NEUBURG SILICEOUS EARTH IN POWDER COATING HYBRID – BASED, WHITE

OBJECTIVE

How can Silfit Z 91 Reduce Titanium Dioxide?

Substitution of
20 % titanium dioxide (pbw)
and
100 % barium sulfate (pbv)

Calcined Neuburg Siliceous Earth:

Silfit Z 91

FORMULATION

	Control	- 20 % TiO_2 + Silfit Z 91	- 20 % TiO_2 - 100 % $BaSO_4$ + Silfit Z 91
Crylcoat 1771-3	39.0	38.9	42.4
Epikote 1003	18.0	18.0	19.6
Additol P 896	3.0	3.2	3.5
Titanium dioxide	19.5	15.6	16.9
$BaSO_4$ natural	20.0	20.0	-
Silfit Z 91	**-**	**3.9**	**17.1**
Benzoin	0.5	0.5	0.5
Total	100	100	100
PVC [%]	16.3	17.1	17.1

SUMMARY

- Replacement of 20 % titanium dioxide at equal weight with Silfit Z 91:
  - similar optical properties and flexibility
  - improved scratch resistance
  - cost reduction potential
- Additional substitution of the natural barium sulfate at equal PVC by Silfit Z 91:
  - improved optical appearance (higher gloss, lower haze, better leveling)
  - improved flexibility (impact test)
  - higher spreading rate (lower density of powder coating)
  - system cost reduction potential
- interpolation of results from 0 to 100 % substitution of barium sulfate is widely possible

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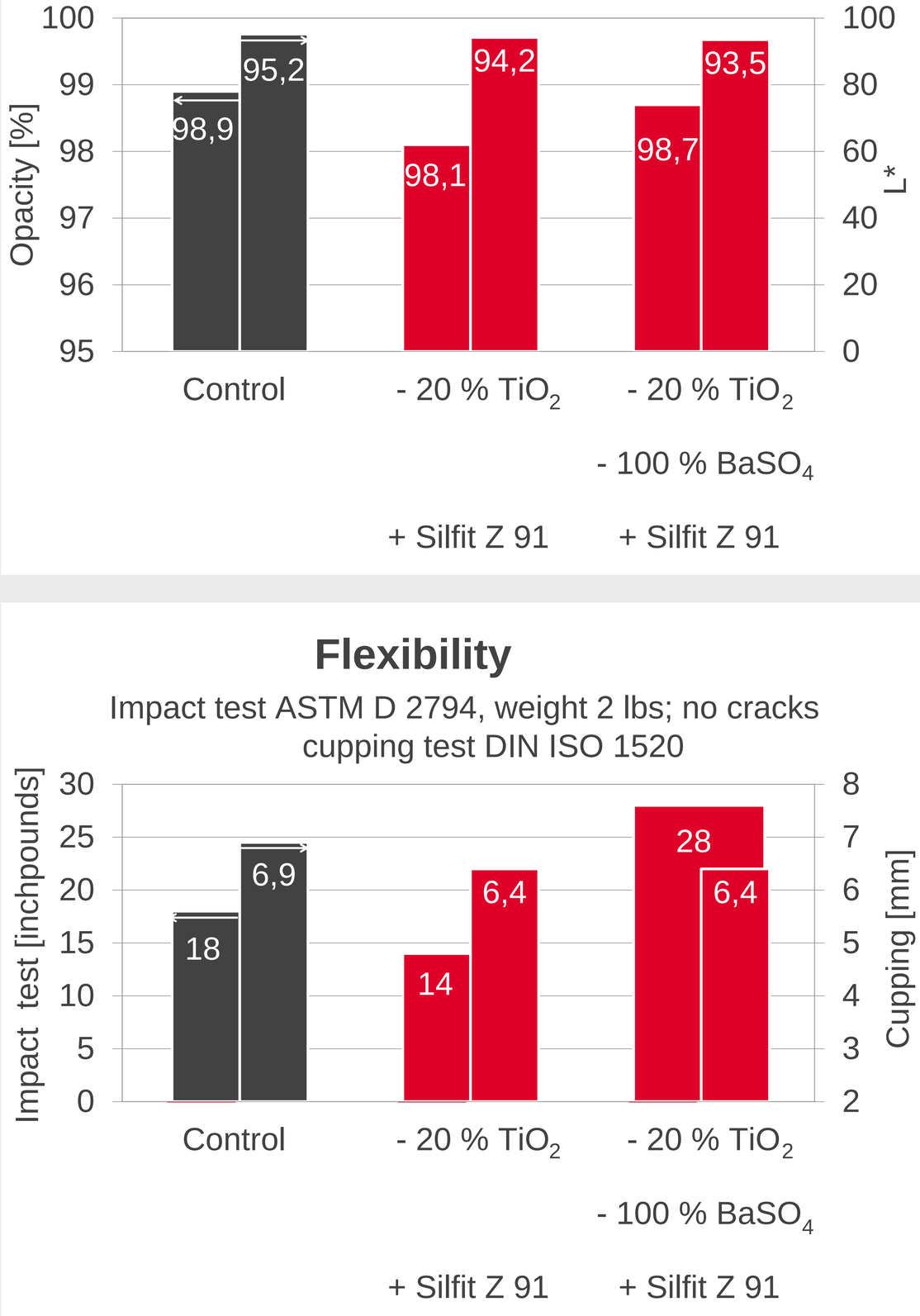
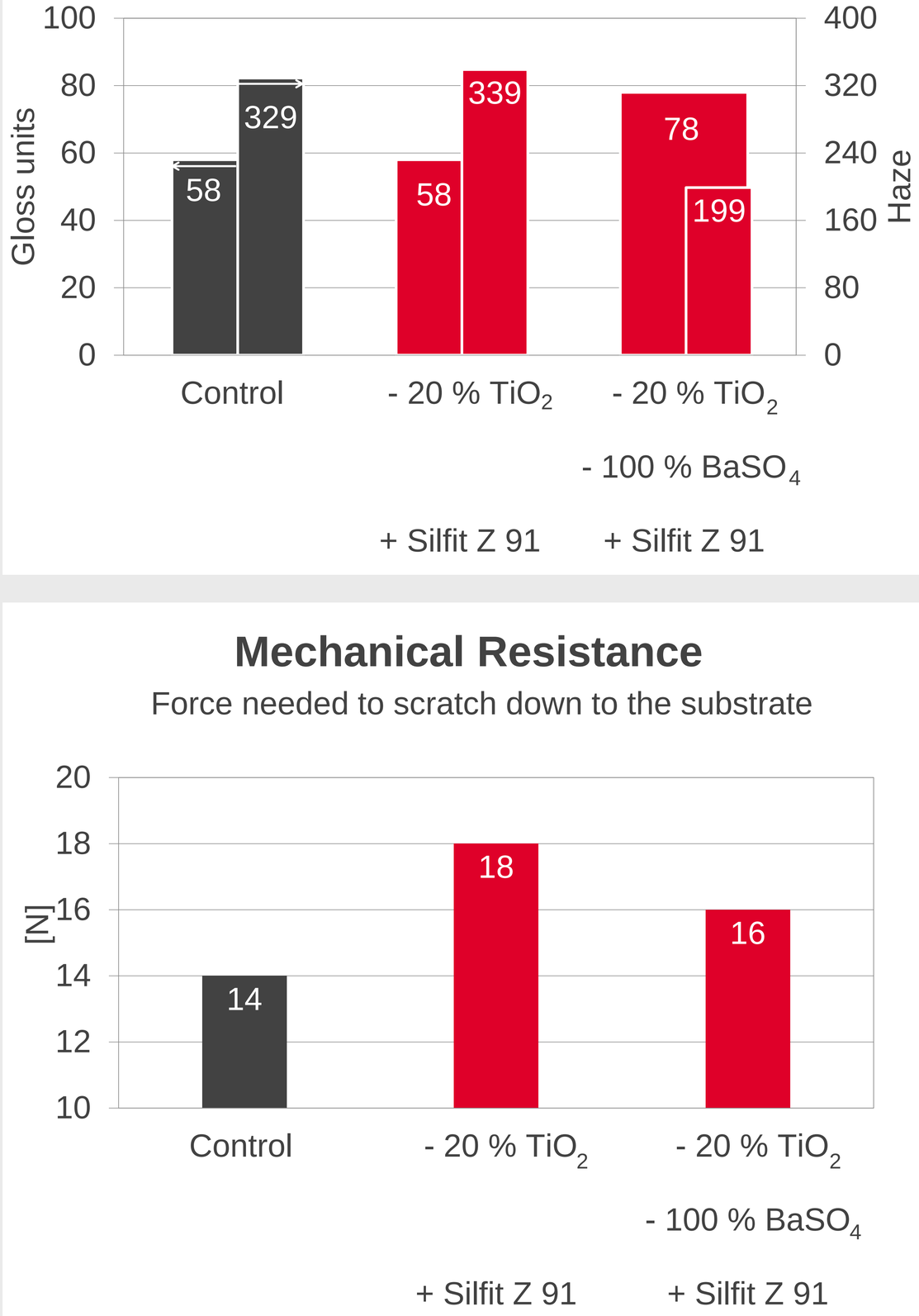
Application: Powder gun GEMA Corona, 80 kV, 2 bar, DFT ~ 70 µm
Substrate: Q-Panels, Aluminum A 36
Curing: 15 min at 180 °C oven temperature, corresponds to 10 min PMT 180°C

RESULTS

Hiding Power / Brightness

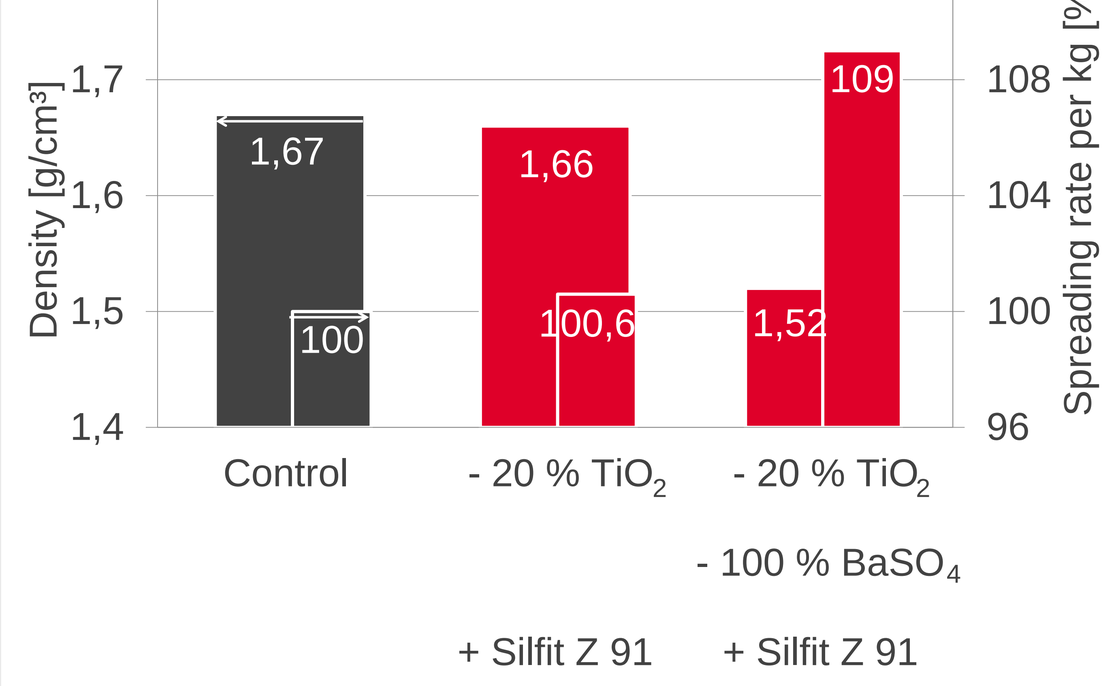


Gloss 20° / Haze



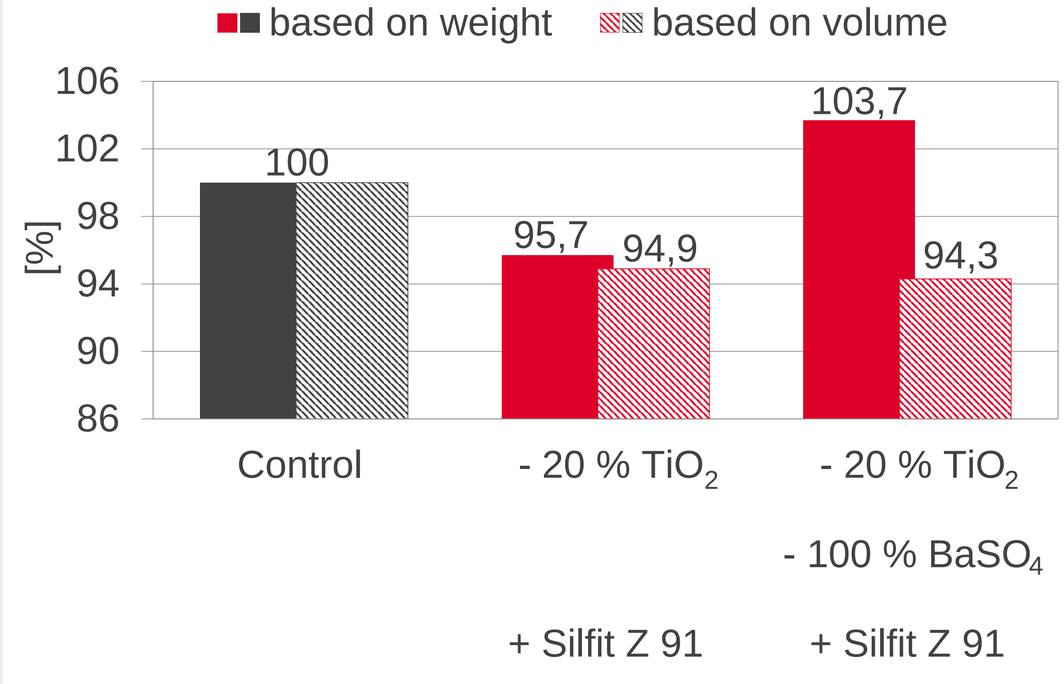
Flexibility

Impact test ASTM D 2794, weight 2 lbs; no cracks
cupping test DIN ISO 1520



Mechanical Resistance

Force needed to scratch down to the substrate



Density / Spreading Rate

Cost Index

Control = 100 % (Base: Germany 2011)