Industrial coating
Powder coating, Polyester/TGIC, white
with precipitated barium sulfate

Basis Polyester

			-20 % Titanium dioxide		
		Control	$BaSO_4$ + SILFIT Z 91	- 33 % $BaSO_4$ + SILFIT Z 91	- 100 % $BaSO_4$ + SILFIT Z 91
I 34402.5		[2]	[4]	[6]	[8]
Crylcoat 2441-3	(1)	59.00	59.00	59.00	59.00
TGIC	(2)	4.50	4.50	4.50	4.50
Kronos 2360	(3)	20.00	16.00	16.00	16.00
Blanc Fixe F	(4)	16.50	16.50	11.00	---
SILFIT Z 91	(5)	---	4.00	7.25	13.75
Modaflow P 6000	(1)	1.00	1.00	1.00	1.00
Benzoin		0.20	0.20	0.20	0.20
Total parts by weight		101.20	101.20	98.95	94.45

Recommendation

[4] good optical properties, improved corrosion resistance
[6] like [4], higher spreading rate (lower density)
[8] outstanding optical properties, improved corrosion resistance, highest spreading rate (lowest density)

The partial replacement of titanium doxide by SILFIT Z 91 offers a cost reduction potential up to 4 %.

Application

- Wagner powder spray gun (EPM Sprint, PEM-CG4 model 360); 90 kV
- Curing: 10 min PMT 200 °C, Dry film thickness 80-90 µm
- Substrate: chromated aluminum (Q-Panel AL 48)

Suppliers

(1) Allnex
(2) Sigma Aldrich
(3) Kronos International
(4) Venator Materials Corporation
(5) HOFFMANN MINERAL

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Technical Data	PVC	%	14.4	15.1	15.1	15.1
	Density (calculated)	g/cm	1.61	1.60	1.56	1.49
	Index spreading rate	%	100.0	100.6	103.2	108.1
	with same powder coating material and film thickness coatable area					
	Optical properties					
	Haze	HU	103	147	166	204
	Gloss 20°	GU	85	76	74	72
	Gloss 60°	GU	95	93	92	92
	Color d/8° L*		96.3	95.9	95.5	95.5
	Color d/8° a*		1.1	1.1	1.1	1.1
	Color d/8° b*		0.7	0.8	0.8	1.0
	Hiding power	%	99.0	98.4	98.3	98.7
	Opacity at 70 µm DFT					
	Leveling		very good	good	good	moderate
	Visual assessment of surface *reflection of overhead light*					

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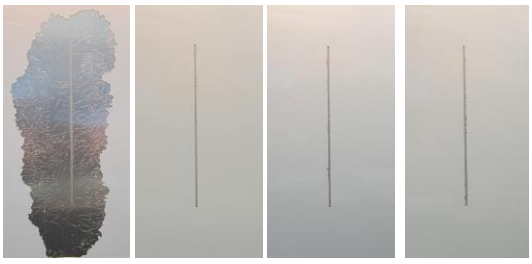
I 34402.5		[2]	[4]	[6]	[8]
Acetic salt spray test DIN EN ISO 9227 AASS, 2000 h					
Degree of blistering *DIN EN ISO 4628-2*		2 % of area: 3 – 3 (S2)	no blistering		
Delamination at scribe *DIN EN ISO 4628-8*	mm	0.8	0.1	0.1	0.1
Humidity test DIN EN ISO 6270-2 CH, 2000 h					
Degree of blistering *DIN EN ISO 4628-2*		4 – 4 (S3)	no blistering		
Delamination at scribe *DIN EN ISO 4628-8*	mm	24	0	0	0



Artificial weathering, 1000 h (customer feedback)

Substitution of 10 to 50 % titanium dioxide by SILFIT Z 91:
after 1000 h no differences between the formulations, all results very good,
ΔE approx. 1.3 and remaining gloss approx. 93 %
None of the formulations exhibited any signs of chalking or white spots after exposure.

Cycle: 4 h UVA light 340 nm at 50 °C + 4 h 100 % relative humidity at 50 °C

More information on this topic:

Calcined Neuburg Siliceous Earth in Powder Coatings (Polyester, TGIC-based, white)

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