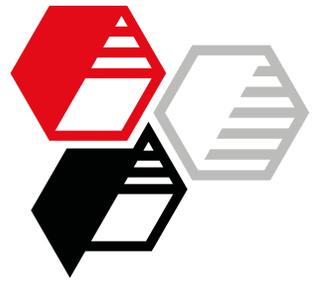


Neuburg Siliceous Earth in 2K VHS epoxy anti-corrosion coating, solids content 85 % Sillitin and Aktisil vs. Talc / Barite



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 Sillitin Z 86 Aktisil AM Aktisil PF 777		
	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 (-)			
	Talc 7 µm	24.4			
	Barite 4 µm	9.8			
Neuburg Siliceous Earth			30.5	30.5	30.5
Component B	Aradur 450 Polyamidoamine adduct, HEW 115	11.1			
	Solvent	5.3			
	Total parts by weight	100.0			
	Solids content w/w [%]	85			

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 1/2
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

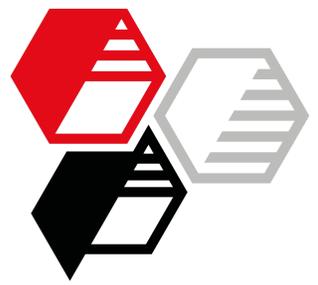
Improved features

	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				
	10.2	3.6	15.4	173.0
	2.4	2.1	1.7	1.5
Viscosity increase rate [mPa*s/min], Brookfield	71	29	29	36
Lower rate = longer pot life				

Mechanical properties

	Talc / Barite	Sillitin Z 86	Aktisil AM	Aktisil PF 777
Hardness König Pendulum [s]				
	11	10	11	15
	62	53	81	88
Abrasion loss Taber Test S-42, Load 5.4 N [mg/100 revolutions]	253	121	128	156

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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]				
 1500 h 4000 h	 15 34	 15 25	 14 23	 12 22
Without zinc phosphate 1500 h substitution by filler at equal PVC				
Acid Resistance				
Sulfuric Acid H_2SO_4 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	 Talc / Barite 10 μm		 Neuburg Siliceous Earth 10 μm	