NEUBURG SILICEOUS EARTH IN POWDER COATING, POLYESTER, TGIC-BASED

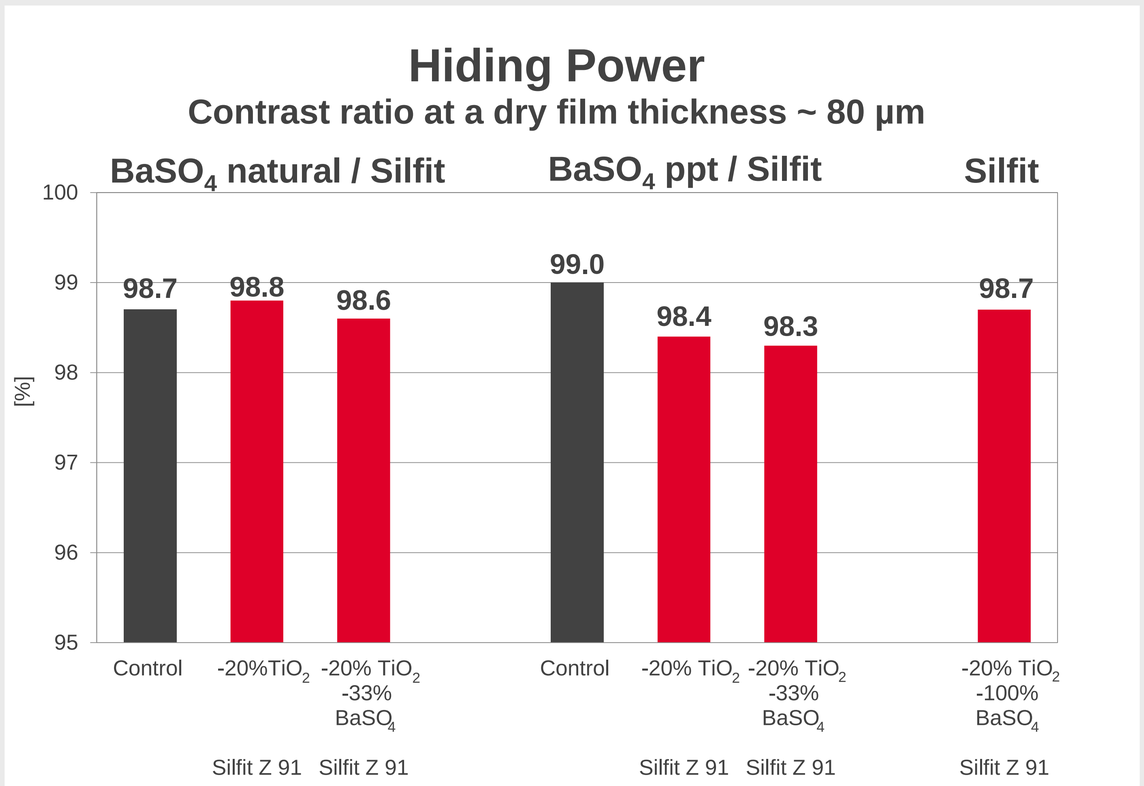
Substrate: chromated aluminum (Q-Panel AL 48)
Curing: 10 min PMT 200 °C, DFT 80-90 µm

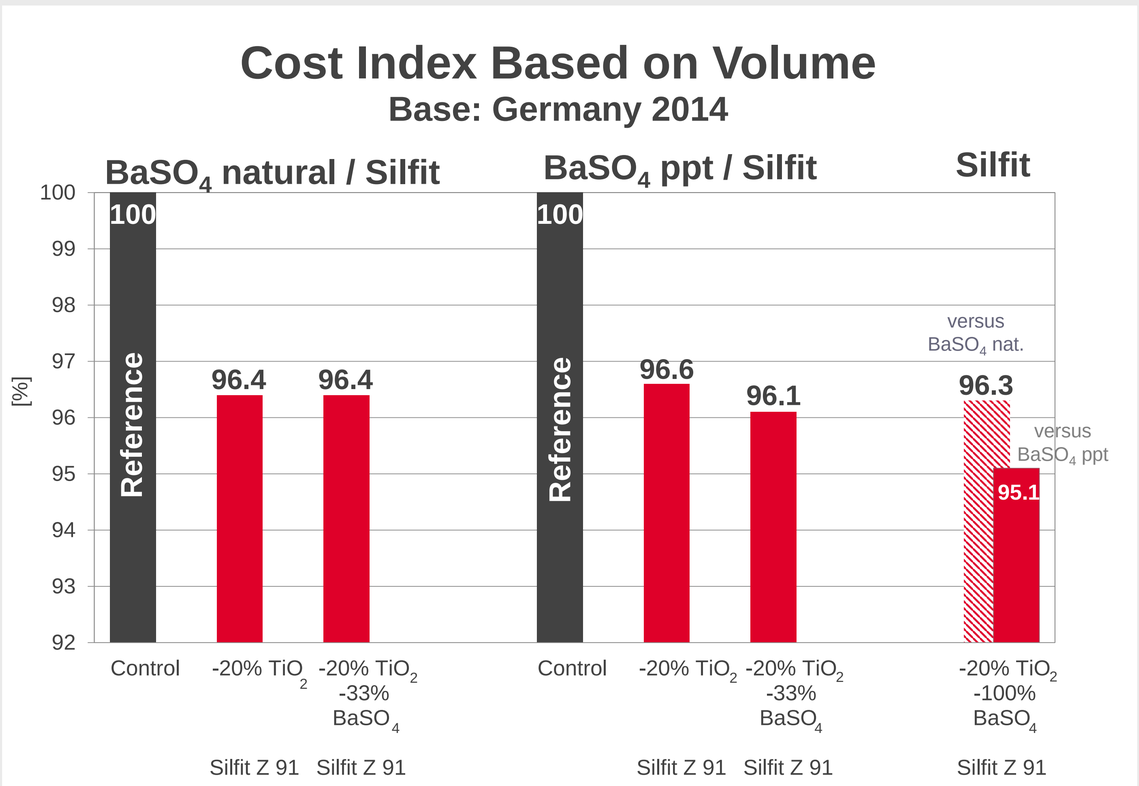
FORMULATION

	$BaSO_4$ natural / Silfit Z 91			$BaSO_4$ precipitated / Silfit Z 91			Silfit Z 91
	Control	-20 % TiO_2 +Silfit Z 91	-20 % TiO_2 -33% $BaSO_4$ +Silfit Z 91	Control	-20 % TiO_2 +Silfit Z 91	-20 % TiO_2 -33% $BaSO_4$ +Silfit Z 91	-20 % TiO_2 -100% $BaSO_4$ +Silfit Z 91
Crylcoat 2441-3	59	59	59	59	59	59	59
TGIC	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Titanium dioxide	20	16	16	20	16	16	16
$BaSO_4$ natural	16.5	16.5	11				
$BaSO_4$ ppt				16.5	16.5	11	
Silfit Z 91		**4**	**7.25**		**4**	**7.25**	**13.75**
Modaflow P 6000	1	1	1	1	1	1	1
Benzoin	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total	**101.2**	**101.2**	**98.95**	**101.2**	**101.2**	**98.95**	**94.45**
PVC [%]	14.4	15.1	15.1	14.4	15.1	15.1	15.1

RESULTS

Color L* / Brightness	95.9	95.3	95.0	96.3	95.9	95.5	95.5
Color b* / Yellowness	0.9	0.6	0.6	0.7	0.8	0.8	1.0
Gloss 20° [GU]	63	53	59	85	76	74	72
Haze [HU]	292	326	280	103	147	166	204
Density [g/cm³]	1.61	1.60	1.56	1.61	1.60	1.56	1.49
Spreading rate Index [%]	100	100.6	103.2	100	100.6	103.2	108.1





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Substrate: chromated aluminum (Q-Panel AL 48)
Curing: 10 min PMT 200 °C, DFT 80-90 µm

Acetic Salt Spray Test 2000 h

$BaSO_4$ natural / Silfit				$BaSO_4$ ppt / Silfit				Silfit
Blistering								
blisters: ~ 5 % of the area	no blistering	no blistering		blisters: ~ 2 % of the area	no blistering	no blistering		no blistering
Delamination at Scribe								
0.7 mm	0.1 mm	0.1 mm		0.8 mm	0.1 mm	0.1 mm		0.1 mm

Control | -20 % TiO_2 Silfit Z 91 | -20 % TiO_2 -33 % $BaSO_4$ Silfit Z 91 | Control | -20 % TiO_2 Silfit Z 91 | -20 % TiO_2 -33 % $BaSO_4$ Silfit Z 91 | -20 % TiO_2 -100 % $BaSO_4$ Silfit Z 91

Humidity Test 2000 h

$BaSO_4$ natural / Silfit				$BaSO_4$ ppt / Silfit				Silfit
Blistering								
blisters: ~ 30 % of the area	no blistering	no blistering		blisters: 100 % of the area	no blistering	no blistering		no blistering
Delamination at Scribe								
7 mm	0 mm	0 mm		24 mm	0 mm	0 mm		0 mm

Control | -20 % TiO_2 Silfit Z 91 | -20 % TiO_2 -33 % $BaSO_4$ Silfit Z 91 | Control | -20 % TiO_2 Silfit Z 91 | -20 % TiO_2 -33 % $BaSO_4$ Silfit Z 91 | -20 % TiO_2 -100 % $BaSO_4$ Silfit Z 91

SUMMARY

Independent from the type of barium sulfate, natural or precipitated, it is possible to replace 20 % of titanium dioxide at equal weight with Silfit Z 91 without loosing significant hiding power or weatherability. The corrosion resistance can be considerably improved and it offers the most economizing potential.

Additional (partial) substitution of the natural barium sulfate by Silfit Z 91 improves the optical properties, increases the spreading rate and offers cost reduction potential.

Additional partial substitution (33 %) of the precipitated barium sulfate by Silfit Z 91 increases the spreading rate and offers cost reduction potential.