Industrial coating
2K PU Topcoat for plastics
Partial replacement of titanium dioxide

Basis Polyurethane

				Control	SILFIT Z 91		AKTIFIT PF 111	
					-10 % TiO_2	-20 % TiO_2	-20 % TiO_2	-30 % TiO_2
					TiO_2 replacement by weight			by volume
	I 24403.1			[49]	[50]	[51]	[60]	[61]
Component A	*-- part 1 --*							
	Desmophen 680 BA		(1)	35.38	35.38	35.38	35.38	35.38
	Borchi Gol OL 31		(2)	0.73	0.73	0.73	0.73	0.76
	Byk-141		(3)	0.37	0.37	0.37	0.37	0.37
	Tinuvin 292	50% in xylene	(4)	0.73	0.73	0.73	0.73	0.73
	Dabco 33 LV	10 % in butyl acetate	(5)	3.71	3.71	3.71	3.71	3.71
	Bentone 38	10 % swelling)**		2.60	2.60	2.60	2.60	2.60
	Disperbyk-118		(3)	0.74	0.74	0.74	0.74	0.66
	Aerosil R972		(5)	0.18	0.18	0.18	---	---
	Titanium dioxide			29.60	26.64	23.68	23.68	20.72
	SILFIT Z 91		(6)	---	2.96	5.92	---	---
	AKTIFIT PF 111		(6)	---	---	---	5.92	5.63
	-- part 2 --							
	Methoxy propyl acetate / Butyl acetate (1:1)			14.39	14.39	14.39	14.39	14.39
Component B	Desmodur ultra N 3390 BA		(1)	9.83	9.83	9.83	9.83	9.83
	Methoxy propyl acetate			1.74	1.74	1.74	1.74	1.74
	Total parts by weight			100.00	100.00	100.00	99.82	96.49

)** 10 % Bentone swelling

Bentone 38	10.0	(7)
Anti-Terra-U	5.0	(3)
Solvent Naphta 100	85.0	
prepare by stirring		

Recommendation SILFIT Z 91 and AKTIFIT PF 111

- very high brightness and color neutrality
- high contrast ratio
- very high gloss
- very low haze
- cost reduction potential

In addition, when using AKTIFIT PF 111, the use of hydrophobic, fumed silica for rheology control can be dispensed with, thus avoiding its negative effect on gloss and haze as well as simplifying handling.

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			Control	SILFIT Z 91 -10 % TiO_2	SILFIT Z 91 -20 % TiO_2	AKTIFIT PF 111 -10 % TiO_2	AKTIFIT PF 111 -10 % TiO_2
				TiO_2 replacement by weight			by volume
	I 24403.1		[49]	[50]	[51]	[60]	[61]
Technical Data	NCO / OH ratio				all 1:1		
Properties	Dynamic viscosity @ 23 °C, after 28 d						
	0.1 s^{-1}	Pa·s	0.24	0.23	0.24	0.20	0.20
	100 s^{-1}	Pa·s	0.13	0.13	0.14	0.13	0.12
	Pendulum hardness, DFT 120 µm after 8 weeks drying time	s	81	81	82	81	78
	Color CIELab d/8° L*	-	97.6	97.4	97.0	97.1	97.0
	Color CIELab d/8° a*	-	-0.5	-0.5	-0.5	-0.4	-0.5
	Color CIELab d/8° b*	-	2.3	2.2	2.1	2.2	2.1
	Contrast ratio, DFT 70 µm	%	98.9	98.7	98.6	98.7	98.3
	Gloss 60°	GU	95	95	93	95	95
	Haze	-	28	34	44	35	34

Mixing

- prepare part 1 by dissolver with adapted bead mill (10 min at 4.7 m/s)
- complete with part 2
- premix raw materials from component B
- mix component A and B shortly before application

Suppliers

(1) Covestro
(2) Borchers
(3) Byk Chemie
(4) BASF
(5) Evonik Industries
(6) HOFFMANN MINERAL
(7) Elementis

More information on this topic:

Partial Titanium Dioxide Replacement by Neuburg Siliceous Earth in 2C PU Top Coat White

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