

On the SURFACE

OPTIMUM INFECTION CONTROL PRACTICE

Vol. 3



OPTIMIZING INFECTION CONTROL:

How the right combination of wiping materials and disinfectants/sanitizers can significantly improve disinfection practices.

According to research, the wiping material you use can dramatically affect the amount of disinfecting agent that actually reaches surfaces being cleaned. This research found that compared to microfiber wipers, cotton rags and cellulose-based wipers tested, KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers (code 06411) used in the WETTASK* Refillable Wet Wiping System can help optimize your infection control practices.

A study was conducted to evaluate the effects of commonly used wiping substrates (using common industry systems of saturation and disinfection practices) on the amount of active quaternary amines and bleach being released to surfaces for the purpose of disinfection. The wiping materials studied were common cotton rags, microfiber wipers commonly used in healthcare settings and disposable cellulose-based wipers used with an open-bucket "dip and squeeze" system; and KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers used in the WETTASK* System.

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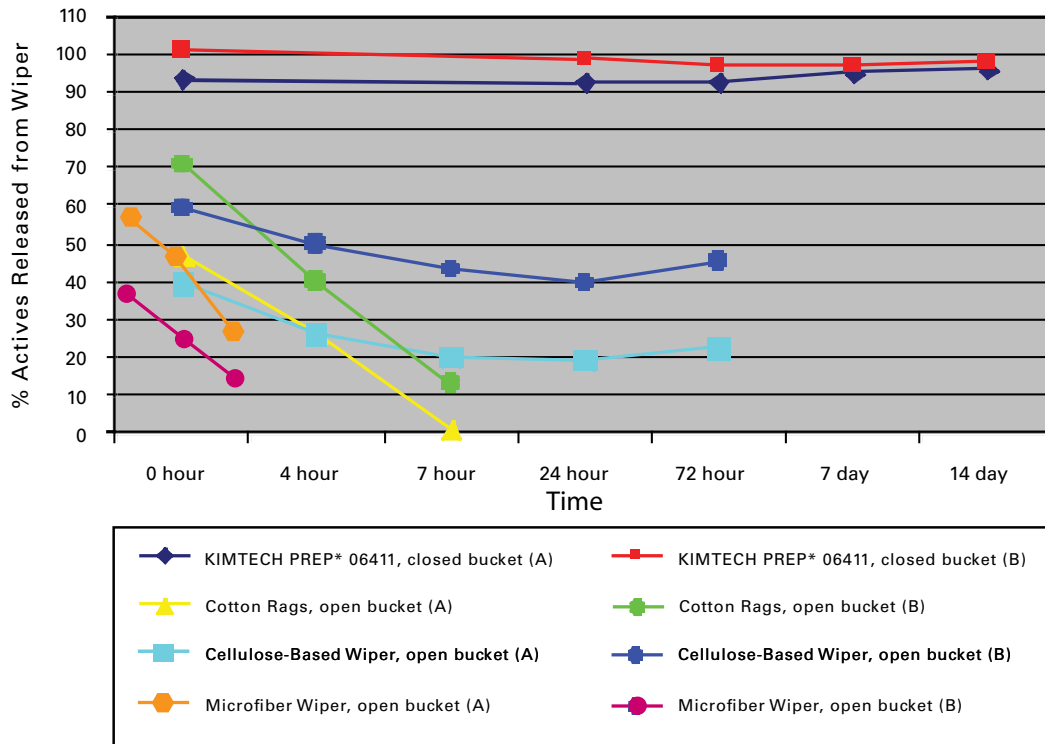
The microfiber wipers, cotton rags and cellulose-based wipers were tested following a common hospital protocol in which the wipers were dipped into the open bucket to absorb disinfectant solution to be applied to a surface. The KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers were used in the WETTASK* System (a closed-bucket towel dispensing system with 90 pre-saturated wipers extracted as needed for the purpose of surface saturation). This system keeps the wipers fresh in the container and pre-saturated with the preferred disinfectant for an extended period of use.

Variables tested in the study, including the type of delivery system, the length of time the wipers were exposed to the chemical and the number of wipers placed in the chemical at one time, mirror practices commonly used in healthcare disinfection applications. As designed, KIMTECH PREP* Wipers in the WETTASK* System remained in contact with the disinfectant solution for a significantly longer period than those in the open-bucket system.

The results showed a significant decline in the concentration of basic quaternary amines released when microfiber wipers, cotton rags or cellulose-based wipers were used in the open-bucket system, compared to the KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers in the WETTASK* System. Note that when used with KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers in the WETTASK* System, the concentration of both quaternary amine disinfectants used in this study did not drop off significantly over a two-week period of use.

PERCENT DISINFECTANT ACTIVE RELEASED FROM SUBSTRATE OVER TIME

Quaternary Amine Disinfectants (A) and (B)



Results comprised of testing performed on four different microfiber wipers from leading manufacturers.

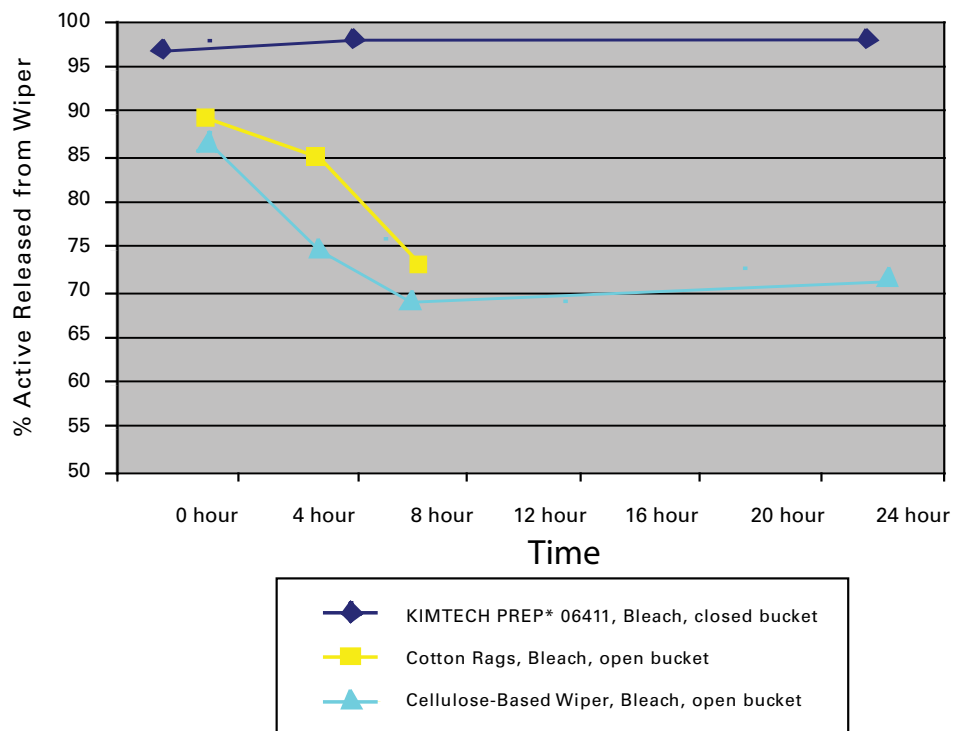
- Quaternary amine release for the first cotton rag from an open bucket is 53% lower than the original disinfectant solution A and nearly 30% lower for disinfectant solution B. Although microfiber wipers are made of synthetic fibers, they are still not compatible with quaternary amines. The initial wiper sampled from chemical A is 43% lower than the target concentration. The first wipe pulled from the bucket of chemical B has almost a third of the chemical expected to be present.
- In contrast, initial quaternary amine release for 06411 KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers is only 6% lower than the original disinfectant solution A and exactly at the same concentration level as the original disinfectant solution B, even over an extended 14-day period.

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Cotton rags, cellulose-based wipers and microfiber wipers in the open-bucket system could only be tested for a limited time, because all the quaternary amine disinfecting solution was depleted. In contrast, the same amount of solution lasted for up to 14 days with KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers in the WETTASK* System.

In addition to quaternary amines, bleach is also a commonly used disinfectant and sanitizer in healthcare environments. As with quaternary amine disinfectants, the study results show that cotton rags and cellulose-based wipers in an open-bucket system rapidly deplete the active chloride ion present in bleach. However, KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers in the WETTASK* System keep it stable for the full 24-hour period.

PERCENT CHLORIDE ION ACTIVE RELEASED FROM SUBSTRATE OVER TIME



Microfiber wipers not recommended for use with bleach due to the resulting fiber destruction when placed on the wiper.

Note: *The bleach solution tested was diluted to the chemical manufacturer's recommended level for disinfection. Because bleach tends to destabilize, the testing period was limited to 24 hours to reflect the usage instructions recommended by the bleach manufacturer.*

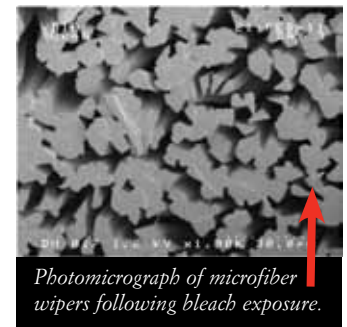
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- Chloride ion release from the first cotton rag from an open bucket is 11% lower than the original bleach concentration. Chloride ion release from the first cellulose-based wiper is 13% lower than the original bleach disinfectant solution and drops to 28% lower after 24 hours of use.
- In contrast, initial chloride ion release for KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers is only 3% to 5% lower than the original bleach concentration. This high chloride ion release remains the same up to 24 hours.

Microfiber wiper manufacturers do not recommend the use of bleach to launder wipers containing microfibers, which normally contain polyamide components. Polyamides, are negatively effected by bleach, resulting in the collapse of the microfiber structure with the wiping material.



Photomicrograph of microfiber wipers prior to bleach exposure.



Photomicrograph of microfiber wipers following bleach exposure.

The original structure of the microfiber, shown in the photo on the left, physically traps dirt particles using the space created by its surface area. When exposed to bleach, the space and surface area of the fiber mass within the wiper is diminished, as seen in the photo on the right. This damage causes the microfiber cloth to trap less particles; thus, it is less efficient at wiping.

DID YOU KNOW?

If the entire roll of KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers is not used with the initial saturation of bleach, the WETTASK* System can be refilled with bleach to increase the duration of use, so that the full roll can be consumed.





SUMMARY AND CONCLUSIONS

The significant decline in the release of bleach and quaternary amine disinfectants when microfiber wipers, cotton rags and cellulose-based wipers are used in an open-bucket system implies that active disinfecting agents are not always applied to the surface in the ideal concentration to support optimum environmental disinfection. Selecting the appropriate wiper substrate and system is critical to optimum disinfectant application.

KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers are specifically designed to be compatible with bleach and quaternary amine disinfectants, which is why they maintain the concentration of actives released to the surface at near-target concentration levels. The enclosed WETTASK* System also helps to avoid contamination of the wipers and the cleaning solution because it eliminates any opportunity to re-dip wipers into an open bucket. Additionally, the use of the WETTASK* System reduces the need for mixing new solution batches because the system is stable for an extended period of time. This benefit should save time and labor for the cleaning professional.

DID YOU KNOW?

Factors such as changes in pH and exposure to air and light can affect the stability of bleach. The WETTASK* System provides an enclosed environment for the bleach and the wiper, with minimal exposure to air and light.

Source: "Dilution of Sodium Hypochlorite Solutions," Chlorine Institute, 11/16/04

These results demonstrate that KIMTECH PREP* Wipers for Bleach, Disinfectants and Sanitizers would better maintain the target concentration for bleach and quaternary amine disinfectants compared with microfiber wipers, cotton rags and cellulose-based wipers.

Some wipers currently in use, such as microfiber wipers, cotton rags or cellulose-based wipers, are far from optimal in their ability to provide disinfectant actives to surfaces in intended concentrations. However, **KIMTECH PREP* Wipers (code 06411) in the WETTASK* System have been designed to be compatible with bleach and quaternary amine disinfectants and can optimize healthcare infection control practices.**



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