



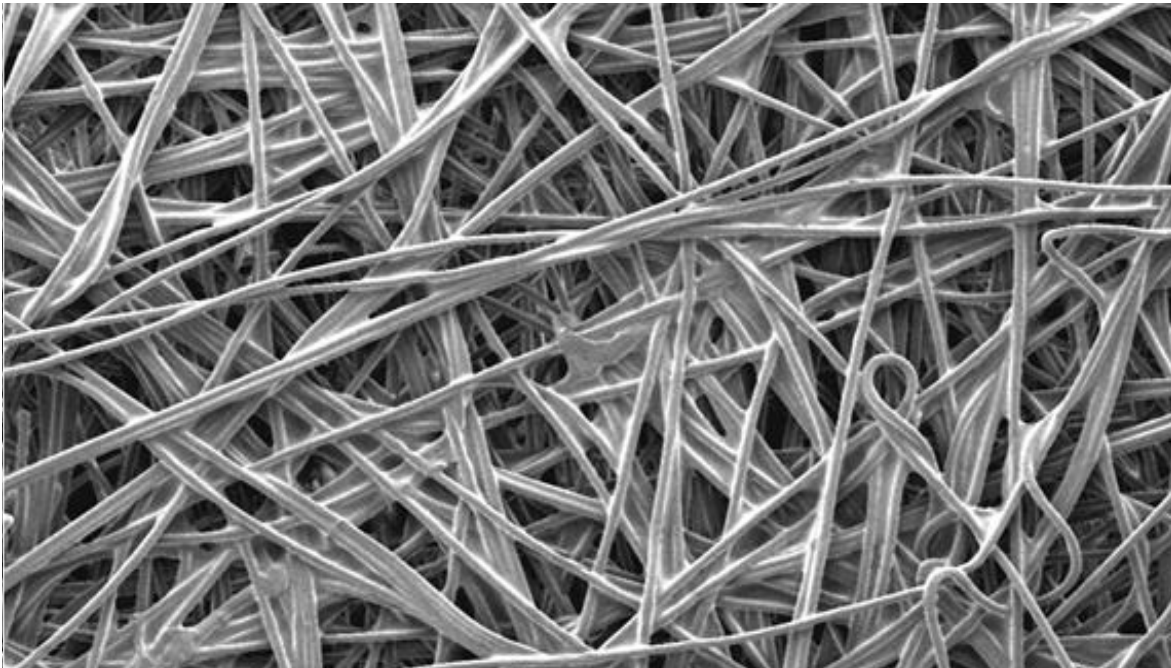
Optimal selection  
of additives and binders  
for fiber bonding –  
bring your vision to live

Dr. Bernd Hövel / Dipl.-Ing. (FH) Ulrich Schütze

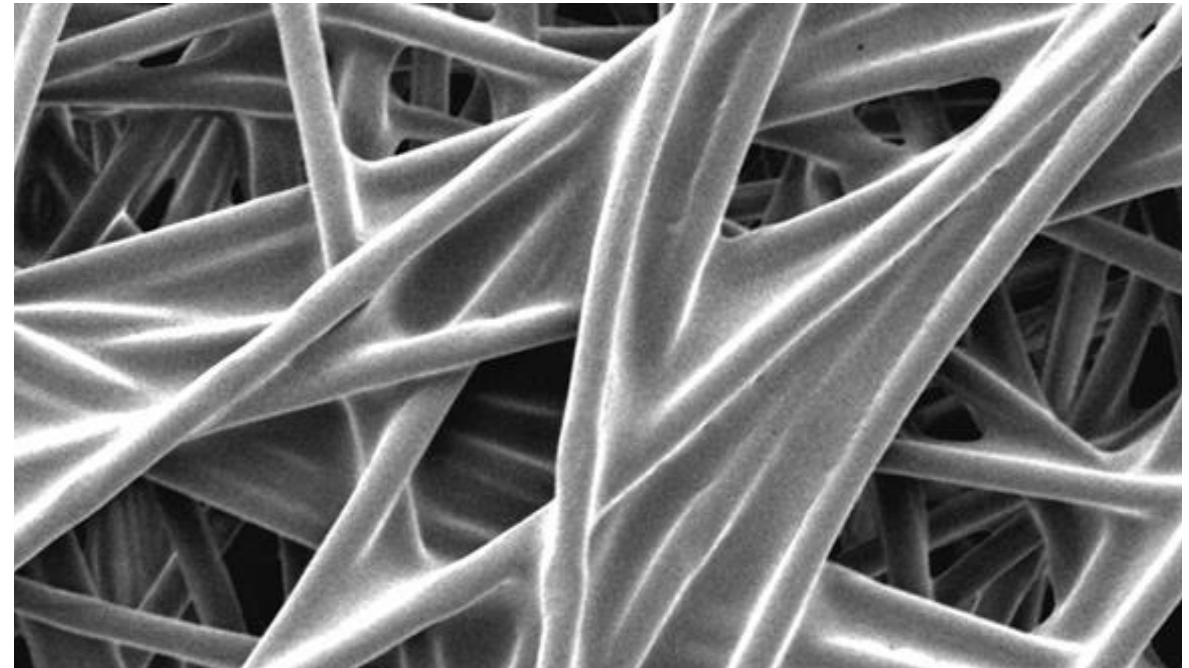


# Target: homogeneous impregnation of non-woven fabric

**No foam / good wetting**



**Perfect impregnation**



# Fiber bonding technologies

## Dispersion

(thermoplastic, soft, flexible)

Acrylic and Styrene Acrylic  
Acronal®

Styrene-Butadiene  
Styrofan®

Polyurethane  
Emuldur®

## Resin

(thermoset, rigid, stable)

Acrylic Resin  
Acrodur®

Urea-Formaldehyde-Resin  
Urecoll®

Melamine-Formaldehyde-Resin  
Saduren®

Formaldehyde and APEO free technologies available

# Additives for fiber bonding

## Performance additives



- Antioxidants
- Light stabilizer
- Photoinitiators
- Flame retardants

## Formulation additives



- Rheology modifiers
- Wetting agents
- Defoamers
- Dispersants

# Additives in use through the value chain



- Antioxidants – Irganox<sup>®</sup>
- Light stabilizer – Tinuvin<sup>®</sup>
- Polymer stabilizer – Irgastab<sup>®</sup>
- Flame retardants – Melapur<sup>®</sup>

- Rheology modifiers – Rheovis<sup>®</sup>
- Wetting agents – Hydropalat<sup>®</sup>
- Defoamers – Foamaster<sup>®</sup>
- Dispersants – Dispex<sup>®</sup>

# BASF portfolio for non-wovens smart combination for superior performance

## Non-Woven

### Dispersions



- Acronal<sup>®</sup>
- Styrofan<sup>®</sup>
- Emuldur<sup>®</sup>

### Resins



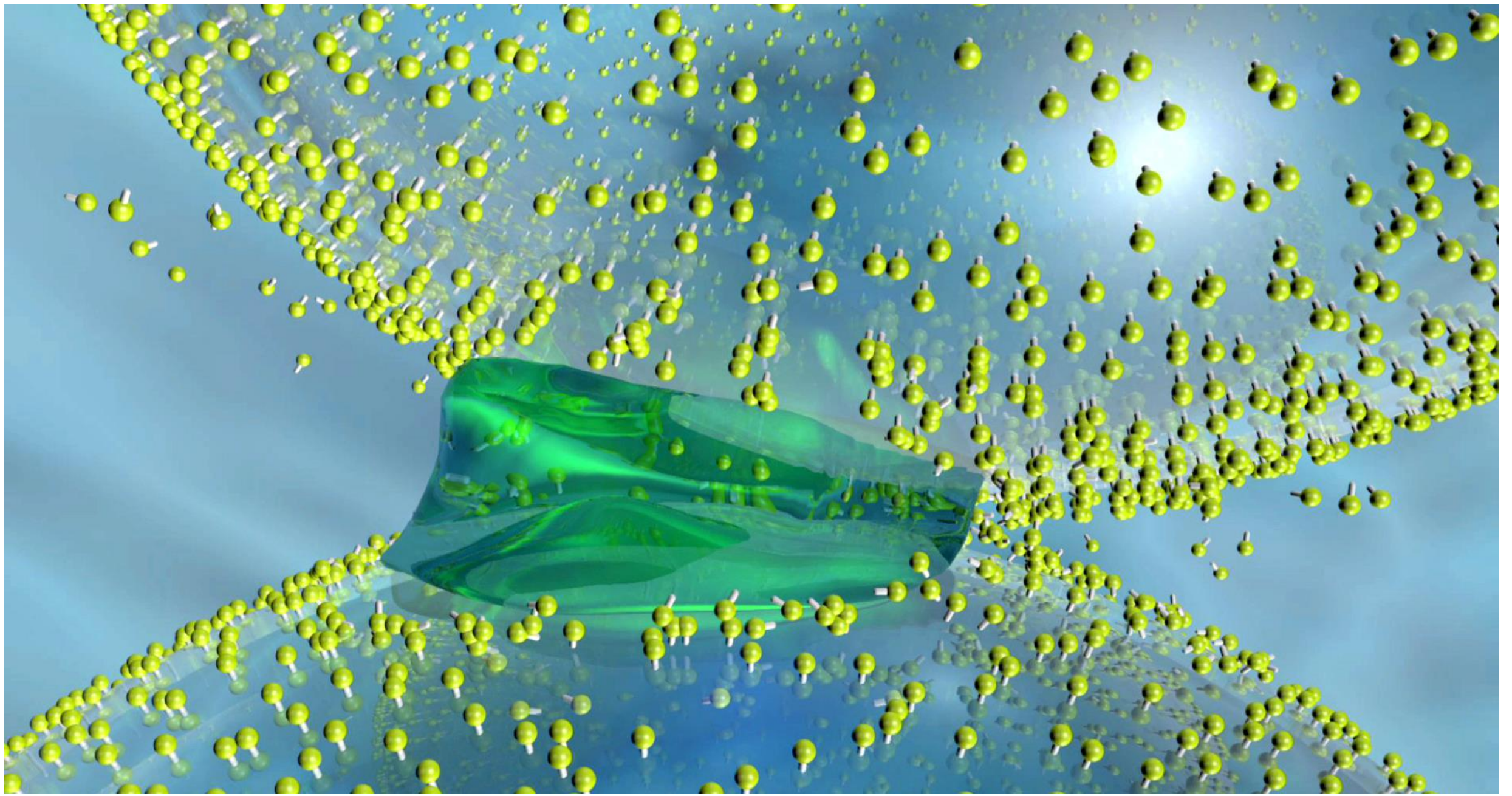
- Acrodur<sup>®</sup>
- Urecoll<sup>®</sup>
- Saduren<sup>®</sup>

### Additives



- Rheovis<sup>®</sup>
- Dispex<sup>®</sup>
- Foamaster<sup>®</sup>
- FoamStar<sup>®</sup>
- Hydropalat<sup>®</sup>

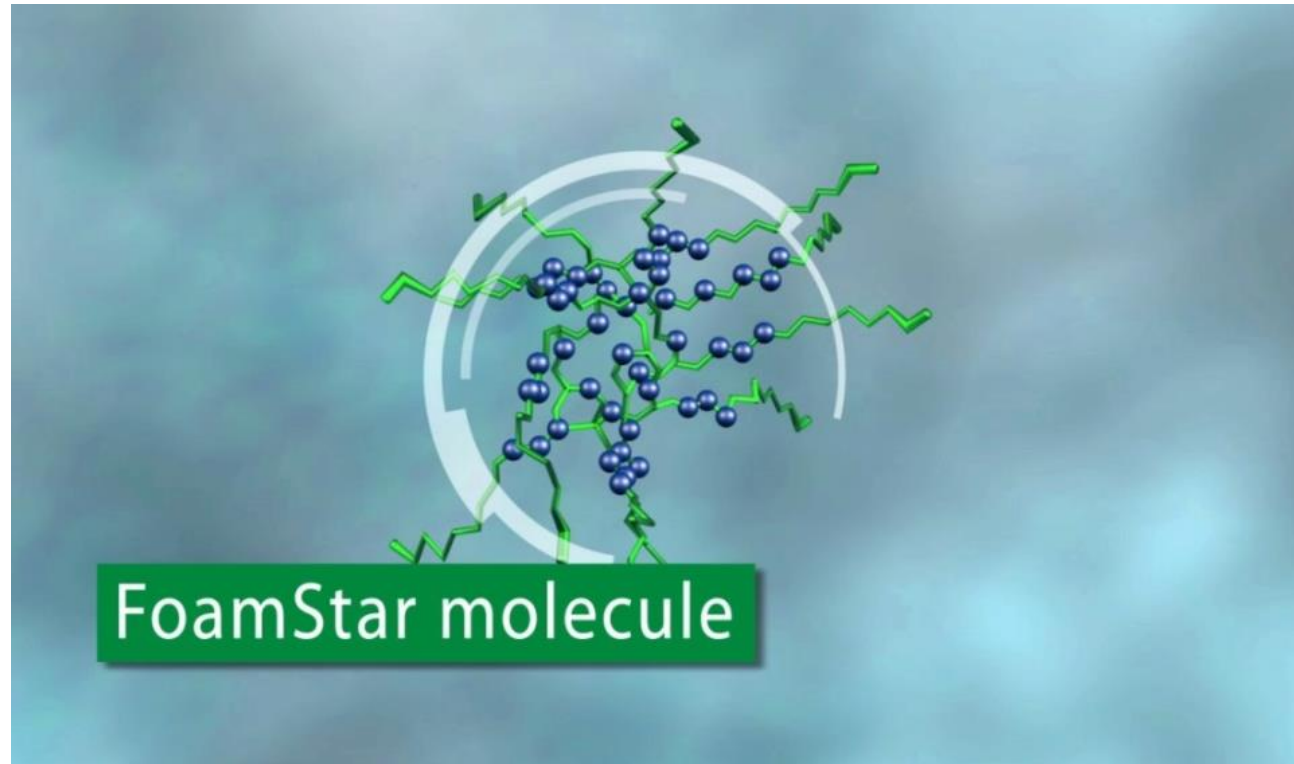




# FoamStar<sup>®</sup> technology

## Speciality defoamer

- Hyper-branched polymer molecule with star shaped structure
- Multifunctional molecule combines properties e.g.
  - ▶ defoaming
  - ▶ wetting



**Main benefit - improved foam reduction**

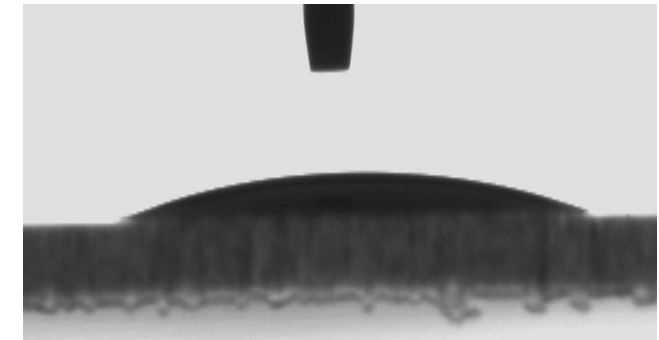
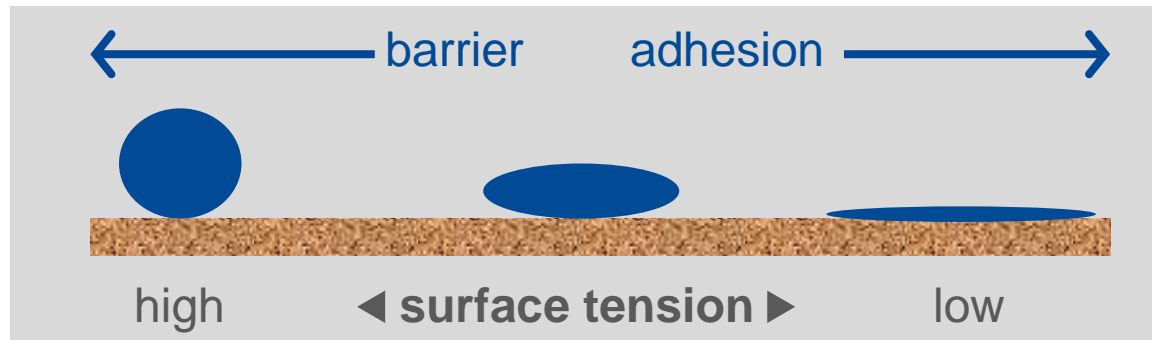
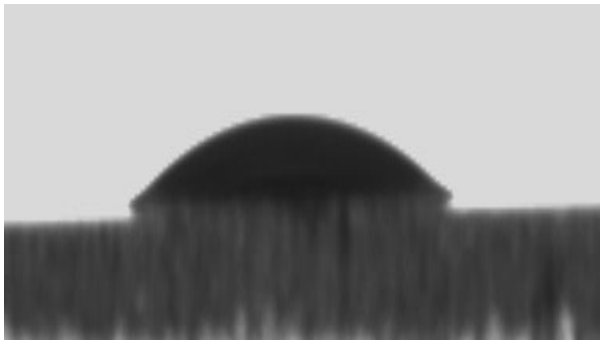
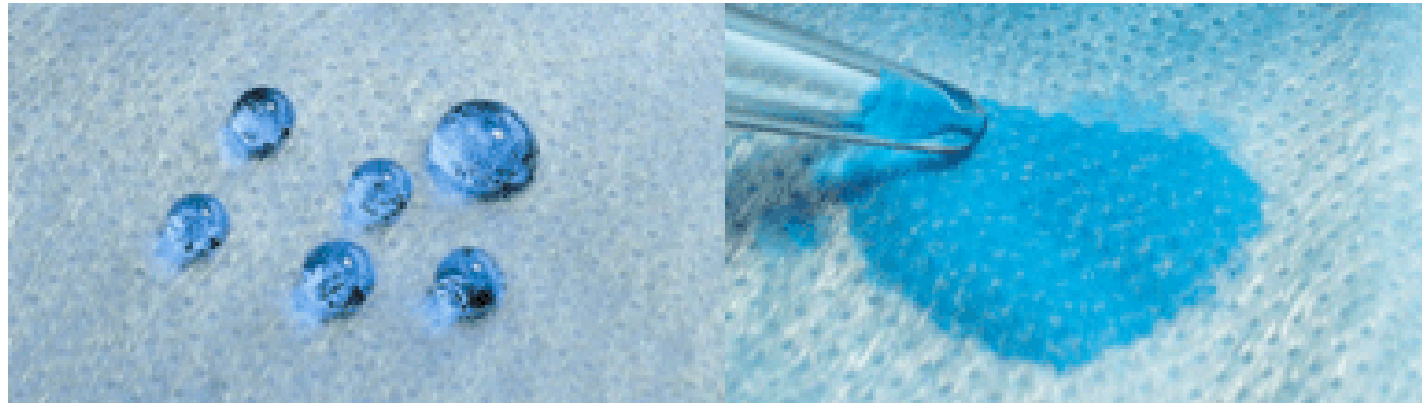


# Selection of essential defoamers

<b>Main product</b>	<b>Product benefits/advantage</b>	<b>Application</b>
Foamaster MO NDW	Mineral oil based standard for SBA, acrylics, PVC copolymers, EVA, water-soluble alkyds	effective in all systems based on synthetic latex, especially containing styrene-butadiene, polyvinyl acetate, acrylics
Foamaster NO 2306	Natural oil based easy incorporation, effective micro foam removal, excellent compatibility and efficiency	acrylics, styrene acrylics and vinyl acetate ethylene copolymer (EVA) emulsions
Foamaster WO 2323	White oil based strong hydrophobicity, broad applicability	best defoamer for styrene-acrylate and acrylate systems
FoamStar ED 2523	Pre-emulsified defoamer long term activity	especially recommended for acrylics, styrene-acrylics and vinyl-acrylic-emulsions

# Influence of surface modifiers on fiber wetting

## Tailoring surface tension



# Selection of essential wetting agents

<b>Main product</b>	<b>Product benefits/advantage</b>	<b>Application</b>
Hydropalat WE 3110	low-foaming, excellent substrate wetting, strong reduction of dynamic surface tension	for substrates subject to high mechanical stress
Hydropalat WE 3120	excellent for decreasing dynamic surface tension, good antifoam behavior in numerous applications, good performance and compatibility combined with low foaming properties	used in fountain and impregnation applications
Hydropalat WE 3475	highly efficient, low viscous, outstanding reduction of dynamic surface tension	particularly suitable for difficult-to-wet substrates such as polymer, cellulose or glass fibers
Hydropalat WE 3486	higher concentrated wetting agent enhances levelling properties, not flammable	for polymer-, glass fibers and siliconized paper



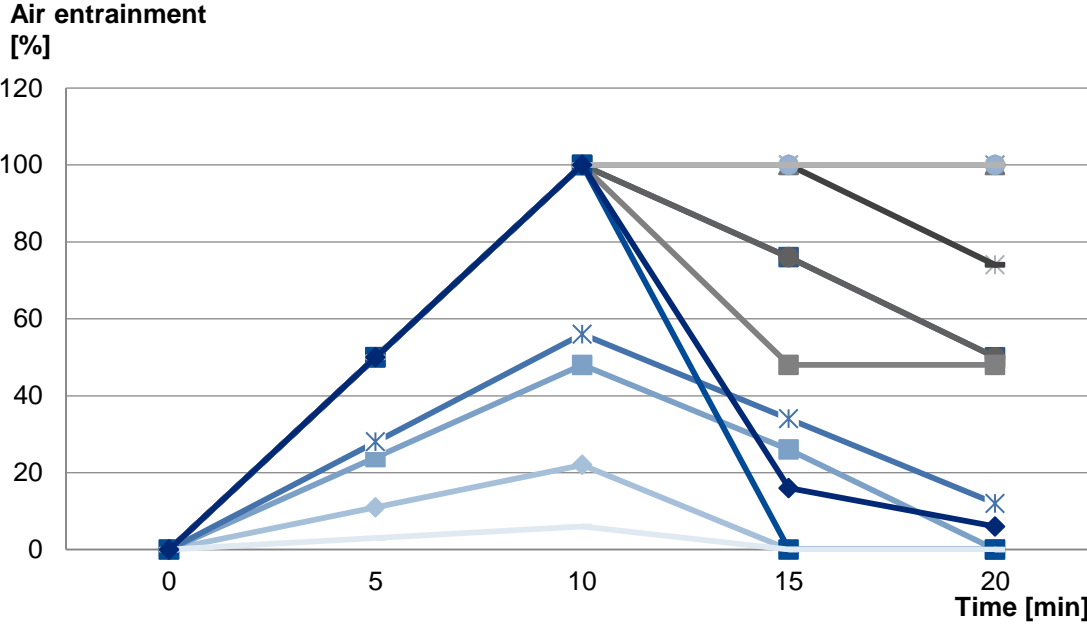
# Balancing wetting and defoaming

## Selecting optimal solutions



### Wetting agents

- Surfactants
- Hydropalat®



### Defoamers

- Oils
- Foamaster®
- FoamStar®

Potential for efficiency increase by managing foam behaviour

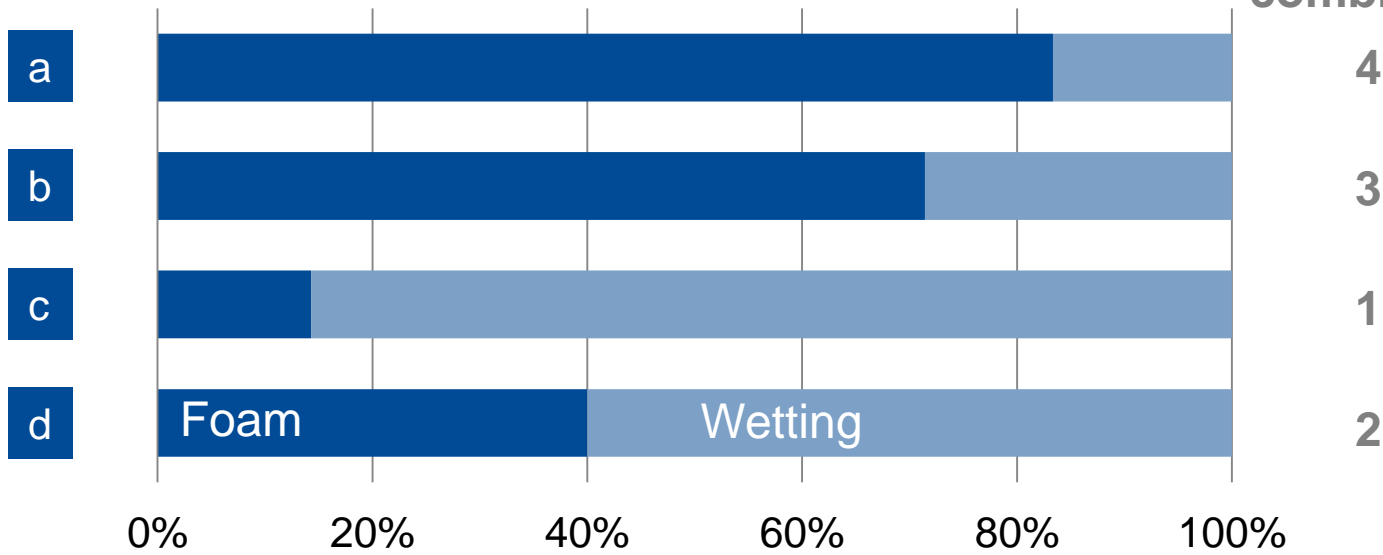
# Combination of additives in Styrofoan 2609

## Hydropalat

- a WE 3475
- b WE 3486
- c WE 3120
- d WE 3110



## In combination with FoamStar®



Ranking for the combination:

- 4
- 3
- 1
- 2

**Combination of best additives ≠ superior results**  
**Best results = right combination of additives and dispersions**

# Advancement of formulations is more than just product selection

Dispersions

Resins

Additive

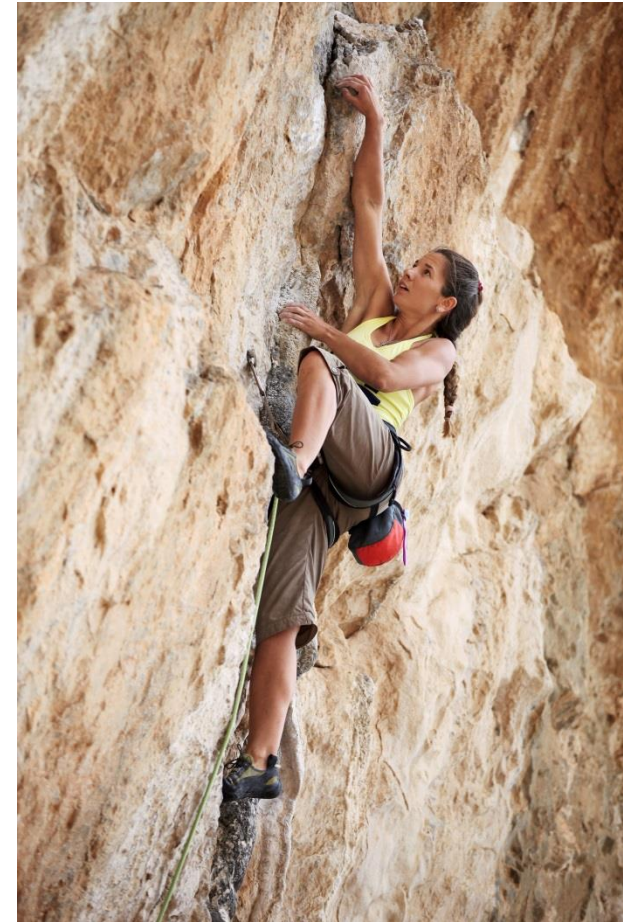
**B**est balance of properties by

**A**dditive combination

**S**ecurity & risk minimization

**F**ormulation know how

We advance **YOUR** formulations  
with our passion for chemistry







The Chemical Company