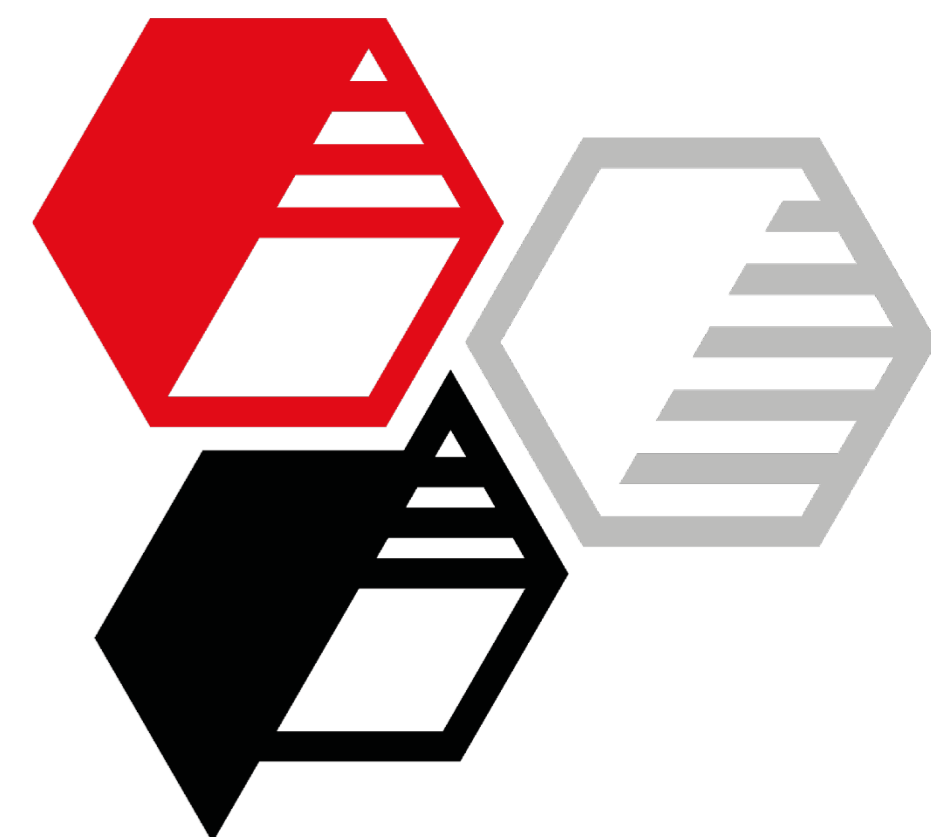



# Neuburg Siliceous Earth in 2P VHS epoxy anti-corrosion coating, solids content 85 % Sillitin and Aktisil vs. Talc / Barite



## Formulation

			Control*	Replacement of filler		
Component A	Araldite GZ 7071 Solid BPA resin in xylene, EEW 635		17.8	Substitution of Talc / Barite  by equal volume of		
	Araldite GY 783 Reactive-diluted BPA/F, EEW 190		13.4			
	Solvent		5.4			
	Additives		0.6			
	Red pigment, iron oxide		4.9			
	Zinc phosphate		7.3 (-)	Sillitin Z 86	Aktisil AM	Aktisil PF 777
	Talc	7 µm	24.4			
	Barite	4 µm	9.8			
	Neuburg Siliceous Earth			30.5	30.5	30.5
B	Aradur 450 Polyamidoamine adduct, HEW 115		11.1			
	Solvent		5.3			
	Total parts by weight		100.0			
	Solids content w/w [%]		85			

## Improved features

	Talc / Barite	Sillitin Z 86	Aktisil AM	Aktisil PF 777
Processing Properties				
Incorporation of filler	difficult	good	good	moderate
Fineness of grind [µm]	20	10 - 15	10 - 15	15
Storage Stability Component A, 28 d 50°C	poor	good	perfect	perfect
Viscosity Component A+B [Pa*s] Rheometer 23 °C, Searle system				
■ at 0.1 s <sup>-1</sup> ▨ at 1000 s <sup>-1</sup>	10.2    2.4	3.6    2.1	15.4    1.7	173.0    1.5
Viscosity increase rate [mPa*s/min], Brookfield	71	29	29	36
Lower rate = longer pot life				

## Mechanical properties

Hardness König Pendulum [s] ■ after 2 d    ▨ after 14 d	11    62	10    53	11    81	15    88
Abrasion loss Taber Test S-42, Load 5.4 N [mg/100 revolutions]	253	121	128	156

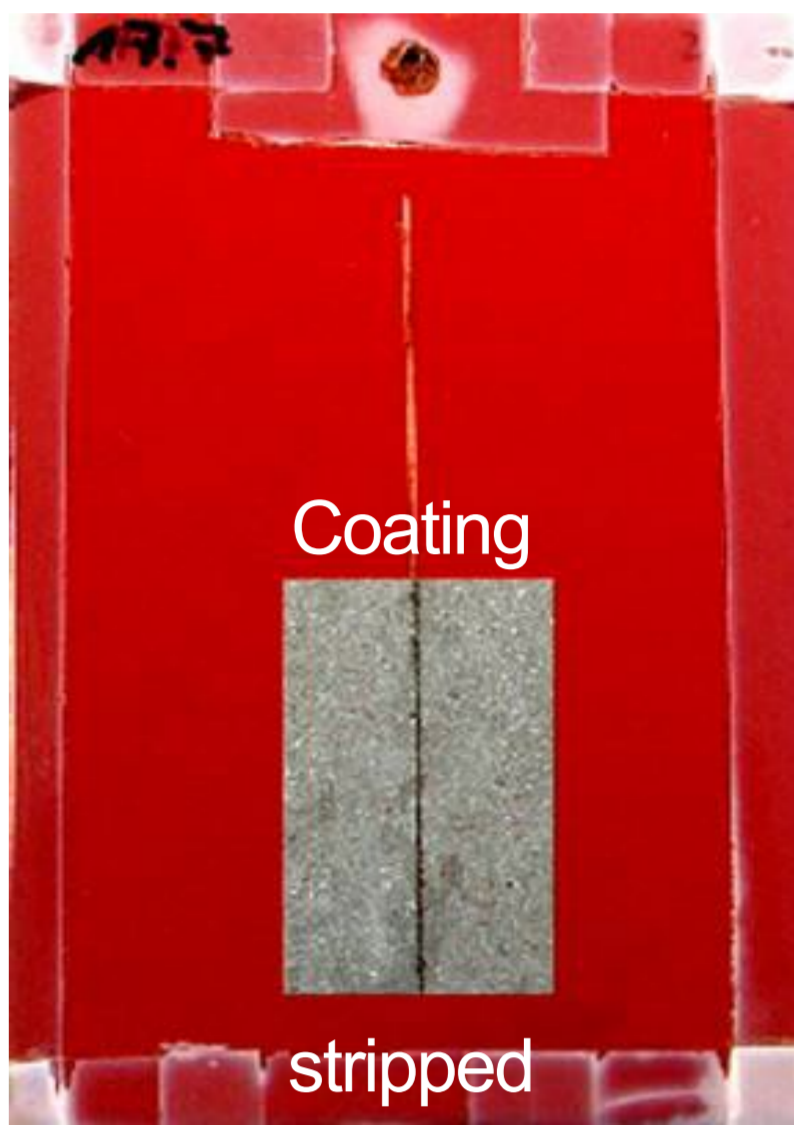
## Retained features

Without significant difference or minor effects

- Drying characteristic  
Erichsen-method: no damage with sliding wire bow, dust dryness slightly improved by Neuburg Siliceous Earth
- Adhesion  
Cross-cut test [GT]: 0 - 1
- Humidity Test 1500 h

Surface:  
No blistering / corrosion in or under coating, good adhesion

Scribe:  
Corrosion average < 0.5 mm, no delamination, no blistering



## Experimental

- Preparation  
Dissolver equipped with bead mill agitator  
20 min 7.8 m/s
- Application  
By air pressure on cold rolled grit-blasted steel, SA 2 ½  
DFT 260 µm
- Conditioning  
14 d 23 °C / 50 % RH

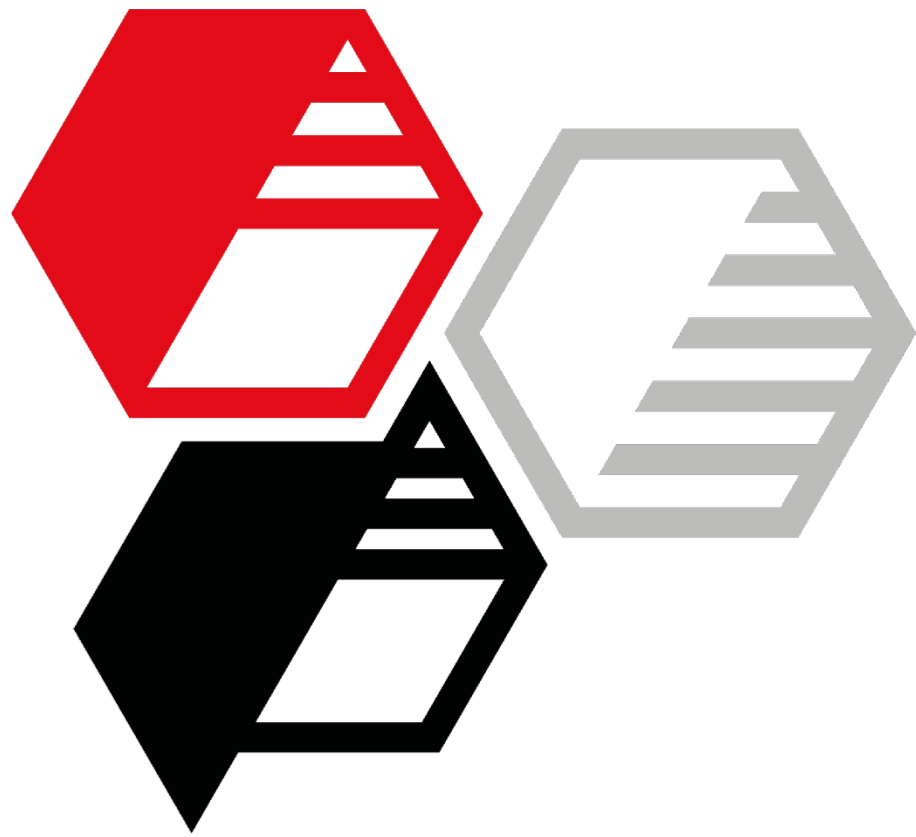
## Summary

Neuburg Siliceous Earth gains the following combined benefits

- ✓ Improved processing properties, storage stability and pot life
- ✓ Adjustable rheological effect:
  - Good leveling with Sillitin Z 86 or Aktisil AM
  - Strong anti-sagging effect with Aktisil PF 777
- ✓ Higher hardness and abrasion resistance for improved wear resistance
- ✓ Better heavy duty corrosion protection increasingly favorable with exposure time:
  - With zinc phosphate reduced delamination at comparable low corrosion at scribe
  - Without zinc phosphate markedly reduction of delamination, particularly with Aktisil PF 777
- ✓ Markedly enhanced resistance against acids, particularly with Aktisil AM and Aktisil PF 777
- ✓ Improved filler embedding into polymer film

# Neuburg Siliceous Earth in 2P VHS epoxy anti-corrosion coating, solids content 85 %

## Sillitin and Aktisil vs. Talc / Barite



### Objective

Improved Features	Talc / Barite	Sillitin Z 86	Aktisil AM	Aktisil PF 777
Salt Spray Test				
With zinc phosphate 1500 h				
4000 h				
Delamination at scribe [mm]	<div> <div>15</div> <div>34</div> </div> <div> <div>1500 h</div> <div>4000 h</div> </div>	<div> <div>15</div> <div>25</div> </div> <div> <div>1500 h</div> <div>4000 h</div> </div>	<div> <div>14</div> <div>23</div> </div> <div> <div>1500 h</div> <div>4000 h</div> </div>	<div> <div>12</div> <div>22</div> </div> <div> <div>1500 h</div> <div>4000 h</div> </div>
Without zinc phosphate 1500 h substitution by filler at equal PVC				
Acid Resistance				
Sulfuric Acid H <sub>2</sub> SO <sub>4</sub> 10 %  1500 h	 coalescing blisters	 small blisters	 no blistering	 no blistering
Acetic Acid HAc 5 %  168 h	 small blisters	 small blisters	 small blisters	 few small blisters
Film Morphologie				
SEM Cross-section of unstressed coating				