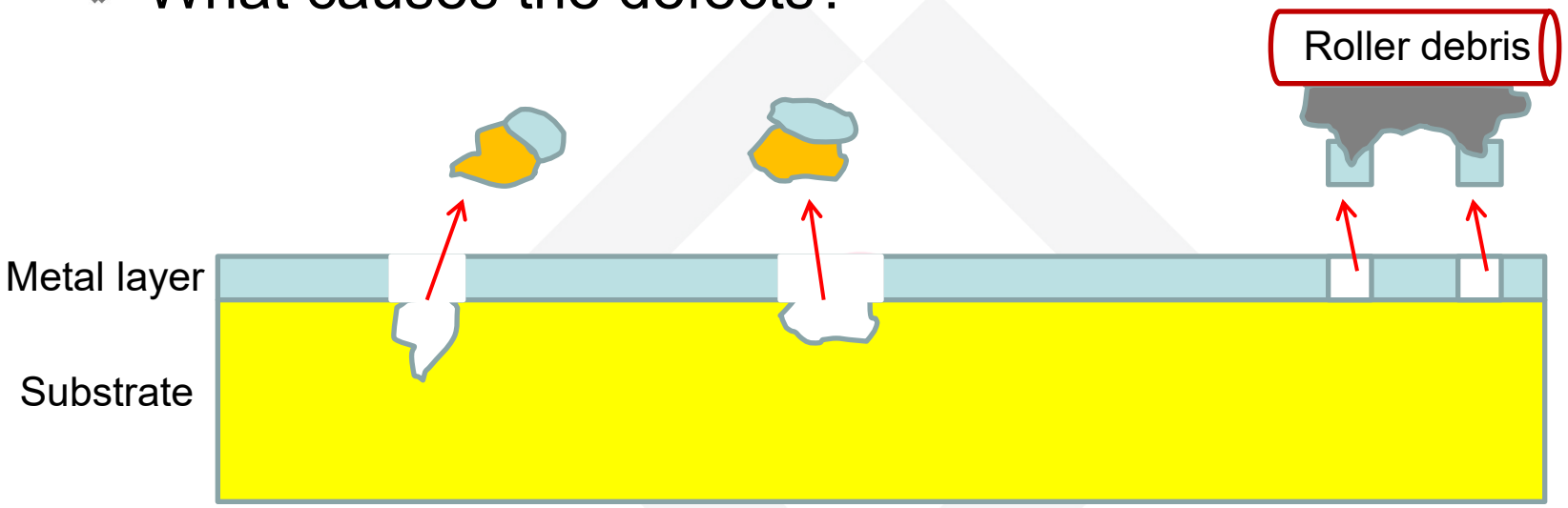
PINHOLE THEORY

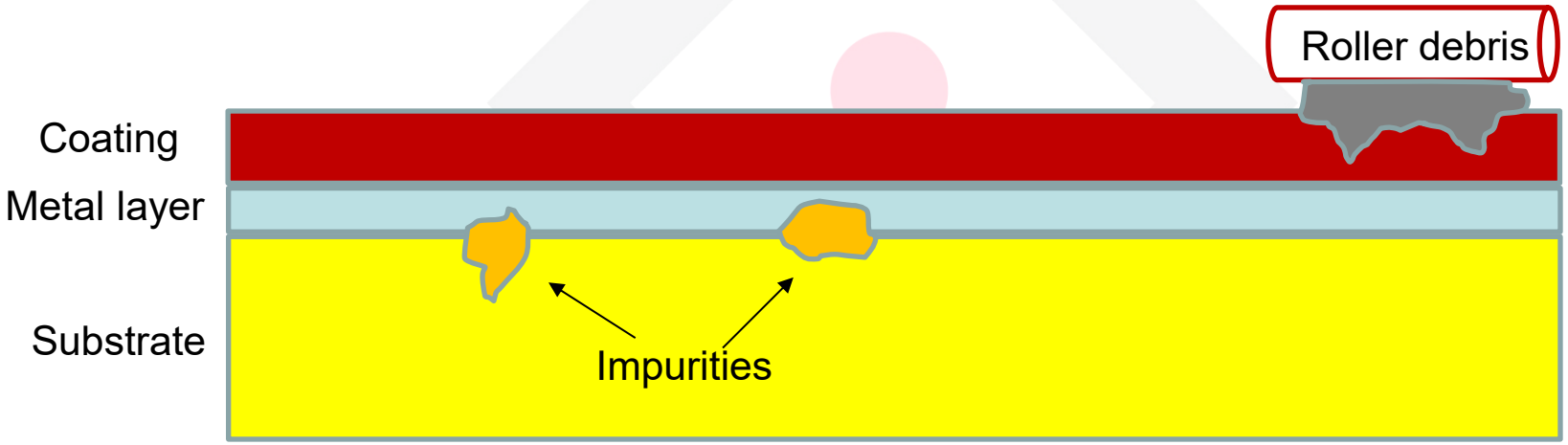
- What causes the defects?



- Scratches in the metal layer from debris on rollers
- Impurities in the surface flaking off
  - Antiblock particles
  - Oligomers & waxes

PINHOLE THEORY

- Gas permeation through a metallized film is caused by defects in the metal area.
- How does a coating prevent the defects?



- Impressions in the coating instead of scratches in the metal layer
- Impurities in the surface are trapped

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AlOx Coating

- Oxygen is injected into the evaporated aluminum stream, creating a clear AlOx coating.
- Available on recycle-ready PE.

	AlOx MDO PE	AlOx PET	AlOx BOPP
WVTR (g/100in²/ 24 hr)	< 0.2	0.05	0.14
OTR (cc/100in² /24 hr)	< 0.02	0.05	0.025

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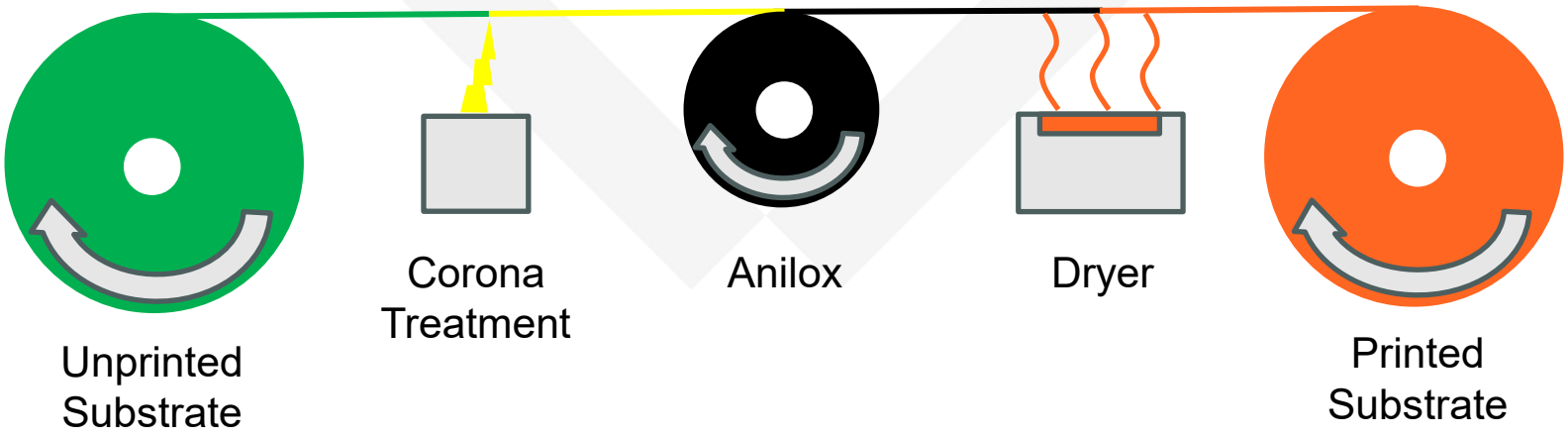
Flexographic Printing

- 61” maximum print width
- 62” roll width
- 30” maximum outer roll diameter
- One-colour printing



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Sustainable Film Development

- **DURAMET® PLA:** high barrier metallized bi-axially oriented PLA film with protective topcoat, made from renewable resources.
- **DURAMET® Prime PHA:** high barrier primed and metallized PHA with protective topcoat, for home and industrially compostable application.
- **FOILMET® O2 RR MDO PE:** metallized on one side and treated on the other for excellent barrier, designed for store drop-off recyclability.
- **DURAMET® Sealant RR PE:** excellent oxygen and moisture barrier with low SIT and excellent Heat Seal strength.

	DURAMET® PLA	DURAMET® Prime PHA	DURAMET® Sealant RR PE	FOILMET® O2 RR MDO PE
WVTR ($g/100in^2/24$ hr)	0.06	0.085	0.04	0.01
OTR ($cc/100in^2/24$ hr)	0.26	0.013	0.05	0.01

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Sustainability 2024

A look at the sustainable initiatives at Celplast and in the flexible packaging market

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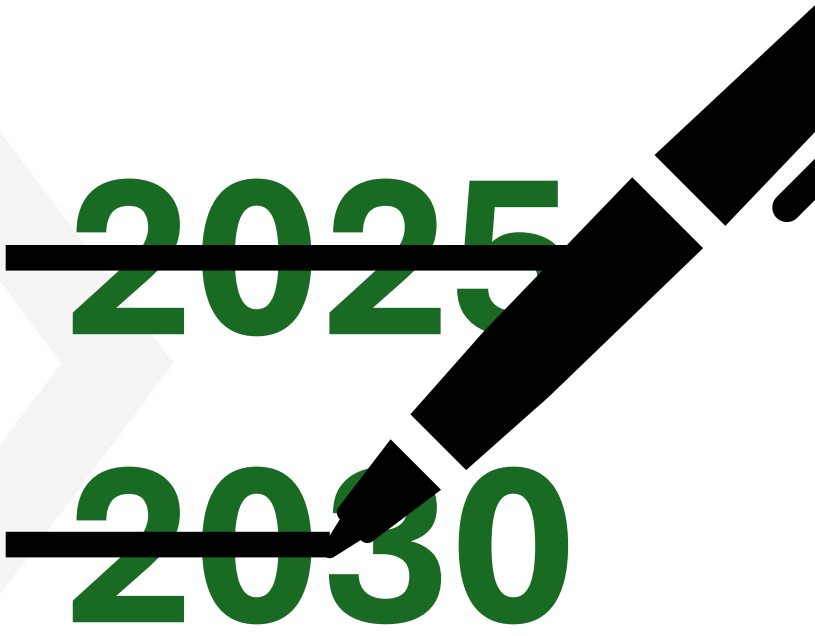
Sustainability Goals

- In 2019, many brands and producers signed onto the Ellen MacArthur Foundation commitment to achieve a circular economy by 2025. However, most did not have a plan or a budget to get there at the time of signing.
- R&D teams have begun to realize that not all packages can be made of sustainable materials for performance and financial reasons, especially in niche applications. A 95% sustainable products portfolio could be attainable soon, but not 100%.
- Many brands are quietly moving their sustainability goals back to 2030 or 2035.



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Sustainability Goals

Brand Owner	Sustainability Goals	Progress
PepsiCo	- 100% of it's packaging to be recoverable or recyclable by 2025. - Cut virgin plastic per serving by 50% by 2030, using 50% recycled content in its plastic packaging	- Increased PCR plastic usage. - Increased virgin plastic usage - Limited by availability and cost of PCR plastic.
Kraft Heinz	100% of packaging to be reusable, recyclable, or compostable by 2025.	87% of their packaging was recyclable, reusable, or compostable in 2022.
Mars	100% of packaging is recyclable by 2025.	Achieved 61% in 2023. Not on track to reach their goal by 2025.
Nestle	100% of packaging to be recyclable or reusable by 2025.	86.8% recyclable or reusable in 2023. 80% of plastic packaging "designed for recycling."
Mondelez	98+% "designed to be recyclable" by 2025	96% "designed to be recyclable" as of 2023

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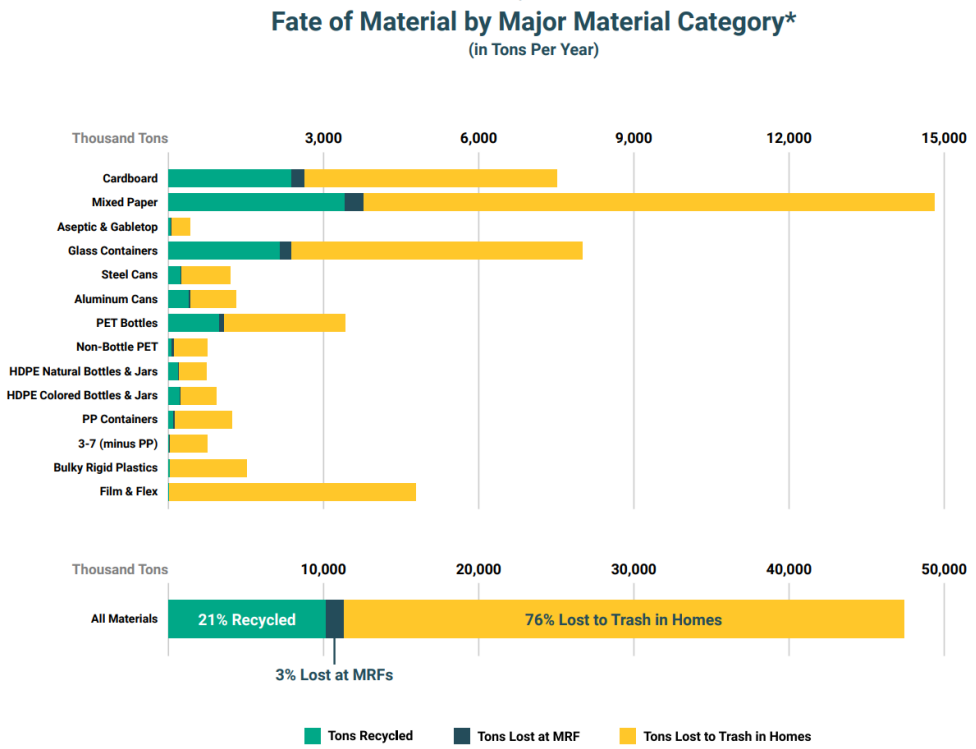
The State of Recycling

- 92.3% of US-sourced plastic acquired by North American reclaimers in 2021 was recycled.
- Recycling infrastructure is improving but recycling rates have a long way to go.
- There is enormous potential feedstock of recyclable materials that never make it to a MRF.
- The recycling rate for flexibles is <1%. Advanced recycling is on the rise and will make flexibles more easily recyclable.



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Extended Producer Responsibility

- State legislators are quickly coming around to EPR program implementation, shifting the burden and cost of recycling from municipalities to producers of plastic products
- Producers are not properly prepared, so they are forming powerful alliances. They are lobbying state and provincial governments to make EPR programs less demanding and more consistent across regions.
- Not all EPR programs are created equal. The FPA emphasizes investment in recycling infrastructure, advanced recycling, and avoiding plastics bans.

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Extended Producer Responsibility

- A producer responsibility organization (PRO) is the entity designated by producers to act on their behalf to administer an extended producer responsibility.
- There is mounting concern from brand owners that having different rules in each state will make it impossible to comply with the any one state's EPR program
- Brand owners have teamed up to create powerful PROs to generate influence over future EPR schemes: Circular Action Alliance in the US and Circular Materials in Canada

Circular Action Alliance™

circular™ materials

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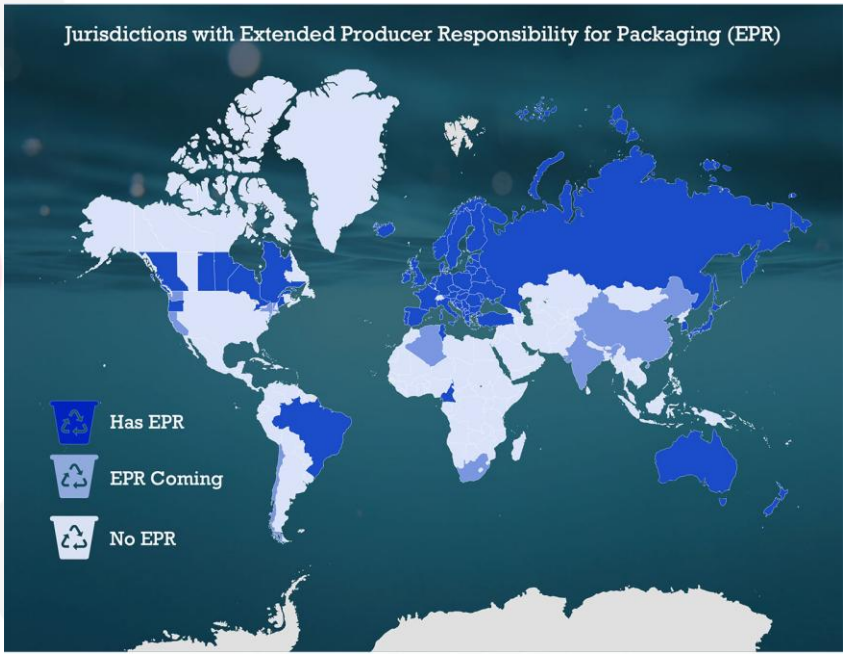
Extended Producer Responsibility

- 5 US states with EPR laws for packaging: California, Oregon, Colorado, Minnesota, and Maine.
- 5 Canadian provinces: Quebec, Ontario, Manitoba, Saskatchewan, British Columbia
- International: virtually all of Europe, Brazil, Russia, Australia and potentially coming to China.
- As California's SB54 law comes into form, other states are watching closely to see how it will set the tone for the rest of the country. The CAA is challenging California legislators to provide fairness and clarity.



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EPR News

Minnesota

Governor Tim Walz signed Packaging Waste and Cost Reduction Act into law in May. He is now running for Vice President under Kamala Harris.

New York

EPR legislation failed to pass in June. Lacked producer involvement, needs assessment language, focus on infrastructure, and compromises.

Ontario

Phased EPR transition is fully underway, to be completed at the beginning of 2026.

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Responsible End Markets

- REMs are a materials market in which the recycling of materials is conducted in a way that benefits the environment and minimizes risks to public health and worker health and safety.
- The end market should be either the producers of the recyclate (e.g., a plastics reclaimer making plastic pellets) or the users of the recyclate (e.g., a toy manufacturer making PCR plastic toys).
- PROs have an obligation to ensure that, ‘to the extent practicable,’ recycled materials go to an REM. A PRO may be forced to financially support or take over an REM to make it viable.

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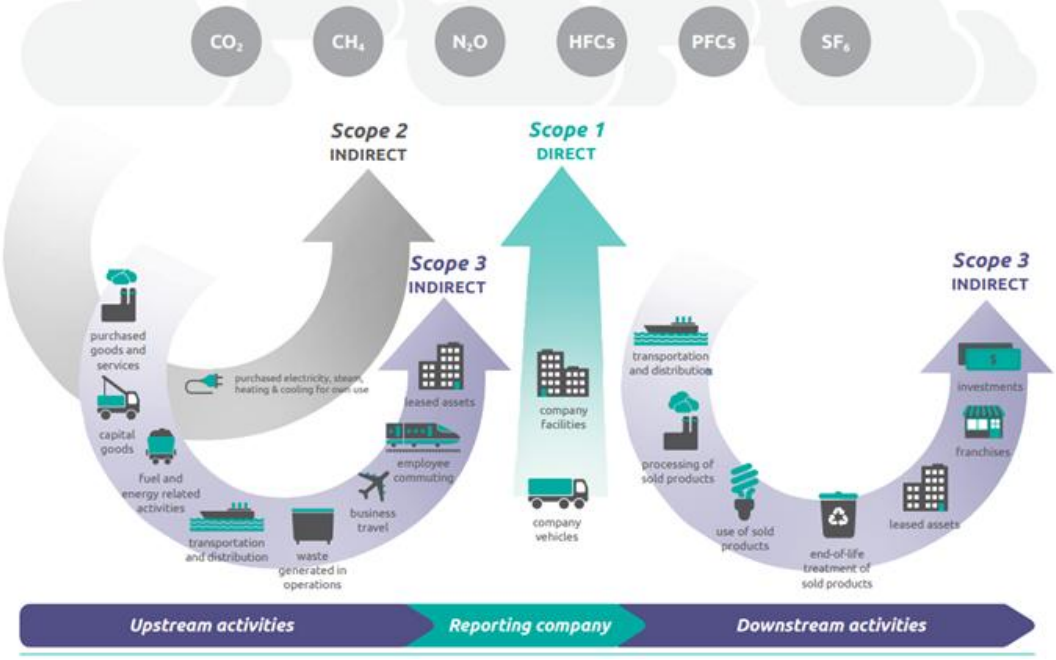
Greenhouse Gas Protocol

- Internationally accepted GHG accounting standards.
- The concept of “scope” differentiates direct and indirect emissions and prevents double-counting emissions.
- Scope 1 represents all of a company’s direct GHG emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.
- Scope 2 encompasses all the indirect emissions from the generation of purchased electricity.



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Scope 3 Emissions

- Scope 3 covers all other indirect emissions from up and down the value chain, including extraction and production of purchased materials, transport-related activities, leased assets, use of sold products and services, waste disposal, and electricity generation associated with all such activities.
- Scope 3 accounting is optional but encompasses most of a company's emissions in many cases.
- It is up to each company to establish the boundaries of their Scope 3 accounting, as they are not responsible for all the emissions from their value chain.
- There are three approaches when consolidating emissions from across the value chain: equity share, financial control, and operational control of an external operation.

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Greenhouse Gas Protocol

- Brand owners expect suppliers to be aware of these standards and have a plan to meet them. They are digging into their supply chains to get a sense of their Scope 3 emissions.
- Product development teams are turning to LCA models to guide their sustainable initiatives.
- Brands are joining sustainability coalitions to share information.

FFRA
FLEXIBLE FILM RECYCLING ALLIANCE

The Recycling Partnership
Solving for Circularity

PATHWAY to CIRCULARITY
FILM & FLEXIBLE COALITION
AN INITIATIVE OF THE RECYCLING PARTNERSHIP

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LCA

- The resources consumed and byproducts emitted during the production, use, and disposal of a product can all affect the natural environment, human health, and resource availability in various ways.
- All this consumption and emission is quantified and compiled in a life cycle inventory, which is what an LCA model uses to calculate the product's impact on the environment in specific categories. Each impact category is standardized to a common unit (e.g., CO2-eq).
- Popular impact categories include global warming potential, human toxicity, water use, and more

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LCA-Driven Decision Making

- The LCA pillars for brand owners include specific impact categories, likely determined by what they perceive to be important to customers, what they think is attainable, and what they are incentivized to prioritize by legislation.
- Brand owners are using LCA because what one thinks is a green solution doesn't always turn out to be an improvement at all. LCA results are often surprising, and there can be several paths to choose from. They have third party auditors to keep them in check.
- For example, a brand might choose a material with a higher carbon footprint if it is more likely to be recycled and if there is a path to lower that footprint.

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Carbon Credits

- Carbon credits are a limited supply of permits issued by governments or NGOs to businesses that allow them to emit a certain amount of greenhouse gas (e.g., 1 credit = 1 ton CO2-eq).
- Companies that lower their emissions below their credited limit can then sell their extra credits to other companies who need them, creating a negative value for emissions. Over time, the government reduces the number of available credits to reduce the total emissions in their jurisdiction.
- These are related to but different from carbon offsets, which are investments in projects meant to capture GHGs from the atmosphere but have often been found to lack credibility.

Plastic Credits

- Plastic credits are similar, but instead of avoiding emissions or even avoiding plastic production, they incentivize plastic recovery.
- Money generated from purchasing plastic credits goes to informal waste workers who collect plastic waste in third world countries where such work is affordable enough to be funded in this manner.
- Plastic credits are not typically equivalent to or exchangeable with carbon credits

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Compostables

- ~140 million tons of flexible packaging goes to landfill each year.
- The compostable packaging market is expected to grow 6% annually.
- CAVEAT: there are only 1.1 million tons of compostable resin available today, most of which goes to the food services industry. This figure will need to grow commensurately with demand.
- There is no consensus on whether paper or compostable plastic will win out over the other. They are each best suited to different applications

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Compostable Packaging

- The frontrunners to become the norm in compostable packaging base films are PLA, PHA, and paper.
- Any of these substrates are far behind PET, PP, and even PE in terms of supply, engineering, mechanical properties, and barrier. CPGs are investing in the R&D to close this gap.
- Metallization and AlOx coating can greatly improve the barrier of these films. Celplast has invested in new technology to be able to coat any of these compostable substrates to improve metal and AlOx adhesion.
- We have achieved 0.085 g/100in^2/day WVTR and 0.013 cc/100in/day OTR on PHA film.

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AlOx Coating

- Oxygen is injected into the evaporated aluminum stream, creating a clear AlOx coating.
- Available on recycle-ready PE.

	AlOx MDO PE	AlOx PET	AlOx BOPP
WVTR ($g/100in^2/24$ hr)	< 0.2	0.05	0.14
OTR ($cc/100in^2/24$ hr)	< 0.02	0.05	0.025

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PE & PLA Development

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