WACKER

CREATING TOMORROW`S SOLUTIONS

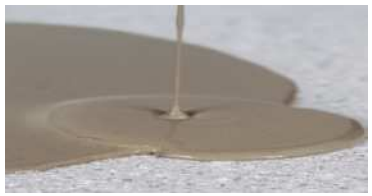
PRIMIS® SAF 9000 in Construction and Coating Applications

Trends and market needs


Mortar joints


Stamped concrete


Marble chip plaster


Self-leveling compounds


Paints

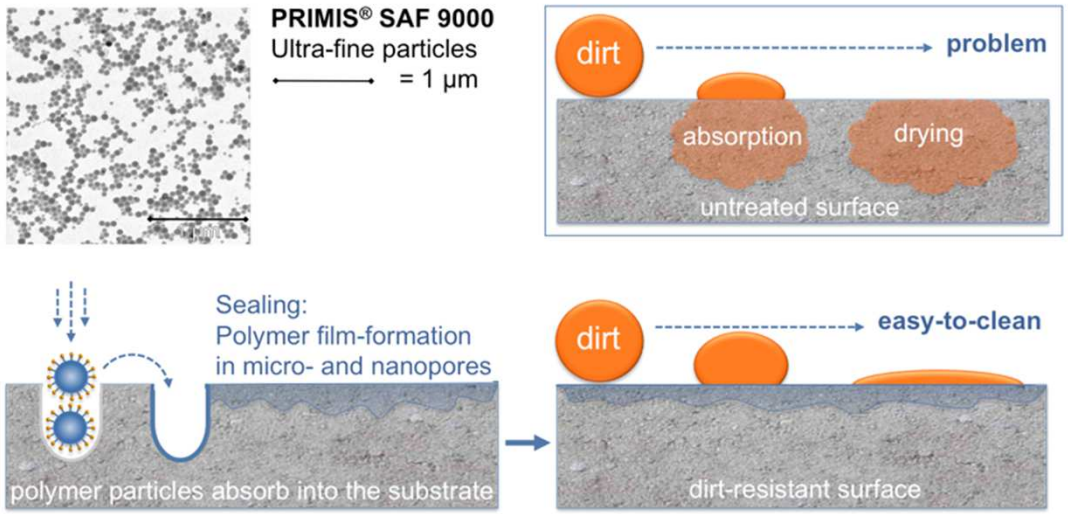

Colored pigments


Venetian stucco

Requirements

- Reduces surface contamination
  - Water
  - Oil
  - Dirt
- Creates easy-to-clean surfaces
- Increased abrasion resistance
- Substrate strengthening
- Protection from efflorescence
- Increased durability

PRIMIS® SAF 9000 in a nutshell



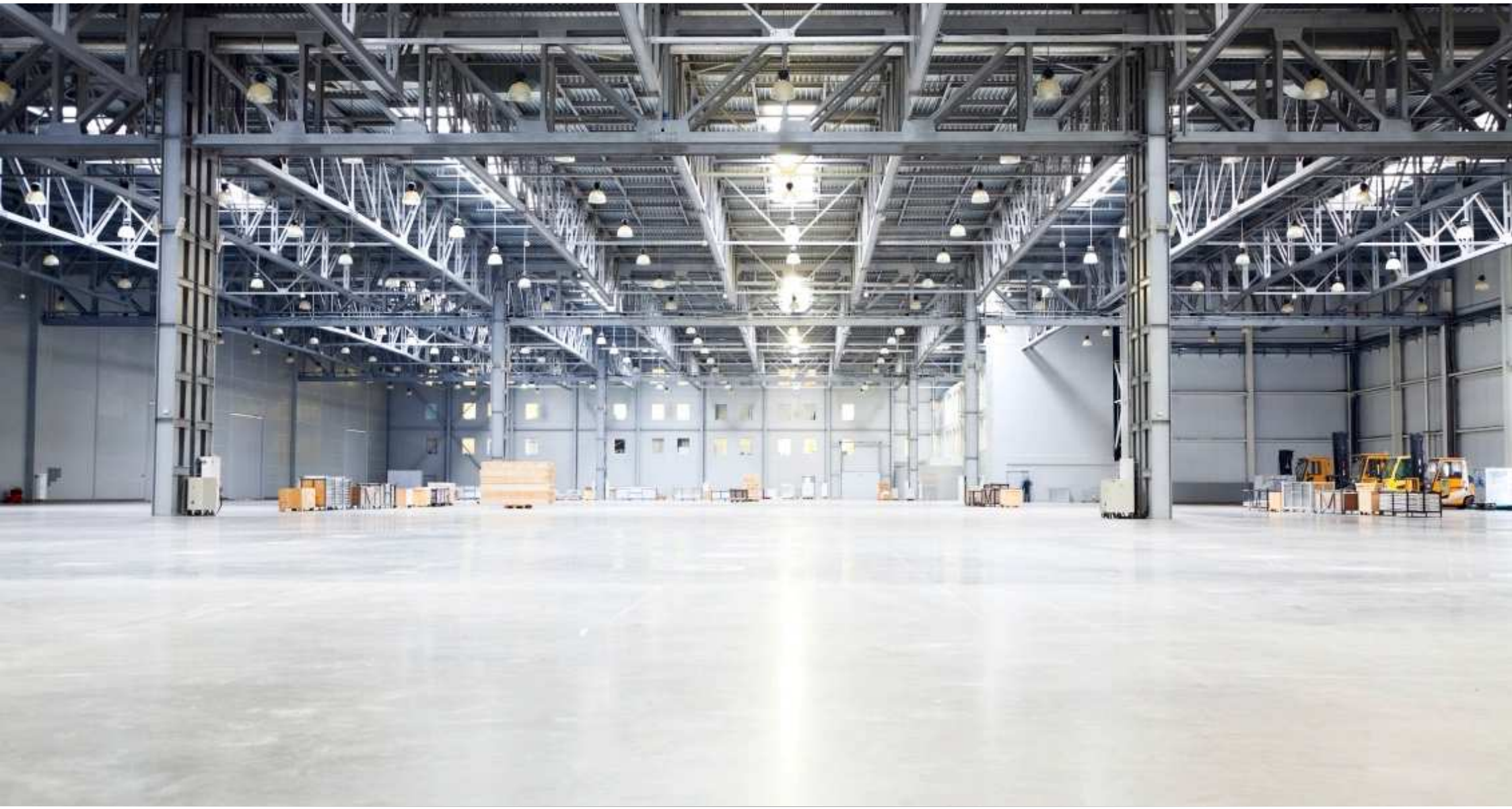
Market requirements:

- Improvement of stain resistance & cleanability
- Alternative to EP and PU
- Low-odor and low-VOC
- Ease of application

PRIMIS® SAF 9000 copolymer dispersion:

- Low particle size: absorption into nano- and micro-pores
- Special polymer composition: oil, water, dirt and stain proof
- High molecular weight: Good mechanical properties

PRIMIS® SAF 9000 for Surface Treatment of Mineral Substrates



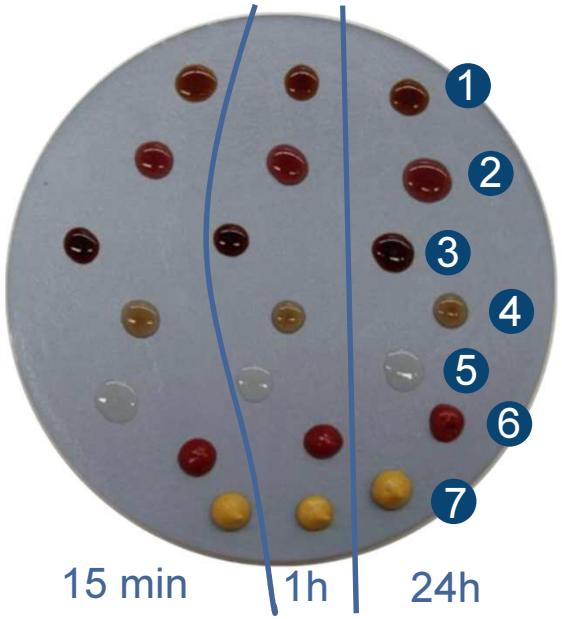
Stain resistance on SLC with PRIMIS® SAF 9000

Application

- All formulations with PRIMIS® SAF 9000 are applied with 30% solids in one coat with a sponge.
- Application of the stains was after a minimum waiting time of 3 days after application of the dispersion.

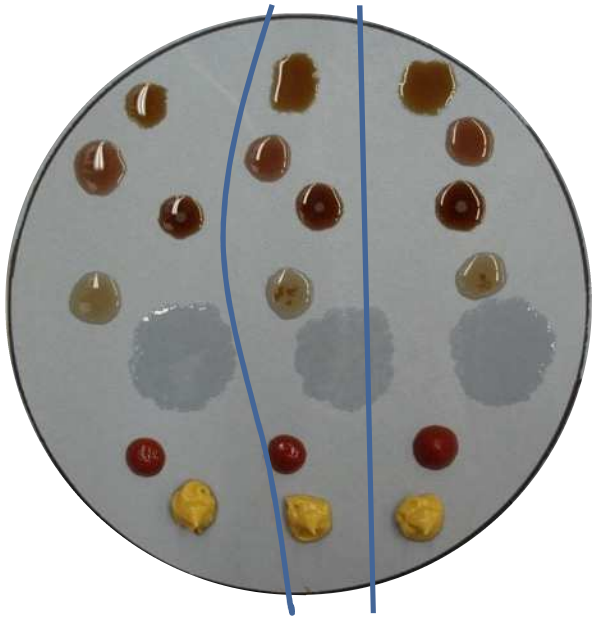
Procedure

- Application of different stains on a cementitious SLC under residence time of 15 min, 1h und 24h.
- Assessment of the residual stains after cleaning and drying

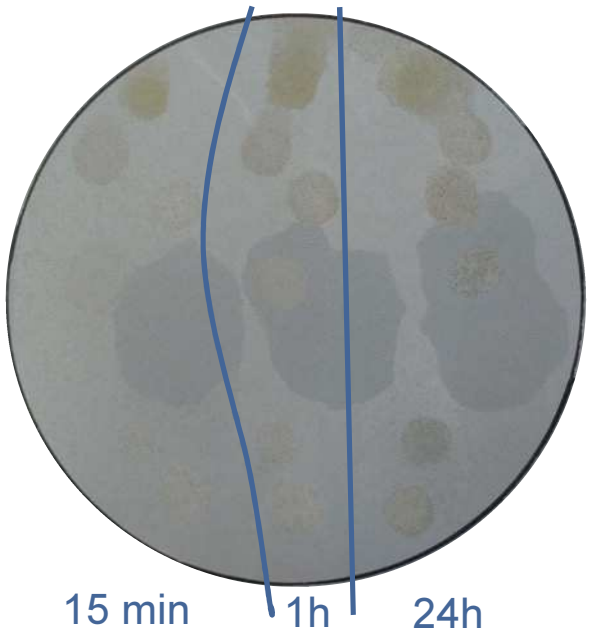


1. Warm coffee
2. Balsamic vinegar
3. Blackcurrant juice
4. Coca Cola
5. Salad oil
6. Ketchup
7. Mustard

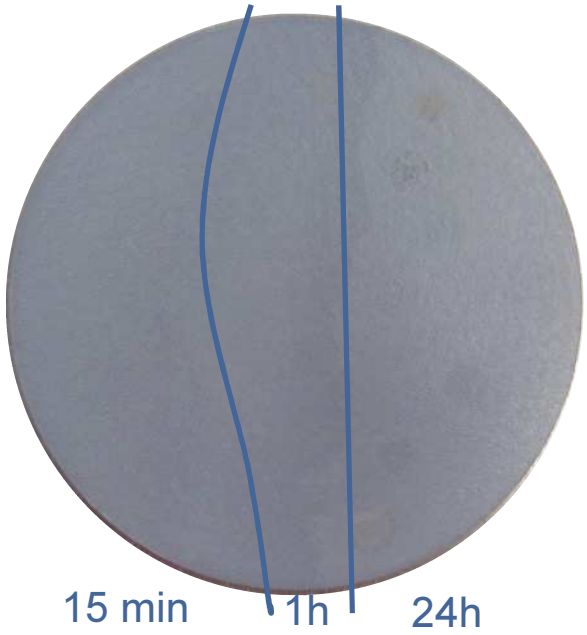
Stain resistance on SLC with PRIMIS® SAF 9000



▶ During staining test



▶ Without treatment



▶ PRIMIS® SAF 9000

Formulation of surface treatments with PRIMIS® SAF 9000

Suggested Formulation

- Mat and hydrophobic surface treatment for SLC based on PRIMIS® SAF 9000

PRIMIS® SAF 9000 (42%s.c.) or PRIMIS® SAF 9001 (development product)
+ 5% Michem Emulsion 47950.E (wax emulsion)
+ 10% Deuteron SO 300 (matting agent)

Adjust solid content of blend to 20 – 30 % s.c. depending on the absorbency of the substrate

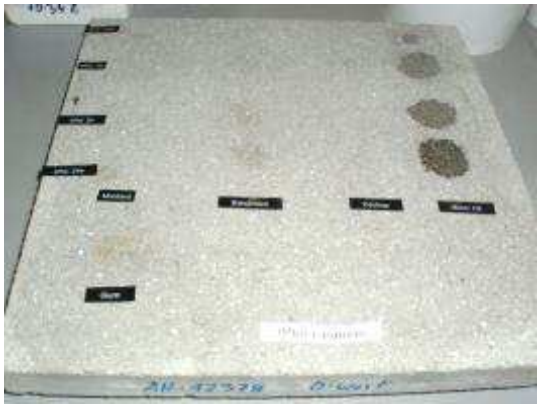
Application

Application of surface treatments based on PRIMIS® SAF 9000 and PRIMIS® SAF 9001 is recommended at a solid content of 10 – 30 % depending on the suction of the substrate. Best practice is application by use of a mop in order to avoid supernatant dispersion.

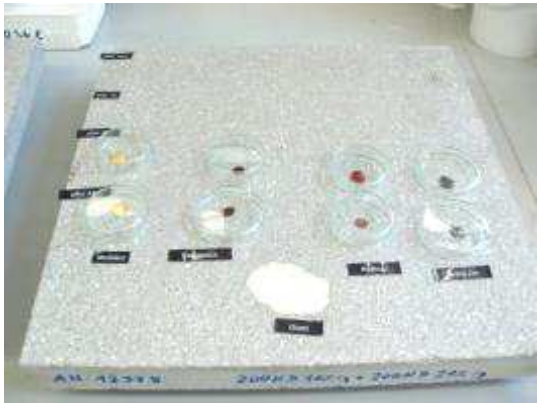
Application is possible in one or multi layers. In case of multi layer application, the first layer should be more diluted for best penetration compared to the following layer.

Stain resistance of an untreated vs. treated plate

Untreated plate



Treated plate with PRIMIS® SAF 9000*

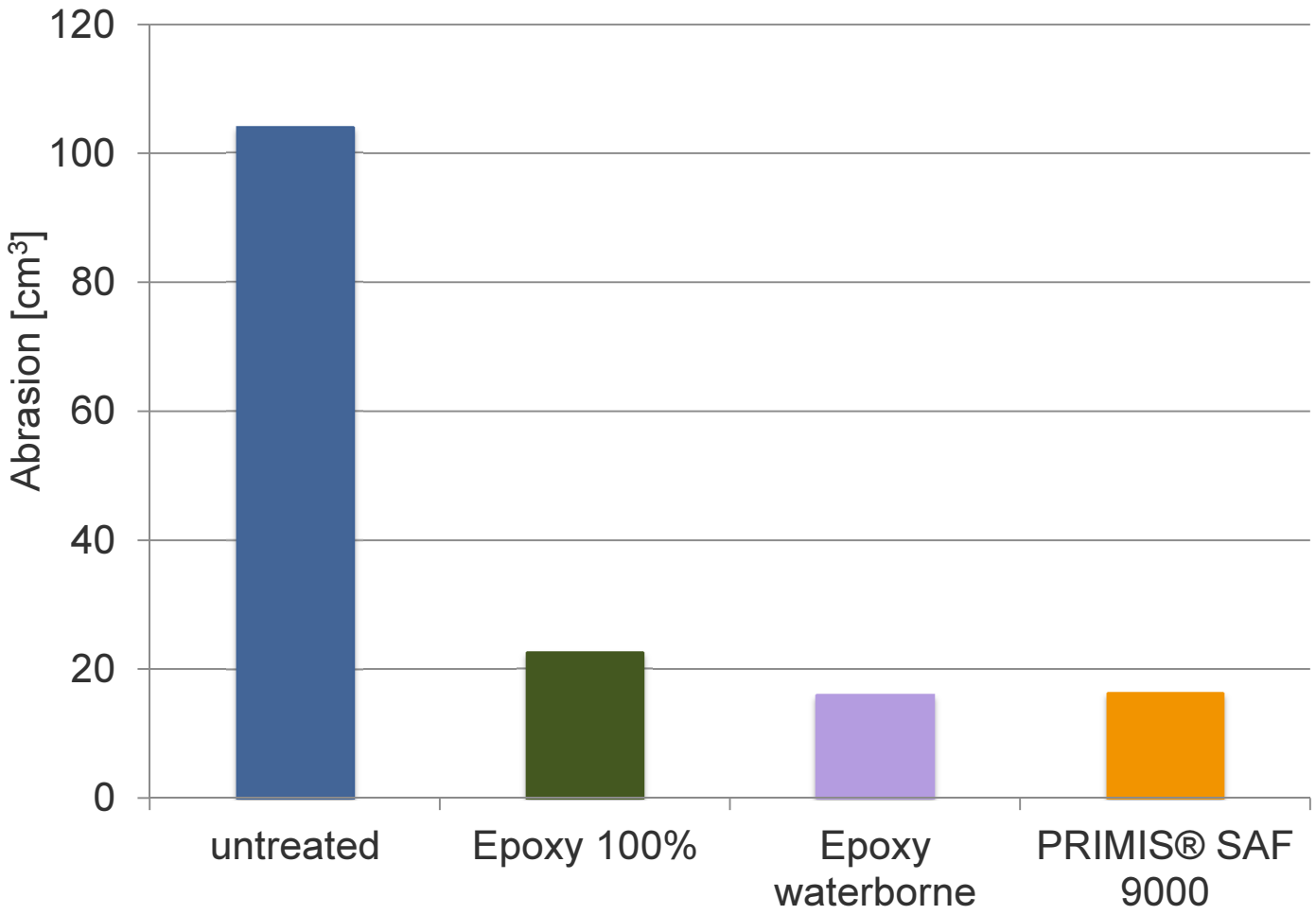


High-pressure cleaner

- **Stains: Mustard, chewing gum, balsamico vinegar, ketchup, old engine oil**

*1x 10% PRIMIS® SAF 9000 + 1x 20% PRIMIS® SAF 9000

Improvement of abrasion resistance of concrete

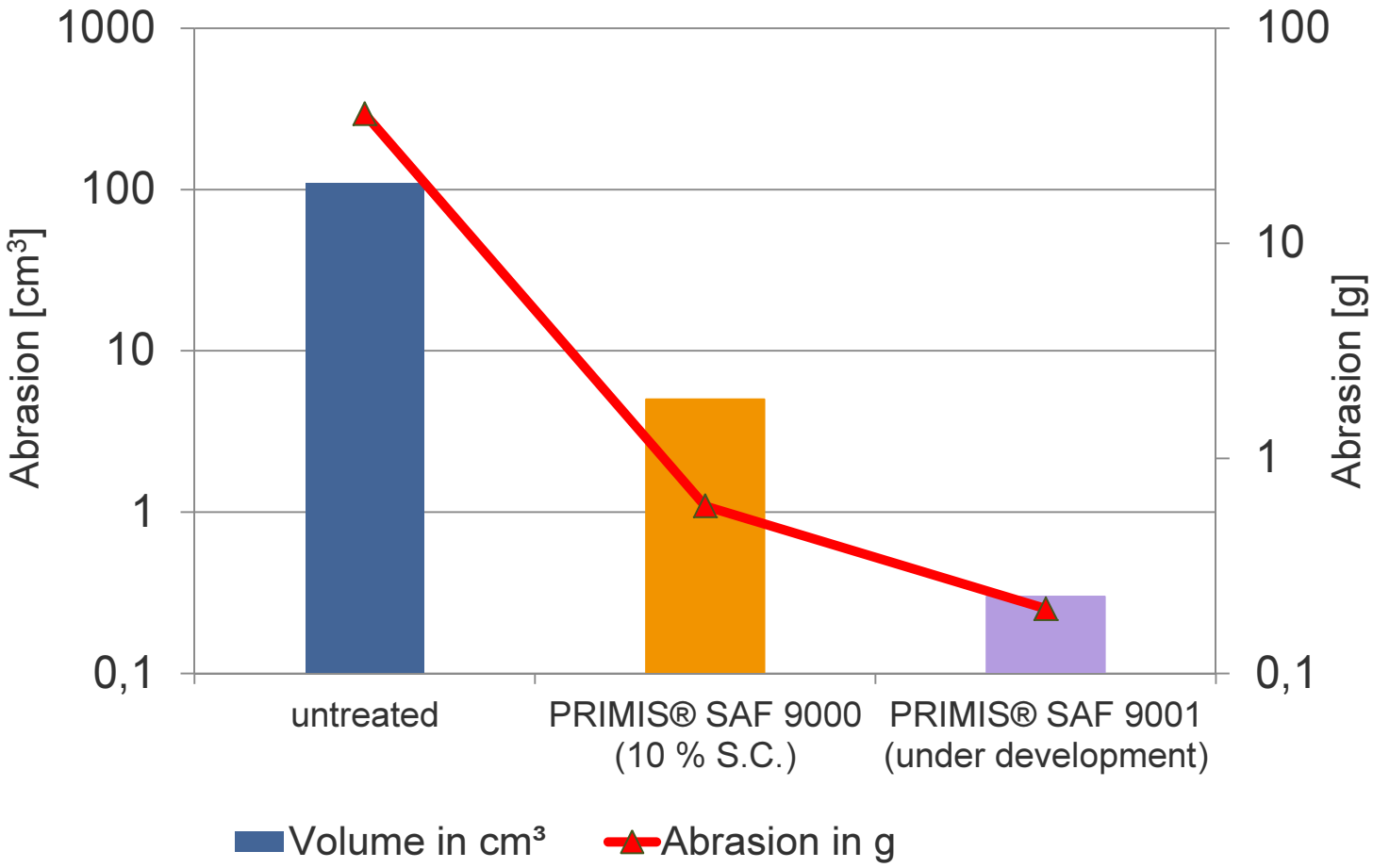


EN 13892-5 (14 D sc.)

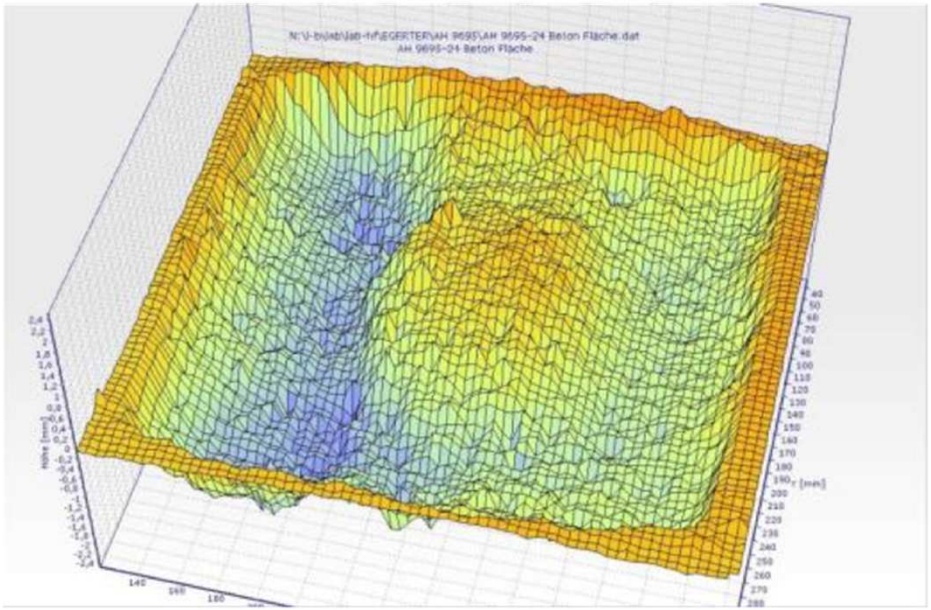
100 – 200 g dispersion/m³

Improvement of abrasion resistance of concrete by PRIMIS® SAF 9000 and PRIMIS® SAF 9001

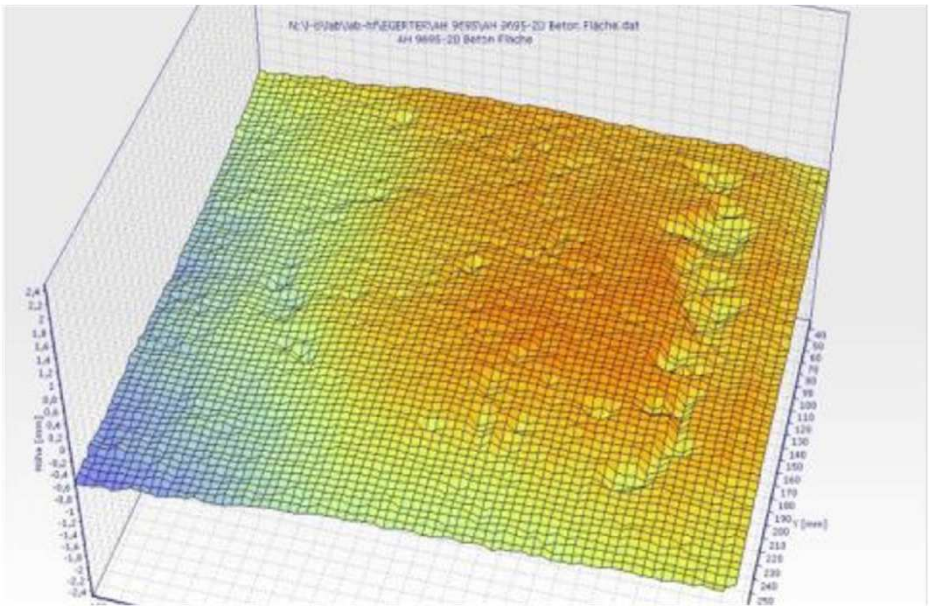
EN 13892-5 (14 D sc.)



Surface scan of concrete plate after abrasion test



without primer



with PRIMIS® SAF 9000

Surface strengthening effect by testing of bond strength

Test setup for evaluation of surface strength:

- Pull-off plates are glued directly on concrete plate and teared out by use of a metal frame

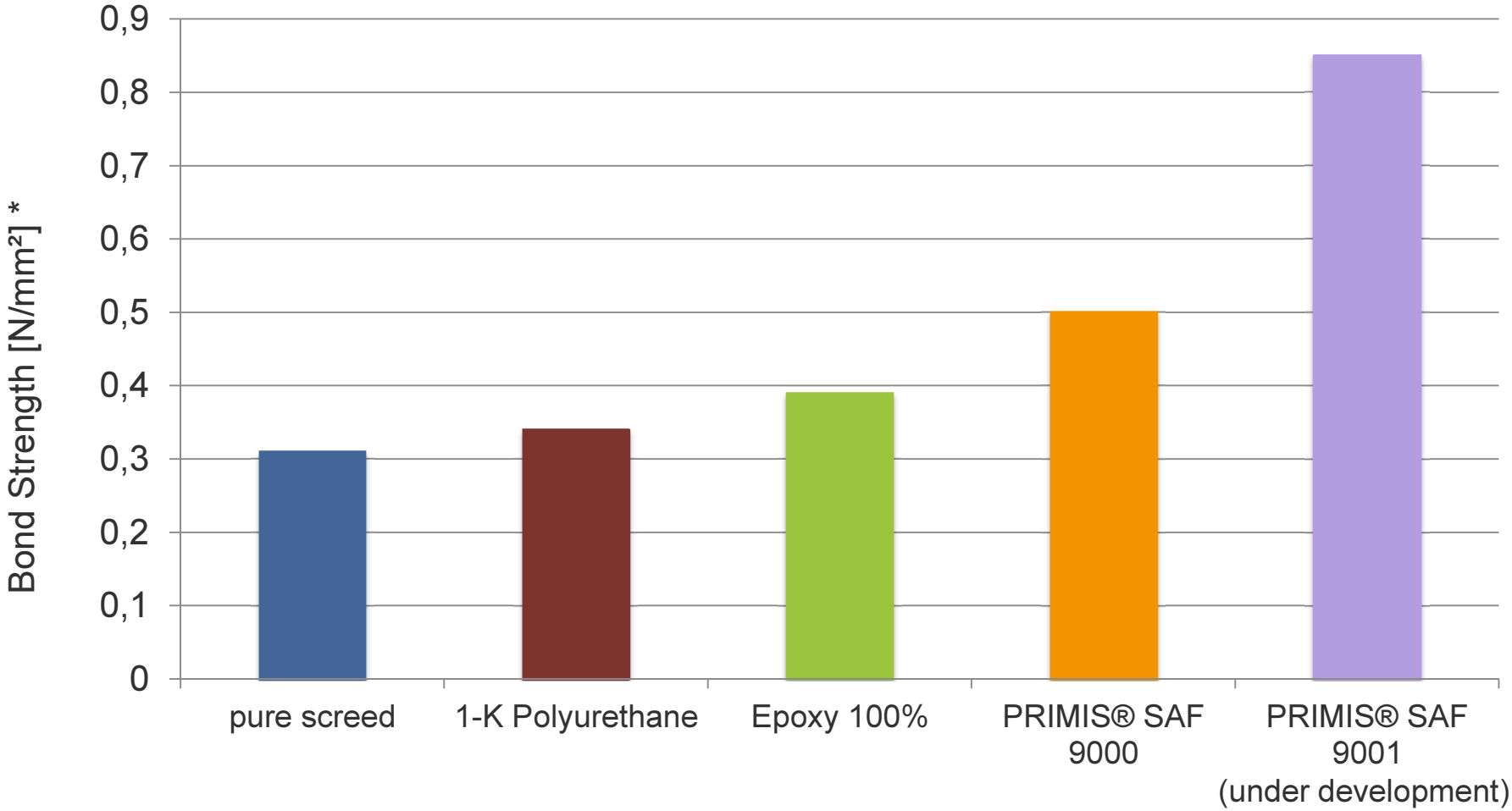
Improved surface strength:

- Deep tear-out of surface and improved bond strength by treatment with **PRIMIS® SAF 9000**

1 **without treatment**

2 **treated with PRIMIS® SAF 9000**

Surface strengthening of a weak screed B25 is strongly improved by PRIMIS® SAF 9000



*after 7d sc, pull off plates glued directly on screed

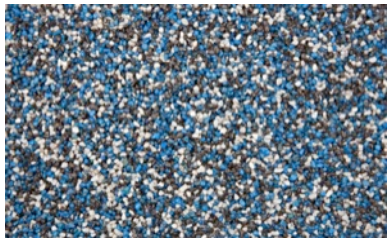
PRIMIS® SAF 9000 as protection of wall plasters – Stucco Veneziano based on calcium carbonate

PRIMIS® SAF 9000 as protection of wall plasters – Stucco Veneziano based on calcium carbonate

Carbonate-based Stucco Veneziano after hygrothermal cycling acc. ETAG004

- perfect appearance of the surface treated with PRIMIS® SAF 9000 after rain, heat and freeze-thaw cycling
- PRIMIS® SAF 9000 applied in two steps with 10 % solids followed by 20 % solids

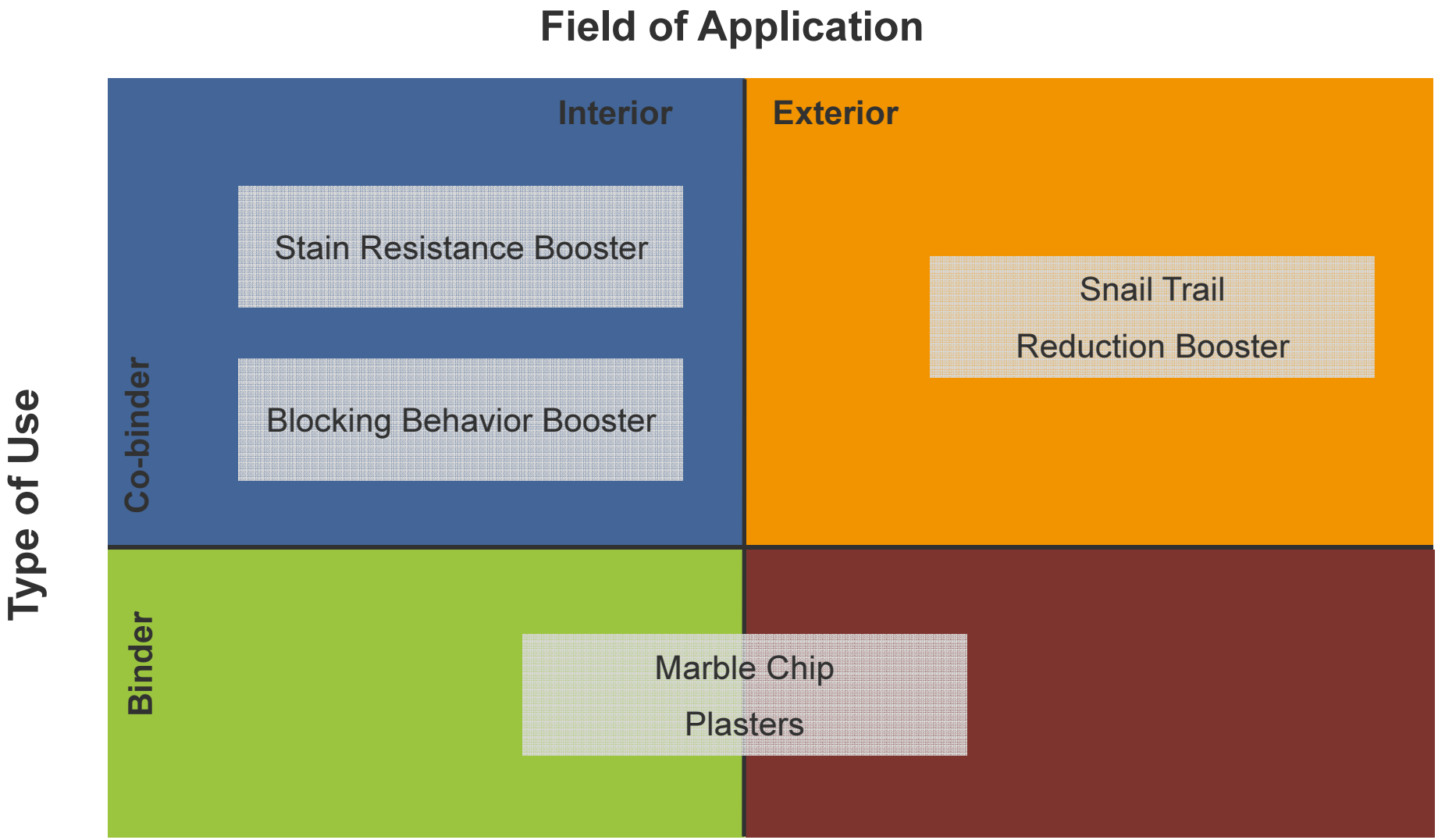
PRIMIS® SAF 9000 as binder for colored silica sand



Silica sand → + 1 % Pigment + 2 % PRIMIS® SAF 9000 → Colored silica sand → Water resistant colored silica sand → e.g. use for marble chip plaster

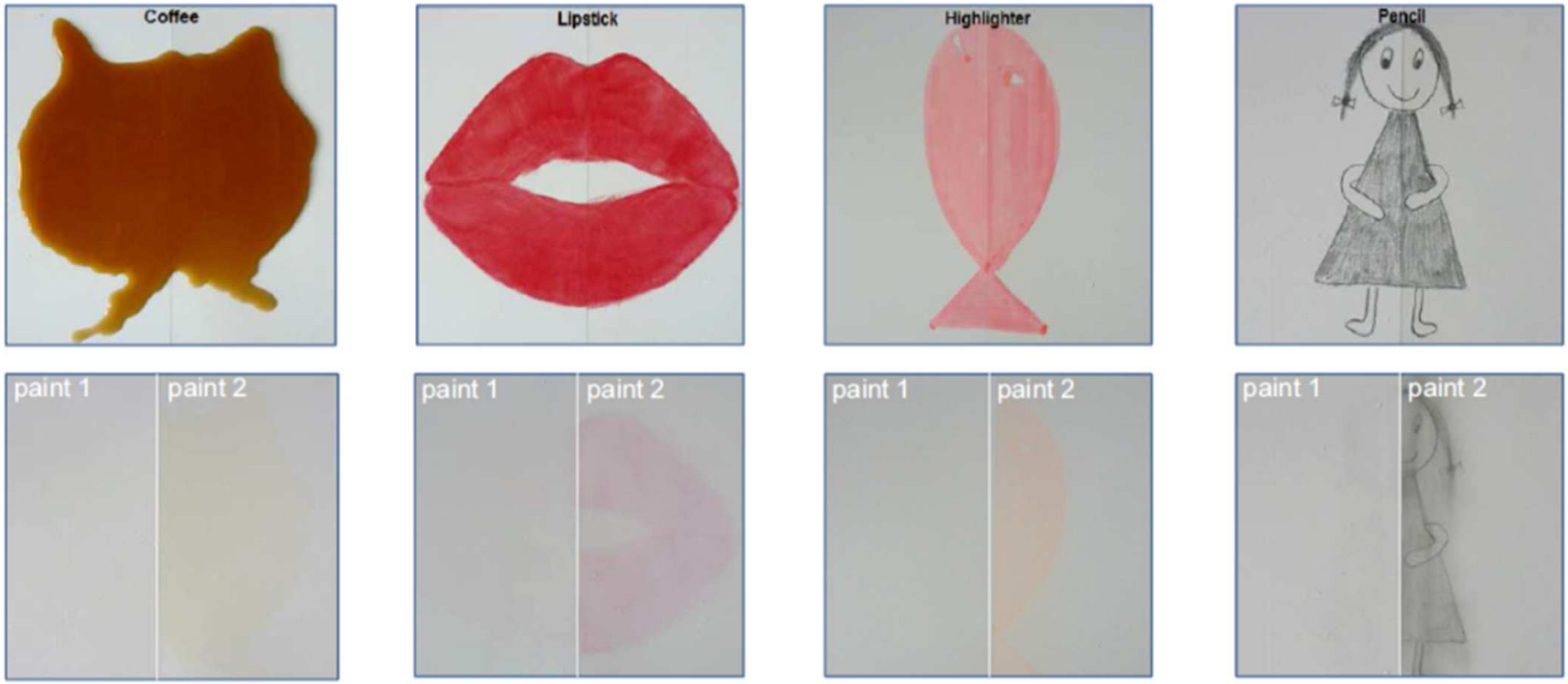
PRIMIS® SAF 9000 for paint and plaster applications

PRIMIS® SAF 9000 can be used for a variety of applications in paints & plasters



PRIMIS® SAF 9000 as a co-binder for easy-to-clean paints

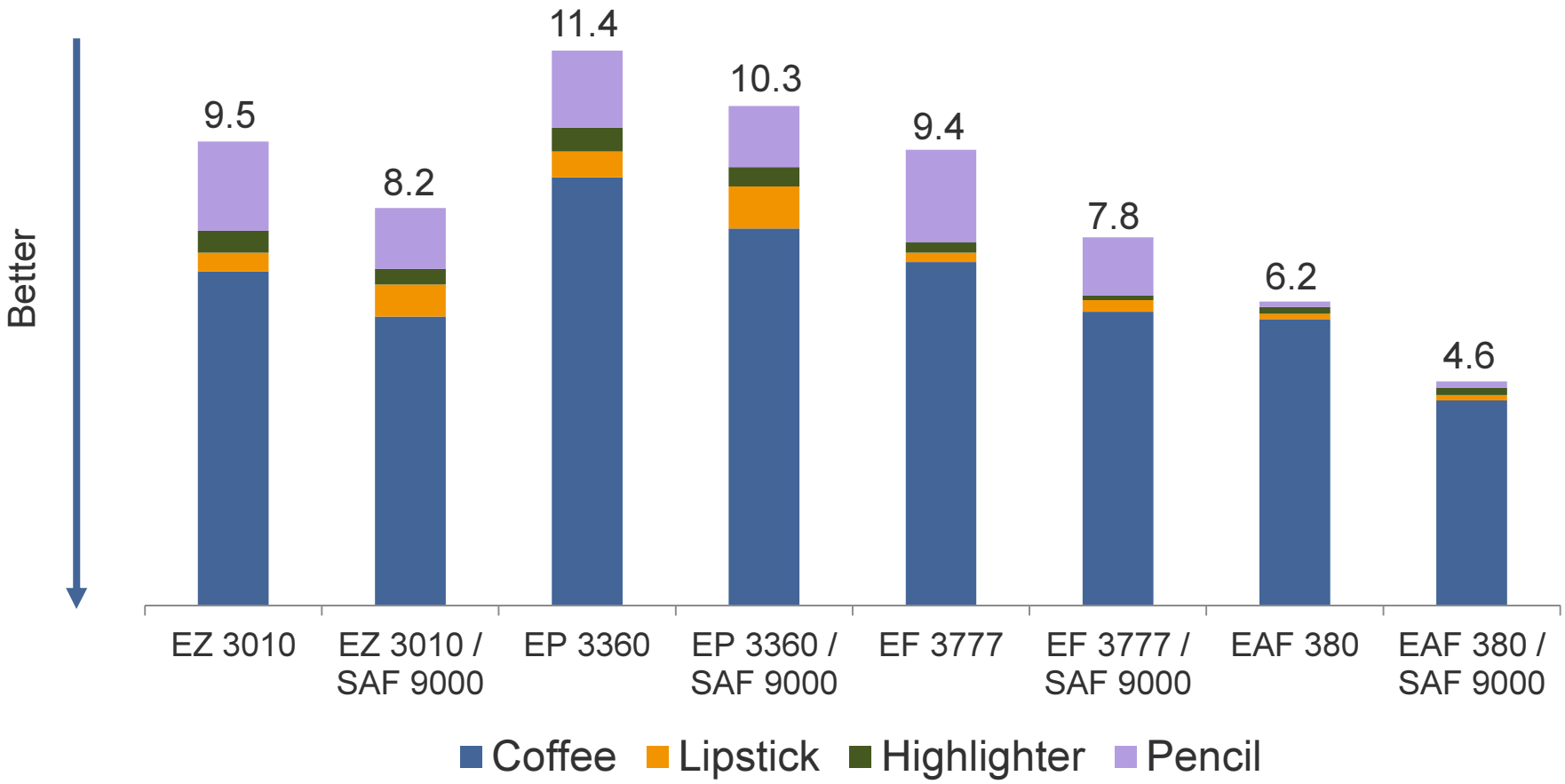
Household stain resistant paints



- Paint 1: Binder 80% VINNAPAS® EAF 380 + 20% PRIMIS® SAF 9000 (PVC 28%)
- Paint 2: Binder 100% VINNAPAS® EAF 380 (PVC 28%)

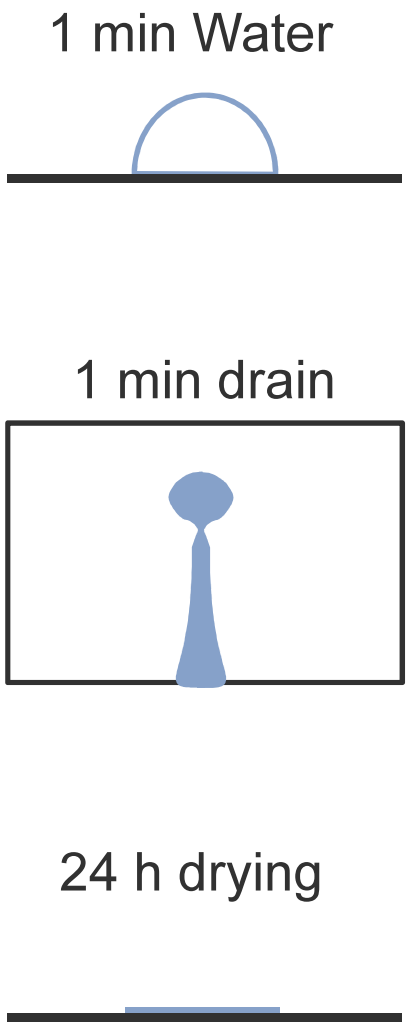
PRIMIS® SAF 9000 Co-binder* for easy-to-clean paints (Delta E)

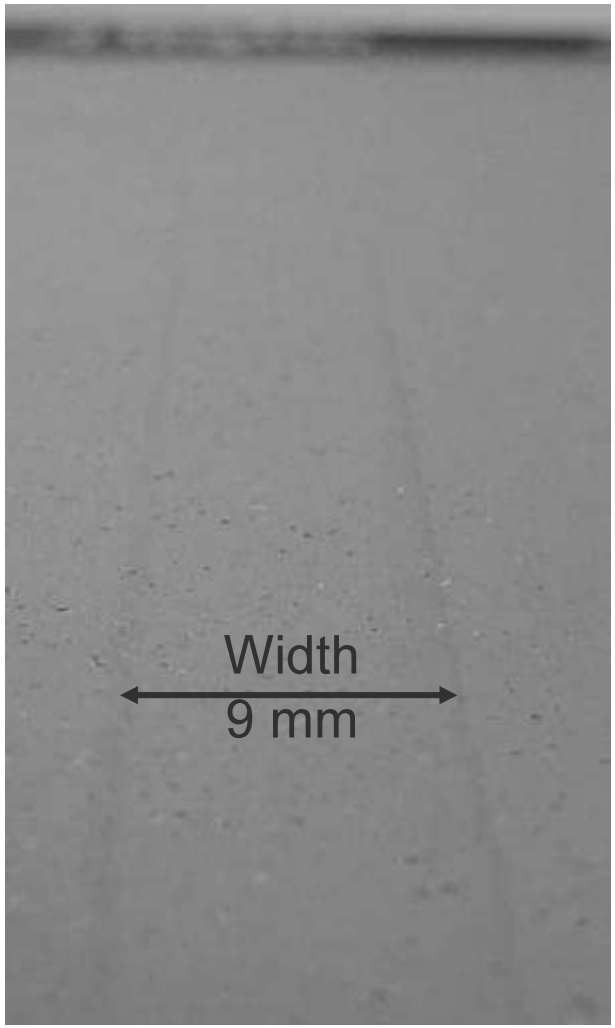
Indoor Satin Paint (10 – 20 units @ 60°)

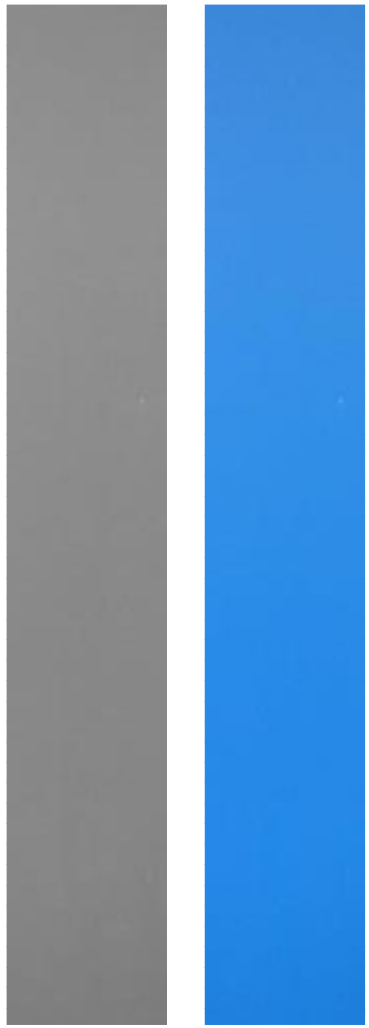


*Proportion 80/20. Recipe: LA091MM Coalescent free

New Product Development – PRIMIS® SAF 9000
Co-binder to reduce snail trails (Method*)



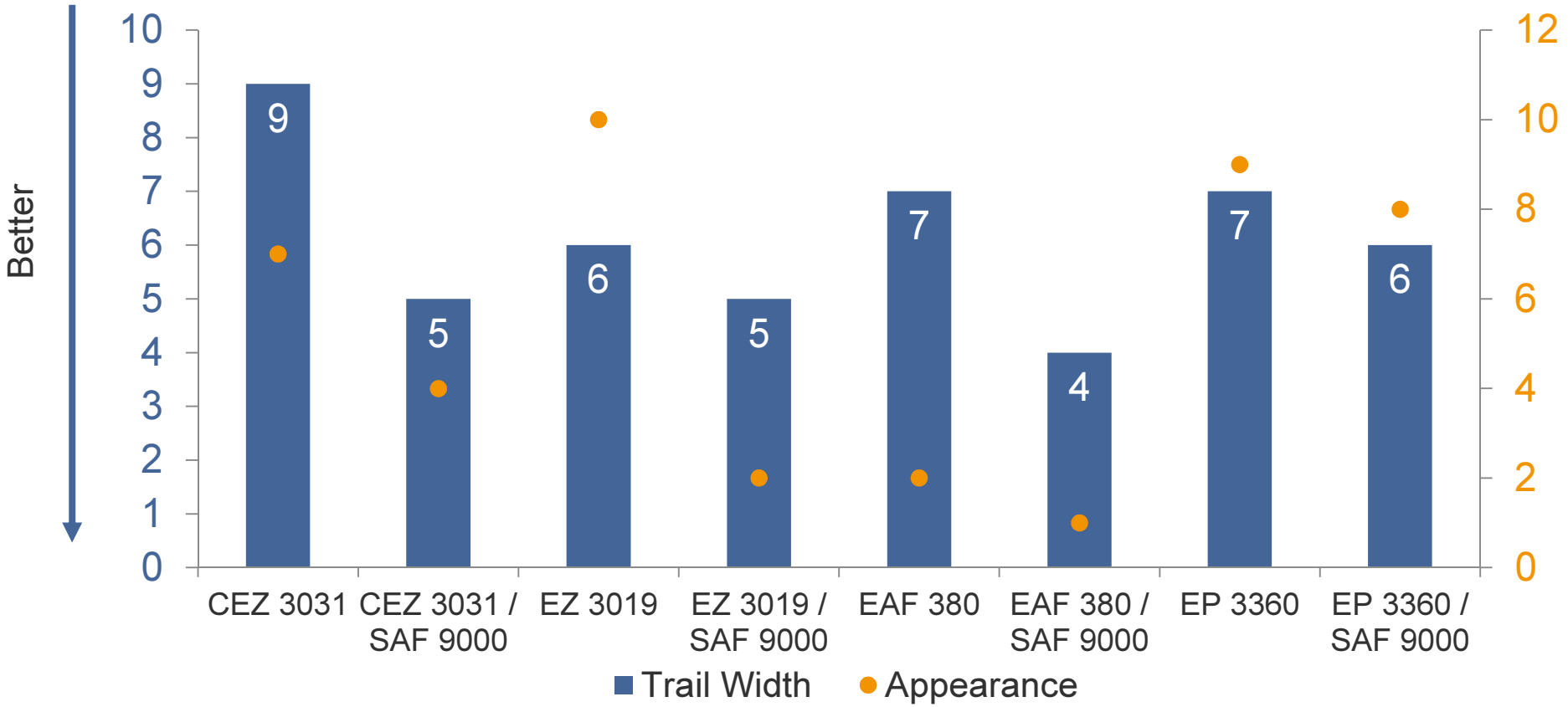




*Curing 7 d (50 % RH; 23 °C)

New Product Development – PRIMIS® SAF 9000
Co-binder* to reduce snail trails (14 days; trail width in mm)

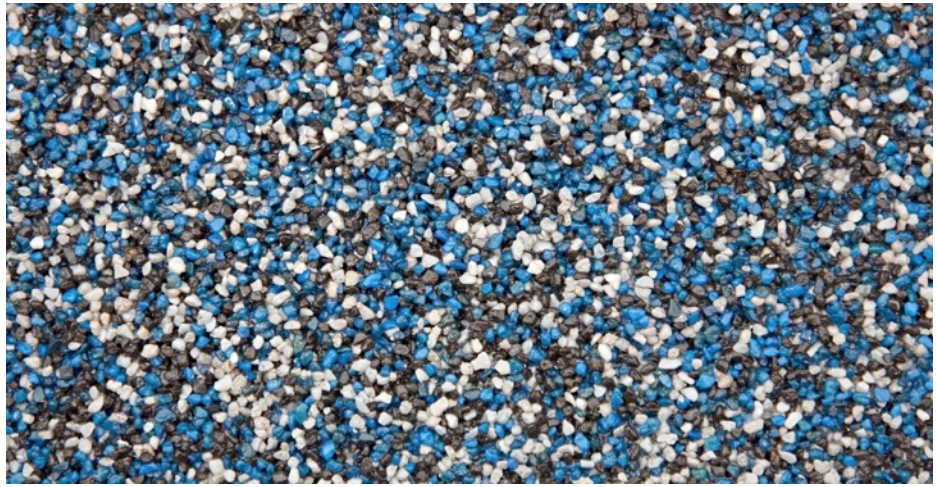
Facade paint



*Proportion 80/20. Recipe: 41 630 05 Mod. 4 % Colanylblue

All grades are VINNAPAS® grades except PRIMIS® SAF 9000

PRIMIS® SAF 9000 as binder or top-coat for marble chip plasters



New Product Development – PRIMIS® SAF 9000
Binder for marble chip plasters

Products in the market

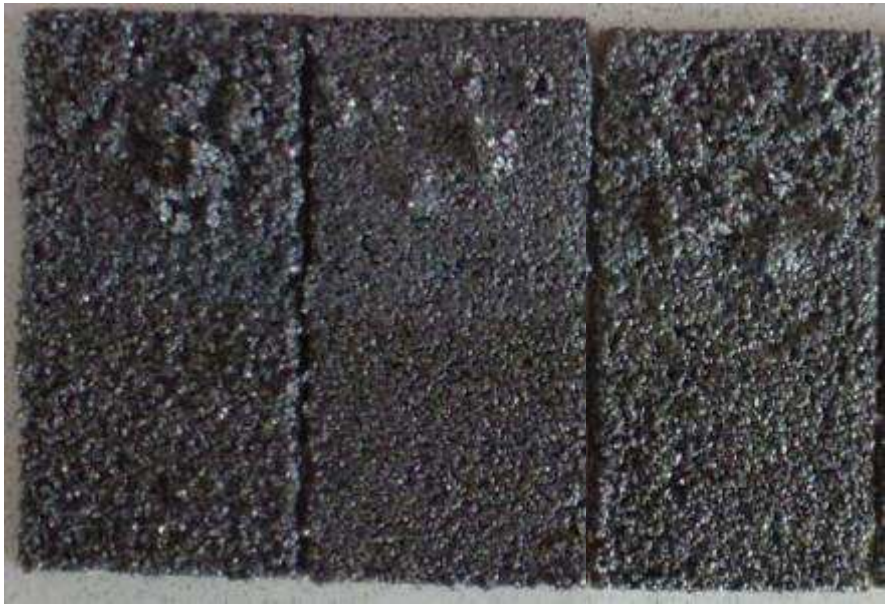
	Comp. 1	Comp. 2	SAF 9000
Polymer	PA (MMA)	PA (MMA)	SA
Tg [°C]	10	20	22
Solids [%]	49	47	42
MFFT [°C]	6	20	13

New Product Development – PRIMIS® SAF 9000
Binder for marble chip plasters

Scratching resistance (Recipe 3)

Comp. 1	Comp. 2	SAF 9000
		Scratching*

after 24 h in water

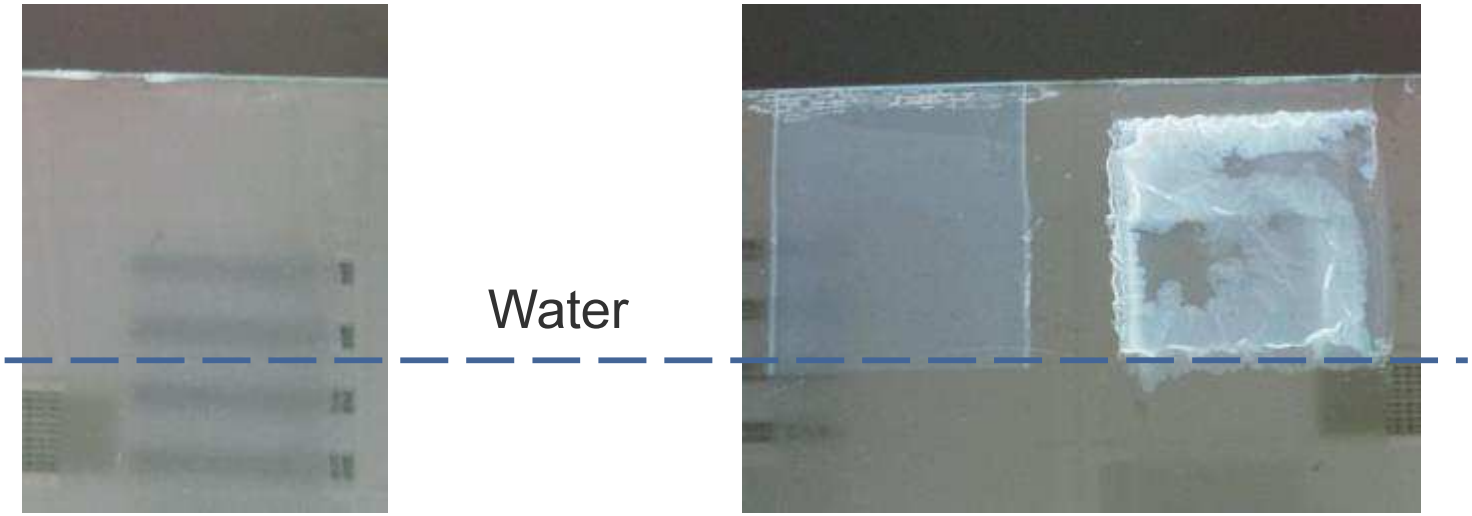


Comp. 1	Comp. 2	SAF 9000
1	3	6

*the highest the best

New Product Development – PRIMIS® SAF 9000
Binder for marble chip plasters

Whitening*:



PRIMIS® SAF 9000 Comp. 1 Comp. 2

* 2 days @ 50 °C; 5 days @ 23 °C; 24 h water

PRIMIS® SAF 9000 is a newly developed dispersion for surface treatment

	PRIMIS® SAF 9000	PRIMIS® SAF 9001
Polymer composition	Styrene Acrylic	Styrene Acrylic Hybrid
Minimum film-forming temperature (MFFT)	13°C	1°C
Tg	22°C	10°C
Solid Content	42 ± 1%	42 ± 1 %
Particle size	70 nm	70 nm

Note

- PRIMIS® SAF 9000 is a scale up product. It has been produced in production scale. Product is available from our plant.
- PRIMIS® SAF 9001 is a development product in lab scale. Samples in lab scale are available. No warranty for product availability from the plant.

Application of PRIMIS® SAF 9000 and PRIMIS® SAF 9001 is recommended with a solid content of 10-20 % depending on the suction of the substrate. Best practice is application by use of a mop in order to avoid supernatant dispersion. Application in two layers results in best results regarding easy-to-clean properties. First layer should be more diluted for best penetration compared to the second layer.

PRIMIS® SAF 9000 – Influence of Texanol on MFFT