



# High Gas Barrier Coatings for Polyester Film

Presented by:  
**Ginger Cushing**  
Business Development Manager  
Michelman Inc.



# Abstract

Improved oxygen barrier in a multi-layer flexible food pouch, sachet or bag translates to prolonged product freshness and extended shelf life. This presentation will describe a new aqueous coating which, when applied in line during the polyester (BOPET) film production process, can have a high impact on oxygen transmission rate. Metalizing the coated substrate further improves gas barrier.

# Agenda

- Objective
- Baseline
- Offline results
- Inline
- Metalizing
- About the coating
- Conclusion

# Objective

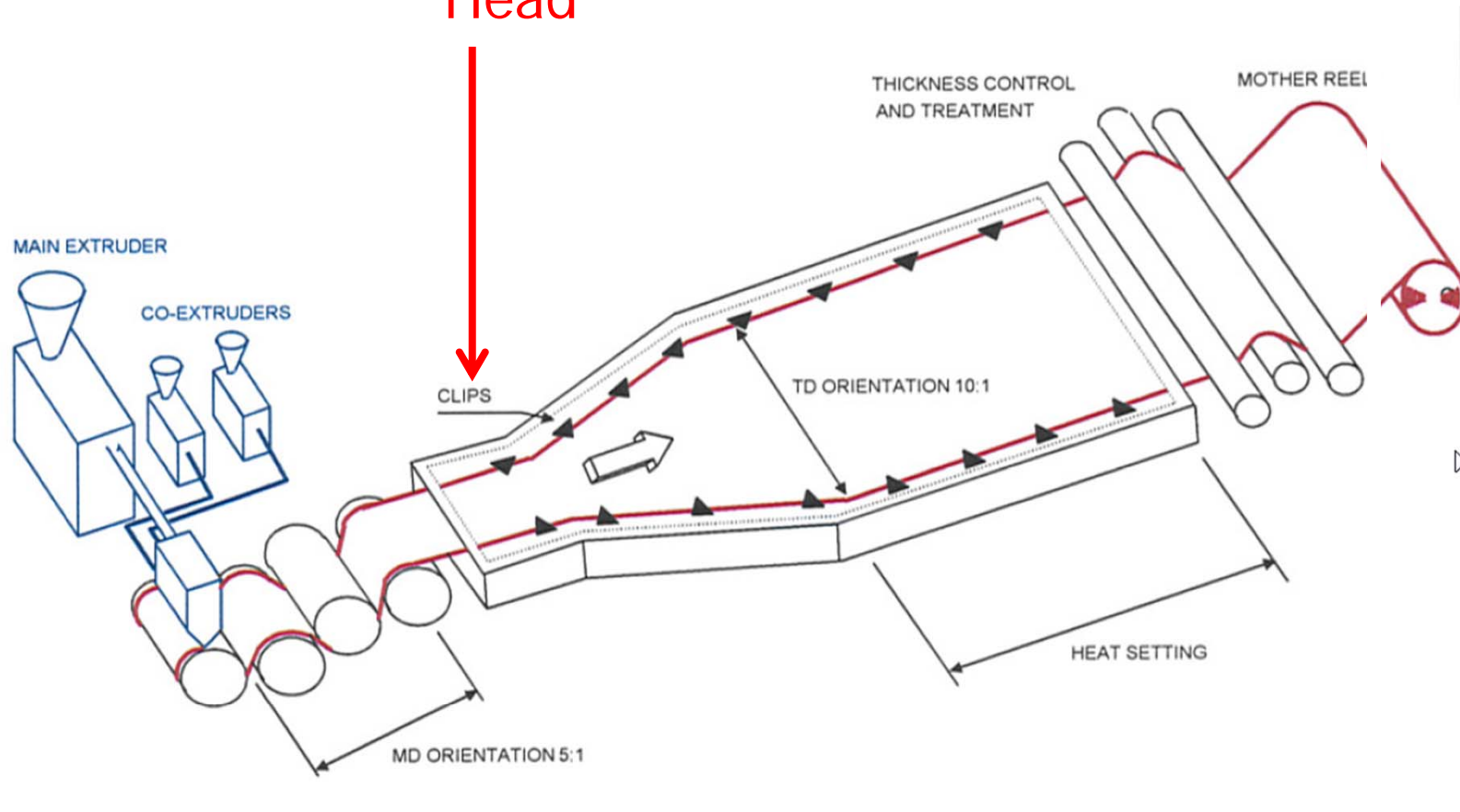
- Reduce oxygen transmission through thin, transparent packaging film to retard oxidative spoilage and prolong product freshness, extend shelf life
- Demonstrate a very thin layer of coating on film can have a high impact on barrier, without adding significant cost or weight to a package structure.

# In Line Barrier Coating Application

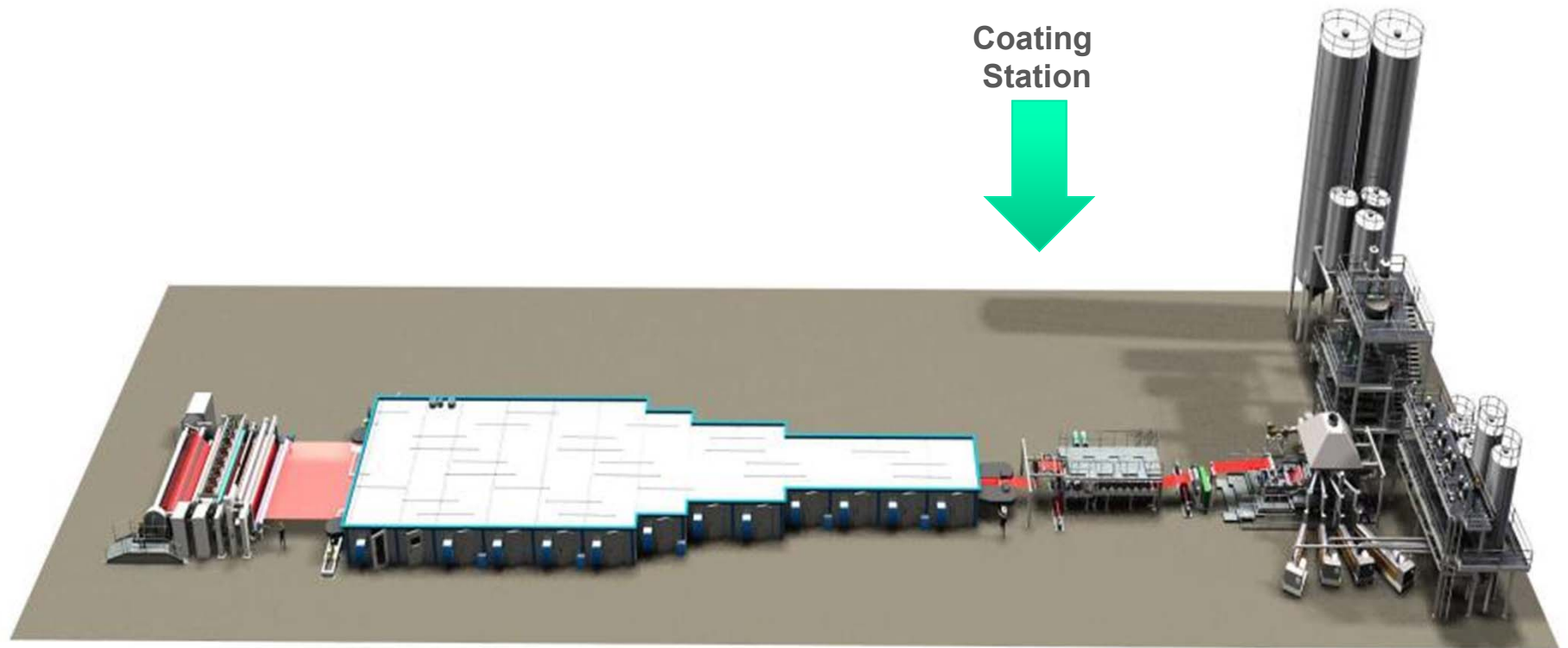
- Used in line in the film production process
- BOPET substrate
  - Substrate selection is critical, smoother is better
- Better properties achieved through the stretching process – e.g. adhesion
- Coat weight range 0.04 – 0.07 dry gsm
- Enhance barrier properties by metalizing on top of the coating

# Bi Axial Orientation Film Schematic

Gravure Coating  
Head

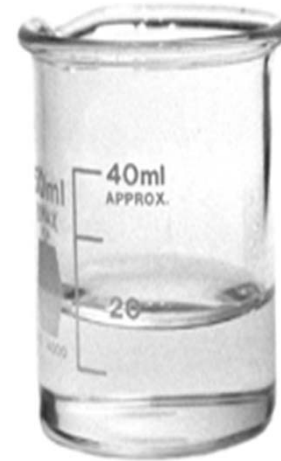


# Bi Axial Orientation Film Process



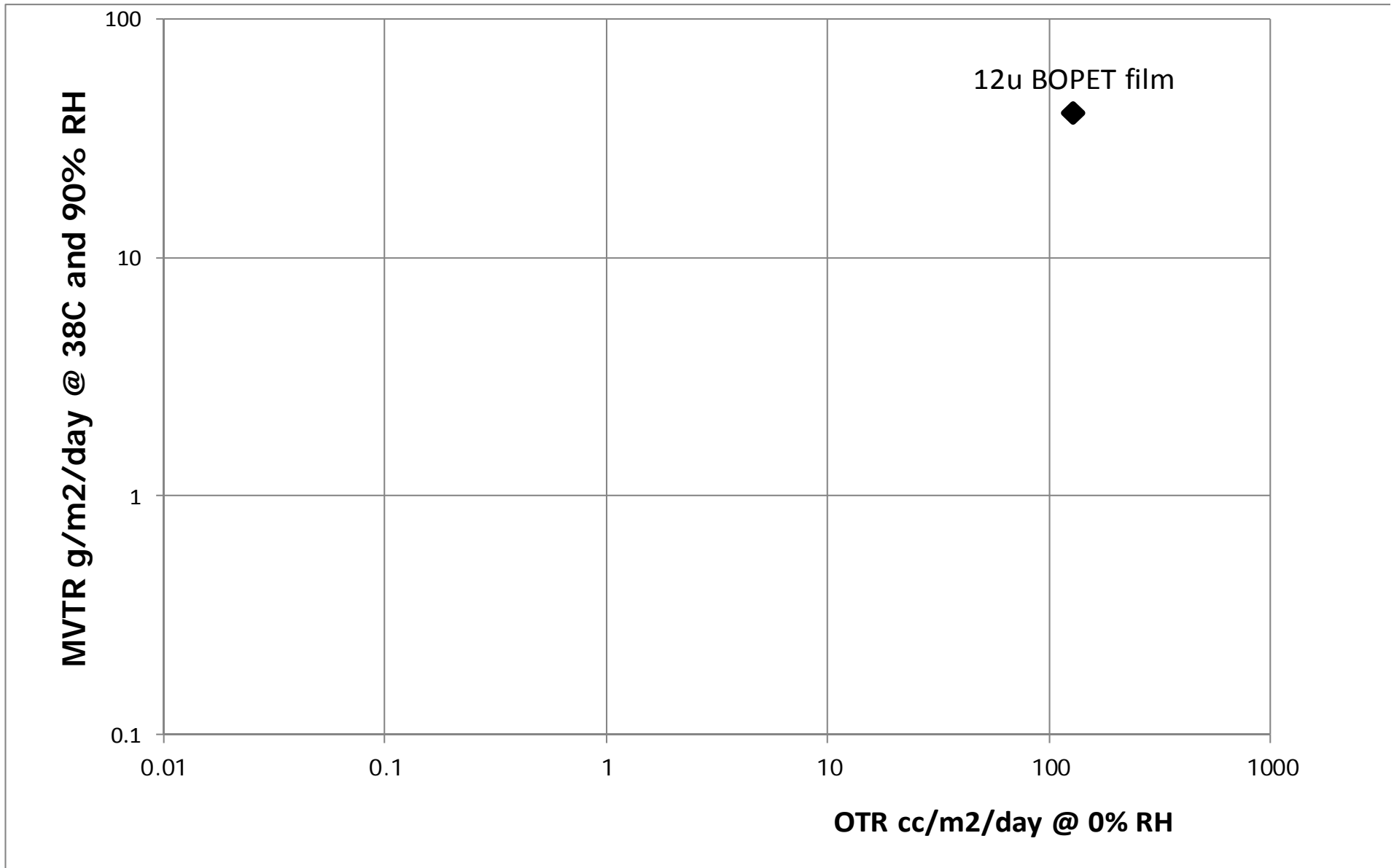
# Barrier Coating Characteristics

- 10% solids in water
- Single component
- Excellent shelf life
- No mineral nano-particulate content
- No chlorine
- Food compliant
- Adhesion
  - To film substrates
  - To vacuum deposited metal, AlOx and SiOx
- Promising water resistance
- Good oxygen barrier versus humidity
- >500 g/in metal adhesion between film and metal

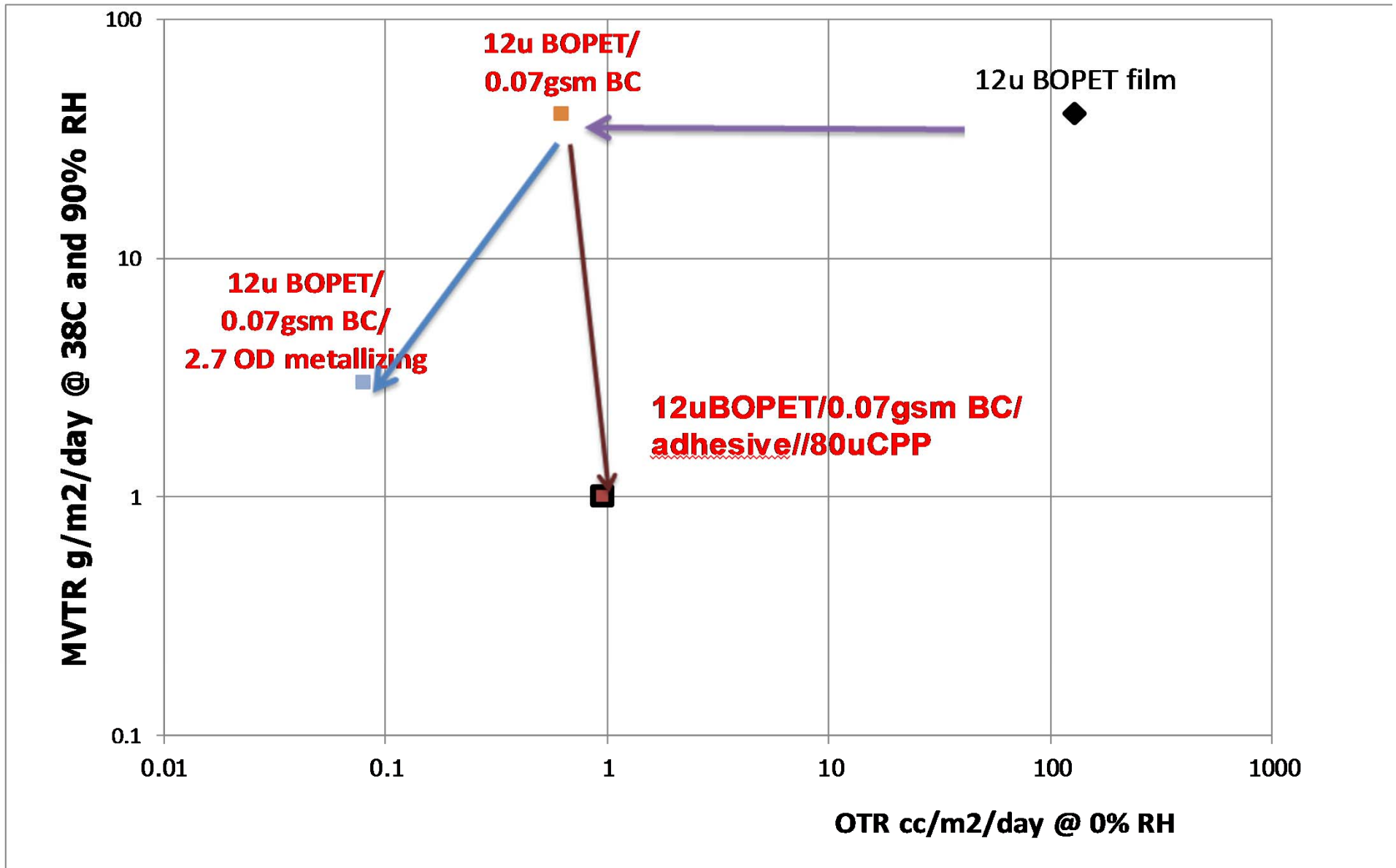




# Benchmark Polyester Film



# Barrier Coating (BC)



# English Translation

- 48 ga BOPET/0.04 ppr BC
  - ❖ OTR @0%RH = 0.04 cc/100in<sup>2</sup>/day
  - ❖ MVTR @ 90% RH = 2.6 g/100in<sup>2</sup>/day
- Above with 2.7 OD metal
  - ❖ OTR @0%RH = 0.005 cc/100in<sup>2</sup>/day
  - ❖ MVTR @ 90% = 0.19 g/100in<sup>2</sup>/day
- Above metalized, laminated to 1.2 mils CPP
  - ❖ OTR @ 0%RH = 0.06 cc/100in<sup>2</sup>/day
  - ❖ MVTR % 90% RH = 0.06 g/100in<sup>2</sup>/day

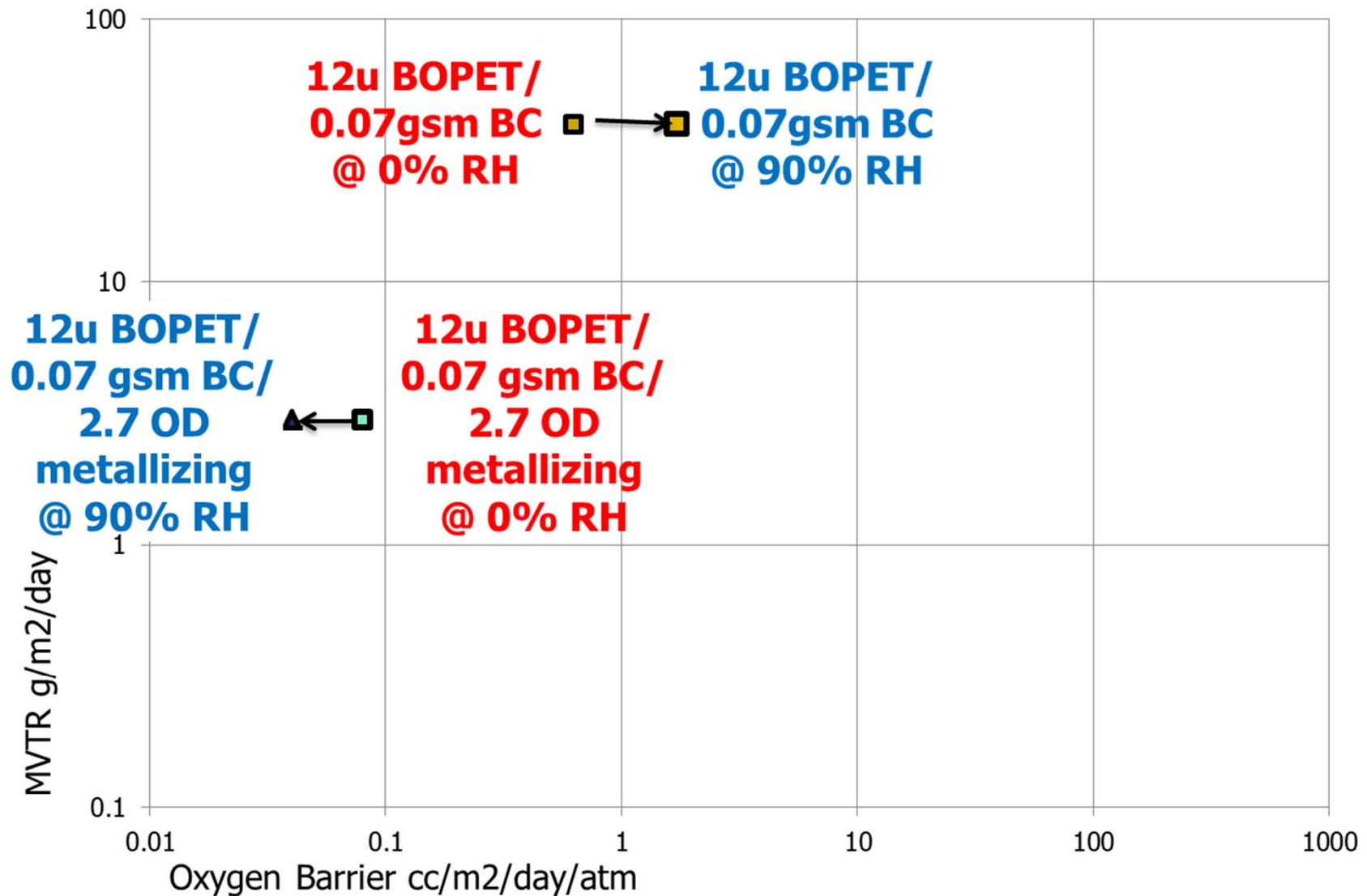


ppr = pound per 3000 ft<sup>2</sup> ream

# Performance at Elevated Humidity



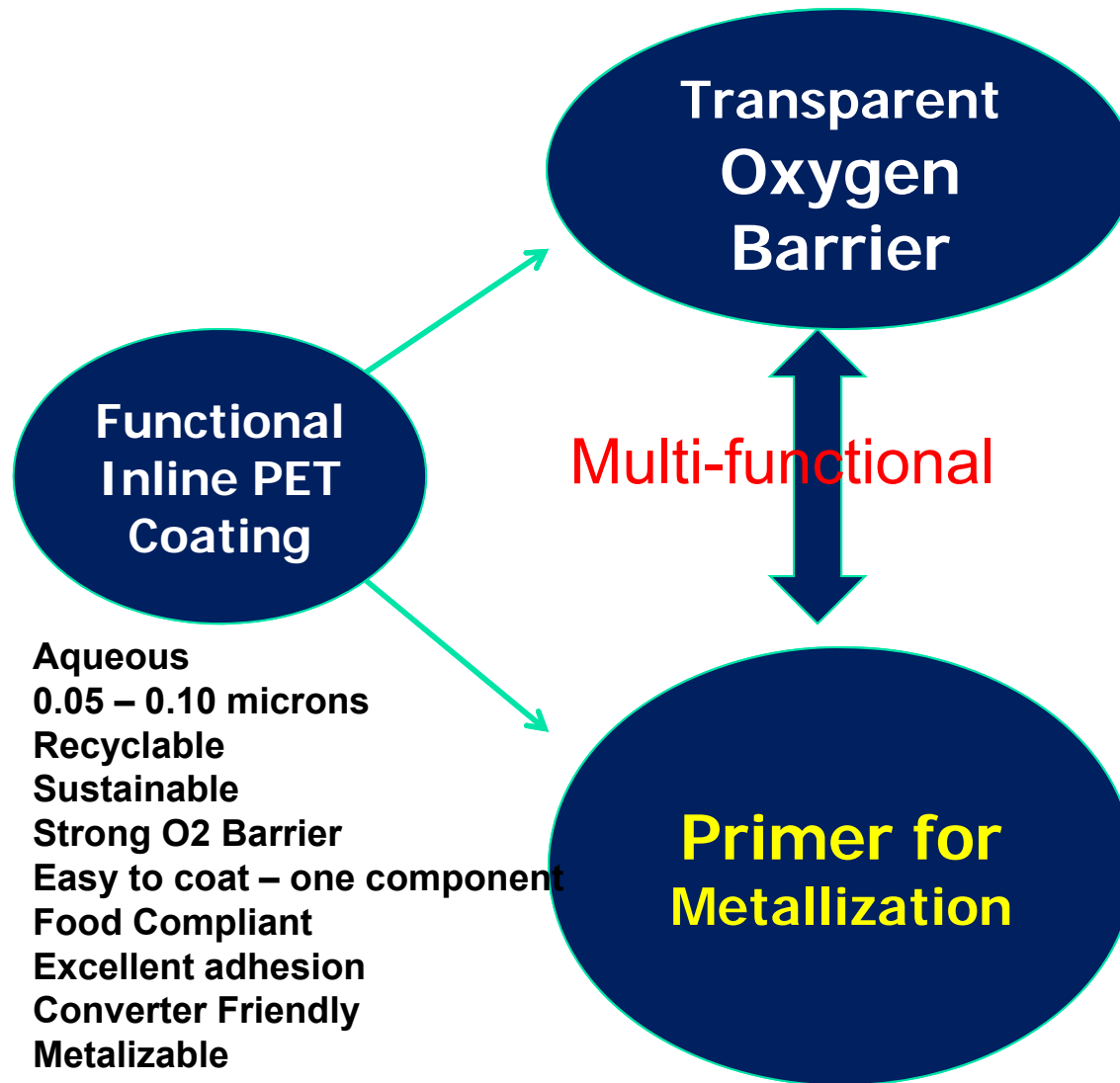
# Barrier Coating (BC) Effect of Humidity



# Fitness for Use

- Print receptivity testing is under way.
- Prototypes under development.
- Adhesive lamination: successful construction made BOPET/BC//CPP with solvent based PU adhesive
- More testing to be done.

# Summary: Coating for BOPET



*New Building Block Structure for higher performance and/or lower cost*

*Can we eliminate lamination?*

*Can we eliminate PVDC?*

*Where are alu foil structures over-engineered?*



# High Gas Barrier Coating for Polyester Film

## Thank you

PRESENTED BY

**Ginger Cushing**

Business Development Manager

Michelman

[GingerCushing@michelman.com](mailto:GingerCushing@michelman.com)

