Neuburg Siliceous Earth in black cathodic electro deposition paints

Filler variations

Clay 1	Neuburg Siliceous Earth: Sillitin Z 86, Aktisil PF 777
Clay 2 (slightly finer than Clay 1)	Neuburg Siliceous Earth: Sillitin P 87
Calcined Clay	Calcined Neuburg Siliceous Earth: Silfit Z 91, Aktifit 111, Aktifit PF 115, Aktifit VM

Formulation

Pigment paste	Deionized water	38.075
	Acetic acid 30%	2.00
	Resydrol EM 6642/55 BG	18.175
	Surfynol 104/50 BG	1.75
	Special black 4	3.65
	Filler	36.35
	Total [%]	**100.00**

Bath formulation	Resydrol EZ 6635WCAT/35WA	33.92
	Deionized water	59.82
	Pigment paste	6.25
	Total [%]	**100.00**

Guide formulation from Allnex

Pigment/binder ratio: 0.2
Substrate: Gardobond 26S/6800/OC (Steel, zinc phosphated)
Curing at 180° C (25 minutes dwelling time of the plates in the oven)
Dry film thickness: 30 µm

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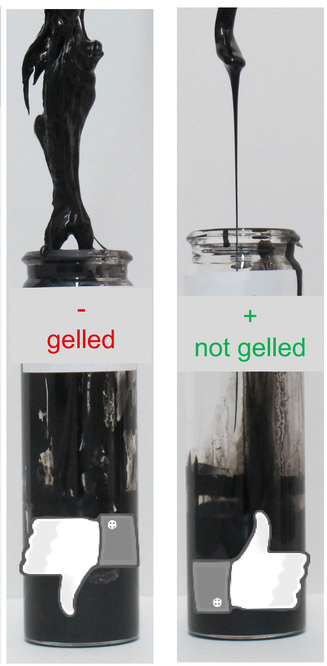
Results

Storage Stability at 38°C

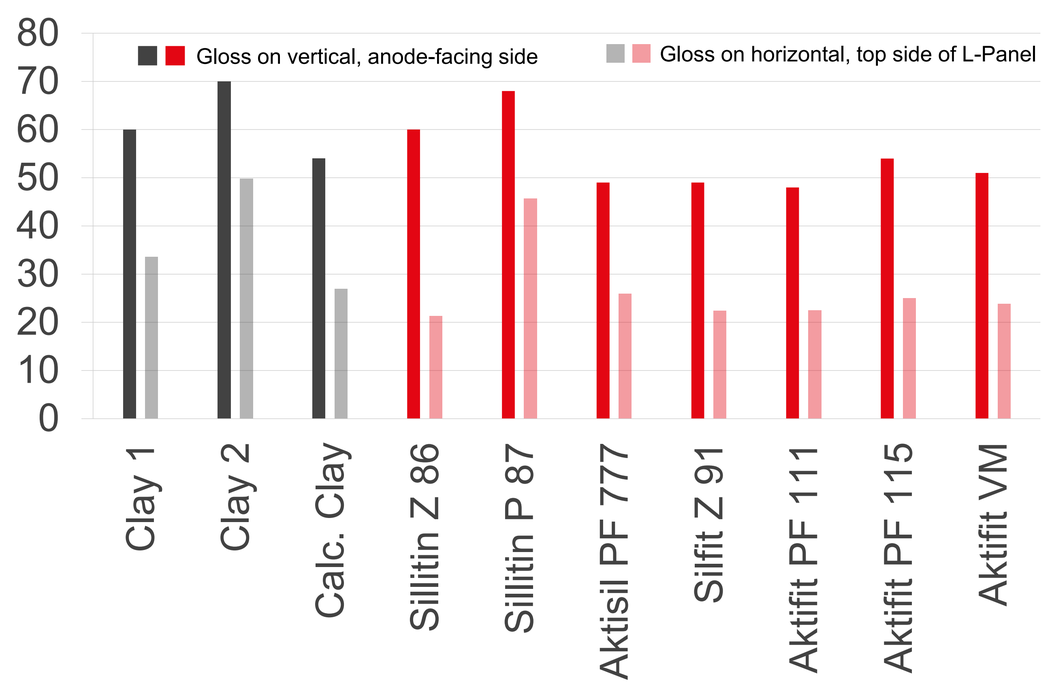
Pigment Paste

Preservation of flowability	after 7 d	after 28 d	after 56 d	after 168 d
Clay 1	+	+	-	-
Clay 2	+	+	-	-
Clacined Clay	+	0	-	-
Sillitin Z 86	+	+	+	-
Sillitin P 87	+	+	+	-
Aktisil PF 777	+	+	+	+
Silfit Z 91	+	0	-	-
Aktifit PF 111	+	+	+	+
Aktifit PF 115	+	+	+	+
Aktifit VM	+	+	+	0



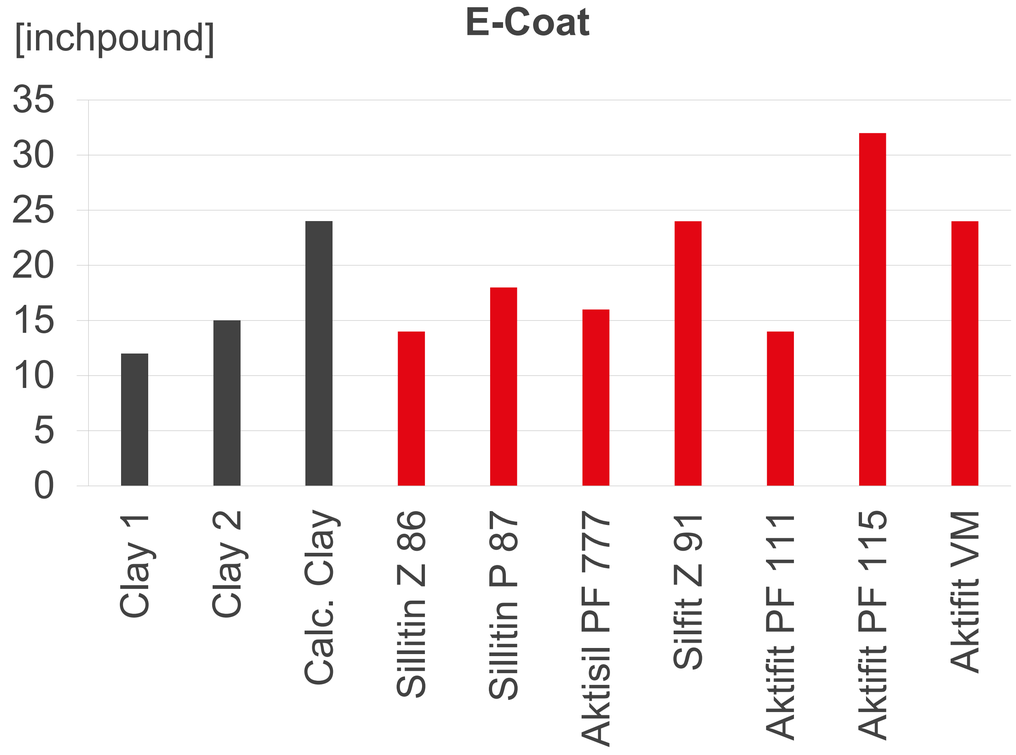
Gloss 60°

E-Coat



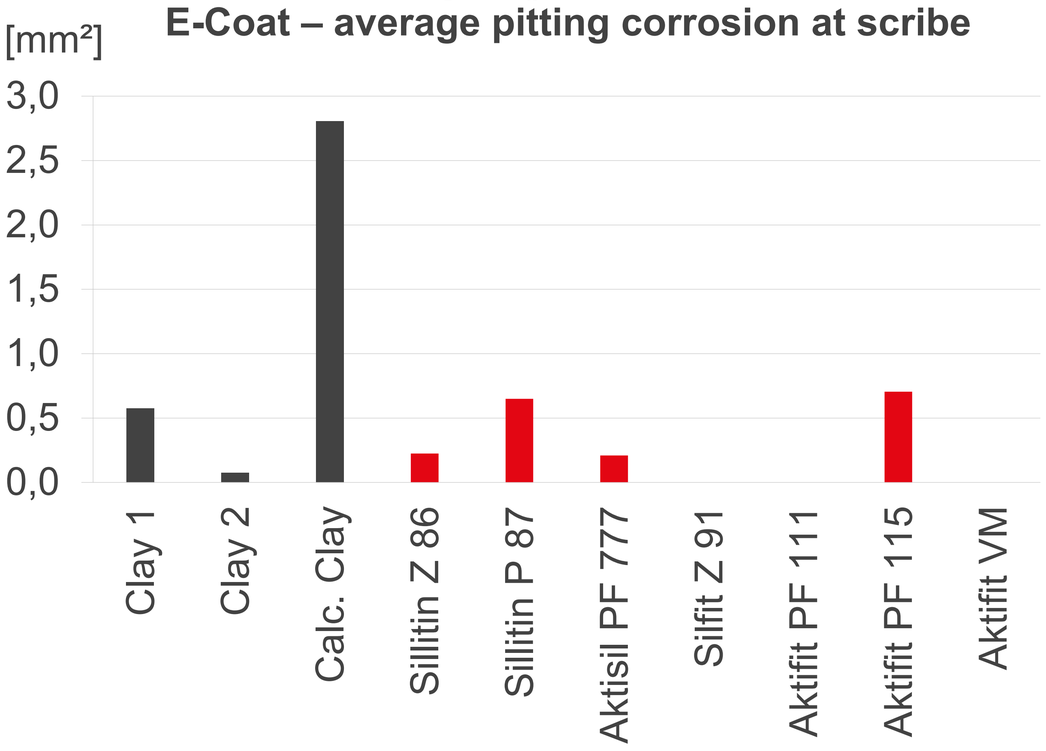
Impact Test

E-Coat



Salt Spray Test 1000h

E-Coat – average pitting corrosion at scribe



Summary

- Compared to the Clays, Sillitin Z 86 and Sillitin P 87 have a comparable good storage stability at room temperature, but an improved shelf life at raised temperatures. Aktisil PF 777 becomes more viscous by storage at 38° C, but is stable over a considerably longer period of time (at least 6 months) and does not gel. It is also recommended for a visual uniform appearance on the different geometric parts (L-effect).
- Compared with the Calcined Clay, Silfit Z 91 and the Aktifit grades offer improved storage stability even at room temperature. All Aktifit types achieve this even at raised temperatures. In addition, the Aktifit PF 115 achieves better mechanical values at Impact Test. All Calcined Neuburg Siliceous Earth products show a significant improvement in corrosion protection.