

SCHWEGO[®] flash inhibitor - Help to prevent flash rust

Brown spots appear short time after the application is done. Very often this phenomenon is visible at the film formation from water – based paints. These spots occur through migration of corrosion products (flash rust) from the metal substrate to the film surface. They are not only a visual issue, but also a start of a corrosion process which later will be caused from this point.

The flash rust formation depends from diverse parameters, e.g. the place of the application, the current air temperature, respectively air humidity and so the drying speed, but also the pretreatment as abrasive blasting could play a roll. But very often all this parameters could not be optimized.

Flash rust inhibitors which are part of the formulation could avoid this phenomenon.

Bernd Schwegmann GmbH & Co. KG developed three new flash rust inhibitors and introduced them under the name **SCHWEGO[®]** flash inhibitor in the market.

SCHWEGO[®] flash inhibitor EL 1320 and **SCHWEGO[®]** flash inhibitor EL 1420 are two products for ferrous substrates. **SCHWEGO[®]** flash inhibitor EL 1520 is usable for ferrous and non-ferrous substrates.

All this three products are special mixtures of inorganic and organic salts. They are chemical active inhibitors and act as passivator and protective layers. They offer also corrosion protection through vapor phase inhibition.

The types offer the following advantages:

- They are free of nitrites (sodium-nitrite), borates and amines.
- They should not influence resistance, e.g. water resistance at the dry film.
- Also the products are free or low in the labeling.

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SCHWEGO[®] flash inhibitors are tested in different kind of latexes to demonstrate the efficiency.

SCHWEGO[®] flash inhibitor in pure acrylic latexes



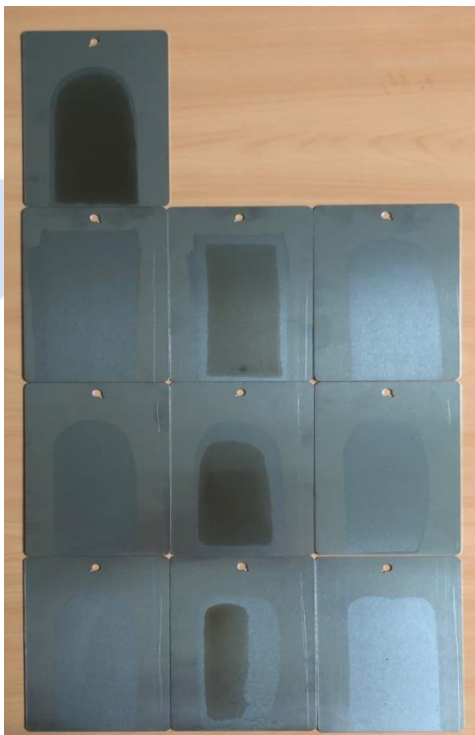
Picture 1 shows the effect in pure acrylic latexes.

The dosage on each panel sheet is 0.1% (upper row), 0.3% (middle row) and 0.5 % (lower row) calculated on latex. All examples are coated with the same film thickness and under the same conditions. After drying time the panels sheets are compared regarding flash rust.

The effect to prevent flash rust is better with increasing dosage of the three **SCHWEGO**[®] flash inhibitor types. The best efficiency is with **SCHWEGO**[®] flash inhibitor EL 1520 in this latex. The film is free from flash rust with 0.3% **SCHWEGO**[®] flash inhibitor EL 1520 calculated on latex. All three products are well with 0.5 % **SCHWEGO**[®] flash inhibitor calculated on latex.

Picture 1: at the top: without additive
left: SCHWEGO flash inhibitor EL 1320
middle: SCHWEGO flash inhibitor EL 1420
right: SCHWEGO flash inhibitor EL 1520

SCHWEGO[®] flash inhibitor in styrene / acrylic latexes

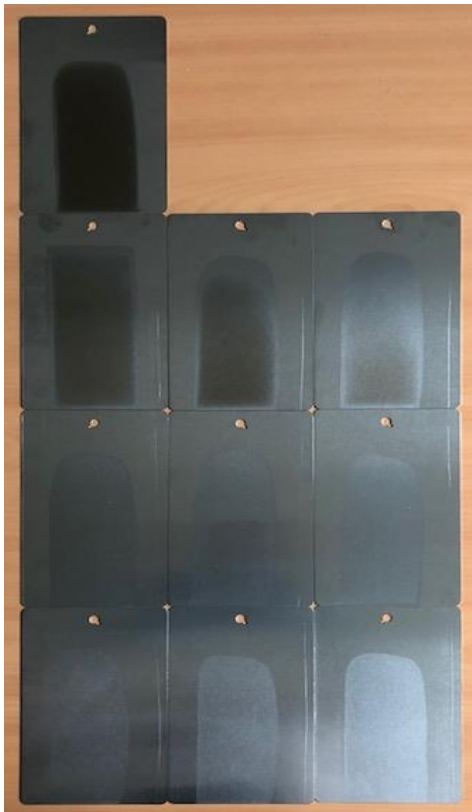


Picture 2 shows the efficiency in styrene / acrylic latexes. The dosage on each panel sheet is 0.5% (upper row), 0.7 % (middle row) and 1.0 % (lower row) **SCHWEGO**[®] flash inhibitor calculated on latex.

The film with 0.5% **SCHWEGO**[®] flash inhibitor EL 1320 is free from flash rust. Both other types need a higher dosage to perform well.

Picture 2: at the top: without additive
left: SCHWEGO flash inhibitor EL 1320
middle: SCHWEGO flash inhibitor EL 1420
right: SCHWEGO flash inhibitor EL 1520

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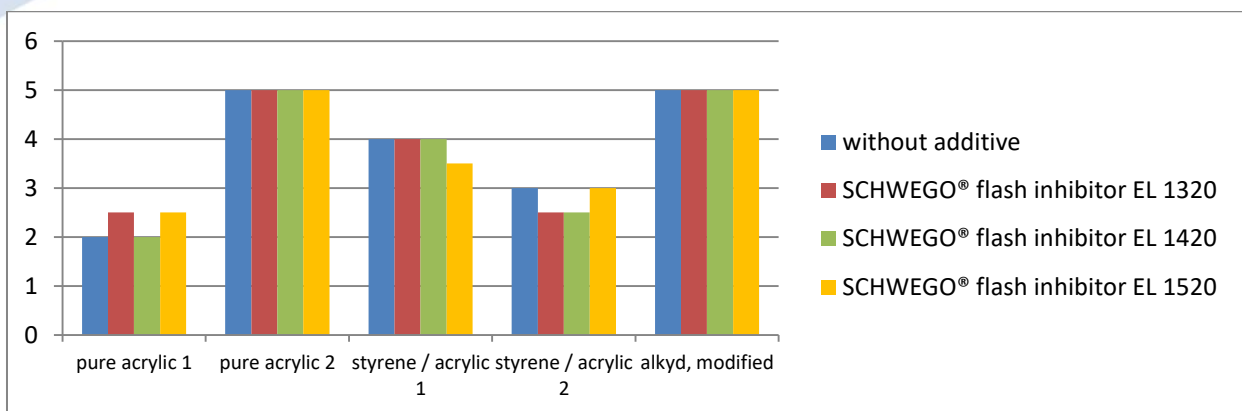
Picture 3 shows also the efficiency in a second styrene - acrylic latex. The dosage was also 0.5 % (upper row), 0.7 % (middle row) and 1.0% (lower row) **SCHWEGO**[®] flash inhibitor calculated on latex.

The **SCHWEGO**[®] flash inhibitor types show the same efficiency in this latex, **SCHWEGO**[®] flash inhibitor EL 1320 was slightly better.

Picture 3: at the top: without additive
left: SCHWEGO flash inhibitor EL 1320
middle: SCHWEGO flash inhibitor EL 1420
right: SCHWEGO flash inhibitor EL 1520

Influence of the **SCHWEGO**[®] flash inhibitor types at the water resistance

Paints developed for metal substrates should own a high water resistance. Mainly latex is responsible for this effect, but also additives could get an influence at the water resistance from the dry film. 1.0% **SCHWEGO**[®] flash inhibitor is incorporated in different kind of latexes. Then the samples were coated with a doctor blade on a glass plate. The drying time was 24 h at 20°C. To test the water resistance a defined amount of water has been dropped on the film and the blushing and the surface of the film after 60 minutes residence time has been observed. The evaluation of the blushing was as follows 5 = no change (blushing) 1 = strong change (blushing). The results are visible in the graphic (Picture 4).



Picture 4: Influence of **SCHWEGO**[®] flash inhibitors on water resistance

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The influence of the **SCHWEGO**[®] flash inhibitor types strongly dependent from latex. So there is no change visible, but also no slightly worsening or improvement from the water resistance with **SCHWEGO**[®] flash inhibitor. Finally the formulations with **SCHWEGO**[®] flash inhibitor achieve the same quality level in water resistance compared without additives. **SCHWEGO**[®] flash inhibitor types own only a slight influence on water resistance.

Summary:

SCHWEGO[®] flash inhibitor EL 1320, **SCHWEGO**[®] flash inhibitor EL 1420 and **SCHWEGO**[®] flash inhibitor EL 1520 are three new developments free of nitrites, borate and amines.

The types are free of VOC.

SCHWEGO[®] flash inhibitor EL 1320 und **SCHWEGO**[®] flash inhibitor EL 1520 are free of labeling, **SCHWEGO**[®] flash inhibitor EL 1420 is labeled with the exclamation mark (GHS07).

The dosage is depending on the system. Normally it is between 0.5 % and 2.0 % calculated on the formulation. The exact dosage should be determined experimentally by laboratory trials. The incorporation of **SCHWEGO**[®] flash inhibitor could be during any stages of paint production and post – addition is also possible.

SCHWEGO[®] flash inhibitor EL 1320 and **SCHWEGO**[®] flash inhibitor EL 1420 are usable for ferrous substrates, **SCHWEGO**[®] flash inhibitor EL 1520 for ferrous and non–ferrous substrates.

An influence at the water resistance with **SCHWEGO**[®] flash inhibitor is not visible.

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