

Novel waterborne acrylics dispersions for trim paints

A photograph of a forest floor with several large, cut logs in the foreground and several standing tree trunks in the background. The bark of the trees is rough and textured, and the logs show the inner wood grain.

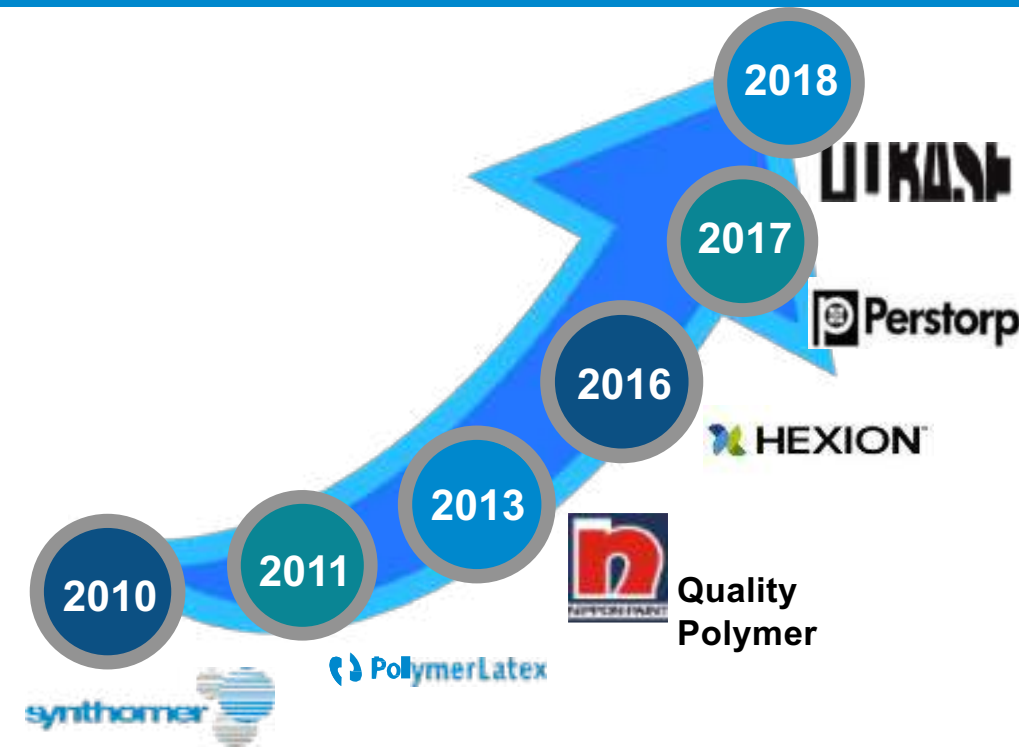
by Dirk Sühling
3rd and 4th October 2018, RAMSPEC

Divisions & Markets



Investing for growth

CONTINUOUS INVESTMENT FOR ORGANIC GROWTH AND THROUGH ACQUISITION



Facts & Figures

- Market Leading Positions
 - #1 in Europe
 - #1 in Middle East Africa
 - #1 in South East Asia
- Step change acquisitions and organic growth
- Strong shareholder commitment
- Financially stable with healthy balance sheet
- Flexible and proximate industry partner
- Rich technology heritage

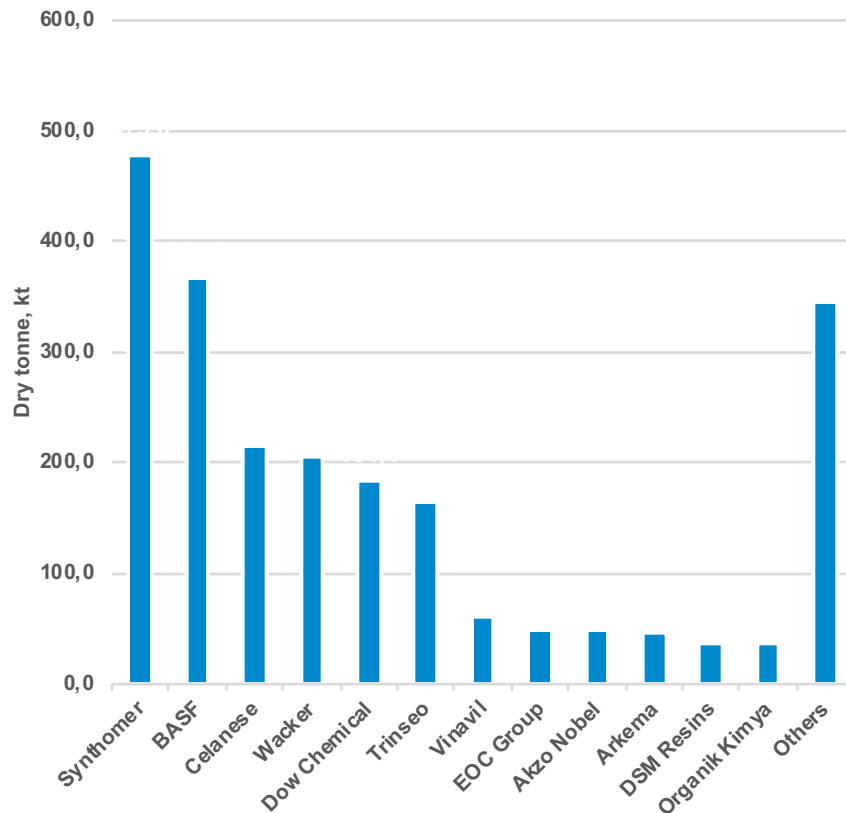
Blue-chip technology heritage:



Synthomer market position

Leading the water based polymer market in Europe and beyond

Synthomer #1 in water based polymers in Europe



Source: Kline Group 2014 report

Facts & Figures

- Biggest supplier of water based polymers:
 - #1 in X-SBR
 - #1 HS-SBR
 - #1 Vinylic-Veova
 - #3 in Acrylics & RDP
- Broadest polymer technology range, over 10 different polymer chemistries
- Organic and acquisitive growth
- Proximate plant network
- Innovation & Solution approach
- Highly customer focused
- **Reliable, long-term industry partner**

The company

£ 1.48 Bn

Group Revenue



18

Manufacturing
Countries



25

Production Sites

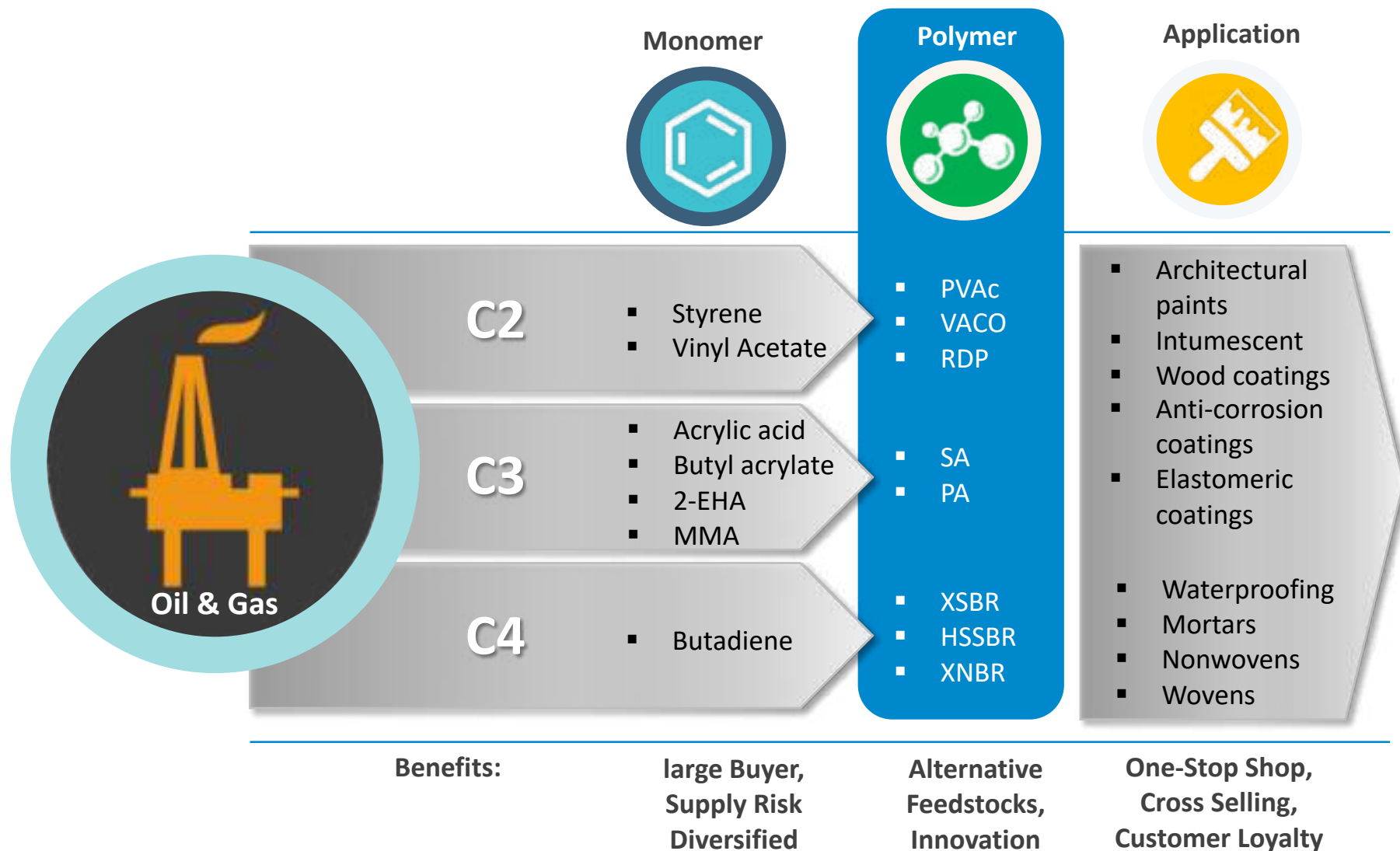


2800

Employees



Reliable supply chain and broadest product offering



Environment first



Low VOC



Material efficiency



APEO free



**Optimised
production**



Form-aldehyde free



Low to no MIT

Synthomer's Proprietary Stripping Technology



The solution for low-VOC products since more than 20 years

- Process developed to remove odour and VOC causing substances
- Decades of basic chemical and engineering research have made Synthomer a pioneer in this technology
- Process fully integrated in our state-of-the art polymerisation plants



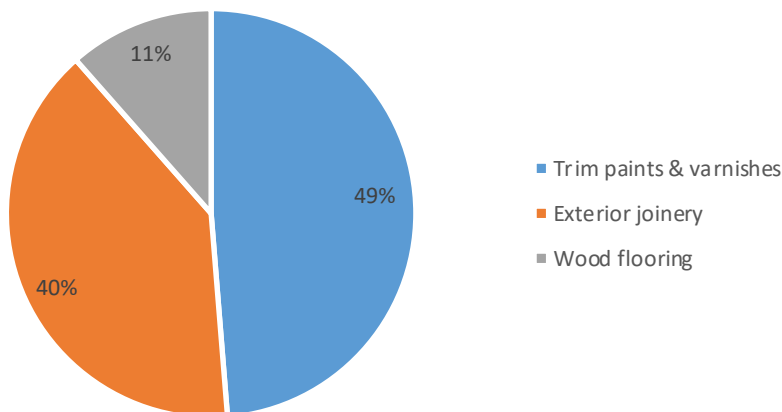
Architectural wood coatings in Europe



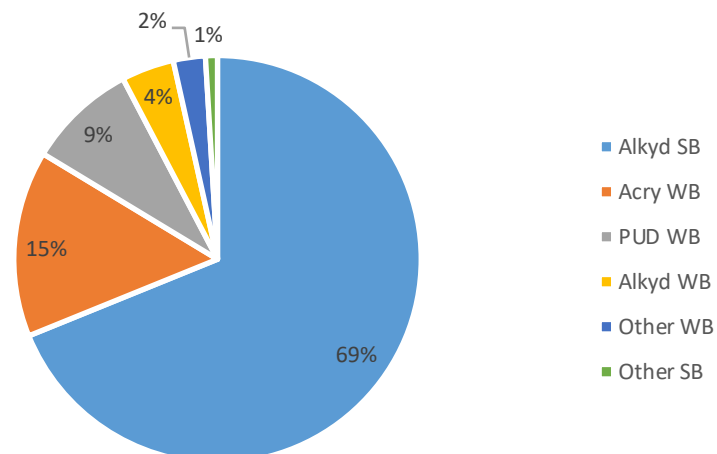
Business outlook

- Refers to trim paints/varnishes, external joinery & internal wood flooring; excluding furniture & other wooden articles
- Total volume in 2012 – 1.2 million kilo-litres; estimated volume in 2017 – 1.3 million kilo-litres
- Trim paints/varnishes is the largest – almost 50% of market
- Solvent borne alkyd is the largest – almost 70% of market, followed by water borne acrylic (15%)

European Architectural Wood Coating Volume
by Application



European Architectural Wood Coating Volume
by Chemistry



Architectural wood coatings in Europe

Business outlook

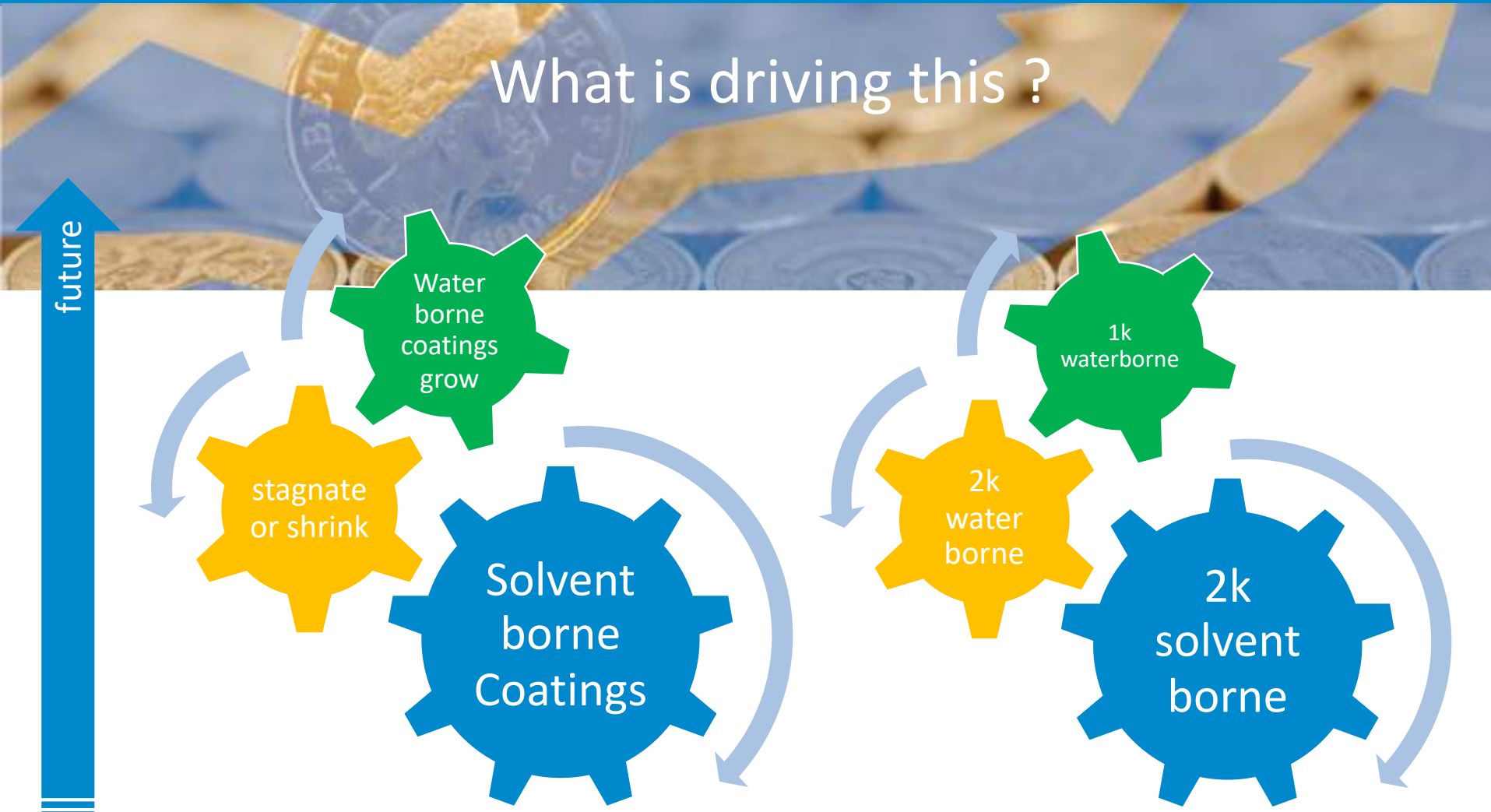


- France is the second largest market in Western Europe
- Majority solvent based:
 - DIY market: 35% WB; 65% SB
 - Trade market: 15% WB; 85% SB
- Countries with mandatory regulations (e.g. Denmark, the Netherlands, Sweden) mainly waterborne system (>90% WB)

Trend in European architectural wood coating

Drivers towards water borne

What is driving this ?



Trend in European architectural wood coating

Drivers towards water borne



VOC content

- max. 130 g/l for in-situ application (2004/42/EC)
- Factory applied according to 1999/13/EC
- GEV EMICODE EC 1+ (max. 50 g/l)

Toxicity

- Low toxicity
- No SVHC (e. g. formaldehyde, APEO)
- No isocyanate crosslinkers





The Chemistry

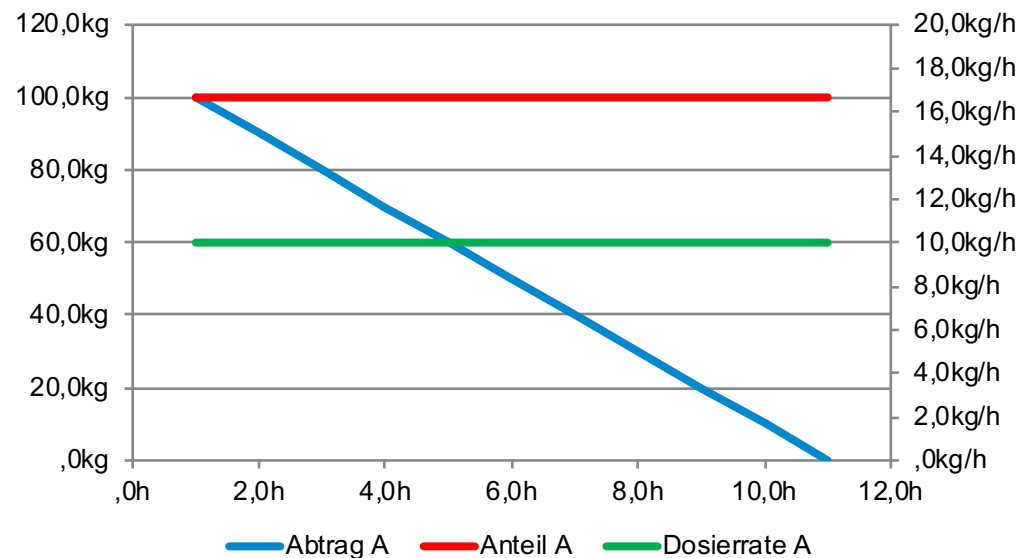
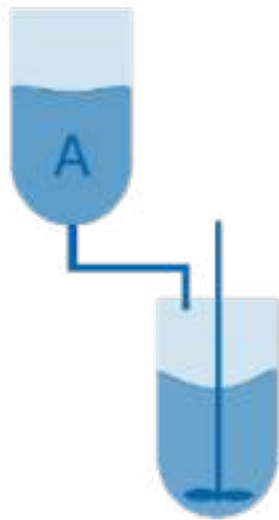
The linear morphology

Keep it straight

A monomer mixture or premix (A) will feed to the reactor with a continuous dosage ratio in a fix time

dosage profil: constant
drain A: linear
Chemical distribution A: constant

morphology:



The core-shell morphology

Like an onion

A monomer mixture or premix (A=Core) will feed continuously to the reactor in a fix time. Then there is a break. After this break a monomer mixture or premix (B=Shell) will feed continuously to the reactor in a fix time.

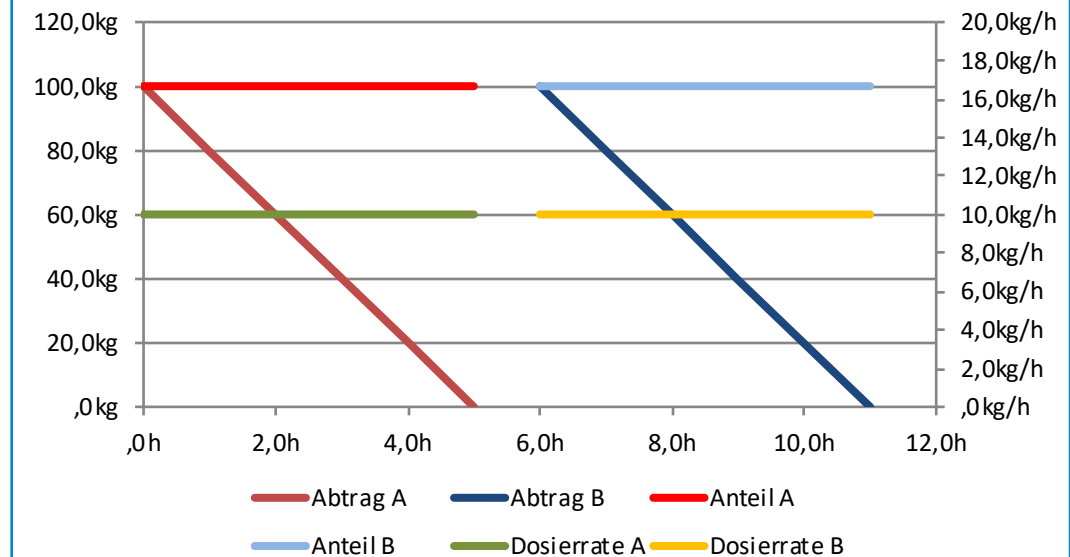
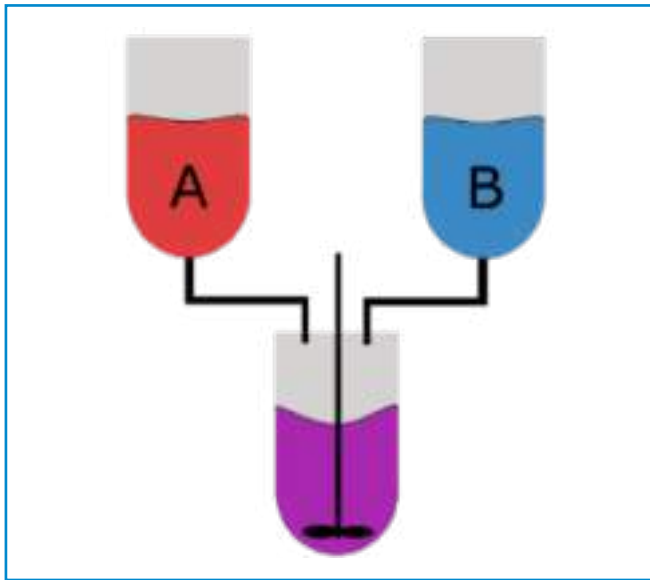
dosage profil A / B: constant / constant

drain A / B: linear / linear

Chemical distribution A / B: constant / constant

Amount A / B: $A > B$ or $A < B$

morphology:



Application Profile



slightly changes with big impact

Benchmark 1

Standard Binder



Plextol R 825

Special Binder



Plextol R 825



High performance binder for high gloss trim

What can Plextol R 825 deliver?

- High gloss potential
- Excellent blocking resistance
- Excellent wet adhesion
- Excellent water resistance
- Good levelling
- Good compatibility with HASE & HEUR thickeners

Type:	core-shell PA
MFFT:	10°C
Tg:	15 / 65
Solids:	47%
pH:	8.5
Viscosity:	3000 mPas (Brookfield)



The results

Plextol R 825



Blocking resistance

Polymer	Ambient	30°C	40°C	50°C
Plextol R 825	5	5	5	5
Benchmark 1	5	3	1	0

0 = worst

5 = best

Excellent block
resistance

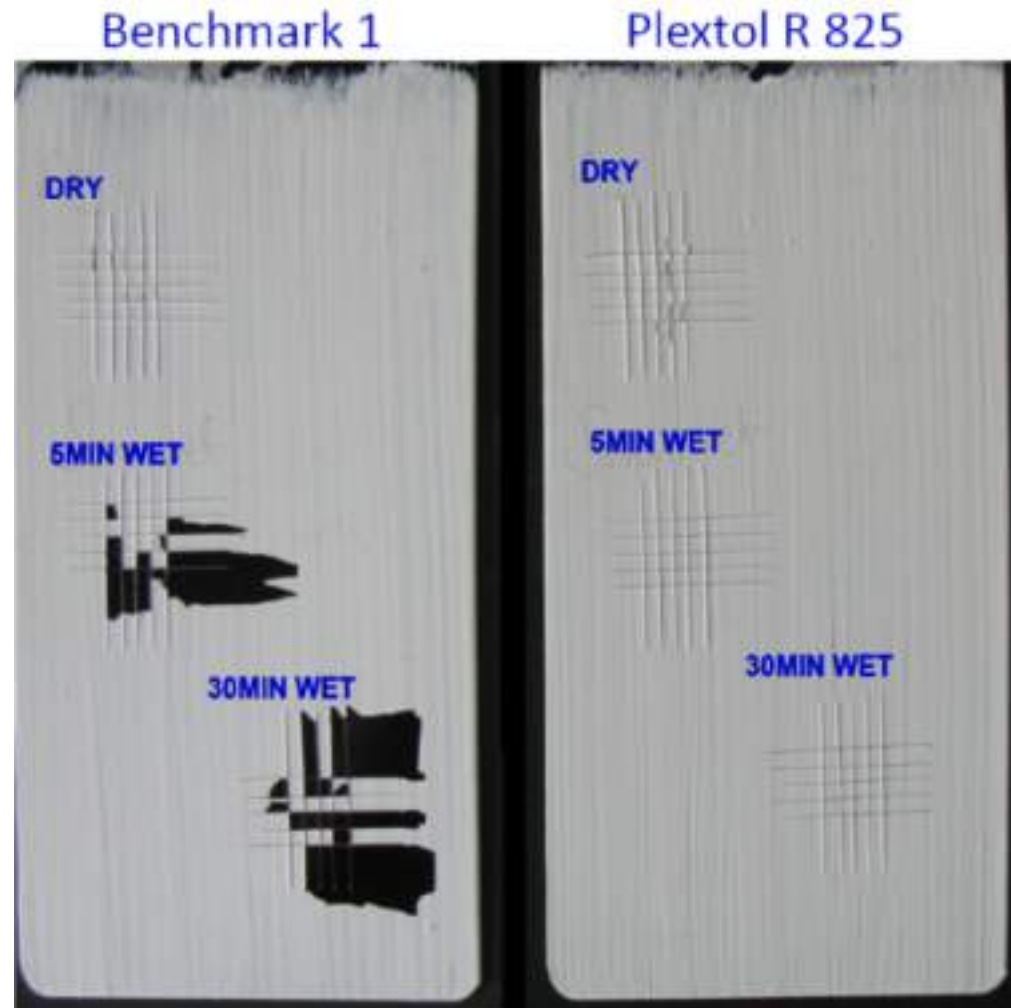


Plextol R 825



wet- / dry adhesion on old alkyd

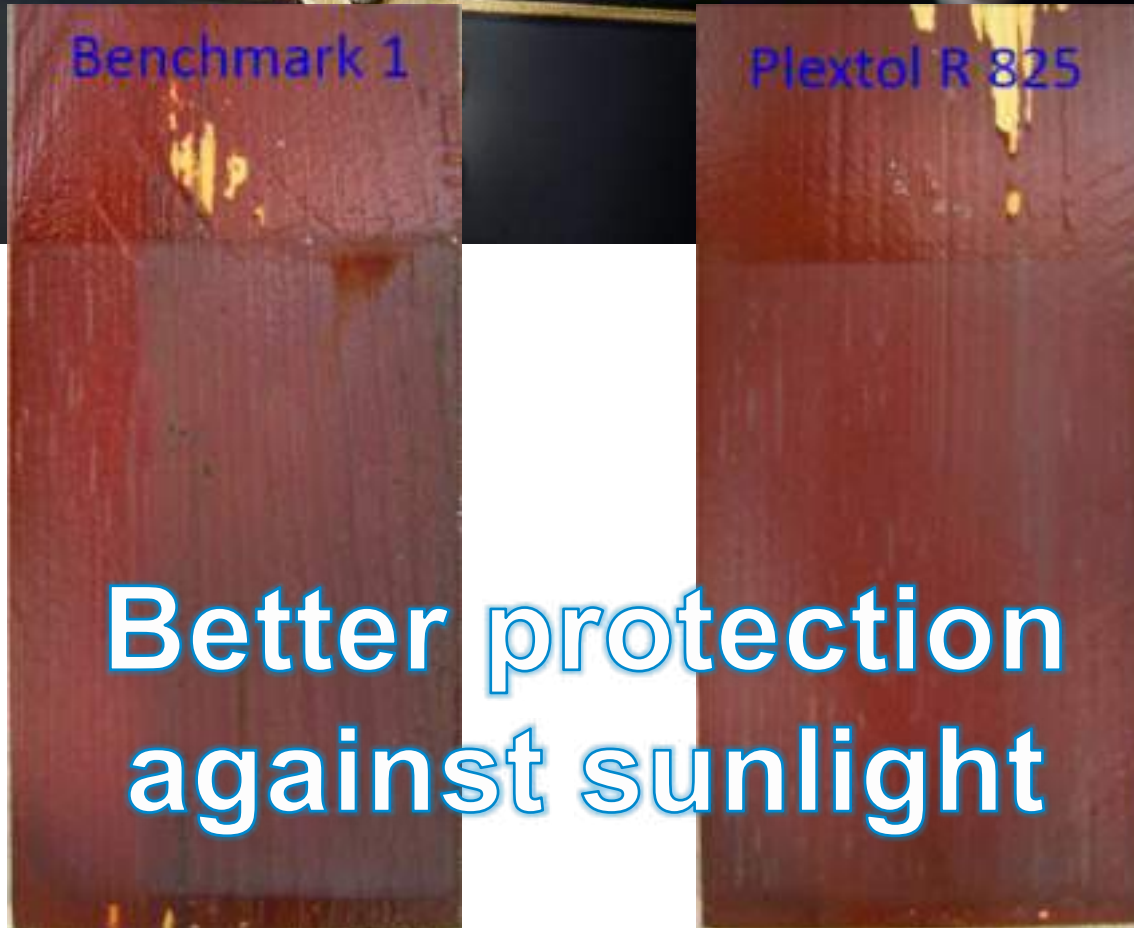
Excellent
adhesion @
dry and wet
conditions



QUV Test



2.000h in the solarium



* Pictures are contrast corrected for better visibility

Outside Exposure



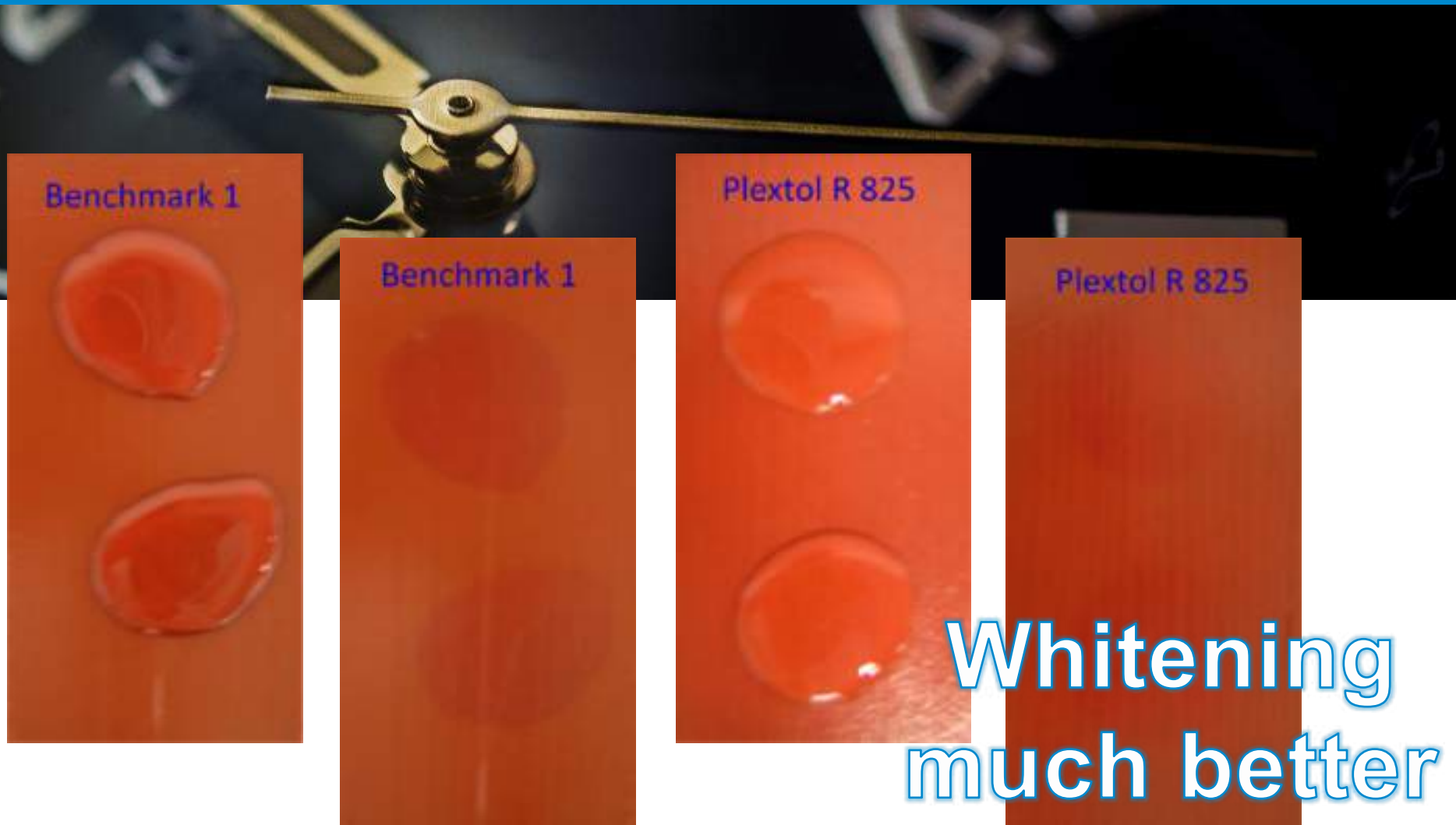
Up to 60 month according to EN 927-3



Better protection against
the outside wheater

Whitening

Is there water in the Film





The Conclusion

I Agree ☐

Synthomer's performance polymers



Plextol R 825 – High gloss trim paint

Based on Synthomer's core-shell technology

- High gloss potential
- Excellent blocking resistance
- Excellent wet adhesion
- Perfect outside protection
- Excellent water resistance
- Good levelling



Q & A



Thank you for your
attention.

