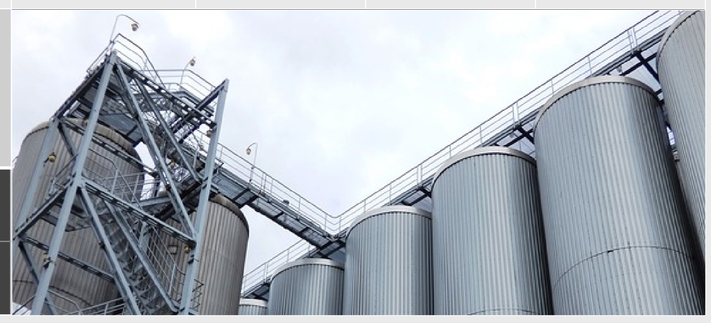
# NEUBURG SILICEOUS EARTH IN 2C POLYASPARTIC ANTI-CORROSION COATING, PVC 30 % SILLITIN Z 86 and AKTISIL PF 777 vs. Classical Fillers

## FORMULATION

| | | Control* | Variation of filler |
|---|---|---|---|
| Component A | *Desmophen NH 1520* Polyaspartic ester, amine-functional resin | 13.2 | **Substitution of Barite by equal volume of** |
| | *Desmophen VP LS 2142* Reactive diluent, blocked cycloaliphatic diamine | 4.1 | |
| | Dewatering agent, zeolite | 1.8 | |
| | Solvent | 7.5 | |
| | Additives | 1.5 | |
| | Titanium dioxide | 9.4 | |
| | Zinc aluminum phosphate | 9.4 | |
| | **Barite** 3 µm | **37.9** | |
| | **Filler varied** | | **Barite / Talc**** / **Wollas-tonite** / **Sillitin Z 86** / **Aktisil PF 777** |
| | | | **19.0 / 12.3** / **25.6** / **23.4** / **23.4** |
| B | *Desmodur N 3600* Hardener, low viscosity HDI polyisocyanurate | 15.2 |  |
| | Total parts by weight | 100.0 | |
| | Solids content w/w [%] | 92 | |

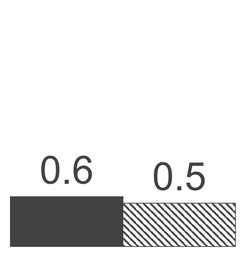
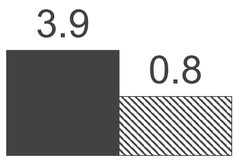
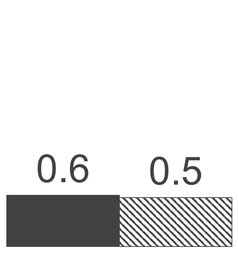
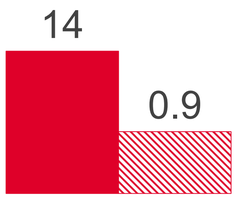
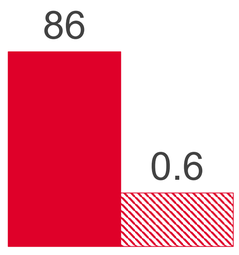
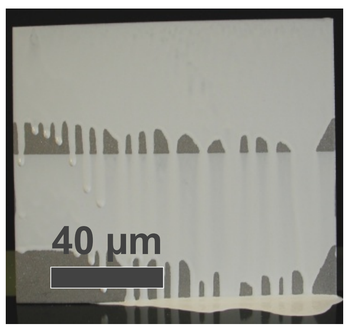
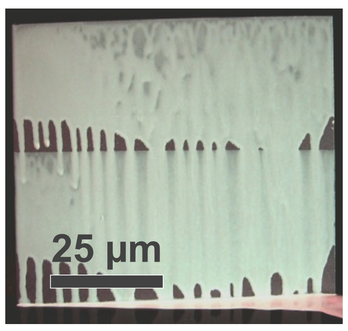
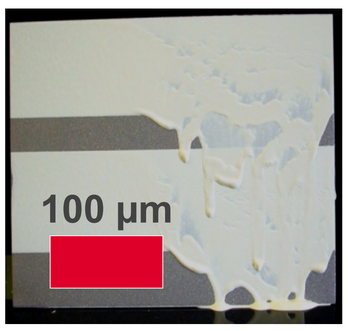
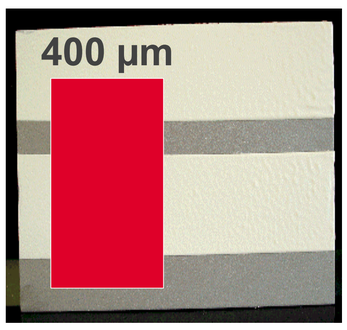
* Without rheological additive, based on Covestro formulation / ** Pure talc unfeasible

## SUMMARY

**Neuburg Siliceous Earth** gains the following combined benefits compared to classical fillers

- ✓ Improved storage stability and application in higher film thickness without rheological additive
- ✓ Strong matting effect; higher gloss feasible with Sillitin V 85, higher brightness with Sillitin Z 89 or Silfit Z 91
- ✓ Better hiding power enabling $TiO_2$ savings
- ✓ Good abrasion resistance, excellent adhesion
- ✓ Markedly improved corrosion protection:
  - **Sillitin Z 86** with best balanced properties due to reduced corrosion / delamination at scribe and excellent protection & adhesion on unscribed surface, preferably for strong ionic exposure
  - **Aktisil PF 777** offering lowest corrosion at scribe and with almost no delamination distinctly best protective performance for intense humid environment

## IMPROVED FEATURES

| Processing Properties | Barite | Barite /Talc | Wollastonite | Sillitin Z 86 | Aktisil PF 777 |
|---|---|---|---|---|---|
| Incorporation of filler | good | difficult | good | moderate | moderate |
| Fineness of grind [µm] | 10 | 15 | 10 | < 10 | < 10 |
| Storage Stability<br>Component A, 28 d 50°C | poor | poor | poor | perfect | perfect |
| Viscosity<br>Component A+B [Pa*s]<br>Rheometer 23 °C<br>Searle system<br>■ ■ at 0.1 $s^{-1}$ ▨ ▨ at 1000 $s^{-1}$ |  |  |  |  |  |
| Sagging resistance<br>Without rheological additive<br>■ ■ up to dry film thickness [µm] |  |  |  |  |  |

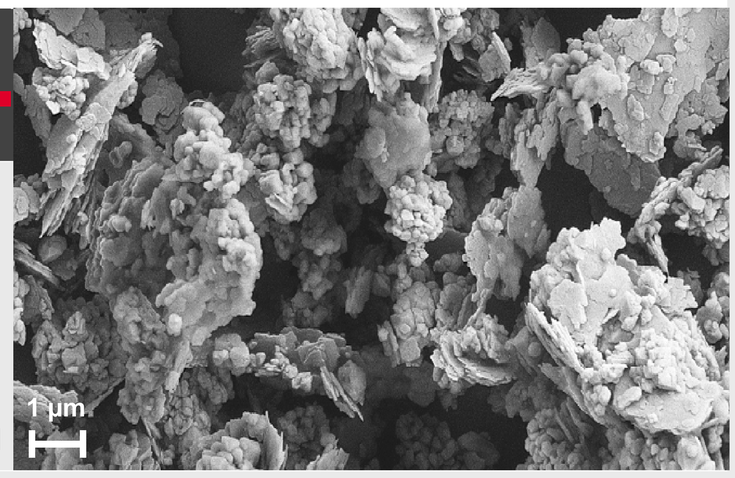
## RETAINED FEATURES

Without significant difference or minor effects

- Drying characteristic
  Drying stage T 4 (DIN 53150) 5 – 6 h
  Dry-Through time (similar to ASTM D 5895) 4 h
- Good Adhesion
  Cross-cut test [GT]: 0 - 1

## EXPERIMENTAL

- Preparation
  Dissolver equipped with bead mill agitator
  20 min 2000 rpm
- Application / Conditioning
  By air pressure on cold rolled grit-blasted steel, SA 2 ½, DFT 120 µm, drying 14d 23°C / 50% RH






HOFFMANN MINERAL®

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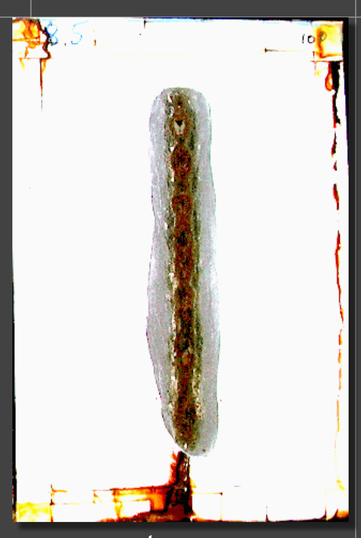
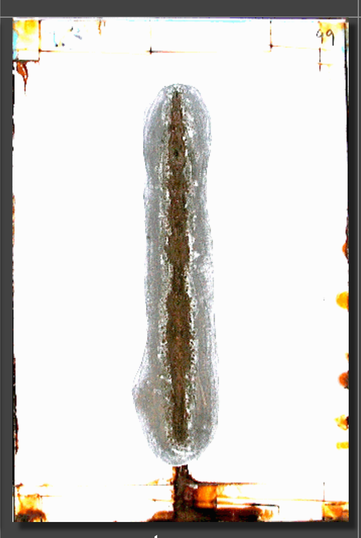
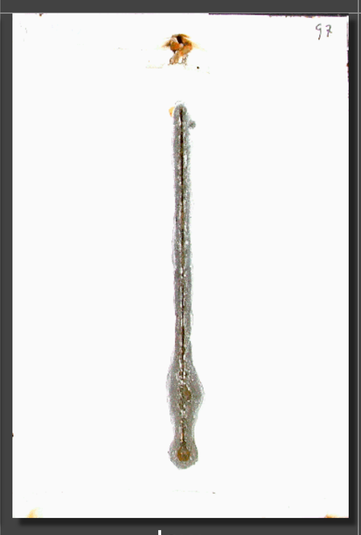
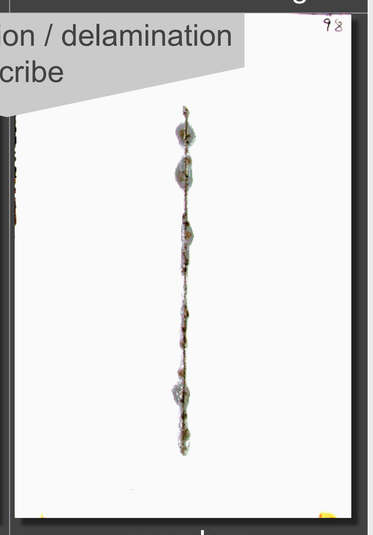
# SILLITIN Z 86 and AKTISIL PF 777 vs. Classical Fillers

## IMPROVED FEATURES

| Optical / Mechanical Properies | Barite | Barite / Talc | Wollastonite | Sillitin Z 86 | Aktisil PF 777 |
|---|---|---|---|---|---|
| Gloss<br>Degree at 60° | 91 | 87 | 91 | 11 | 28 |
| Dry film thickness for good hiding power<br>DFT [µm] for contrast ratio 98 % | 109 | 98 | 113 | 86 | 83 |
| Abrasion loss<br>TaberTest S-42, Load 5.4 N<br>[mg/100 revolutions] | 178 | 266 | 129 | 176 | 185 |

Matting

20 - 25 % savings

| Anti-Corrosion Properties | Barite | Barite / Talc | Wollastonite | Sillitin Z 86 | Aktisil PF 777 |
|---|---|---|---|---|---|
| Salt Spray Test<br>1500 h<br><br>Surface:<br>No blistering / corrosion in or under coating, good adhesion<br><br>Scribe:<br>Corrosion<br>Delamination |  |  |  |  |  |
| | strong<br>moderate | strong<br>moderate | moderate<br>strong | moderate<br>low | low<br>moderate - strong |
| Humidity Test<br>1500 h<br><br>Surface:<br>Apart from barite no blistering / corrosion, good adhesion<br><br>Scribe:<br>Corrosion<br>Delamination |  |  |  |  |  |
| | not evaluable<br>strong | low<br>low | low<br>completely | low<br>low | very low<br>very low |

Reduced corrosion at scribe

Reduced corrosion / delamination at scribe

5 (S4)
acc. ISO 4628-2



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