

**RIO
TINTO**

MINERALS



High Performance Talc for Water-Based Barrier Coatings

Rio Tinto Minerals

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Agenda

- **Barrier Packaging Overview**
- **High Performance Talc for Barrier Coatings**
 - Oil and Grease Resistance (OGR)
 - Moisture Vapor Transmission Resistance (MVTR)
 - Water barrier (30-min Water Cobb)
- **Conclusions**



Market Drivers favor Water-Based Barrier Coatings

- **Increased focus on recyclability**
- **Increased demand for sustainability**
- **Heightened health concerns with PFOA/Fluoro-carbon for OGR papers**

Challenge

- **Lower cost at equal performance**



Cost and Performance Factors of WBB Coatings

- **Barrier polymers - higher costs**
- **Functional Minerals: Talc**
 - **Lowers coating cost**
 - **Enhances barrier performances**



Relevant Properties of Functional Minerals

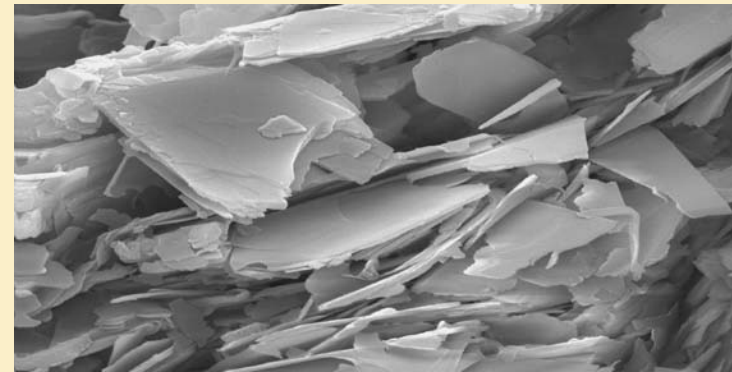
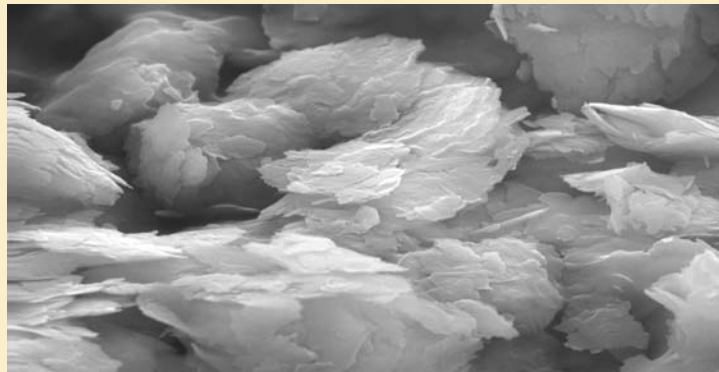
- **Particle size, particle size distribution**
- **Platy-ness**
- **Surface Energy – hydrophobicity**
- **Low Abrasiveness – important to converting**



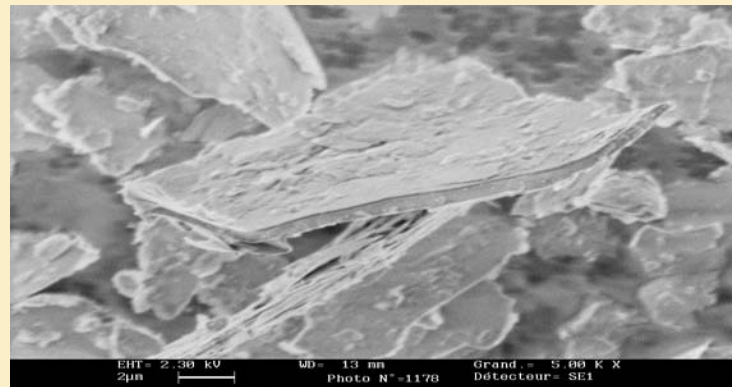
Talc for Barrier Coatings SEM 5000x

Printing Coating Talc

Barrier Coating Talc



High-efficiency MVTR Talc



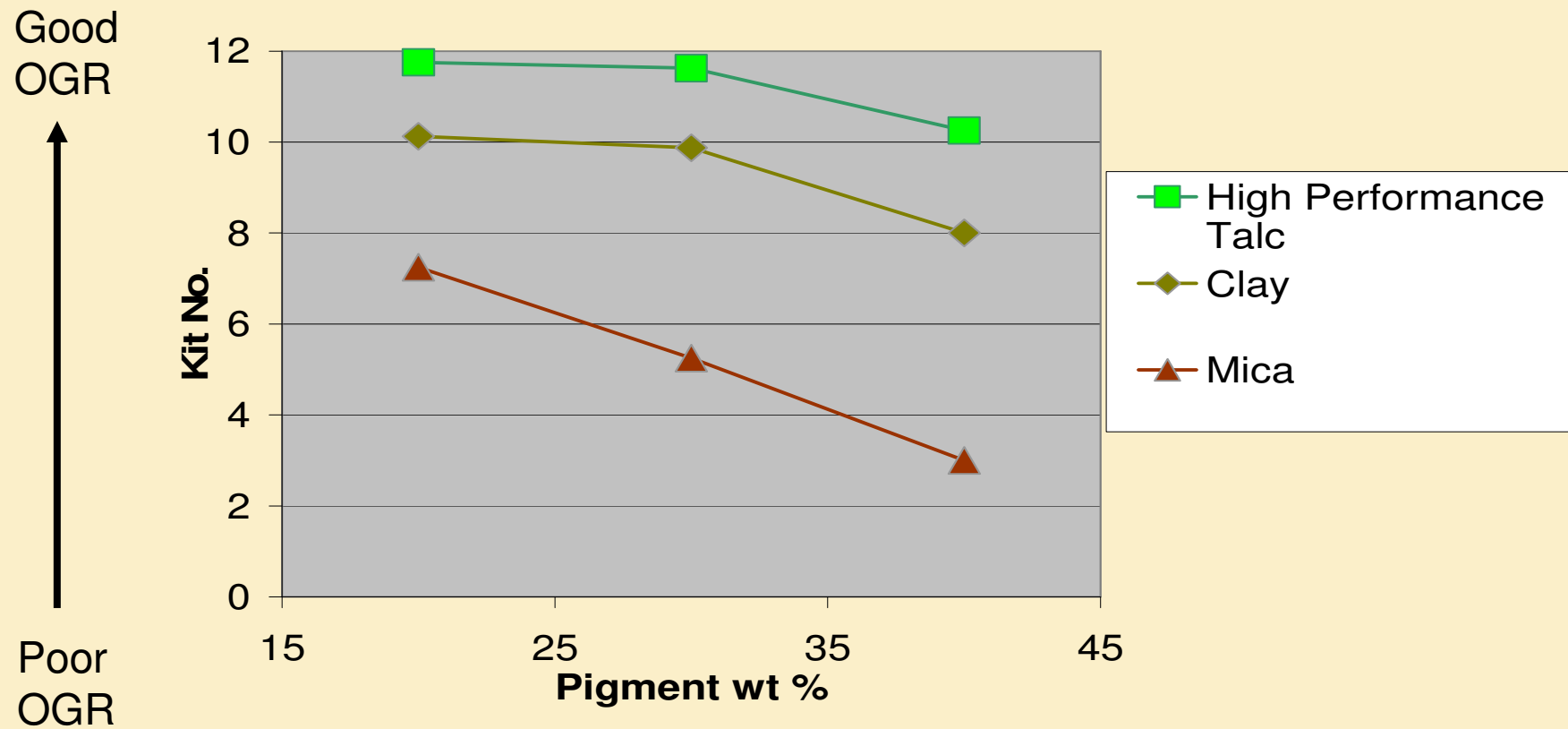


High Performance Talc for WBB Coatings

- **Reduces cost - less binder required**
- **Improves barrier coating performance**
 - Moisture vapor
 - Oil and Grease
 - Water absorption
 - Hold-out of subsequent coating
- **Prevents/Reduces blocking**
- **Compatible with barrier polymers and coating additives**
- **Suitable for common coaters, applicators**

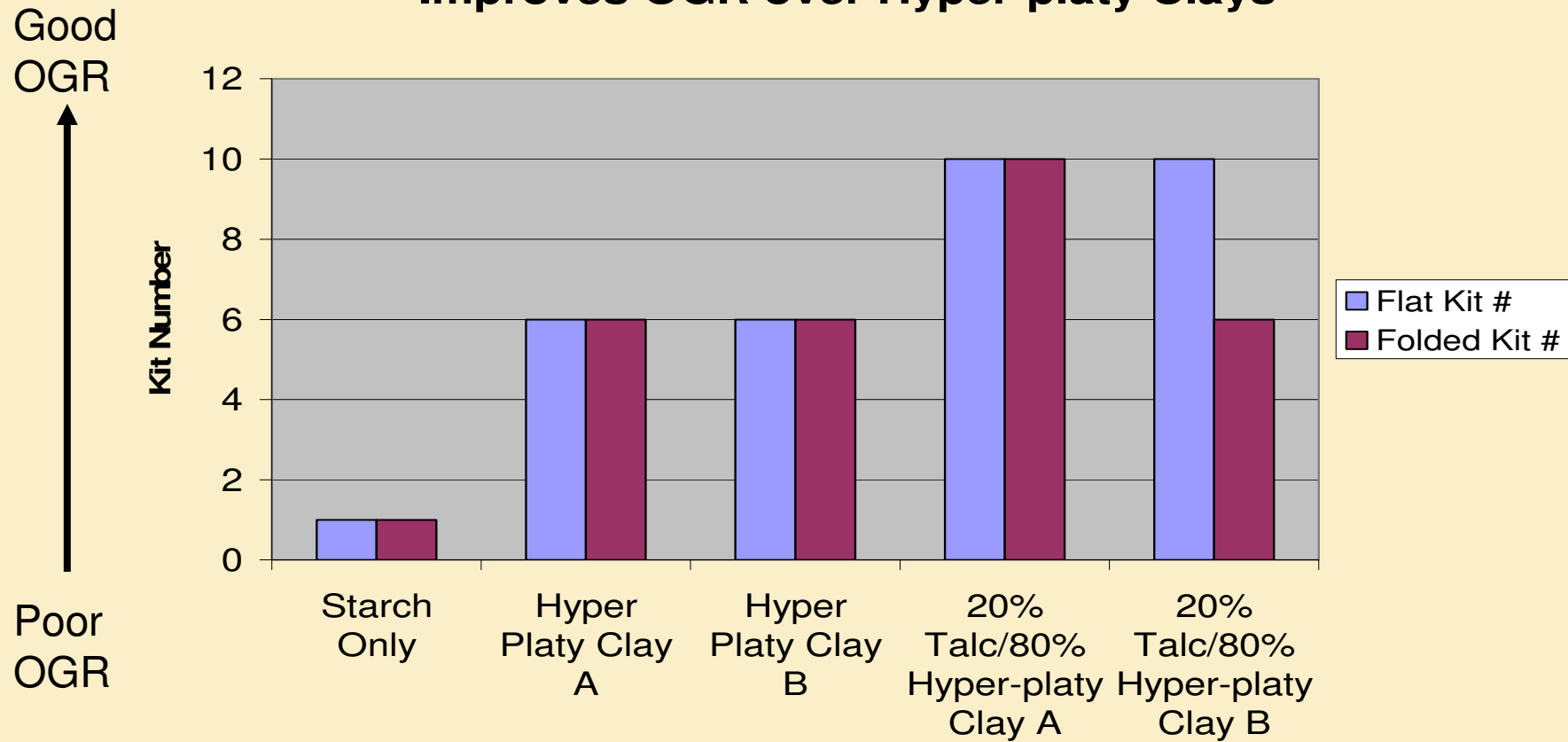


More Effective OGR than Clay and Mica



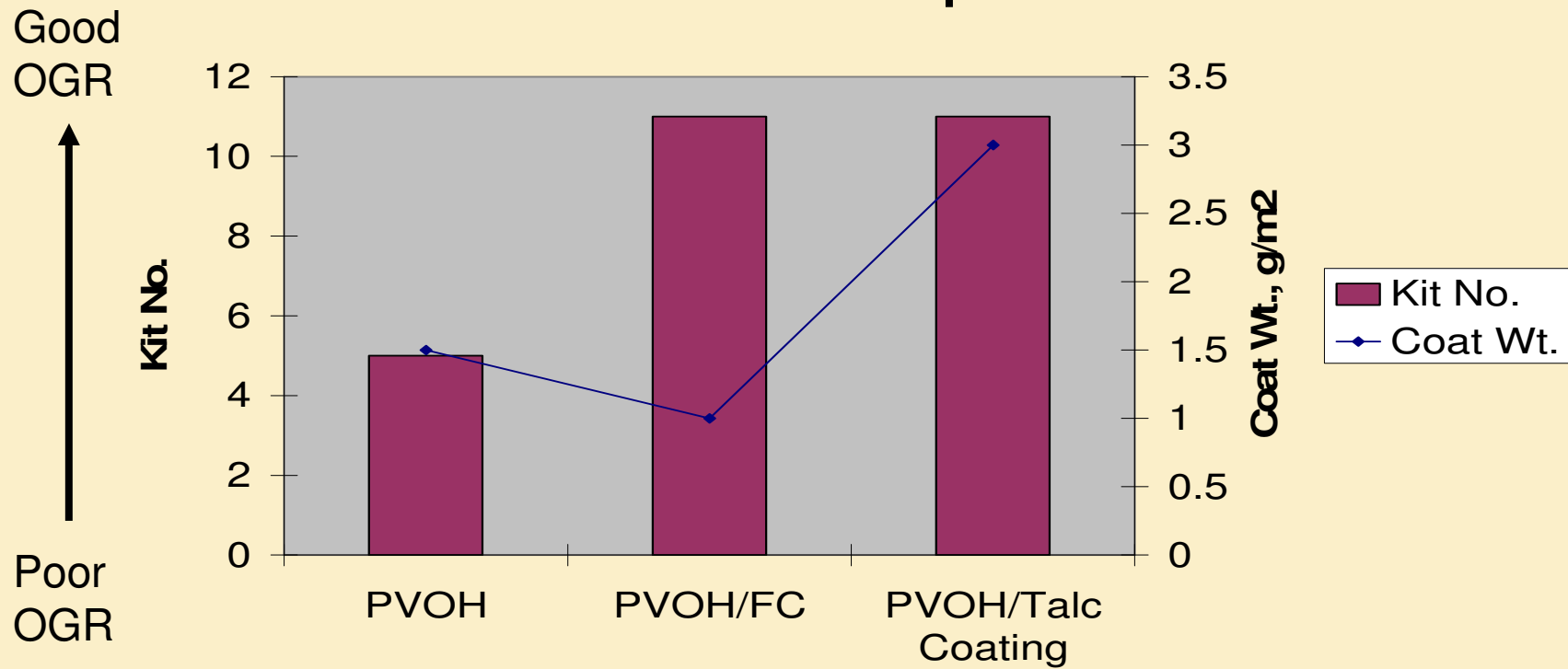


Improves OGR over Hyper-platy Clays





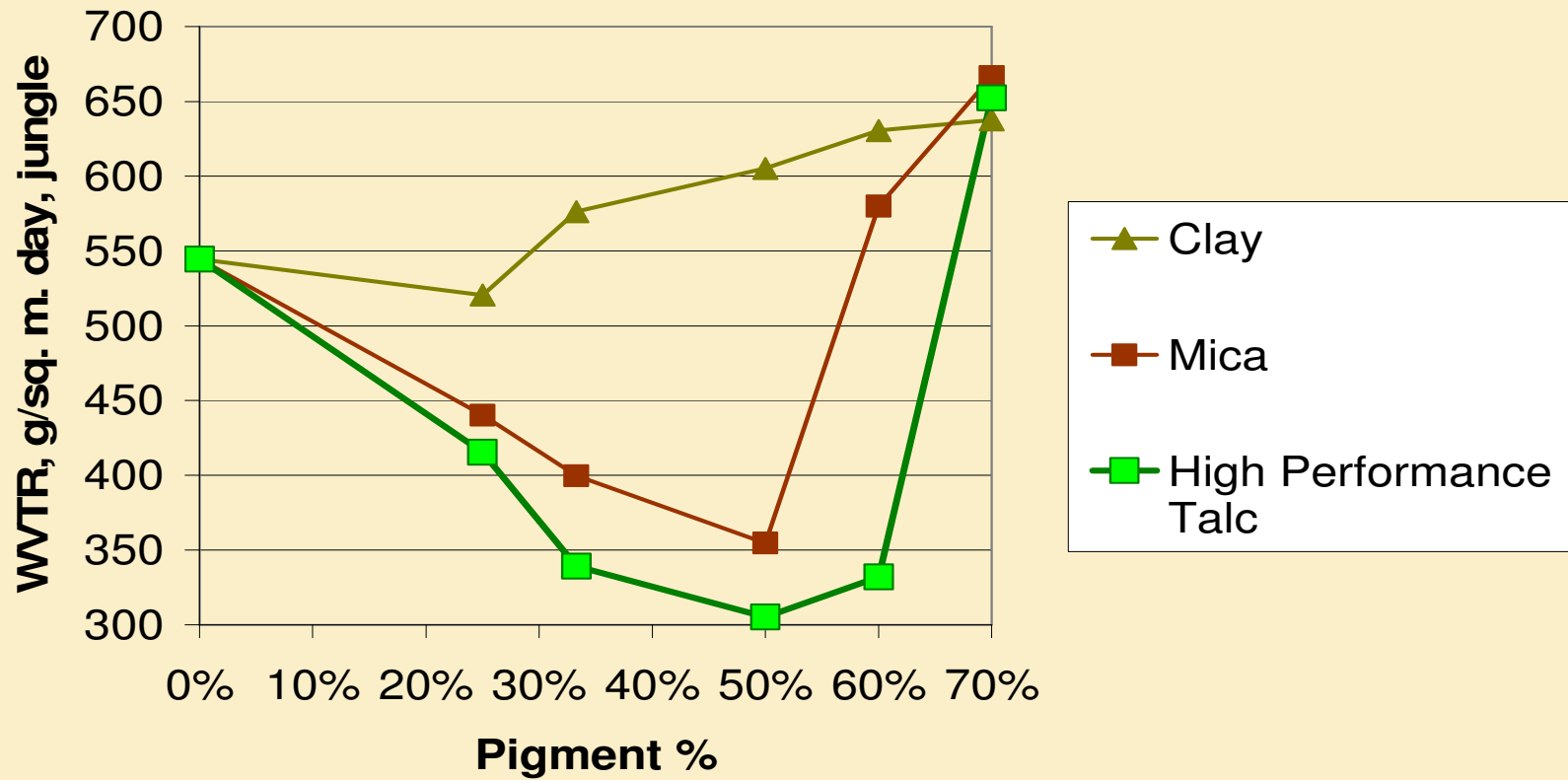
Talc Coating as Fluoro-Carbon Replacement for OGR Paper





Poor
MVTR

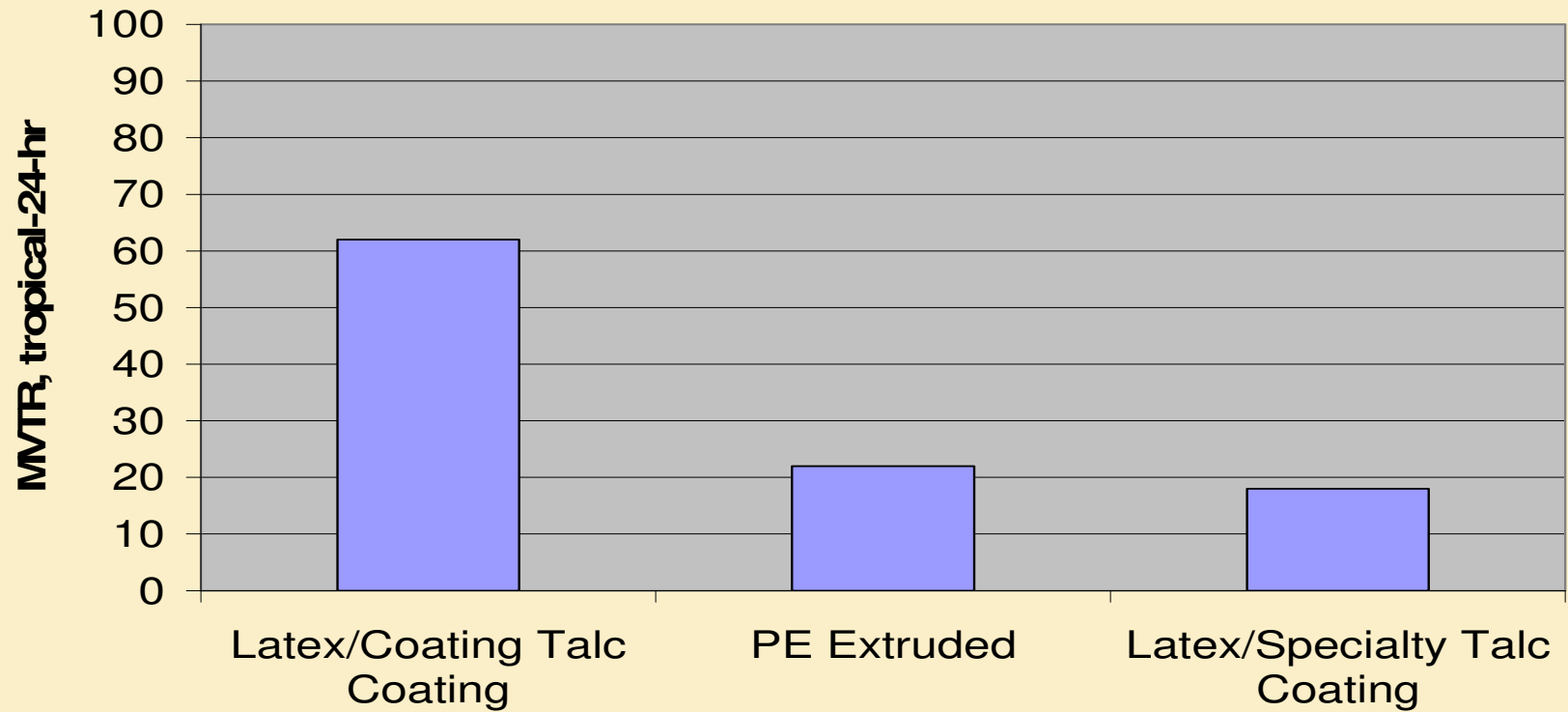
More Effective MVTR than Clay or Mica



Good
MVTR

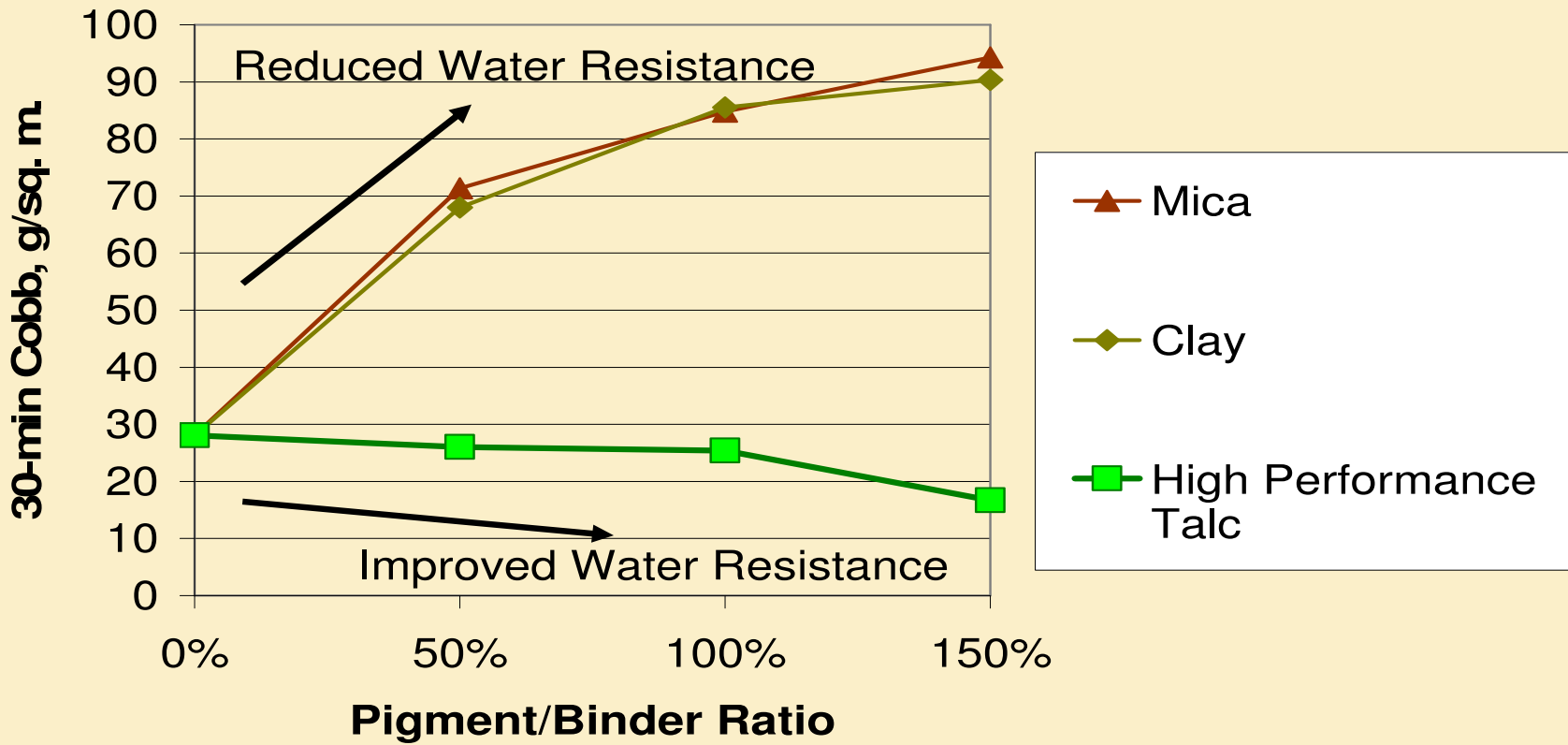


Talc Coating as PE Replacement





Effect of Pigment Type on Water Resistance





Conclusions

High Performance Talc Products

- **Enables WBBC competitive against other barrier technology**
- **Cost efficient functional minerals**
- **Compatible with common barrier polymers and coating additives**
- **Suitable for various common coaters, applicators**
- **Can be tailored for specific customer needs**



Questions?

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