

Sustainable fibres for surface disinfection

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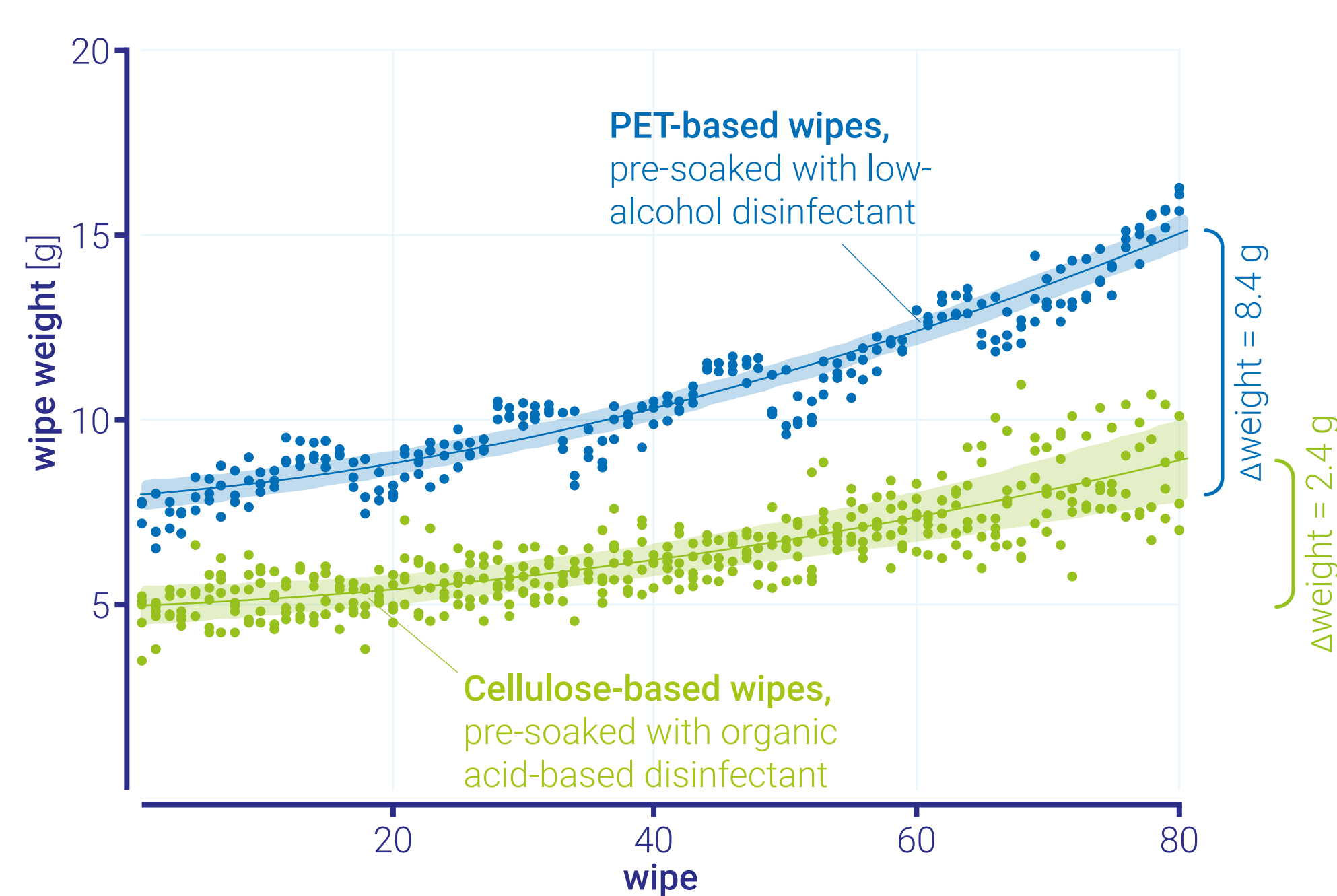
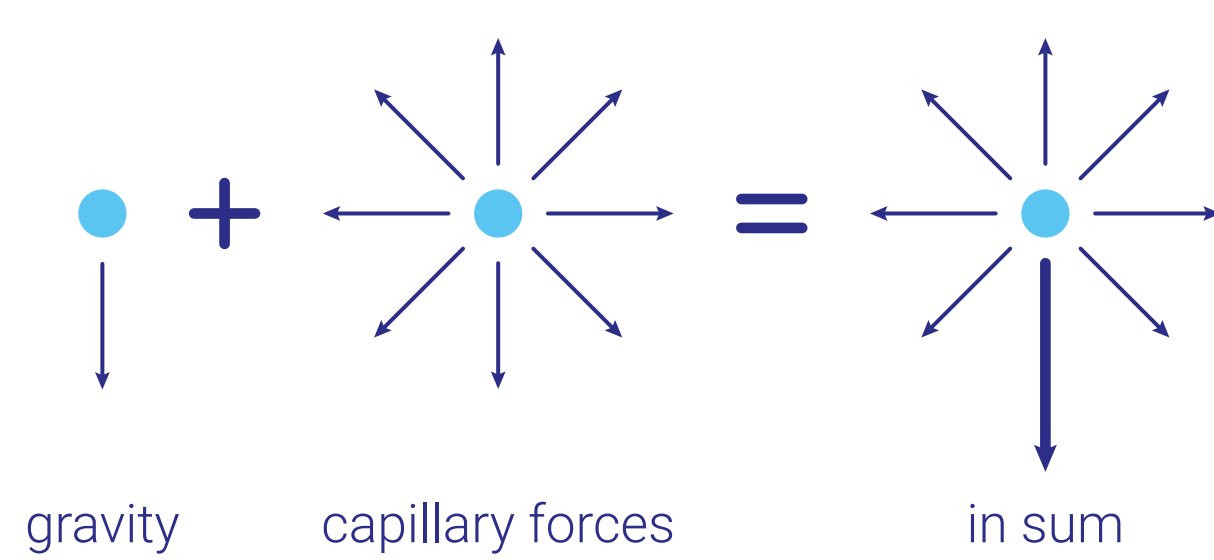
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Defying Gravity

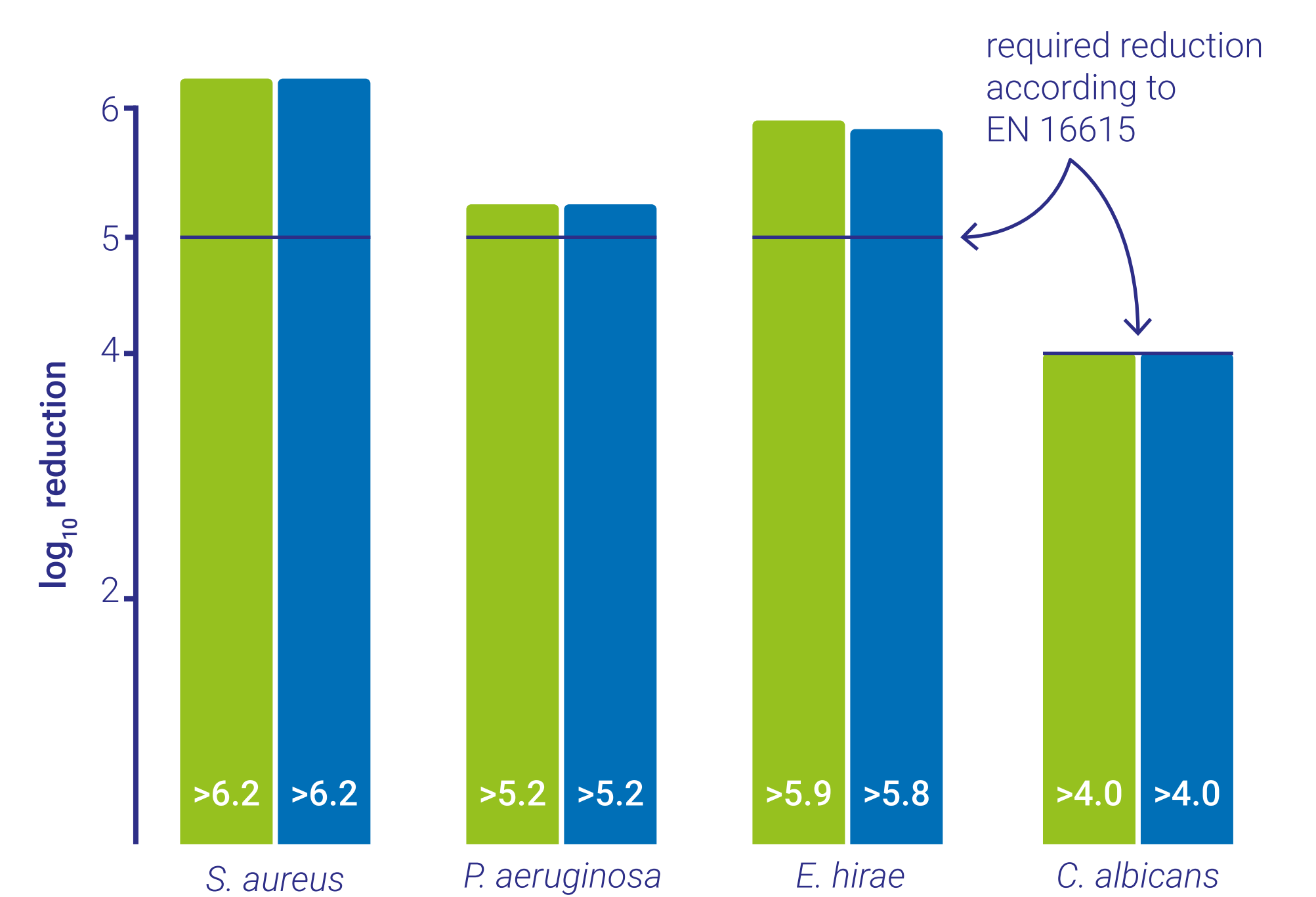
In flowpacks with pre-soaked disinfectant wipes, two forces are continuously acting that are mainly responsible for the distribution of the liquid within the wipe stack: **Gravity**, which pulls the disinfectant downwards, and the **capillary forces** of the wipe fibres, which distribute the liquid equally in all directions. The downward acting forces add up, so that when flowpacks are stored over a long period of time, the liquid sinks and the first wipes are not as wet as the last ones.

If the first wipes are not soaked properly, can sufficient antimicrobial efficacy be guaranteed?



Method: Flowpacks with wipes based on cellulose fibres or PET fibres and pre-soaked with either a low-alcohol disinfectant or an organic acid-based disinfectant were stored with the lid upwards for three days. Afterwards, the weight of each wipe was determined. At least three independent replicates were performed and are shown here as dots. The average is illustrated as line, the 95% confidence interval as pale band.

Capillary forces are stronger in cellulose-based fibres and thus, the difference in weight of the first wipe and the last is only 2.4 g, compared to 8.4 g for PET-based fibres.



Method: The antimicrobial efficacy of disinfectant wipes *i.a.* depends on the degree of impregnation. The first wipes in a flowpack are less impregnated than the last wipes. To ensure sufficient antimicrobial efficacy, the very first wipe from the flowpacks, stored with the lid up for three days, was subjected to an EN 16615 efficacy test (4-field test). Both the cellulose-based wipe and the PET-based wipe passed the norm.

Cellulose wipes have a smaller difference in impregnation level between the first and the last wipe than PET wipes. However, the following applies to HARTMANN flowpacks: They are effective from the first to the last wipe.

Fibre lint woes, hidden foes

Decades ago, lints of cloths entering surgical sites represented a risk for patient safety by interfering with the healing process^{1,2}. Particles of few micrometer were identified as causing agent of infections and health risks². Nowadays, fibres in the healthcare sector are sufficiently free from linting.

The transformation to more sustainable healthcare requires the use of new materials, such as cellulose-based wipes in surface disinfection, which could reawaken problems like linting that were thought to have been solved.

Method: The liquid from flowpacks of pre-soaked disinfection wipes was squeezed out. The liquid was filtered using a pore size of 0.45 µm. The filters were dried over night and then photographed. The weight of the filters was determined before the filtering and after drying and the difference calculated.

PET-based non-woven wipes for surface disinfection are in use for decades and have proved to be sufficiently lint-free for their specific field of application. Modern wipes made from sustainable cellulose-based fibres can have a similar good performance. However, cellulose-based wipes containing layers of pulp release a visible amount of lints; this could pose health risks and should be observed with caution.

