BASF
We create chemistry

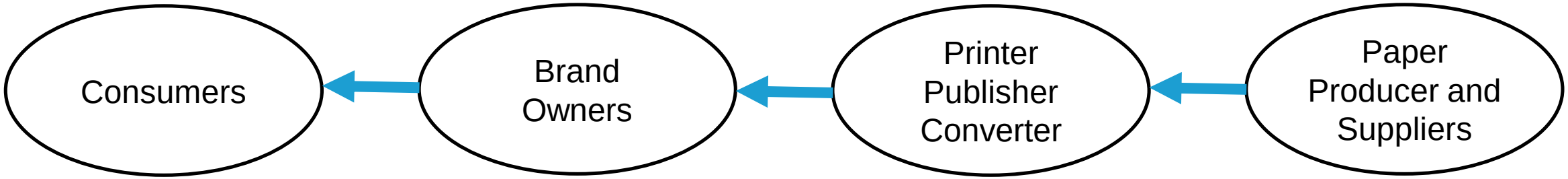
Achieving Consistent Quality in Coated Packaging Board manufactured with Recovered Paper:

'*Innovation in Paper Coating Latex*'

Avnish Kumar Verma
Paper Coatings
BASF India Limited

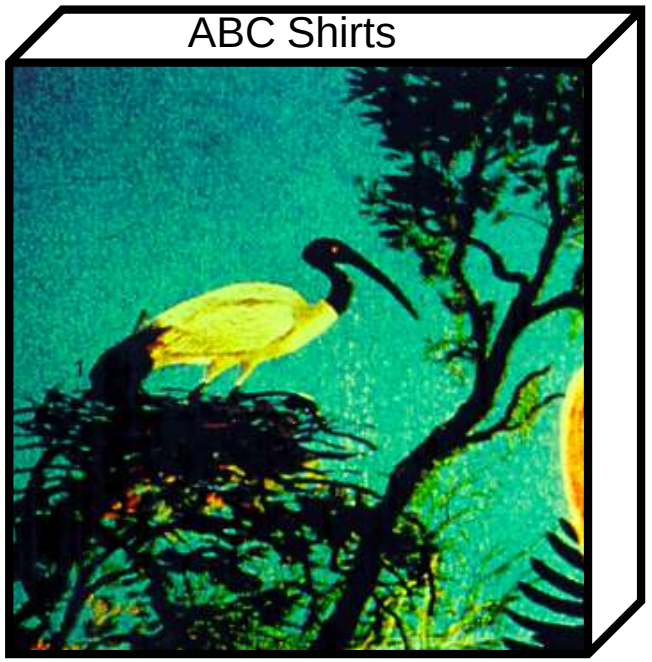
Contents

Insight of Coated packaging board manufactured with recycled board

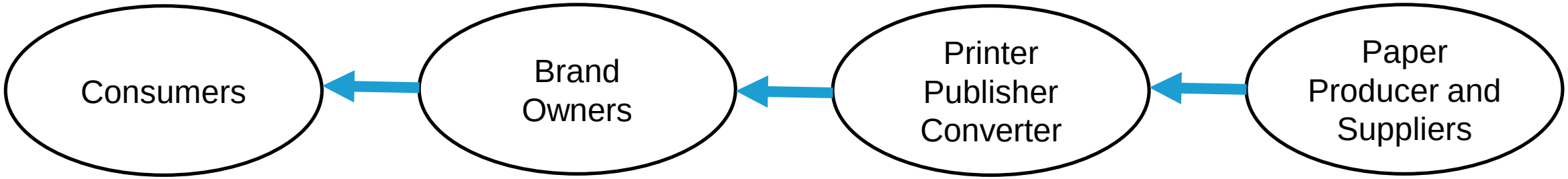


Packaging influences consumer a lot

- Brand Image
- Packet/Box design and ease of handling
- **Print appeal and overall appearance**

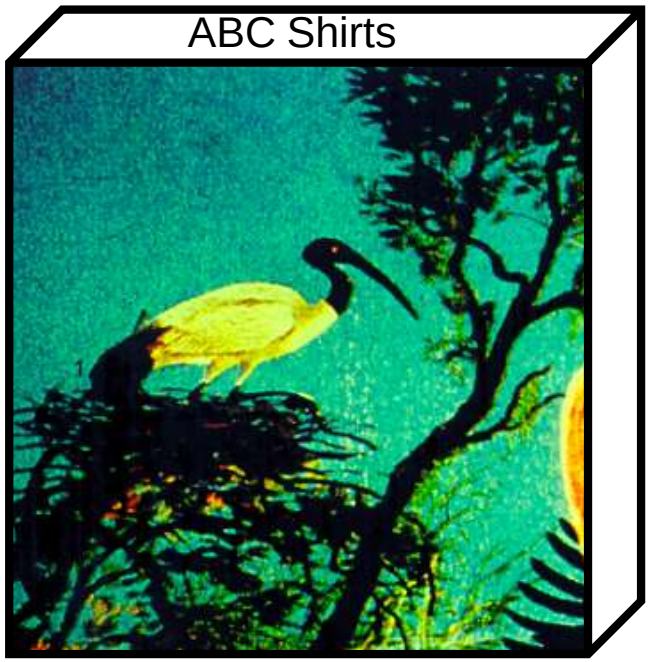


Insight of Coated packaging board manufactured with recycled board



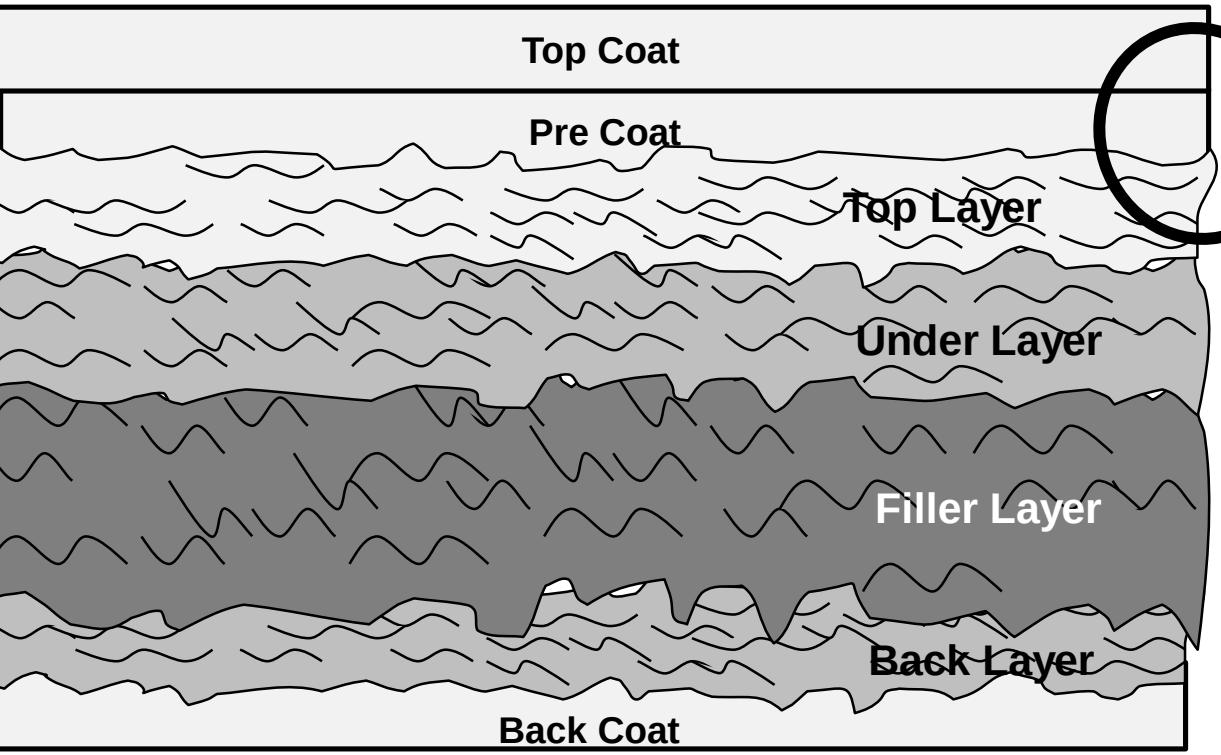
Challenges

- Degrading Furnish
- Inconsistent quality of board
- Faster Convertibility
- Superior Printability
- Sustainability
- Runnability
- Cost In Use

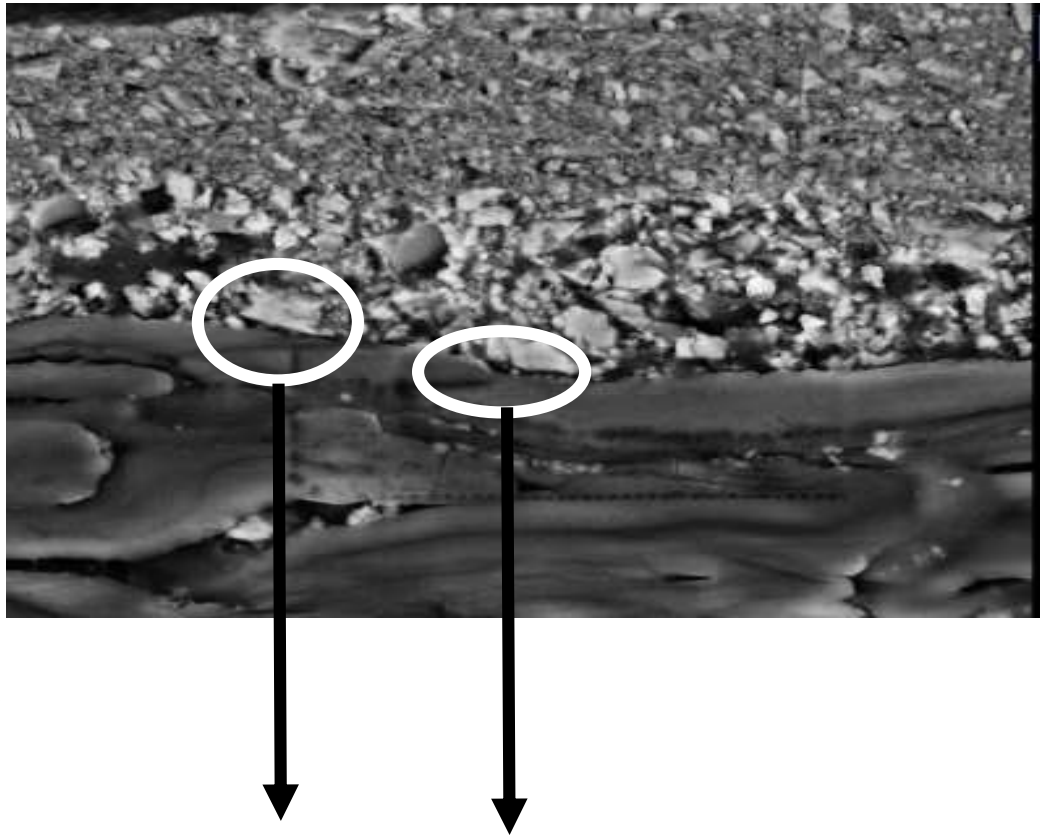


Insight of Coated packaging board manufactured with recycled board

Cross-Section of Packaging Board



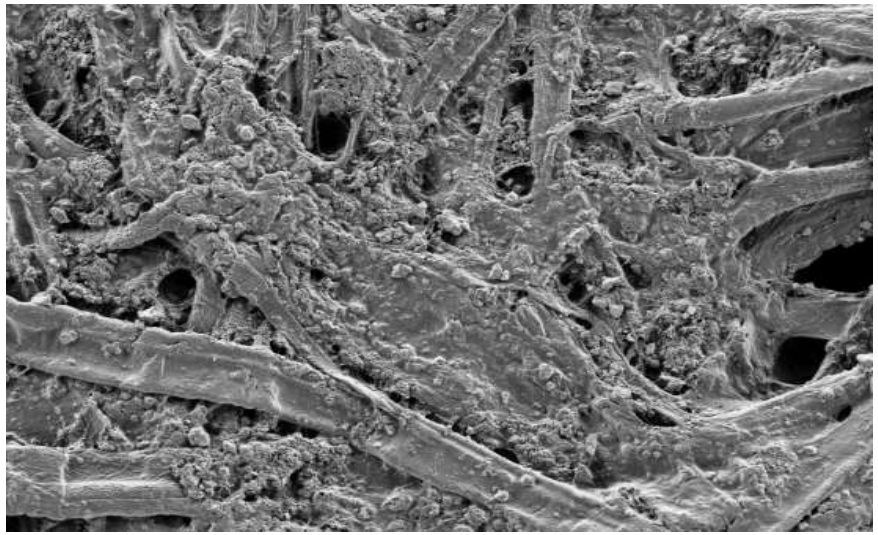
2000 X Magnification



Pores / Capillaries of baseboard

Insight of Coated packaging board manufactured with recycled board

Baseboard Surface → 2000 X Magnification (Pores/Capillaries)



Inconsistency in recovered fiber due to:

- Type of recovered paper
- Morphology of initial fiber
- Varying ash content
- Sourcing country

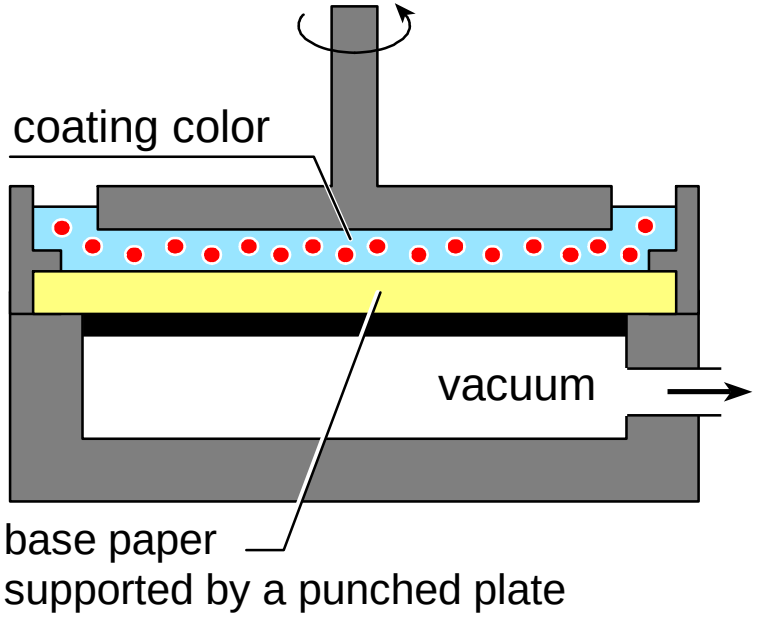
The inherent unavoidable variation leads to

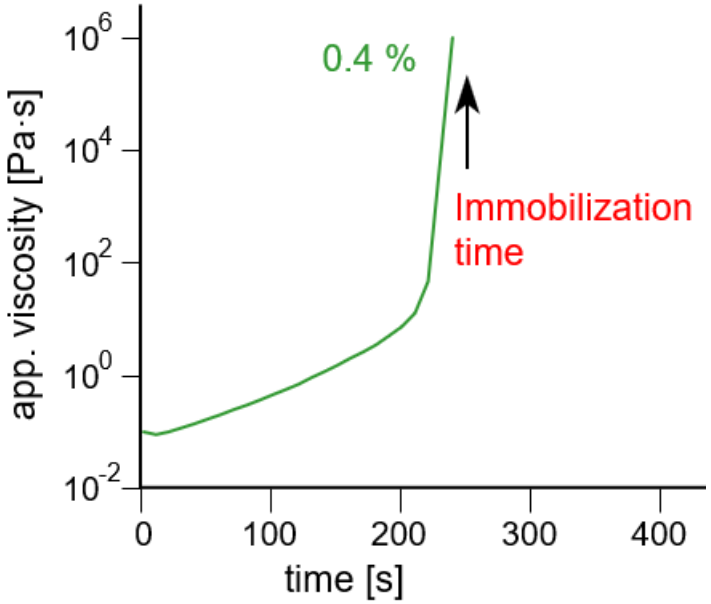
- Changes the pore size and capillary in top layer of base board
- Non-uniform water migration from precoat color
- Binder Migration (with other water-soluble ingredients)
- Inconsistent coating coverage and strength
- Complaints on dusting and mottling

Improved water holding capacity of coating color can mitigate the above challenges

Test Methods of Water Holding Capacity of Coating Color

Anton Paar

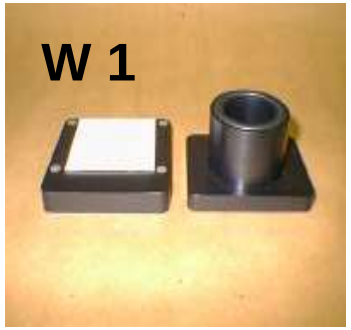


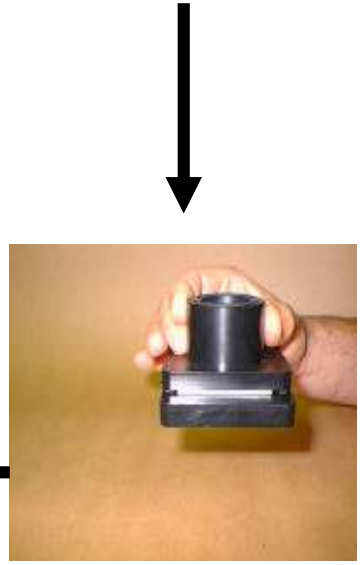


Higher Immobilization time is preferred

Test Methods of Water Holding Capacity of Coating Color

Gradek Water Retention





WR = (W2 – W1) *1250 gsm

Lower water retention values are preferred

BASF's Approach - Revolutionary Binder

What we want to accomplish …

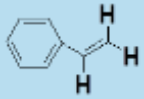
Revolutionary

High Performance Binder

Attaining step-change in maintaining consistent coated P&B properties

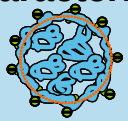
And How

Polymer Characteristic



- ❑Unique balance between Monomers
- ❑High internal cohesion
- ❑Perfect water ink balance
- ❑Special Additives

Colloidal Characteristic



- ❑Particle size / distribution
- ❑Emulsifier system (stability)

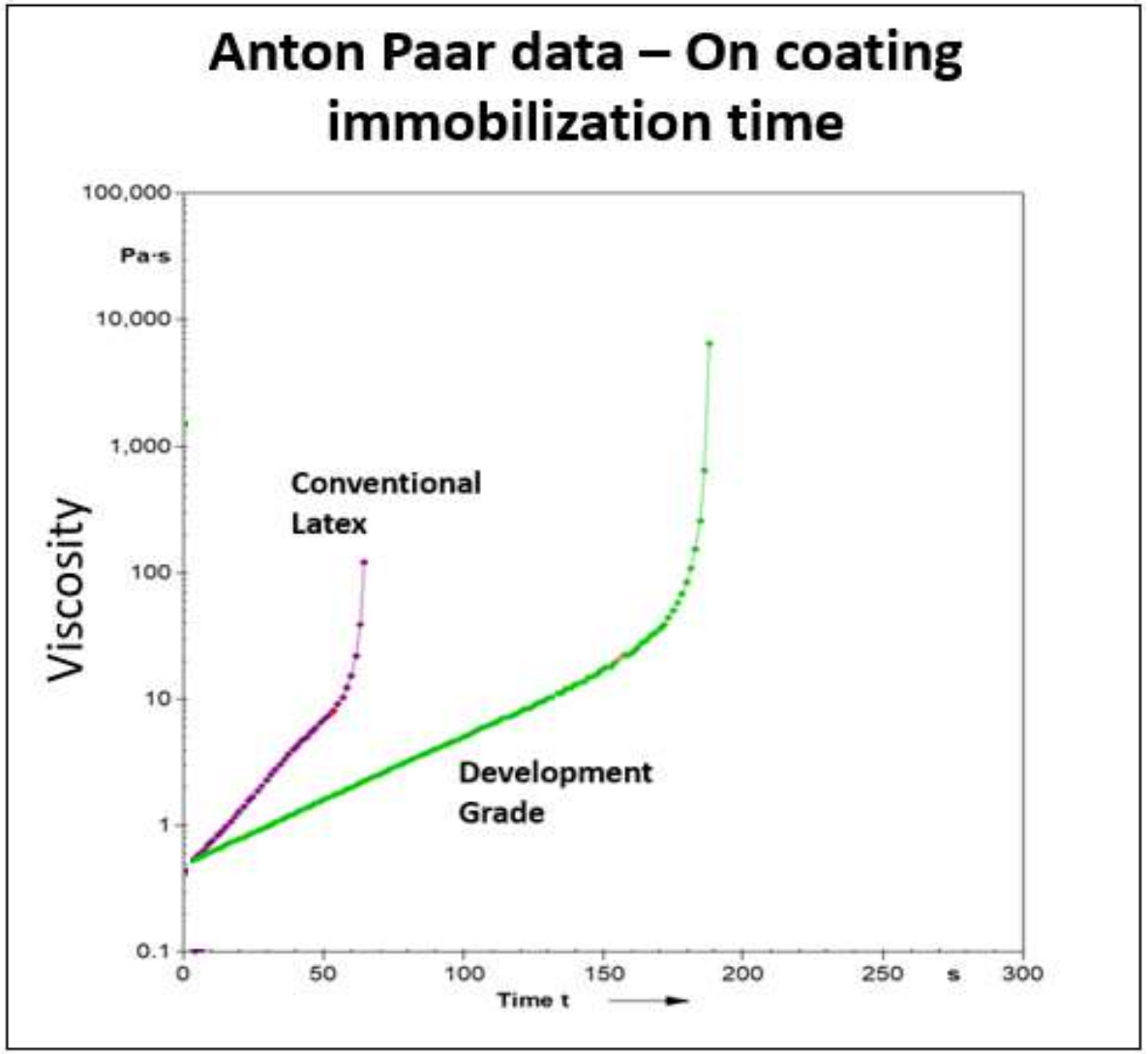
PROCESS

- ❑Optimized monomer feeding strategy

Results - Precoat

Recipe Details		
Ingredients (parts)	Conventional Latex	Development Grade
C 60	100 pts	100 pts
Dispersant	0.04 pts	0.04 pts
Rheology Modifier	0.4 pts	0.4 pts
Latex	11 pts	11 pts

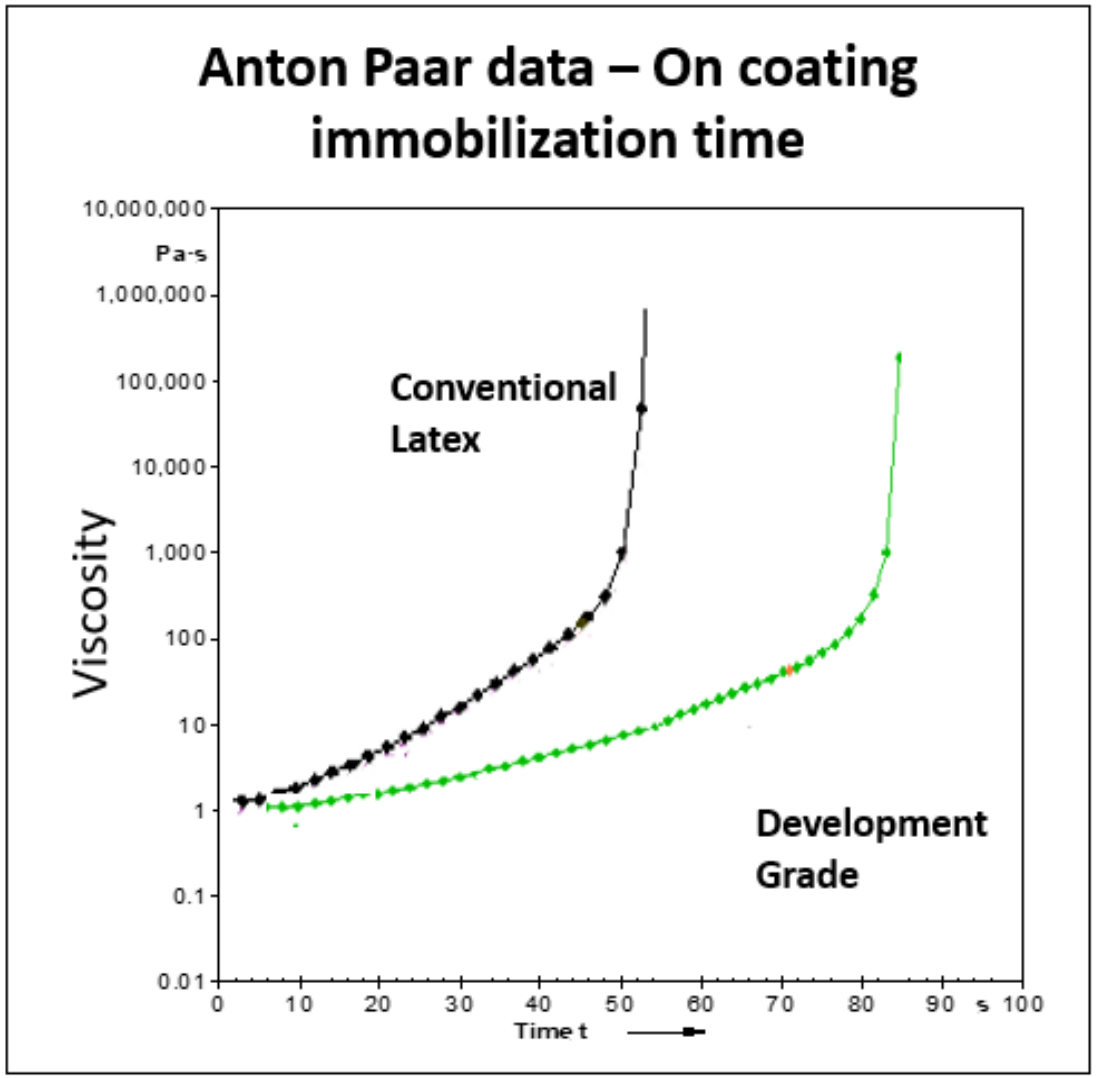
Coating Color Properties		
Testings	Conventional Latex	Development Grade
pH	~ 9	~ 9
Viscosity	800 cps	800 cps
Solids	66%	66%
Gradek WR	65 gsm	50 gsm



Results – Top coat

Recipe Details		
Ingredients (parts)	Conventional Latex	Development Grade
C 95	70 pts	70 pts
Clay	30 pts	30 pts
Dispersant	0.08 pts	0.08 pts
CMC	0.45 pts	0.45 pts
Latex	12.5 pts	12.5 pts
Crosslinker	0.5 pts	0.5 pts

Coating Color Properties		
Testings	Conventional Latex	Development Grade
pH	~ 9	~ 9
Viscosity	1000 cps	1000 cps
Solids	64%	64%
Gradek WR	90 gsm	68 gsm



Conclusion on Technical Experiments:

- Extensive testings, consistently showed superior performance of the new latex grade on Gradek and Anton Paar equipment.
- The positive results prompted the use of scaled-up paper latexes in real paper mill trials, meeting the expectations of end users.
- Customer complaints about mottling and dusting significantly decreased with the new latex. These latexes are in commercial use now at various paper mills

Conclusion

- A key challenge in using recovered paper for paper manufacturing is ensuring consistent quality in final product.
- The challenges of ensuring consistency in quality is even more critical for coated duplex board, due rigorous printing and converting processes.
- In order to keep up with the increasing emphasis on recycling, paper manufacturers must embrace and implement new technologies in their production processes.
- BASF remains dedicated to investing in continuous innovation, aiming to address the challenging key issues faced by customers and provide them with cutting-edge technology that can offer a significant competitive advantage in the coated paper and board industry.

We create chemistry