



Alternative Pigment Concepts for New Market Requirements in Board Application

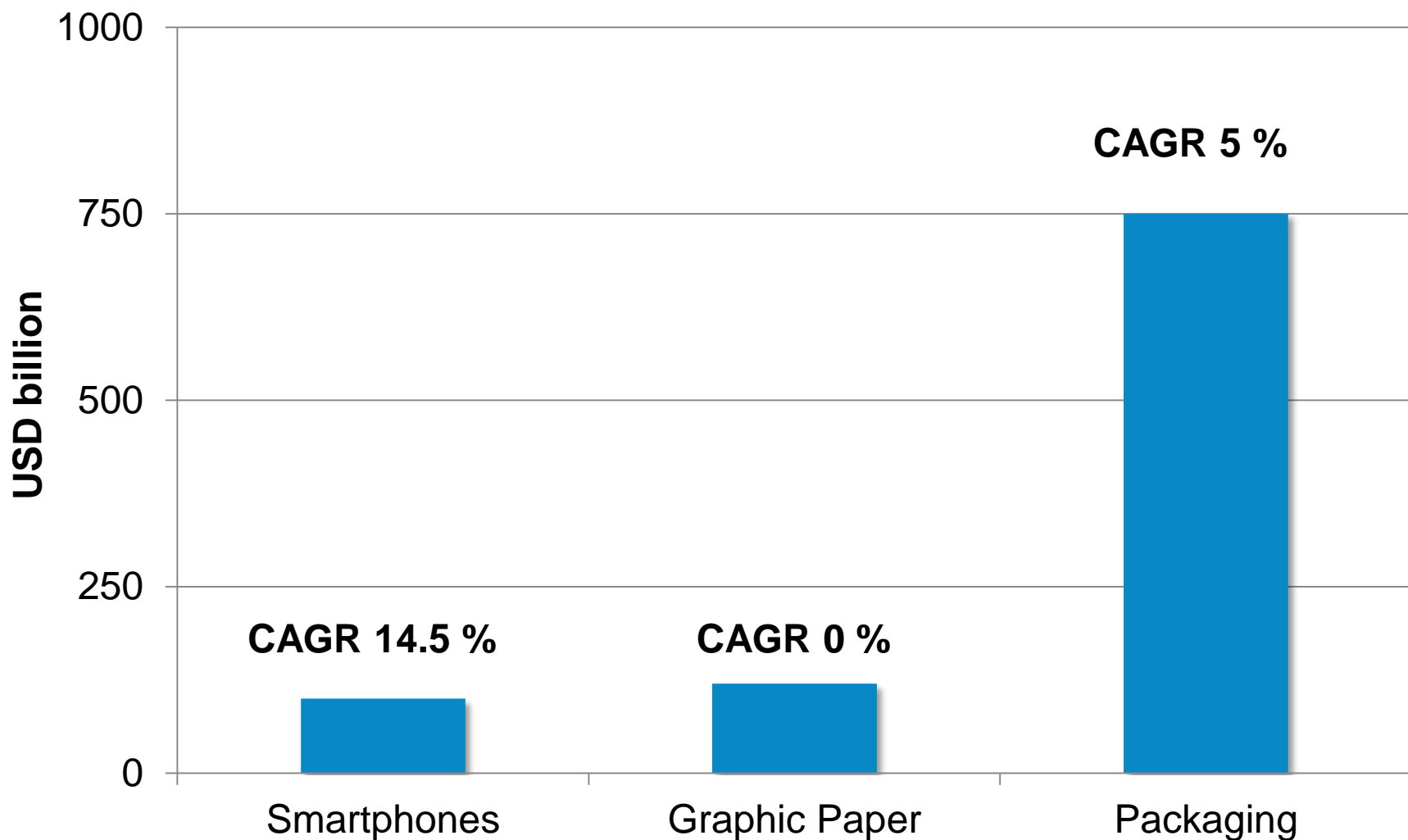
Georg Häusler

Technical Services & Innovation Forest Products Industry

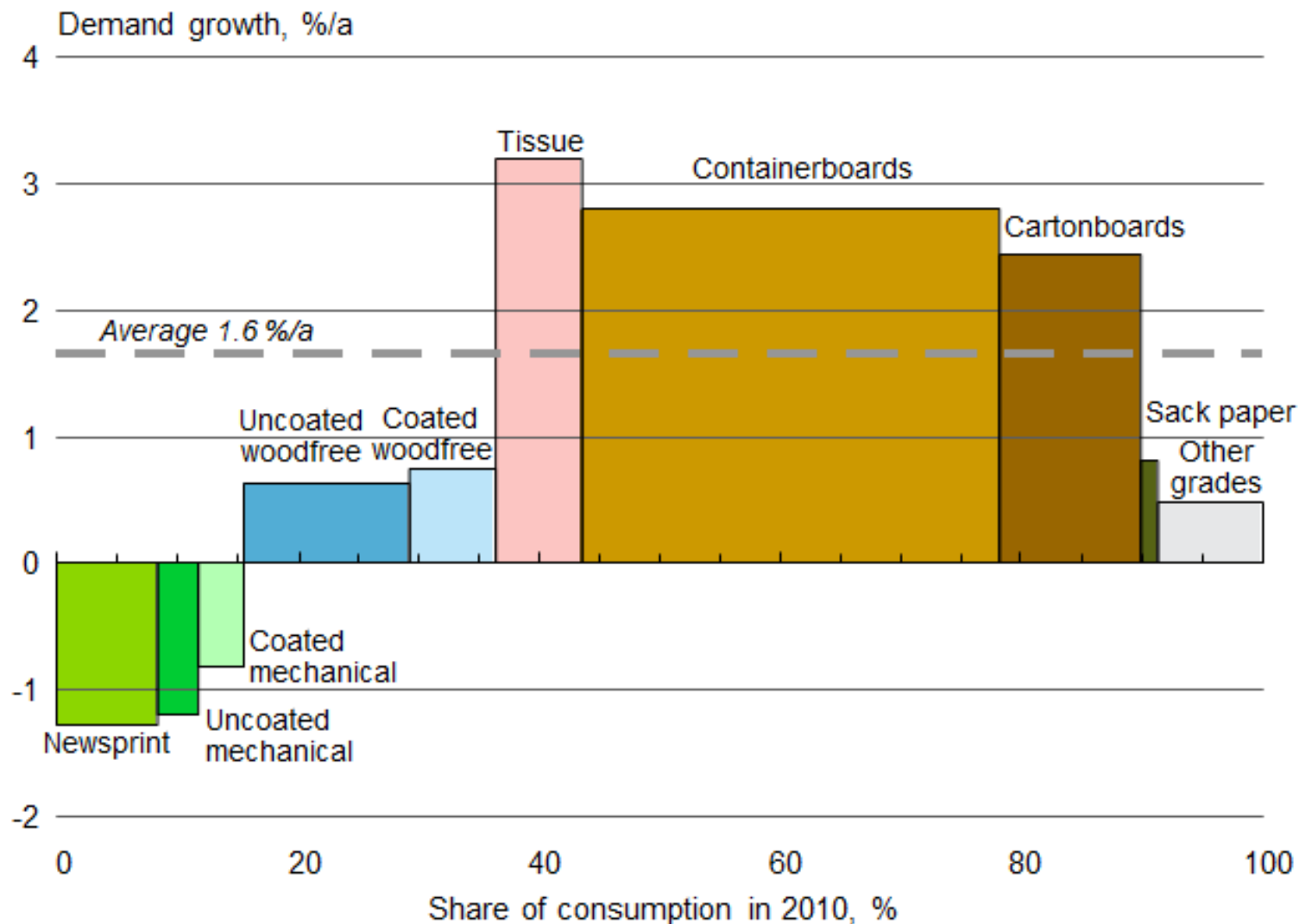
Omya International AG, Switzerland

- Major trends in the paper & board market
- Different Case Studies
 - Coverage and brightness improvements
 - Faster ink setting in Flexographic printing
 - High glossability – glossy paper and matte calendering
- Summary

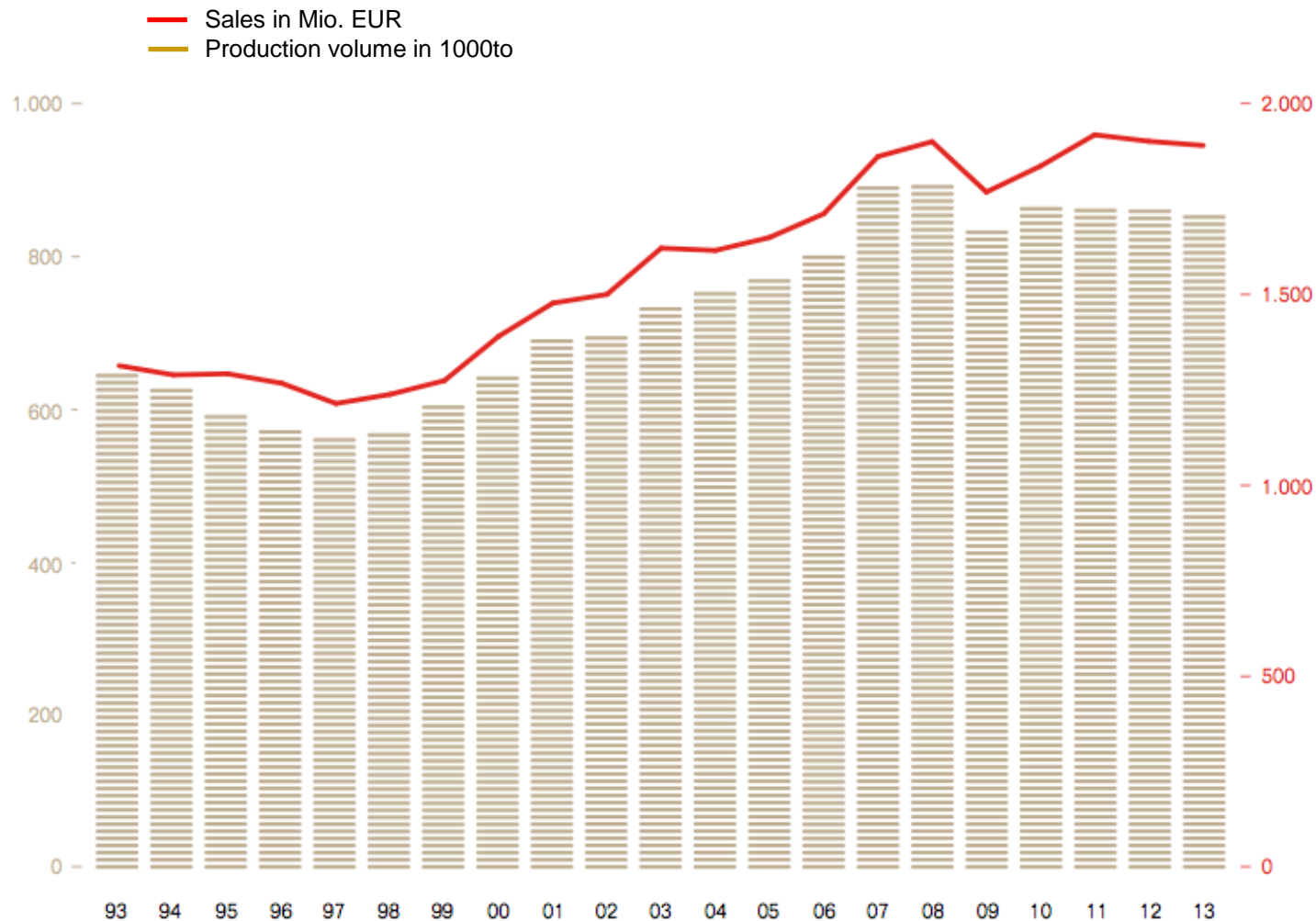
Global Market Size and Growth of Selected Industries 2012



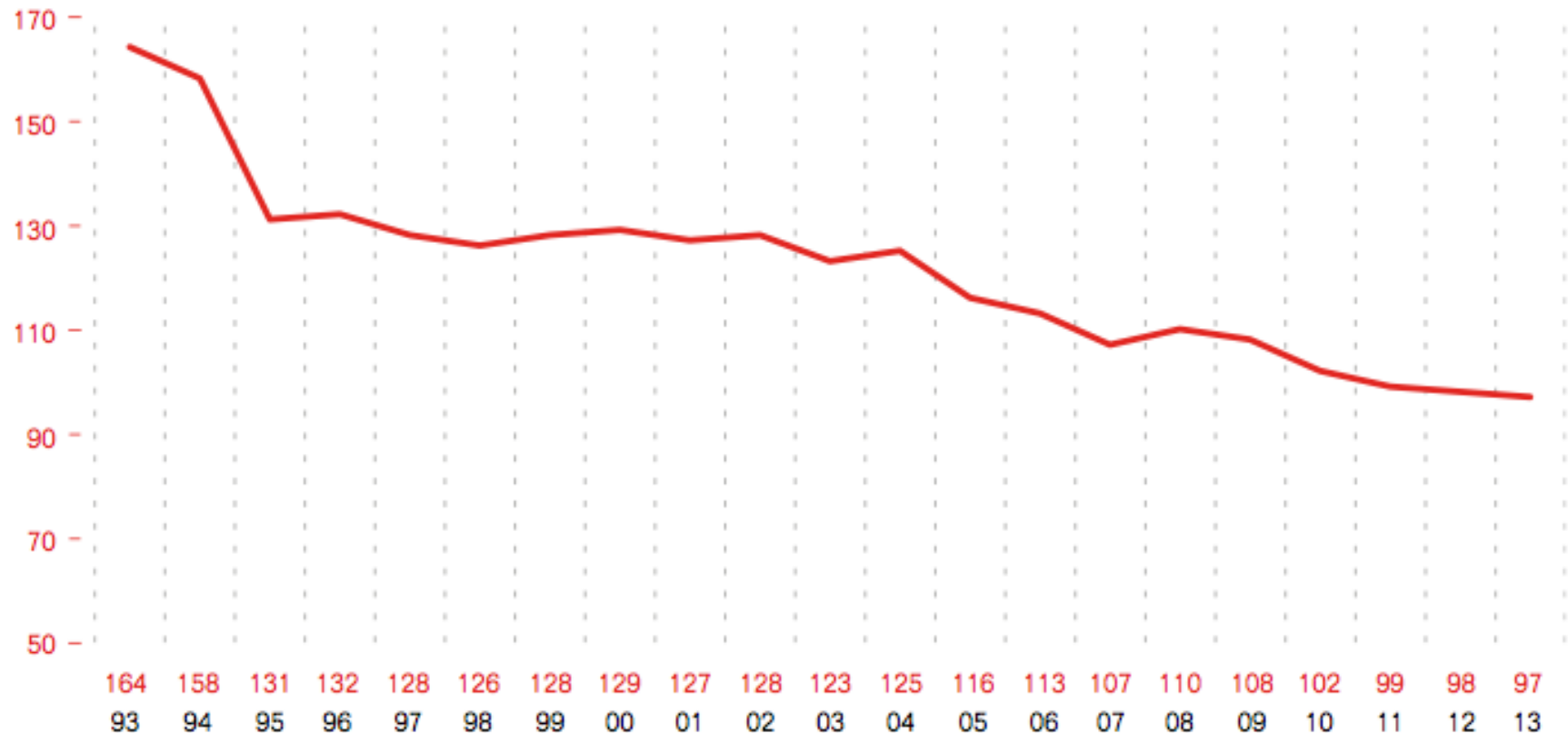
Long-Term Growth of Paper & Board Through 2025



Germany; FFB Market – Volume Production & Sales



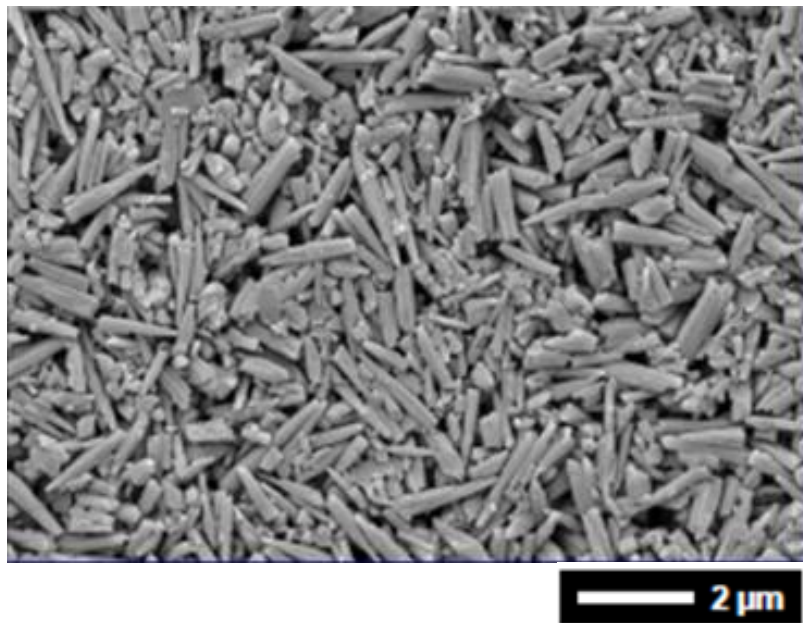
Numbers of FBB Producers



- Coverage / hiding power / brightness development
 - Replacement of clay
- A homogeneous surface for improved printability



Coverage and Brightness Omyaprim® HO 40



Omyaprim® HO 40

Aragonite PCC

Specific surface area = **14.0 m²/g**

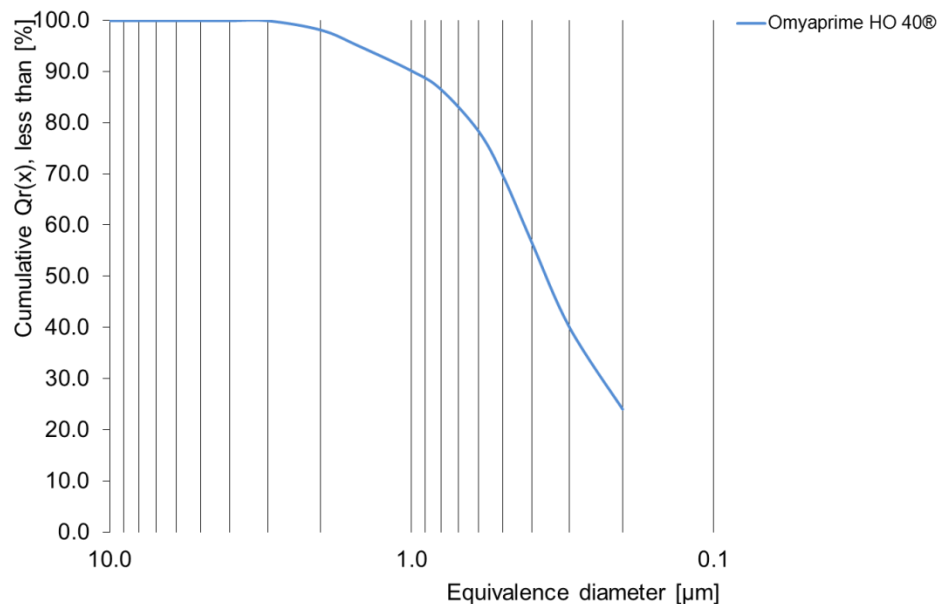
Average particle diameter (d50) = **0.42 μm**

Features:

High gloss, high opacity, good coverage,
moderate rheology

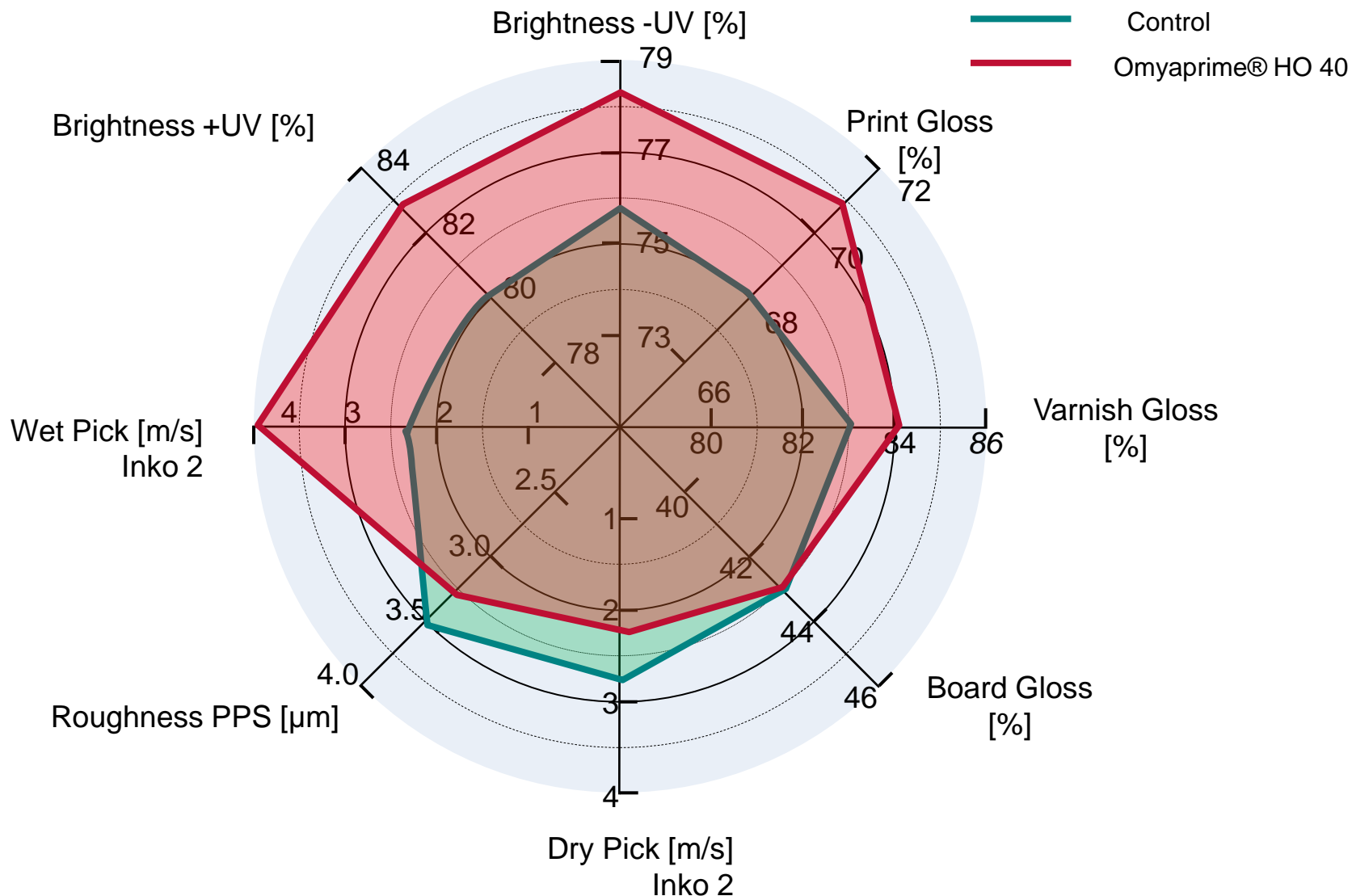
Application(s):

Topcoat wood-free, Board, LWC



- Board quality: recycled based Folding Box Board 280 g/m² (GD2 Quality)
- Triple Coated Board – Pre- and Topcoat constant
 - Middle Coat: Standard 1:1 replaced by GCC / Clay blend : Omyaprime® HO 40
- Coater Speed: 550 m/min
- Coat weight 14 g/m²

Coverage and Brightness / Results Mill Trial



Compared to Standard:

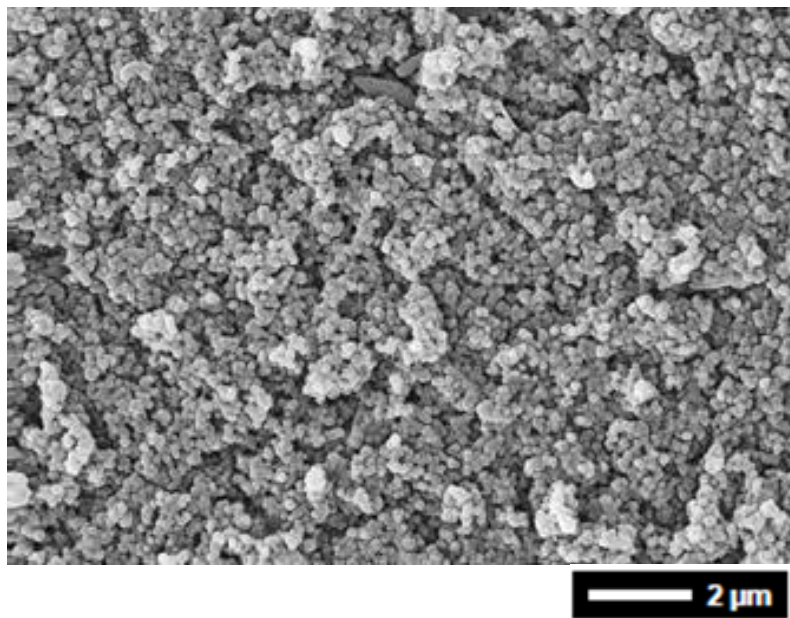
- Improved coverage and hiding power
- Enhanced brightness development
- Topped surface and print properties – less mottling
- Increased cost recovery



- Homogeneous surface and good flexographic printability
 - No smearing between print units without intermediate drying process



Fast Flexographic Printability – Omyaprim® HA 12



Omyaprim® HA 12

Rhombohedral PCC

Specific surface area = **21.0 m²/g**

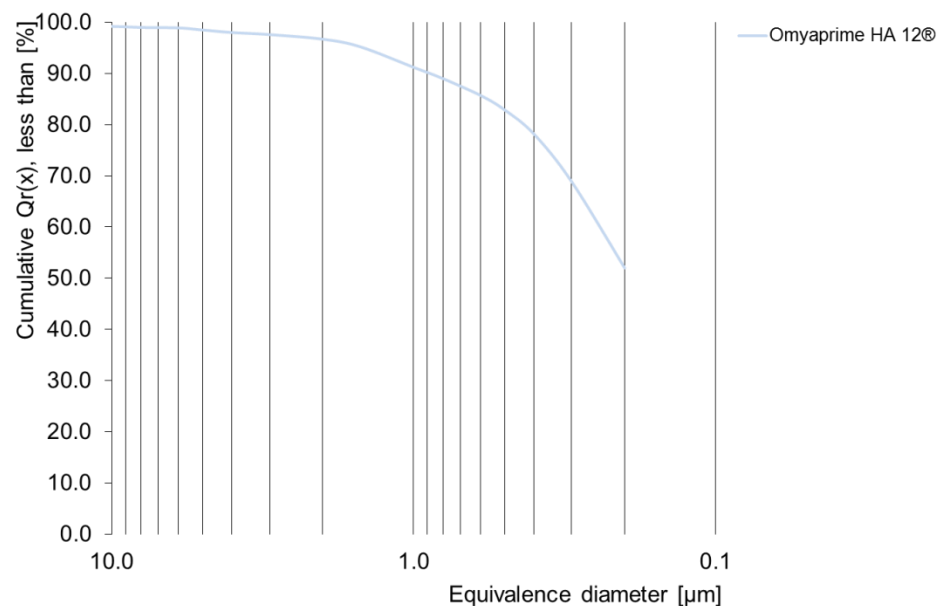
Average particle diameter (d50) = **0.21 μm**

Features:

Fast ink-setting, high gloss

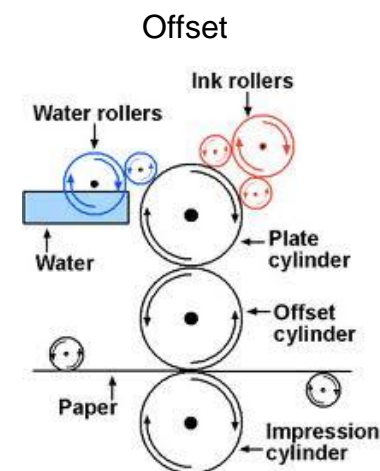
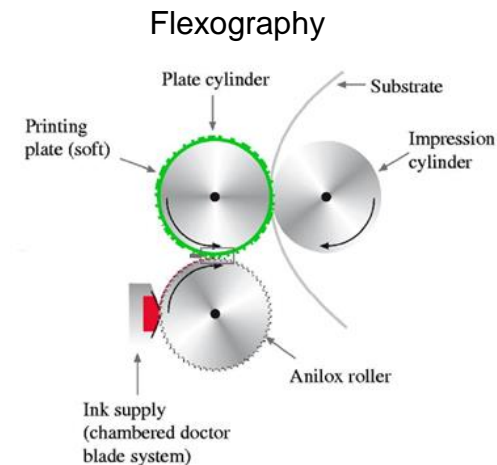
Application(s):

Topcoat board



Fast Flexographic Printability – Generic Information

	Flexography	Offset
Ink system	Water or solvent based, pure ink	Oil based ink-water emulsion
Ink viscosity	Very low	Very high
Ink transfer	Via Anilox roll to raised-image flexible and soft polymer printing plates.	Via ink rollers to hydrophobic parts on flat aluminum plate to rubber blanket.
Available lab methods	Few options, e.g. Saueressig	Robust methods like IGT or Prüfbau

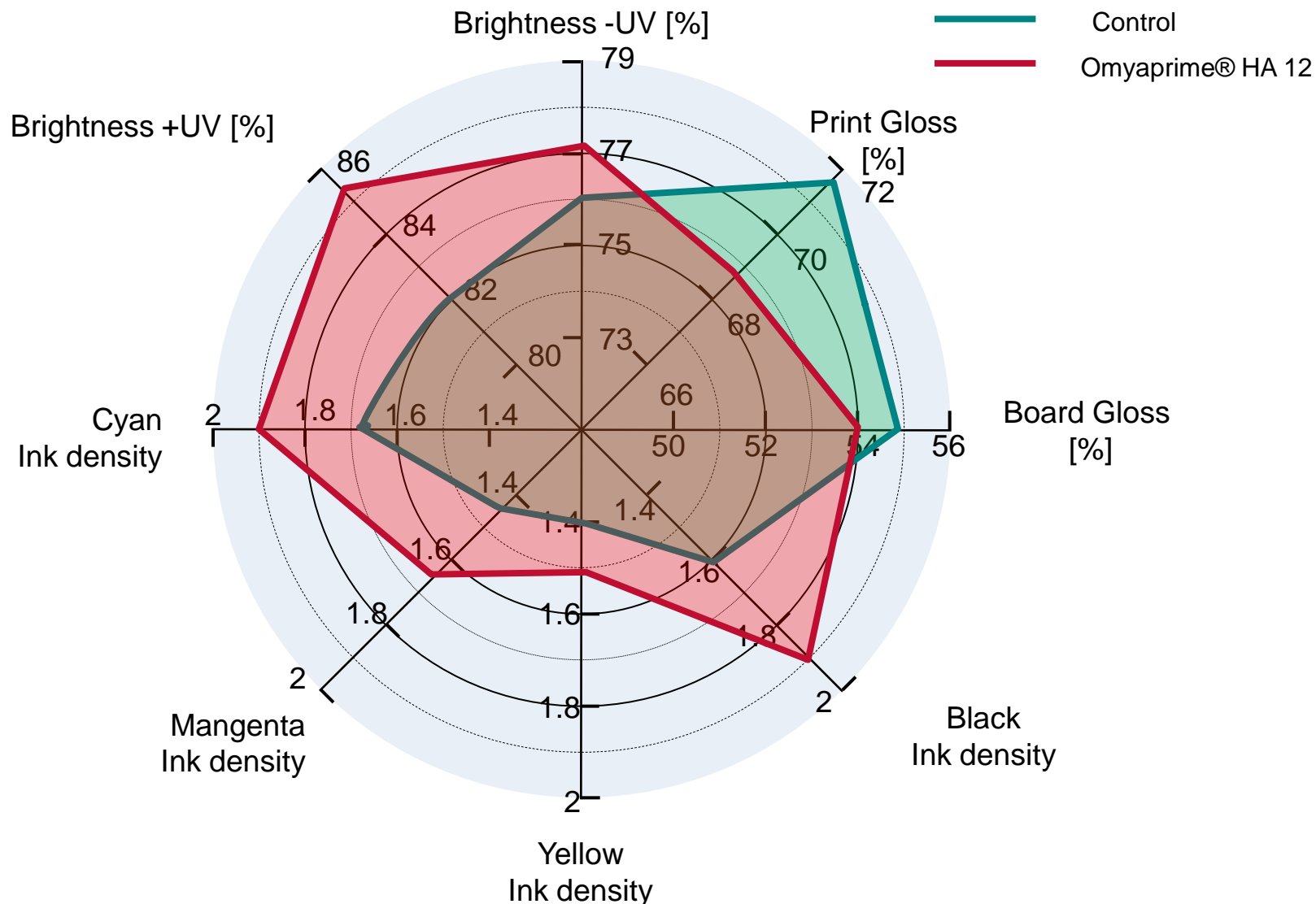


Fast Flexographic Printability – Trial Setup

- Board Quality: recycled based Folding Box Board 210 g/m² (GD2 Quality)
- Triple Coated Board – Pre- and Middle Coat constant
 - Top Coat: Standard 1:1 replaced by ultrafine GCC : Omyaprime® HA 12
- Coater Speed: 800 m/min
- Coat weight 7 g/m²



Fast Flexographic Printability – Results Mill Trial



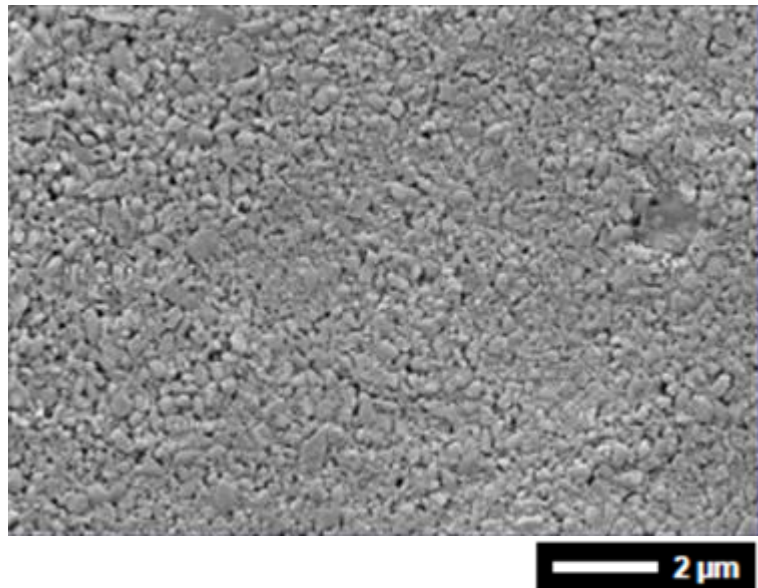
Compared to Standard:

- Improved surface and print properties
 - Higher color densities in half and full tone areas
- No smearing and trapping
- Print unit increased the speed by 20%



- High glossability without the use of a supercalender
 - Gloss target with matte calender (machine calender) higher than 50° (Tappi 75°)

High Gloss Performance – Omyaprime® HG 30

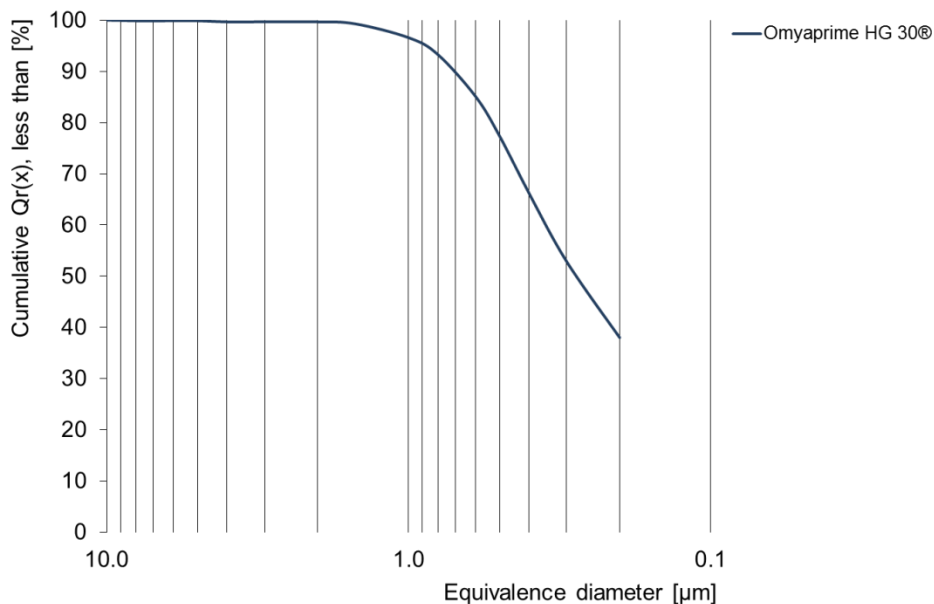


Omyaprime® HG 30

GCC/PCC Co-processing

Specific surface area = **23.0 m²/g**

Average particle diameter (d50) = **0.27 µm**



Features:

High gloss, premium printability, very good runnability

Application(s):

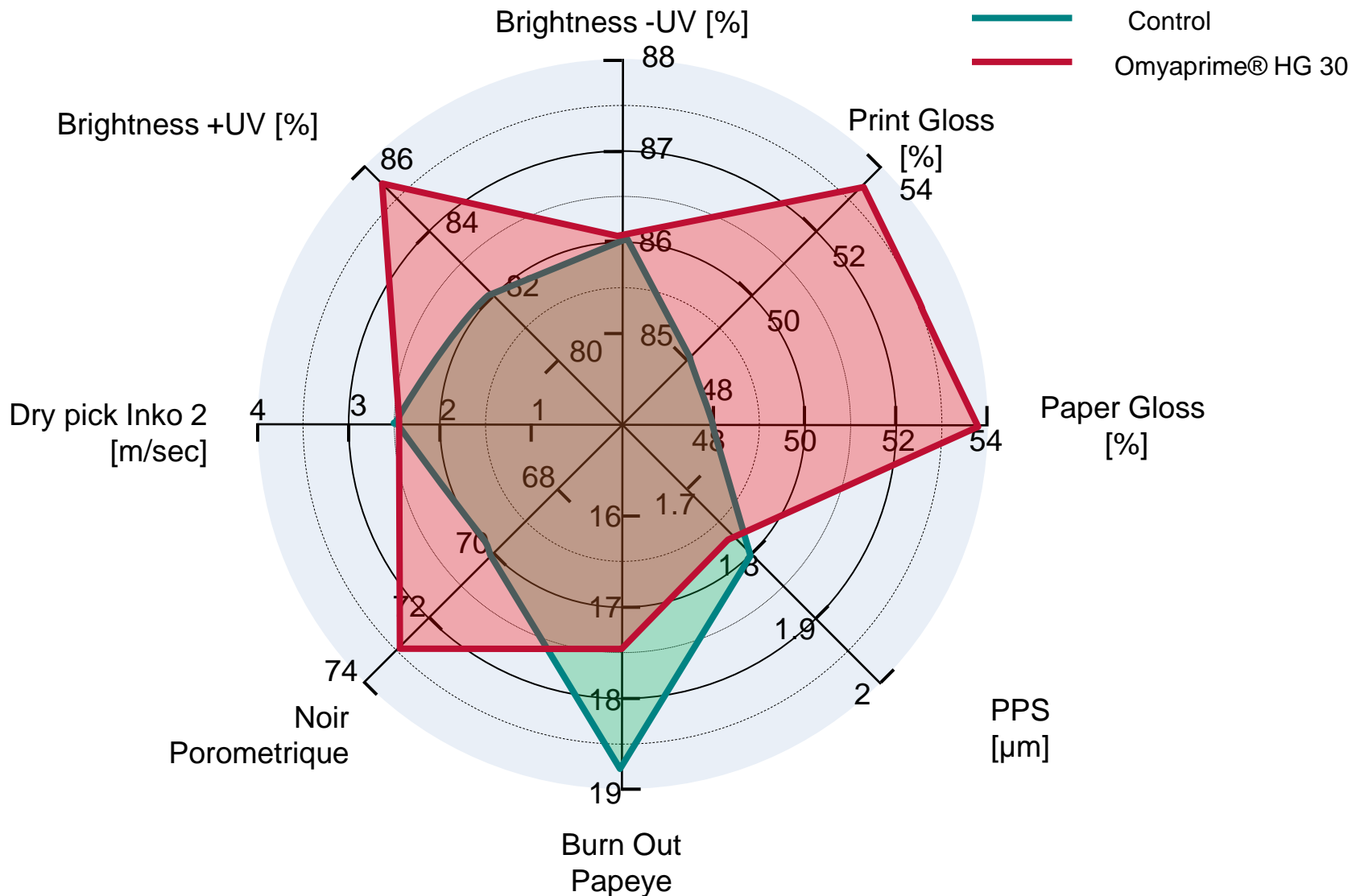
Topcoat wood-free

High Gloss Performance – Trial Setup

- Paper quality: double coated wood-free 135 g/m² (offset quality)
- Double coated paper – precoat constant
 - Topcoat: Standard 1:1 replaced by
ultrafine GCC : Omyaprime® HG 30
- Coater Speed: 1200 m/min
- Coat weight 12 g/m²



High Gloss Performance – Results of Mill Trials

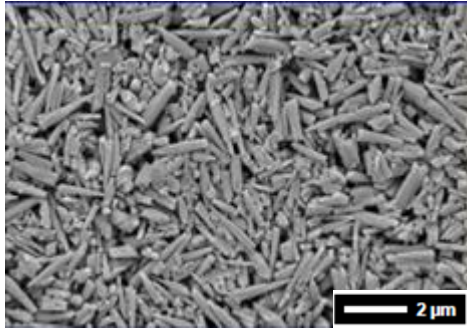


Compared to Standard:

- Improved surface and print properties
- Gloss target achieved without additional calendaring

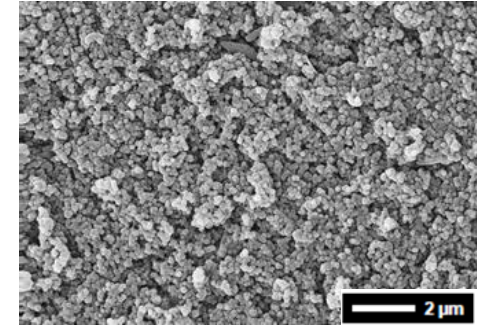
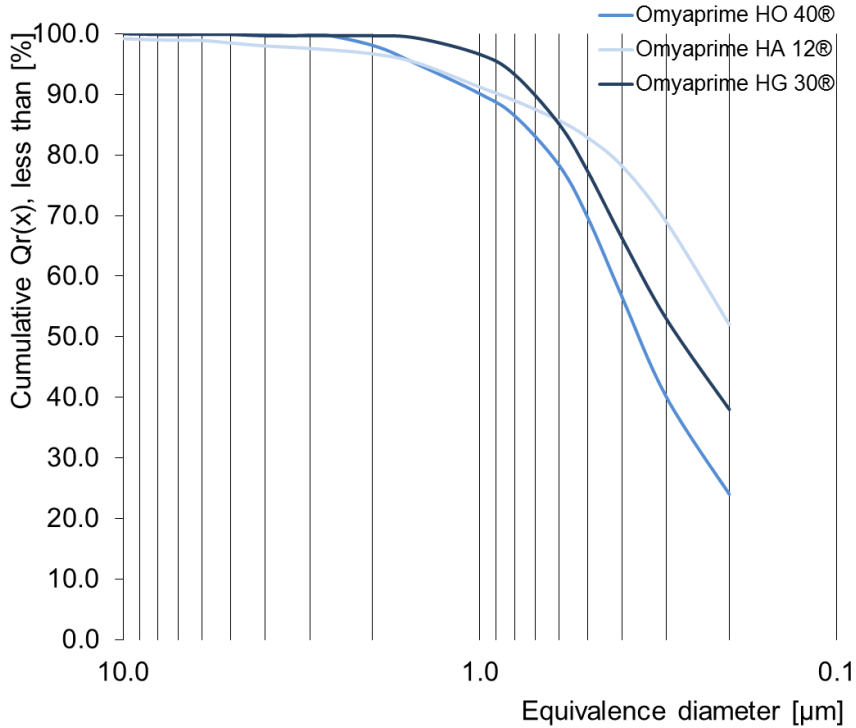


Summary



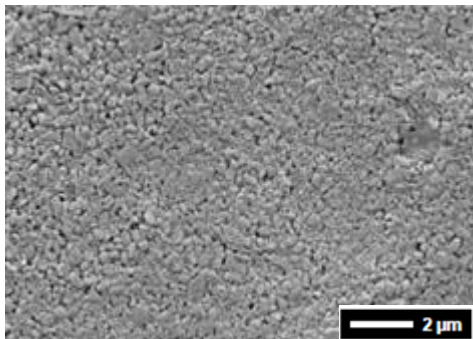
Omyaprim® HO 40 Aragonite PCC

Specific surface area = 14.0 m²/g
Average particle diameter (d₅₀) = 0.42 µm



Omyaprim® HA 12 Rhombohedral PCC

Specific surface area = 21.0 m²/g
Average particle diameter (d₅₀) = 0.21 µm



Omyaprim® HG 30 GCC / PCC Co-processing

Specific surface area = 23.0 m²/g
Average particle diameter (d₅₀) = 0.27 µm

Do You Have Any Questions

