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Vibration 2002/44/EG
Fugen-Risssanierung
Fugenkonstruktion
beim Bundesverband
freier Sachverständige e.V.
(BVFS) Düsseldorf

Kooperationspartner

Dipl. Ing. Ralf Marth
Sachverständiger & Buchautor

Fachbereiche
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Fußbodenkonstruktion der
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VDMA Richtlinien
Luft-Gleitkissen Böden
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ESD Schutz
Zugelassen und Vereidigt am
Landgericht zu Koblenz

Dr. Wolfgang Loeser
Sachverständiger & Geologe

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BECO Treat Aps
Nebelvej 15
8700 Horsens
Dinamarca

Verification of water absorption and slip resistance of a grinded and treated concrete surface on March 2,2015

Below: The report

Good morning, Mr. Gerlach,
good morning, ladies and gentlemen,

On February 27,2015 the profesional expert Dipl.-Ing. (FH) Ralf von Reiner Marth was publicly appointed by telephone and email by the company IHK Koblenz publicly in the order of the company BECO TREAT in order to issue the present report on water absorption of a new concrete surface, grinded and treated with BECOSAN Densifier. The surface was produced by the company Twintec and afterwards treated with the BECOSAN system.

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1. Generally

The object in question is an industrial floor with a not further specified concrete surface built in 2014.

BECO TREAT Aps has created a new method for treating new and existing concrete floors concrete in order to use the surface immediately after treatment.

To this end, the concrete surface is grinded at least three times with the BECOSAN, subsequently treated with BECOSAN Densifier, proceeding with the surface polishing and finally applying BECOSAN Protective Sealer.

The treated surface is immediately usable and efficient, thus it is not necessary to apply any other type of flooring to use it directly.

The undersigned expert was commissioned to examine to what extent the change affects the surface caused by the new BECOSAN proceeding concerning sliding friction and water absorption.

2. Determination of sliding friction according to DIN 51131

On site in the specified testing areas (original state, triple grinding with BECOSAN diamond disks Grit 400, application of BECOSAN Densifier and final dry polish), the sliding friction according to DIN 51131 was determined using the microprocessor-controlled measuring device "GMG 200".

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The aforementioned measuring device measures the dynamic coefficient of sliding friction between a loaded slider and the floor to be tested.

The measured values are permanently displayed digitally.

The instrument is portable, power independently and is characterized by an easy handling, ensuring due to identical testing conditions and to the elimination of the influence by the testing person very accurate and reproducible results.

The following test results were determined:

Table 1: Determination of sliding friction

Concrete Surface	Sliding Friction					Average Value	Valuation
	1	2	3	4	5		
Original state (power floated) and cleaned once with water	0,73	0,71	0,71	0,71	0,71	0,71	VERY SAFE
Triple grinding with BECOSAN diamond disks Grit 400	0,68	0,69	0,70	0,73	0,67	0,69	VERY SAFE
Treated with BECOSAN Densifier and polish with BECOSAN diamond disks Grit 1000	0,53	0,53	0,54	0,53	0,53	0,53	SAFE
Dry polish with BECOSAN diamond disks Grit 3000	0,62	0,63	0,62	0,62	0,62	0,62	SAFE

The test was performed in each case with a rubber slider

The sliding friction values are to be considered in accordance with the following manufacturer instructions:

Sliding Friction Value	Valuation
0,00 – 0,29	NOT SAFE
0,30 – 0,44	CONDITIONALLY SAFE
0,45 – 0,64	SAFE
0,65 – 1,00	VERY SAFE

Due to the performance of the tests, it was confirmed that although the sliding friction, starting from the original state to the finished floor, decreases, but still "safe" is set in a range of evaluation.

3. Determination of the water absorption coefficient

The so-called water absorption coefficient as a characteristic value for the classification of building materials of building materials in terms of water absorption behaviour according to DIN 52617 / DIN EN ISO 15148 has been determined.

As part of the on-site inspections the following measurement results were obtained:

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Table 2: Determination of the water absorption coefficient

Condition of concrete surface	Testing area	Time in minutes	Result in L/m2
Original state	centre of the hall	more than 15	1,2
Original state	centre of the hall	15	1,4
Original state	border area	15	1,8
Triple grinded surface with BECOSAN diamond disks Grit 400	centre of the hall	15	0,1
Triple grinded surface with BECOSAN diamond disks Grit 400	border area	15	0,2
Triple grinded surface with BECOSAN diamond disks Grit 400	entrance area	15	0,1

Based on the results obtained it could be demonstrated that only with a triple grinding process with BECOSAN diamond discs grit 400 a significant reduction of the water penetration capacity on the concrete surface was achieved.

The additional measures, such as a BECOSAN treatment of the polished concrete surface with BECOSAN Densifier, a wet grinding process with BECOSAN diamond disks grit 1000 and a subsequent dry polishing with BECOSAN diamond disks grit 3000 the concrete surface is more compacted/denser so that the water penetration could be again significantly reduced.

According to the agreement no further tests on the concrete surface have been carried out.

HEREBY IT IS INSURED UNDER OATH, THAT THE EXECUTION OF THE EVALUATION WORKS AND THE PREPARATION AND ISSUE OF THE PRESENT REPORT HAVE BEEN CARRIED OUT IN AN IMPARTIAL MANDER AND EXSLUSIVELY AFTER GOOD FAITH.

The Professional Expert

Dipl.-Ing. (FH) Ralf Marth