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Test Report: 160826-3

Test of the resistance of a 2-component epoxy coating to disinfectants

Customer: FAKOLITH Farben GmbH
Carl-Benz-Straße 19
D-64658 Fürth

Contractor: Department Analytical Chemistry
Holger Struwe
Phone: +49-89-5791-2636
Fax: +49-89-5791-2229

Type of product: 2-component epoxy coating

Name of product: FAKOLITH FK 45 FOODGRADE

Date of receipt: 01.07.2016

Specification of sample: 0,75 litre and 0,5 litre PP-container

Date: 26. August 2016

Date: 2016-08-26

Our reference:
IS-USL-MUC/hs
PB Fakolith FK 45 08-16_EN.doc

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The test results refer exclusively
to the units under test.



1 Assignment

At the request of FAKOLITH Farben GmbH, TÜV SÜD Industrie Service GmbH tested a sample of a 2-component epoxy coating with regard to their resistance to disinfectants.

2 Test method

The 2 components were mixed one to one according the manufacturer information and coated two layers with a roller on four cleaned glass plates. The drying time between the two layers was 48 hours.

Application amount: each 200 g / m² per layer.

After two day drying time the plates were positioned vertically on the wall of a fume cupboard. Hereinafter, a plate was not treated as a reference pattern with disinfectant.

The four other plates were daily sprayed with disinfecting solutions with different composition until droplet formation. After each 24-hour drying time of the disinfectant to the surface the plates were cleaned with water.

Daily treatment was performed over 10 days, excluding weekends.

Following disinfectant and application concentrations were used:

1. **Descogen F**, representing disinfectants based on active oxygen.
A 3% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
2. **Trichlorol**[®], representing disinfectants based on active chlorine.
A 0.75% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
3. **Lysoformin**[®] **spezial**, representing disinfectants based on guanidine derivatives and quaternary ammonium compounds. A 1,5% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
4. **Incidur**[®] **Spray**, representing disinfectants based on ethanol, n-propanol and glutaral.
An undiluted solution was used.

The disinfectants were filled into pump sprayer and used so.

The used disinfectants are validated for surface disinfection by the Association for Applied Hygiene (Verbund für Angewandte Hygiene; VAH), Version 2008, as effective and listed accordingly.



3 Test results

After the end of disinfectant exposure, the surfaces of the test specimen were examined with regard to blistering, flaking and cracking as well as visual changes, such as colour and gloss, in accordance with the standards listed below.

- Blistering: DIN EN ISO 4628-2: 2004-01
- Flaking: DIN EN ISO 4628-5: 2004-01
- Cracking: DIN EN ISO 4628-4: 2004-01
- Color: DIN EN ISO 4628-1: 2004-01
- Gloss: DIN EN ISO 4628-1: 2004-01

Table 1. Results

Disinfectant	Test method	Features	Results
Descogen® F	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Trichlorol®	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Lysoformin spezial	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Aldasan 2000	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e

^a ASTM D 714: None

^b Blister count (blister size) = none; i.e. no recognisable damage (not visible with 10x magnification)

^c Percentage of coating area that flaked off (size of the area where the coating has flaked off; largest dimension: 0 = no visible flaking at 10x magnification)

^d Number of cracks (crack width) = none, i.e. no recognisable cracks (none visible at 10x magnification)

^e Amount of damage (damage size) = none; i.e. no recognisable damage (not visible at 10x magnification)

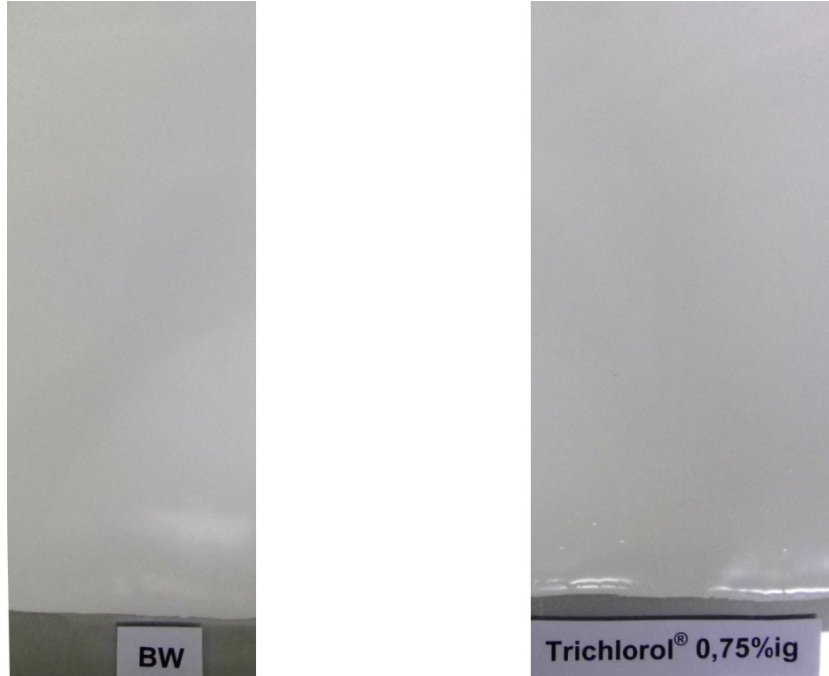


Figure 1: Appearance of the sample by 10 strains with 0.75% - Trichlorol solution compared to unstressed sample (blank BW)



Figure 2: Appearance of the sample by 10 strains with 1,5% - Lysoformin Spezial solution compared to unstressed sample (blank BW)



Figure 3: Appearance of the sample by 10 strains with 100% - Incidur solution compared to unstressed sample (blank BW)

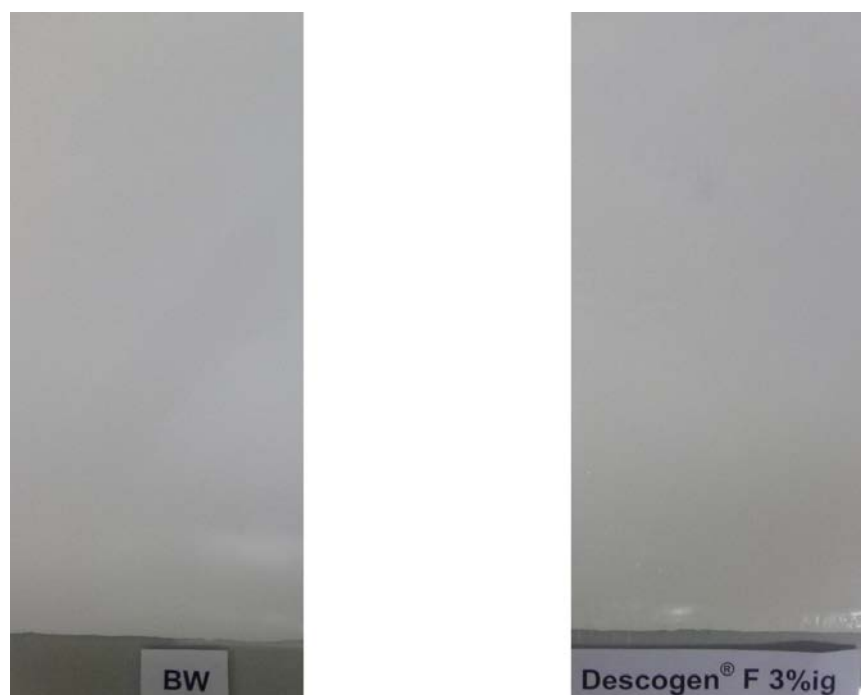


Figure 4: Appearance of the sample by 10 strains with 3% - Descogen F solution compared to unstressed sample (blank BW)



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4 Assessment

The test of the resistance of FAKOLITH FK 45 FOODGRADE for surface cleaning (wiping disinfection) showed that the 2-component epoxy coating did not blister, flake or crack.

In the context of the performed test of the 2-component epoxy coating FAKOLITH FK 45 FOODGRADE, the resistance to the used disinfectants can be attested.

Department Analytical Chemistry
Project Manager

A handwritten signature in blue ink, appearing to read 'H. Struwe'.

Holger Struwe

A handwritten signature in blue ink, appearing to read 'F. Englisch'.

Florian Englisch



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Test Report: 160826-1

Test of the resistance of an emulsion paint to disinfectants

Customer: FAKOLITH Farben GmbH
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D-64658 Fürth

Contractor: Department Analytical Chemistry
Holger Struwe
Phone: +49-89-5791-2636
Fax: +49-89-5791-2229

Type of product: Emulsion paint

Name of product: DISPERLITH ELASTIC

Date of receipt: 01.07.2016

Specification of sample: Emulsion paint; 1 litre PP-container

Date: 2016-08-26

Our reference:
IS-USL-MUC/hs
PB Disperlith Elastic 08-
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Date: 26. August 2016



1 Assignment

At the request of FAKOLITH Farben GmbH, TÜV SÜD Industrie Service GmbH tested a sample of an emulsion paint with regard to their resistance to disinfectants.

2 Test method

The paint was applied on four cleaned glass plates (15.3 cm * 23.0 cm) with a film applicator (1 layer, application quantity: 245 g / m²). After one day drying time the plates were positioned vertically on the wall of a fume cupboard. Hereinafter, a plate was not treated as a reference pattern with disinfectant.

The four other plates were daily sprayed with disinfecting solutions with different composition until droplet formation. After each 24-hour drying time of the disinfectant to the surface the plates were cleaned with water.

Daily treatment was performed over 10 days, excluding weekends.

Following disinfectant and application concentrations were used:

1. **Descogen F**, representing disinfectants based on active oxygen.
A 3% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
2. **Trichlorol**[®], representing disinfectants based on active chlorine.
A 0.75% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
3. **Lysoformin**[®] **spezial**, representing disinfectants based on guanidine derivatives and quaternary ammonium compounds. A 1,5% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
4. **Incidur**[®] **Spray**, representing disinfectants based on ethanol, n-propanol and glutaral.
An undiluted solution was used.

The disinfectants were filled into pump sprayer and used so.

The used disinfectants are validated for surface disinfection by the Association for Applied Hygiene (Verbund für Angewandte Hygiene; VAH), Version 2008, as effective and listed accordingly.

3 Test results

After the end of disinfectant exposure, the surfaces of the test specimen were examined with regard to blistering, flaking and cracking as well as visual changes, such as colour and gloss, in accordance with the standards listed below.

- Blistering: DIN EN ISO 4628-2: 2004-01
- Flaking: DIN EN ISO 4628-5: 2004-01
- Cracking: DIN EN ISO 4628-4: 2004-01
- Color: DIN EN ISO 4628-1: 2004-01
- Gloss: DIN EN ISO 4628-1: 2004-01

Table 1. Results

Disinfectant	Test method	Features	Results
Descogen® F	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Trichlorol®	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Lysoformin spezial	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Aldasan 2000	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e

^a ASTM D 714: None

^b Blister count (blister size) = none; i.e. no recognisable damage (not visible with 10x magnification)

^c Percentage of coating area that flaked off (size of the area where the coating has flaked off; largest dimension: 0 = no visible flaking at 10x magnification)

^d Number of cracks (crack width) = none, i.e. no recognisable cracks (none visible at 10x magnification)

^e Amount of damage (damage size) = none; i.e. no recognisable damage (not visible at 10x magnification)



Figure 1: Appearance of the sample by 10 strains with 0.75% - Trichlorol solution compared to unstressed sample (blank BW)



Figure 2: Appearance of the sample by 10 strains with 1,5% - Lysoformin Spezial solution compared to unstressed sample (blank BW)

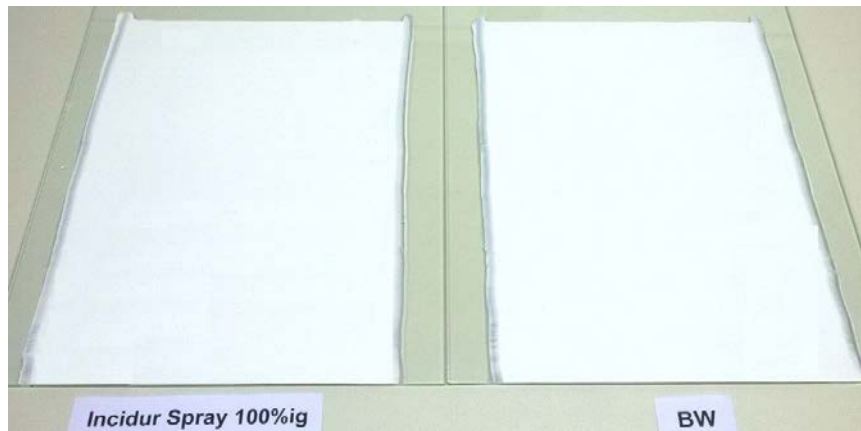


Figure 3: Appearance of the sample by 10 strains with 100% - Incidur solution compared to unstressed sample (blank BW)

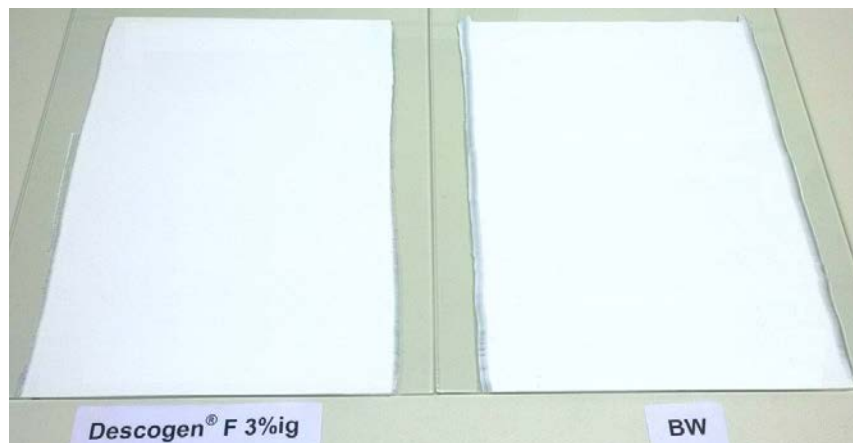


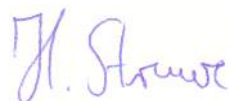
Figure 4: Appearance of the sample by 10 strains with 3% - Descogen F solution compared to unstressed sample (blank BW)

4 Assessment

The test of the resistance of DISPERLITH ELASTIC for surface cleaning (wiping disinfection) showed that the emulsion paint did not blister, flake or crack.

In the context of the performed test of the emulsion paint DISPERLITH ELASTIC, the resistance to the used disinfectants can be attested.

Department Analytical Chemistry
Project Manager



Holger Struwe



Florian Englisch



Industrie Service

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Test Report: 160826-2

Test of the resistance of an emulsion paint to disinfectants

Customer: FAKOLITH Farben GmbH
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Contractor: Department Analytical Chemistry
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Phone: +49-89-5791-2636
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Type of product: Emulsion paint

Name of product: DISPERLITH HYGIENIC

Date of receipt: 01.07.2016

Specification of sample: Emulsion paint; 1 litre PP-container

Date: 2016-08-26

Our reference:
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PB DISPERLITH HYGIENIC 08-
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Date: 26. August 2016



1 Assignment

At the request of FAKOLITH Farben GmbH, TÜV SÜD Industrie Service GmbH tested a sample of an emulsion paint with regard to their resistance to disinfectants.

2 Test method

The paint was applied on four cleaned glass plates (15.3 cm * 23.0 cm) with a film applicator (1 layer, application quantity: 248 g / m²). After one day drying time the plates were positioned vertically on the wall of a fume cupboard. Hereinafter, a plate was not treated as a reference pattern with disinfectant.

The four other plates were daily sprayed with disinfecting solutions with different composition until droplet formation. After each 24-hour drying time of the disinfectant to the surface the plates were cleaned with water.

Daily treatment was performed over 10 days, excluding weekends.

Following disinfectant and application concentrations were used:

1. **Descogen F**, representing disinfectants based on active oxygen.
A 3% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
2. **Trichlorol**[®], representing disinfectants based on active chlorine.
A 0.75% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
3. **Lysoformin[®] spezial**, representing disinfectants based on guanidine derivatives and quaternary ammonium compounds. A 1,5% solution was used, corresponding to the highest concentration recommended for disinfecting surfaces.
4. **Incidur[®] Spray**, representing disinfectants based on ethanol, n-propanol and glutaral.
An undiluted solution was used.

The disinfectants were filled into pump sprayer and used so.

The used disinfectants are validated for surface disinfection by the Association for Applied Hygiene (Verbund für Angewandte Hygiene; VAH), Version 2008, as effective and listed accordingly.



3 Test results

After the end of disinfectant exposure, the surfaces of the test specimen were examined with regard to blistering, flaking and cracking as well as visual changes, such as colour and gloss, in accordance with the standards listed below.

- Blistering: DIN EN ISO 4628-2: 2004-01
- Flaking: DIN EN ISO 4628-5: 2004-01
- Cracking: DIN EN ISO 4628-4: 2004-01
- Color: DIN EN ISO 4628-1: 2004-01
- Gloss: DIN EN ISO 4628-1: 2004-01

Table 1. Results

Disinfectant	Test method	Features	Results
Descogen® F	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Trichlorol®	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e
Lysoformin spezial	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	2 ^f
	ISO 4628-1	Gloss:	0(S0) ^e
Aldasan 2000	ISO 4628-2	Blistering; degree of blistering:	0(S0) ^{a, b}
	ISO 4628-5	Flaking; degree of flaking:	0(S0) ^c
	ISO 4628-4	Cracking; degree of cracking:	0(S0) ^d
	ISO 4628-1	Colour:	0(S0) ^e
	ISO 4628-1	Gloss:	0(S0) ^e

^a ASTM D 714: None

^b Blister count (blister size) = none; i.e. no recognisable damage (not visible with 10x magnification)

^c Percentage of coating area that flaked off (size of the area where the coating has flaked off; largest dimension: 0 = no visible flaking at 10x magnification)

^d Number of cracks (crack width) = none, i.e. no recognisable cracks (none visible at 10x magnification)

^e Amount of damage (damage size) = none; i.e. no recognisable damage (not visible at 10x magnification)

^f low degree of yellowing, i.e. clearly noticeable changing



Figure 1: *Appearance of the sample by 10 strains with 0.75% - Trichlorol solution compared to unstressed sample (blank BW)*

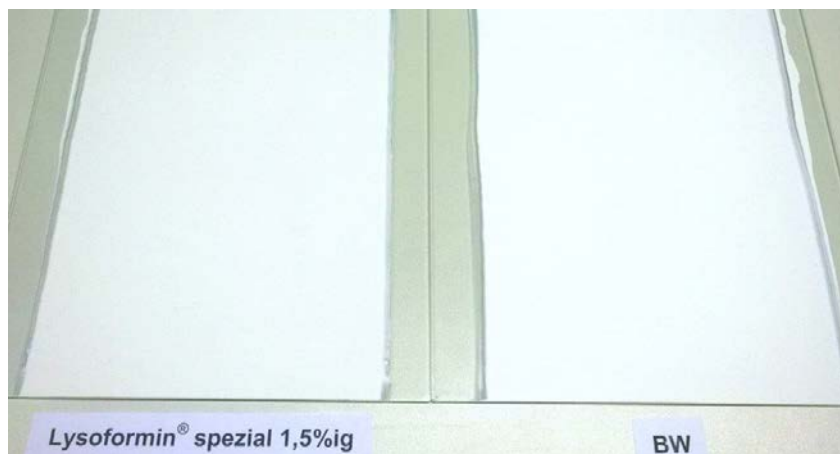


Figure 2: *Appearance of the sample by 10 strains with 1,5% - Lysoformin Spezial solution compared to unstressed sample (blank BW)*

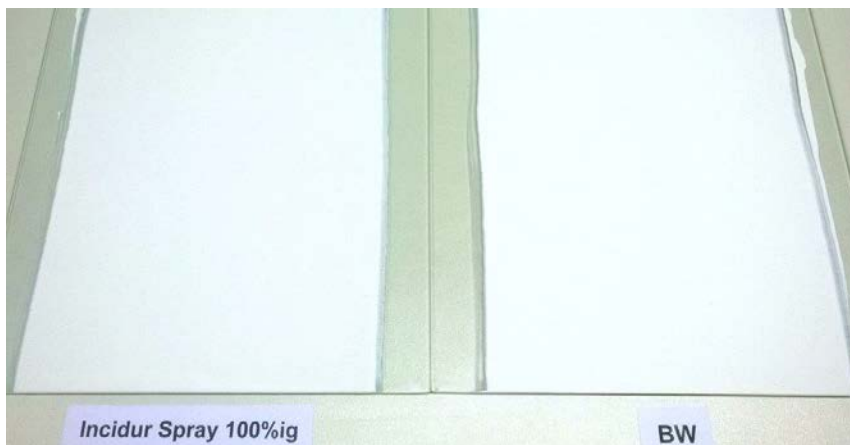


Figure 3: Appearance of the sample by 10 strains with 100% - Incidur solution compared to unstressed sample (blank BW)

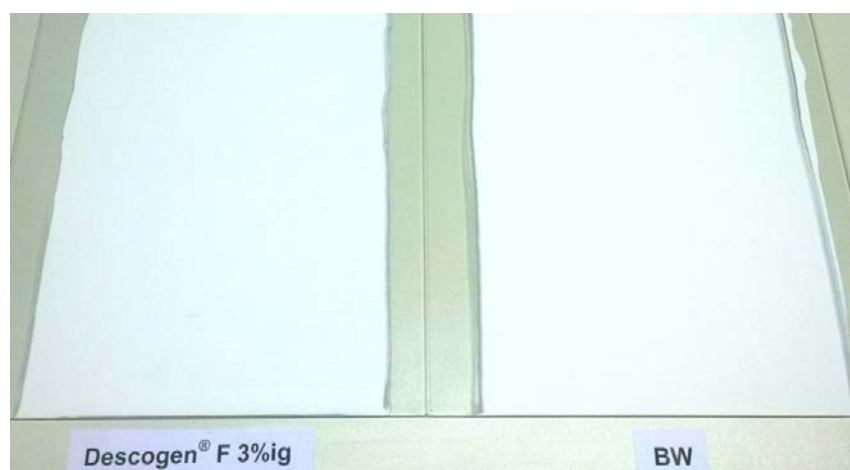


Figure 4: Appearance of the sample by 10 strains with 3% - Descogen F solution compared to unstressed sample (blank BW)

4 Assessment

The test of the resistance of DISPERLITH HYGIENIC for surface cleaning (wiping disinfection) showed that the emulsion paint did not blister, flake or crack. However, there was a slight yellowing with the maximum use concentration of Lysoformin special allowed by regulations. In the context of the performed test of the emulsion paint DISPERLITH HYGIENIC, the resistance to the used disinfectants can be attested, with the above-mentioned adverse affect.



Industrie Service

Department Analytical Chemistry
Project Manager

A handwritten signature in blue ink that reads 'H. Struwe'.

Holger Struwe

A handwritten signature in blue ink that reads 'F. Engisch'.

Florian Engisch