Pasquick® technology: speed up your painting operations

Srba Tasic

Agenda

Pasquick® technology: Speed up your painting operations

01	Infrastructure and Pasquick®: A perfect fit
02	Pasquick® technology: chemistry
03	Pasquick® toolbox and recent developments
04	Pasquick® technology and selected case studies

Infrastructure: An important market for coating technologies

Pasquick® technology addresses market needs within the infrastructure market

- Infrastructure is essential for society to function. Coating technologies often play a substantial role in protecting and designing valuable infrastructure.
- Many painting operations in infrastructure are time- and cost-consuming due to
  - multiple coats with long drying times
  - slow return to service
- This presentation will introduce you to Pasquick® technology and its benefits. It will also highlight selected case studies.

Benefits of Pasquick® technology

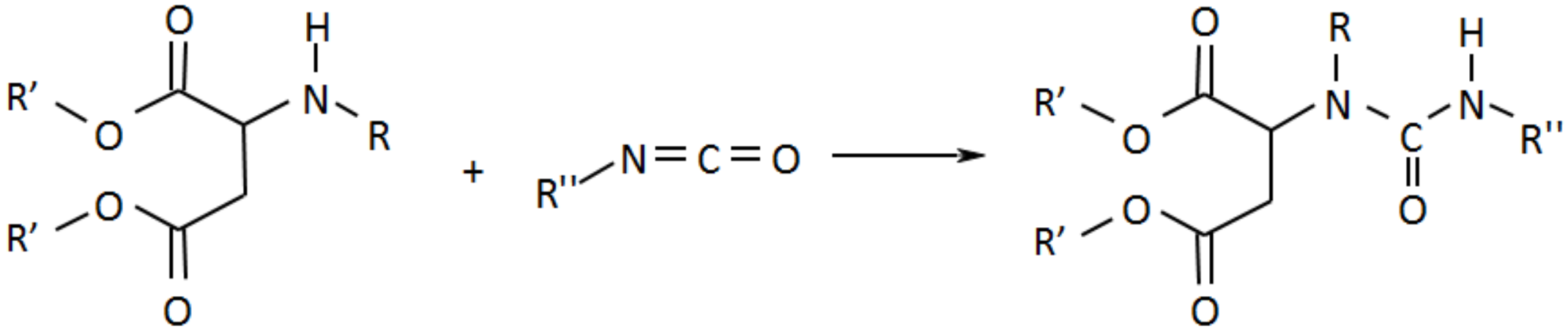
Pasquick® combines high productivity with long lasting durability

- Fast cure translates into a faster painting process and / or to faster return to service
- High film build makes it possible to reduce the number of coats in a paint system while maintaining the same overall thickness
- The increased productivity helps to reduce the overall cost of the painting process
- Ultra high solids to near Zero-VOC are possible
- Proven technology with various references

Pasquick® coating technology is an umbrella designation for 2K Polyaspartic systems based on **Desmodur®** aliphatic polyisocyanates and **Desmophen® NH** aspartic resins

Pasquick® - 2K system with unique reactivity profile

Curing reaction of aspartic acid esters with polyisocyanates



Aspartic Acid Ester

Aliphatic Isocyanate

Aliphatic Urea Structure

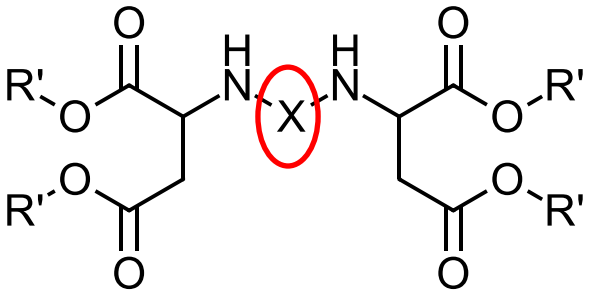
Desmophen® NH

Desmodur® N

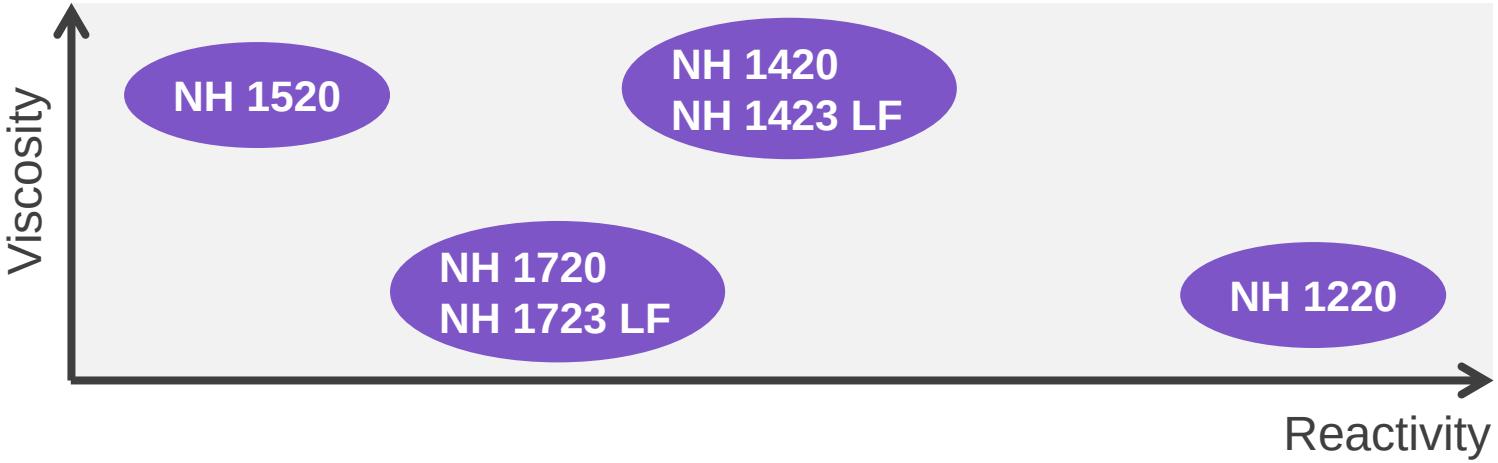
Pasquick®

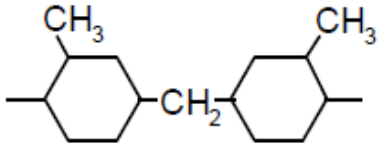
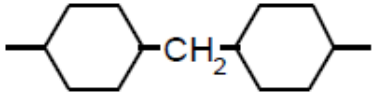
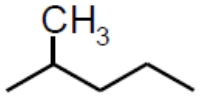
Pasquick® toolbox

Desmophen® NH – aspartic acid ester resins



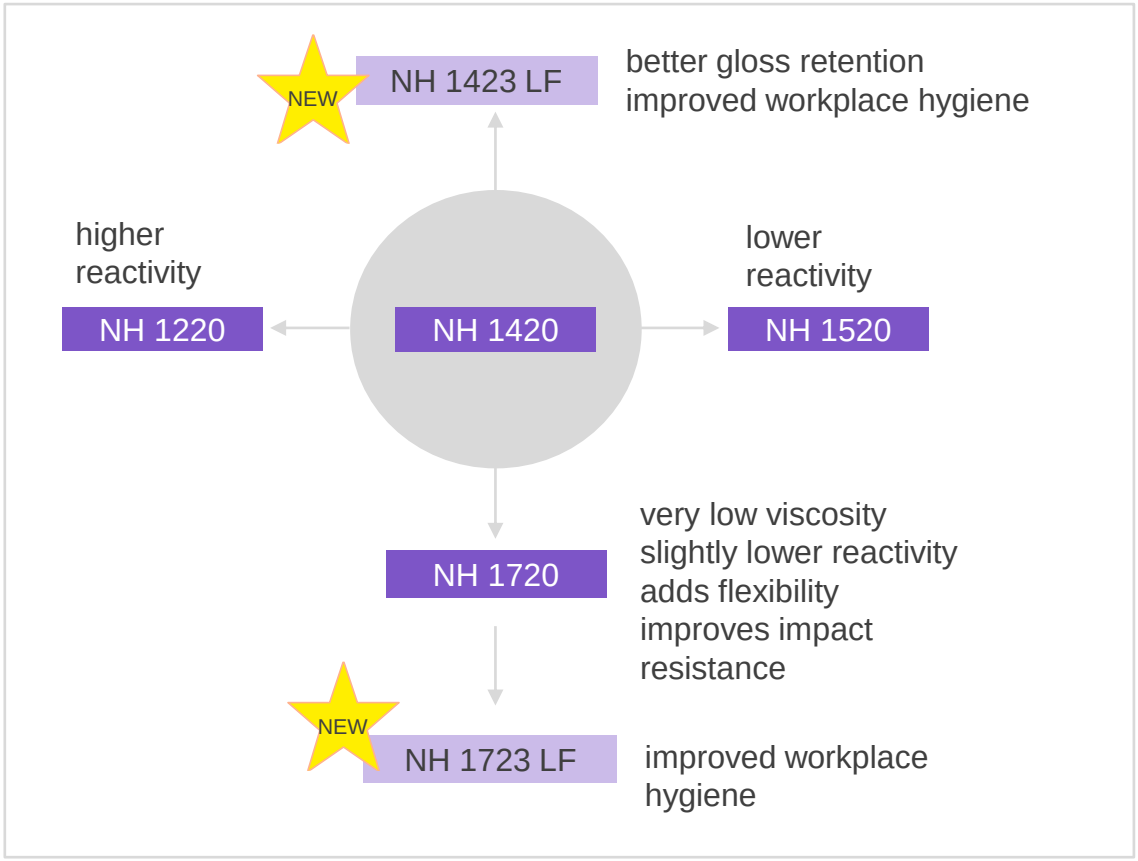
Tailoring reactivity via steric hindrance



X			
Reactivity	Slow	Moderate	Fast

Pasquick® toolbox – new developments

Desmophen® NH – aspartic acid ester resins



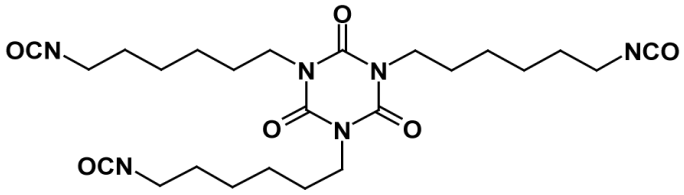
*FADEE is reduced to the technically possible content
LF = Low fumaric acid diethylester (FADEE)

Desmophen® NH portfolio

Desmophen®	Equivalent Weight	Viscosity @ 25 °C	FADEE* content
NH 1220	234 g/mol	90 mPas	Approx. 1%
NH 1420	276 g/mol	1450 mPas	Approx. 5%
NH 1423 LF NEW	274 g/mol	1450 mPas	< 0.1%
NH 1520	290 g/mol	1400 mPas	Approx. 5%
NH 1720 (NH 2850 XP)	295 g/mol	100 mPas	Approx. 4%
NH 1723 LF NEW	290 g/mol	100 mPas	< 0.1%

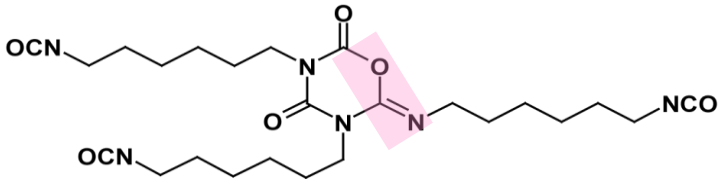
Pasquick® toolbox – new developments

Desmodur® – aliphatic polyisocyanate crosslinkers



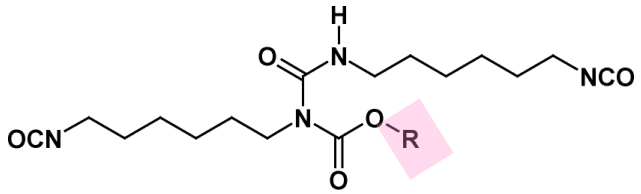
Desmodur ultra N 3300
Desmodur ultra N 3600

Standard HDI trimer



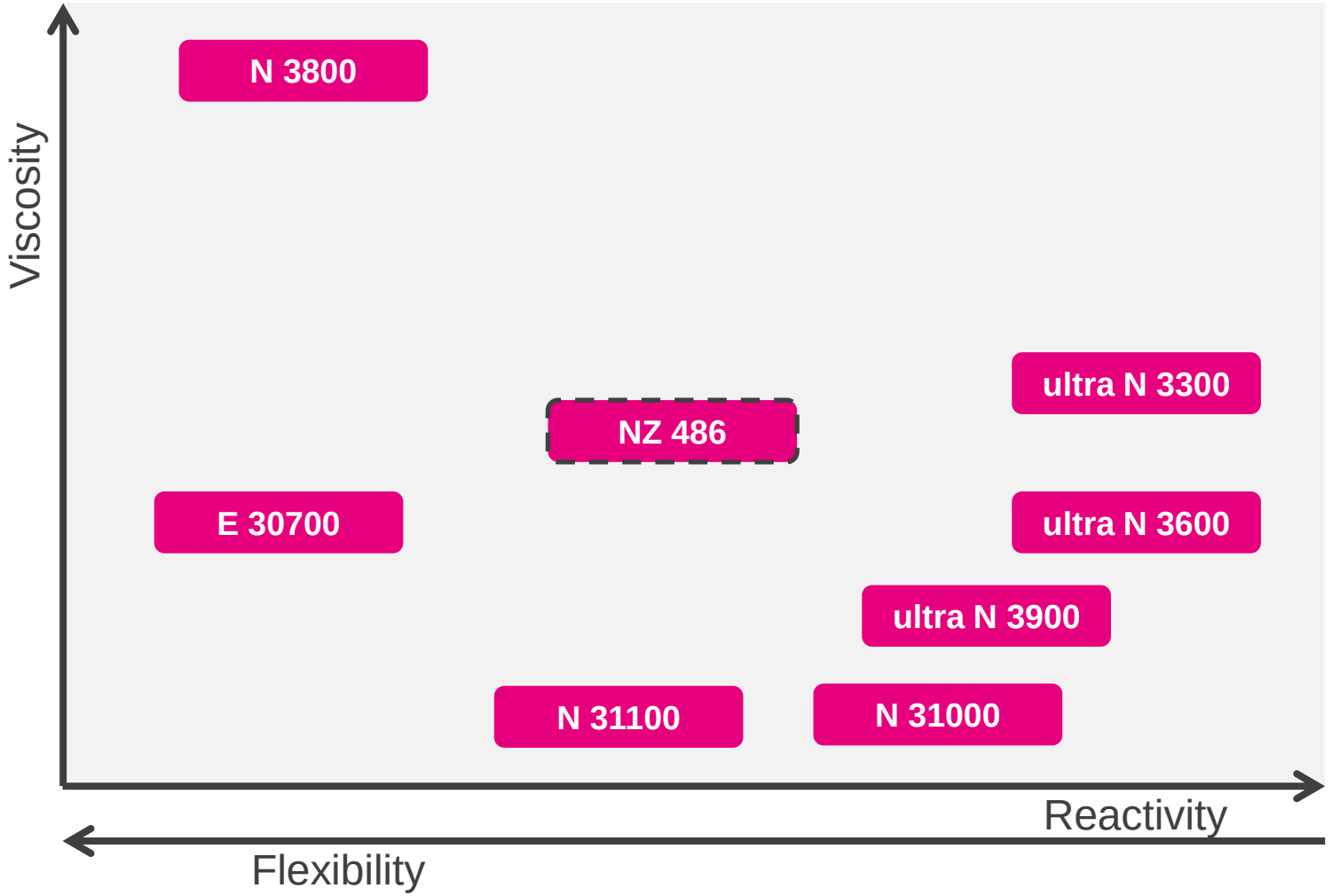
Desmodur ultra N 3900

Assymetric HDI trimer



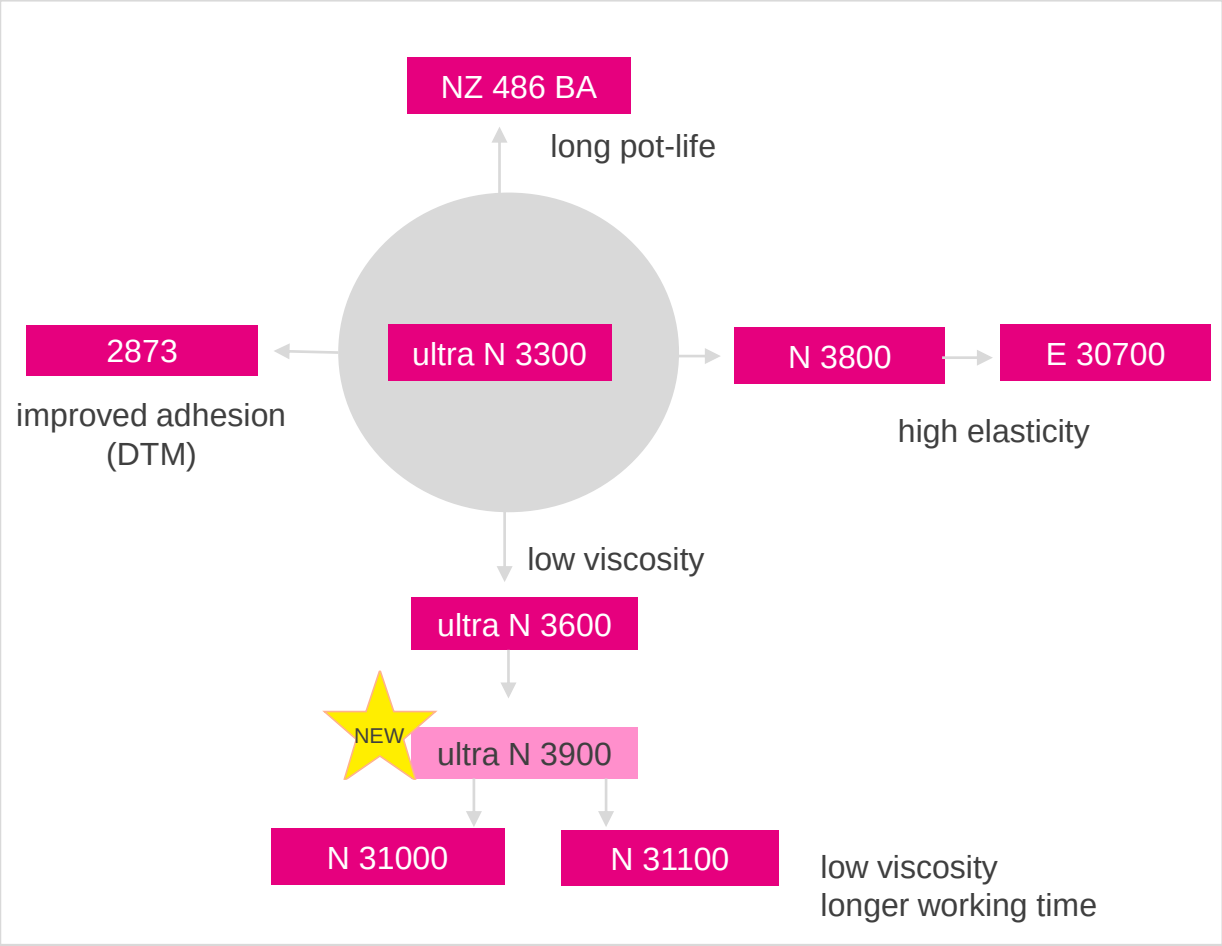
Desmodur N 31100

Low viscous HDI allophanate



Pasquick® toolbox – new developments

Desmodur® – recommend aliphatic polyisocyanate crosslinkers



Desmodur®	NCO content	Viscosity @ 25 °C	Residual monomer content*
ultra N 3300	21.8%	3000 mPas	<0.1%
ultra N 3600	23.0%	1200 mPas	< 0.1%
ultra N 3900 NEW	23.5%	730 mPas	< 0.1%
N 31000 (XP 2840)	23.0%	500 mPas	<0.26%
N 31100 (XP 2860)	19.5%	500 mPas	< 0.16%
N 3800	11.0%	6000 mPas	<0.25%
E 30700 (E 2863 XP)	11.0%	1350 mPas	< 0.3%
NZ 486 BA (86% in BA)	10.2%	2100 mPas	<0.1% HDI <0.28% IPDI
2873 (silane modified)	12.3%	450 mPas	<0.25%

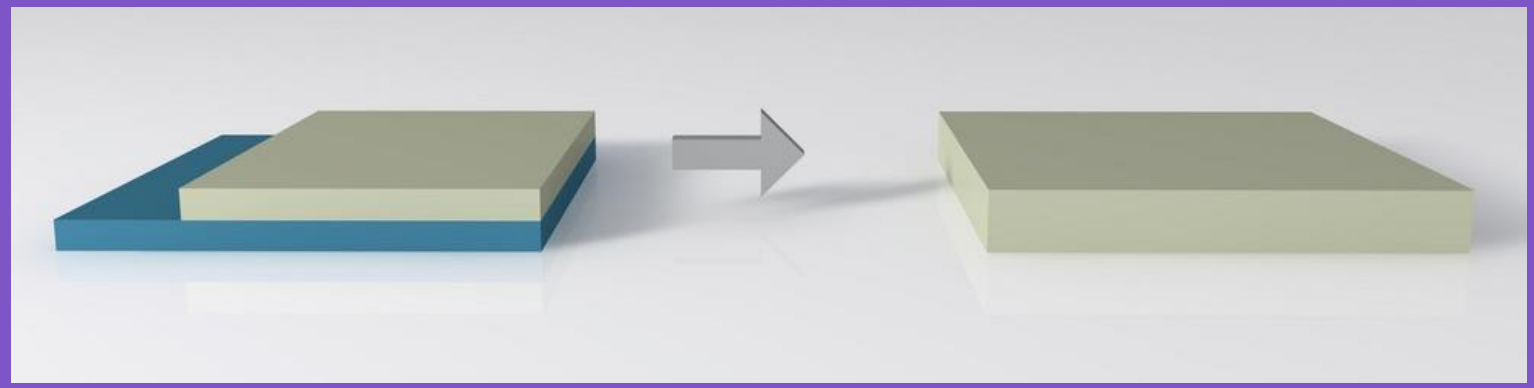
Benefits of Desmodur® ultra grades:

- Improved workplace hygiene
- Not in scope of the diisocyanate restriction under REACH

Benefits of Pasquick® technology

High productivity combined with good gloss retention for pigmented top coats

- **Increased productivity of Pasquick® technology:**
  - **Fast cure characteristics at ambient temperature**
  - **Reduction of layers through high film build**



- **Replacement of primer and topcoat by a direct-to-metal (DTM) polyaspartic topcoat**

Is there really a market for another coating technology?

Pasquick® has proven itself already

Here is what's happened with Pasquick® in the last 5 years:

- 50+ companies have launched Pasquick®-based products worldwide
- Polyaspartic technology has become part of the most important standard for corrosion protection, the ISO 12944 as well as several national standards.
- Numerous case studies have proven the benefits and the long-term performance of Pasquick®

Case study: Citadel Bridge, Hamburg

First reference to Pasquick® in a public infrastructure project in Germany

Object: Swing bridge across the Hamburg Lotsekanal, in service since 2015

Coating supplier: Sherwin-Williams

Coating system:

- Primer 60 µm
- Intermediate 160 µm
- 100 µm Pasquick® Topcoat 100 µm

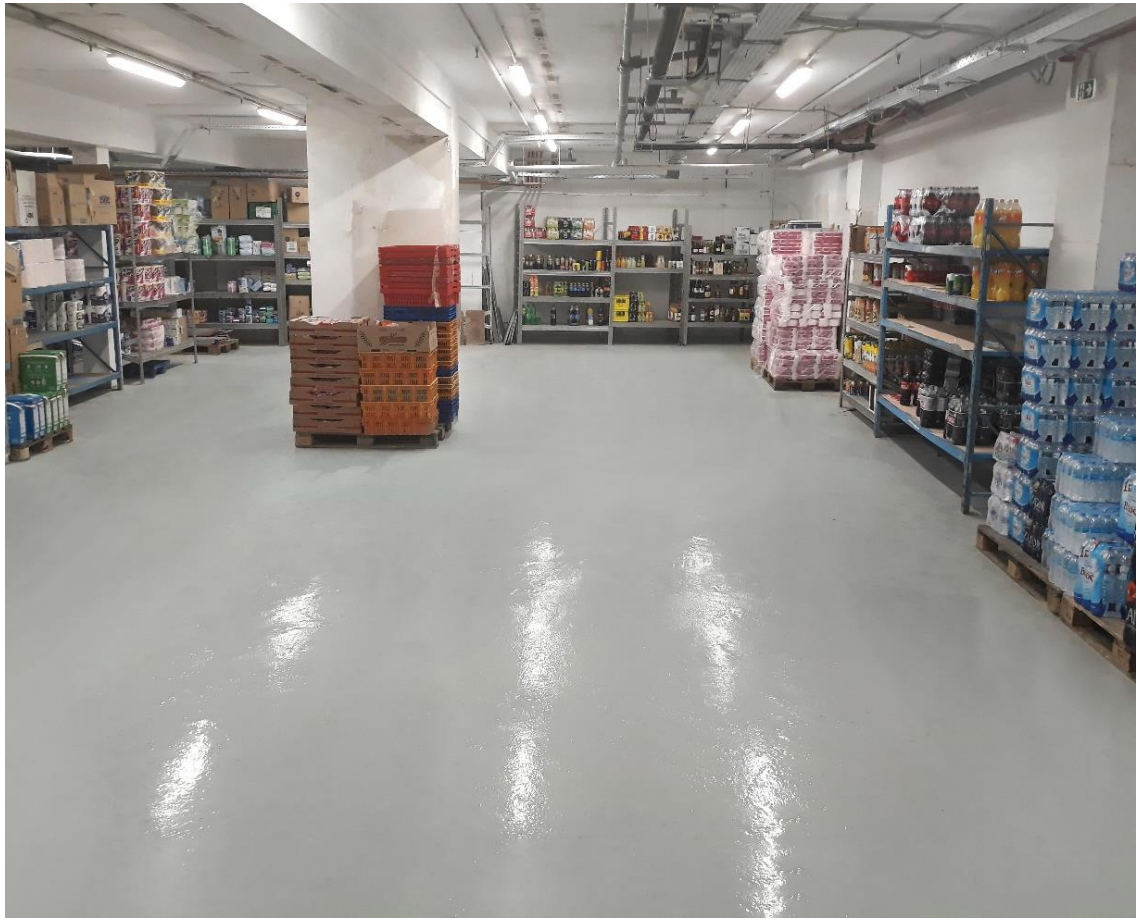
Contractor: NE Sander Eisenbau GmbH

Building owner: Landesbetrieb Straßen, Brücken und Gewässer, Hamburg

Three coats instead of four to speed up painting operation

Case study: Floor refurbishment supermarket warehouse

Renovation in only one day with no impact on service times of the warehouse



Object: Supermarket warehouse, refurbishment of 250 m² concrete floor in 2018

Coating supplier: NEOTEX S.A., Greece

Coating system:

- Pasquick® based primer
- Pasquick® based putty
- Pasquick® based coating layers

Building owner: My Market, Greece

Renovation done in just one day

Pasquick® technology: Speed up your painting operations

Summary

- Fast cure translates into a faster painting process and / or to faster return to service
- High film build makes it possible to reduce the number of coats in a paint system while maintaining the same overall thickness
- The increased productivity helps to reduce the overall cost of the painting process
- Ultra high solids to near Zero-VOC are possible
- Proven technology with various references

Thank you
for your attention

Forward-looking statements & Disclaimer

This presentation may contain forward-looking statements based on current assumptions and forecasts made by Covestro AG.
Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here.
These factors include those discussed in Covestro's public reports, which are available on the Covestro website at www.covestro.com.

The company assumes no liability whatsoever to update these forward-looking statements or to adjust them to future events or developments.
This information and our technical advice - whether verbal, in writing or by way of trials - are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to verify the information currently provided - especially that contained in our safety data and technical information sheets - and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactured by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility. Our products are sold in accordance with the current version of our General Conditions of Sale and Delivery.