

## ЛАКОКРАСКА, 21.+22. February 2018

### **Easy dispersible rheological additives – saving time, energy and costs**

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# Content

- **Introduction of Lehmann&Voss&Co.**
- **Rheological Additives: Incorporation and Activation**
- **Easy Dispersible/Low Temperature Rheological Additives**
- **Summary**

## Lehmann&Voss&Co. at a glance

### Our three locations in Hamburg



Company headquarters on the Aussenalster lake



Laboratory, pilot plant and compounding and mixing plant in Wandsbek



Warehouse in the harbour area

### Key data 2016 including subsidiaries

- Limited commercial partnership in its fourth generation (founded 1894)
- 569 employees in 11 countries
- Turnover 347 million Euro
- Approx. 7,000 customers
- Approx. 6,500 products incl. variations
- Lab and Pilot plant area extension project, size to be tripled until 2019

## We are partners for a wide range of industries



**Plastics industry**



**Paints and coatings industry**



**Pharmaceutical industry**



**Beverage industry**



**Cosmetics industry**



**Lubricants industry**



**Pulp and paper industry**

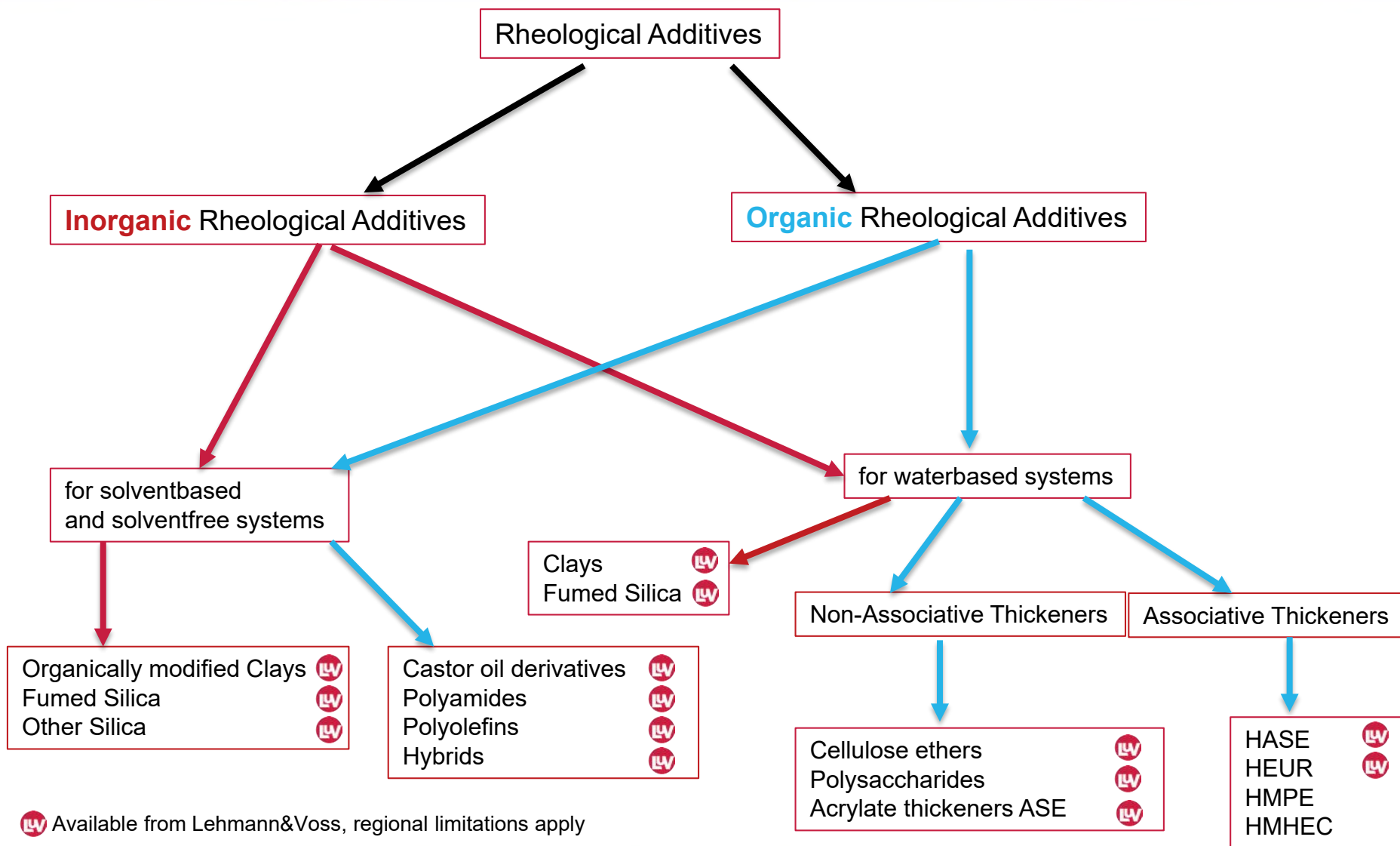


**Refractory industry**



**Rubber industry**

# Classification of Rheological Additives

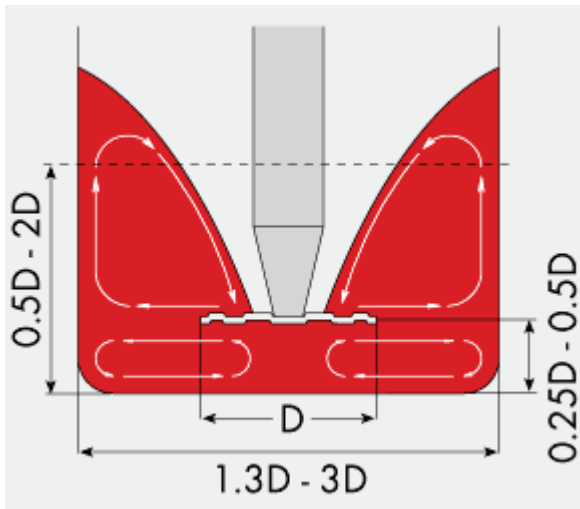




## Incorporation and Activation

For the incorporation moderate to high shear rates are necessary.

A cowless dissolver is recommended, other mixing equipment like paddles or stator-rotor (Turrax) are used for low viscous applications (like lubricants).



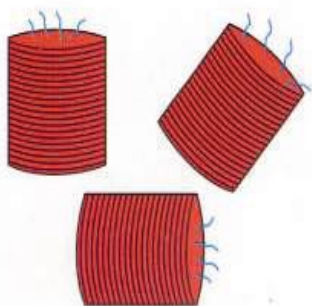
Source: VMA Getzmann

The Donut-Effekt during the dispersion process depends on:

- shear rate
- viscosity of the liquid
- parameters of the equipment

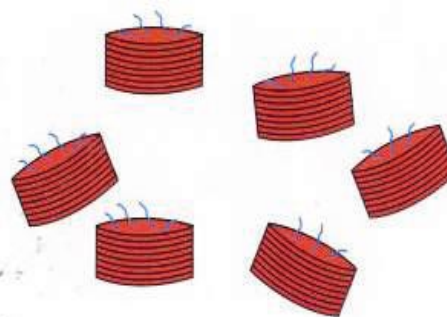
# Incorporation and Activation of clay-based Additives

Organoclay Platelet Stacks

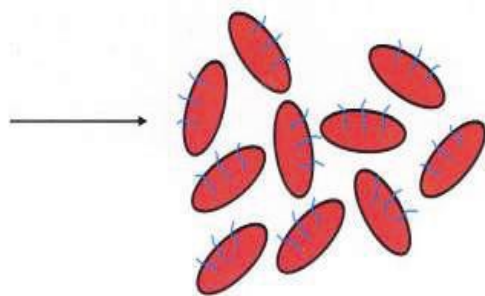


Shear  
Solvents

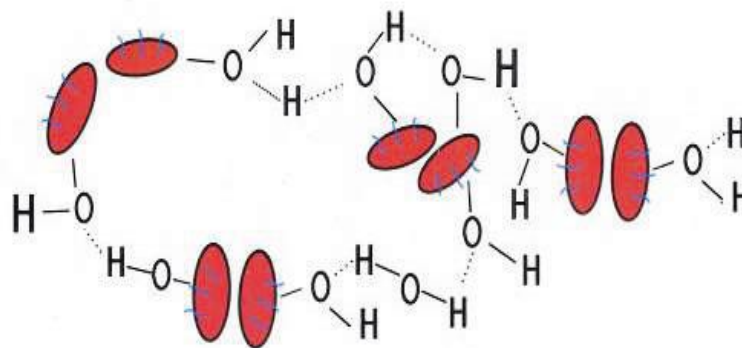
Partial deaggregating



Full deaggregating



Activated gel



## Incorporation/Activation of Easy-dispersible Clays

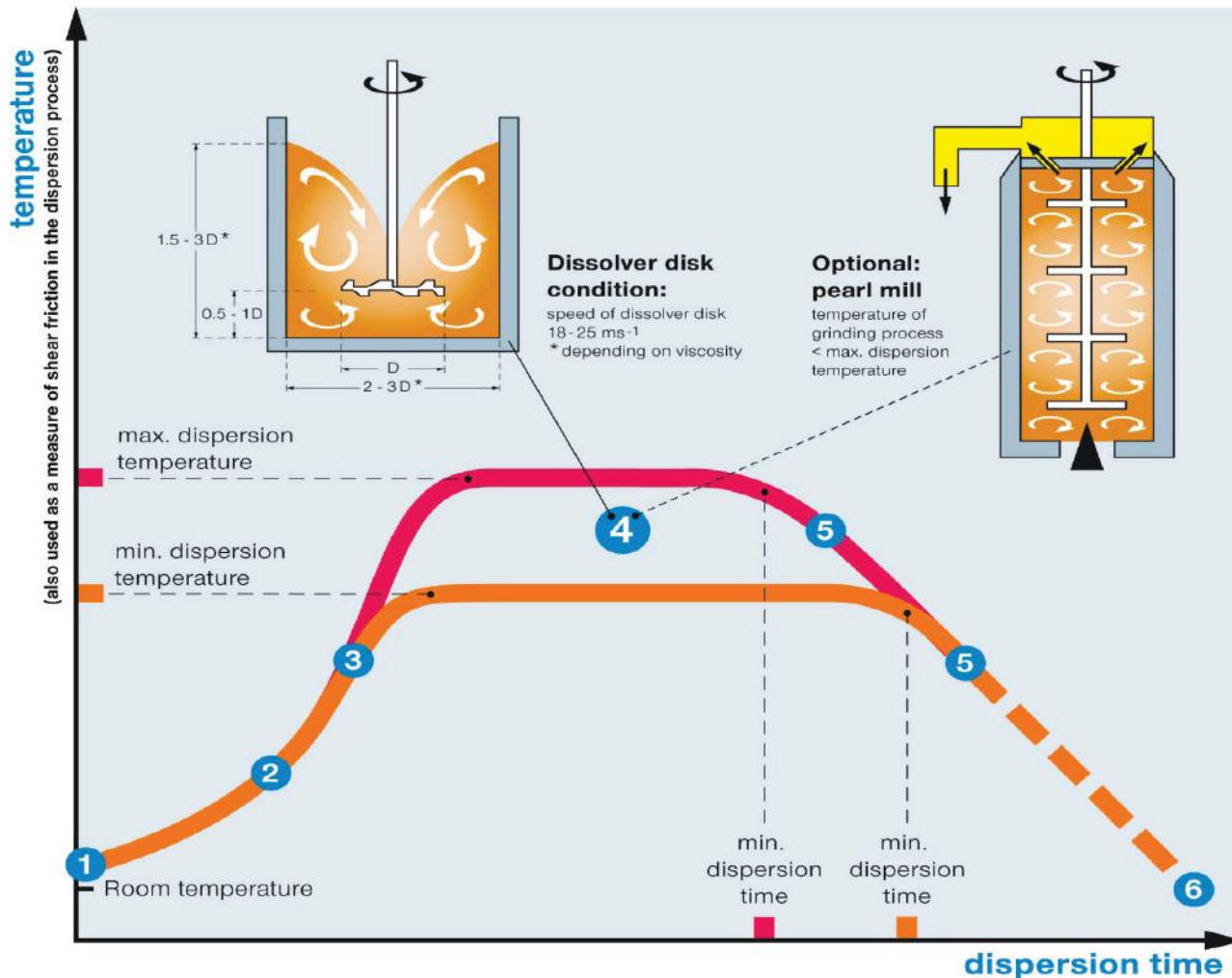
- **Easy dispersible**  
rheological additives for direct incorporation in powder form (**no pre-gel**)  
reduced dispersion times over standard grades (**higher throughput**)
- **Self-activating**  
no requirement for chemical polar activators (**less complex formulation**)
- **Not temperature dependant (valid for all clay-based thixotropic agents)**  
no temperature monitoring needed (**wider range of production equipment**)  
no problems with too low/too high production temperatures (**more robust**)



# Activation or Organic Rheological Additives

## LUVOTIX®

Temperature – and time controlled dispersion process



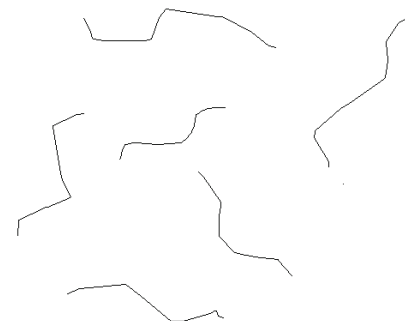
## Activation of Organic Rheological Additives

How does it work ?

**standard:** activation in a temperature and time controlled dispersion process within narrow process parameters



- high shear forces
- high (but not too high) temps
- controlled process mandatory

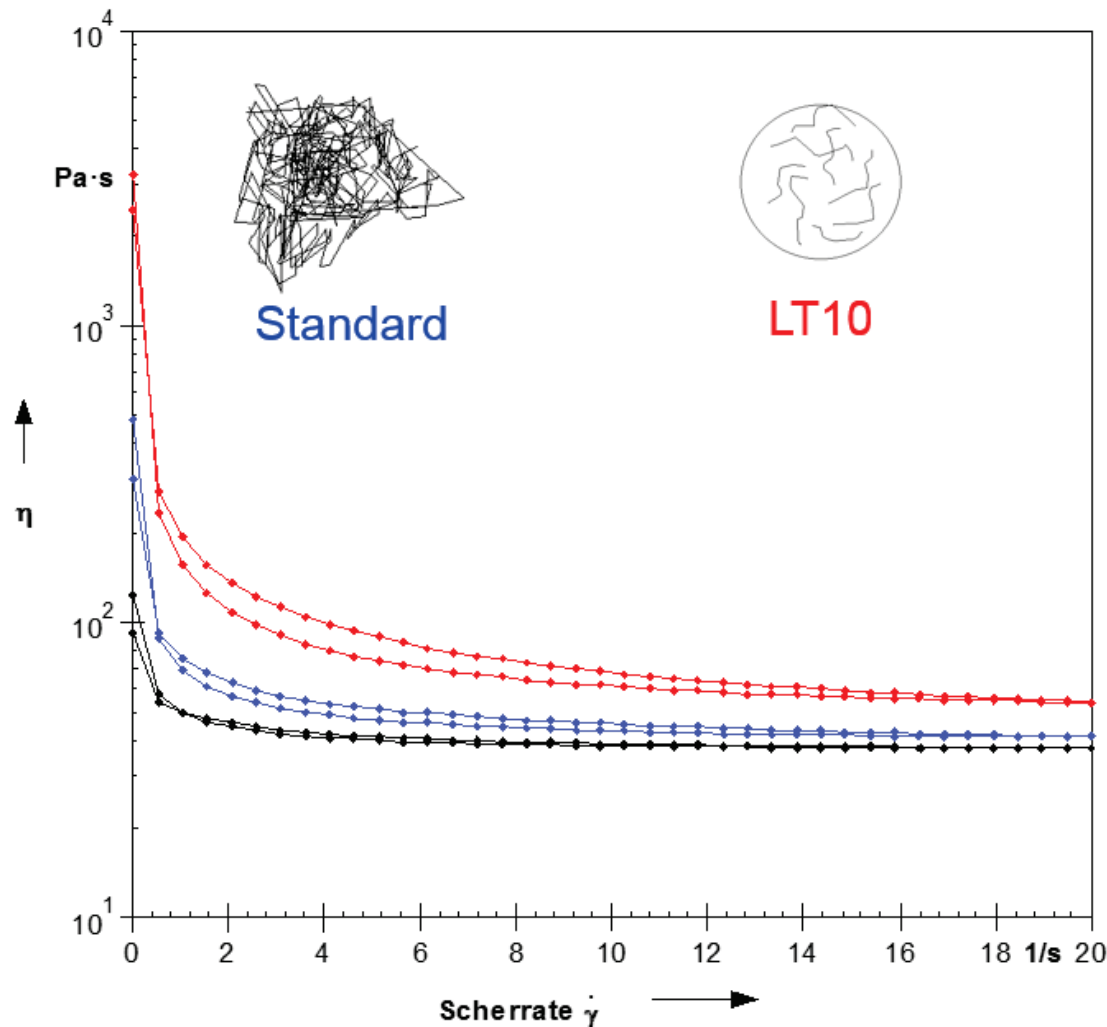


improper dispersion, incomplete activation, too low/high temperatures



Batch off spec

# Activation of Organic Rheological Additives: Comparison



Example:

Industrial Epoxy Solvent formulation, processed at 45°C, sag control without thixotropic agent 75 $\mu$ m, comparison of **standard polyamide thixotropic** agent with **LUVOTIX LT10**)



**Incomplete activation**  
(sag control 350 $\mu$ m)

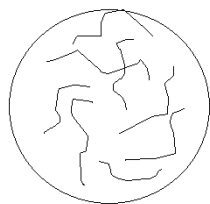


**Full activation**  
(sag control 1500 $\mu$ m)

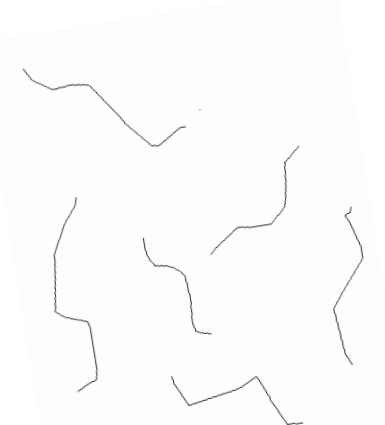
# Low temperature Organic Rheological Additives

## Special LT-types for Low Temperature activation

**new:** no temperature and time controlled process needed  
wide range of activation temperatures possible  
wide compatability with different solvents



- relative low shear forces
- low temperature
- no controlled process



### Standard Polyamide Rheological Additives

- have a limited activation temperature window (ca. 50-70°C)
- need high shear forces/controlled shear process required

### Special Polyamide/Polyolefin LT-types

- are suitable for low temperature activation ( $\geq 30^{\circ}\text{C}$ ), but still have high temperature stability ( $> 70^{\circ}\text{C}$ )
- need reduced shear forces (i.e. post addition possible)

## Summary Easy Dispersible Rheological Additives

- Lehmann & Voss & Co. offers a wide range of organic and inorganic rheological additives.
- Our LUVOGEL<sup>®</sup>- and LUVOTIX<sup>®</sup>- products are suitable for various applications in solvent-based, solvent-free and water-based formulations.
- Easy dispersible and selfactivating types are available for direct incorporation in powder form.
- Reliable and easy dispersion and activation are possible without control of process temperature.



## Our R&D-Team in Surface Technology



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Any questions ?



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