



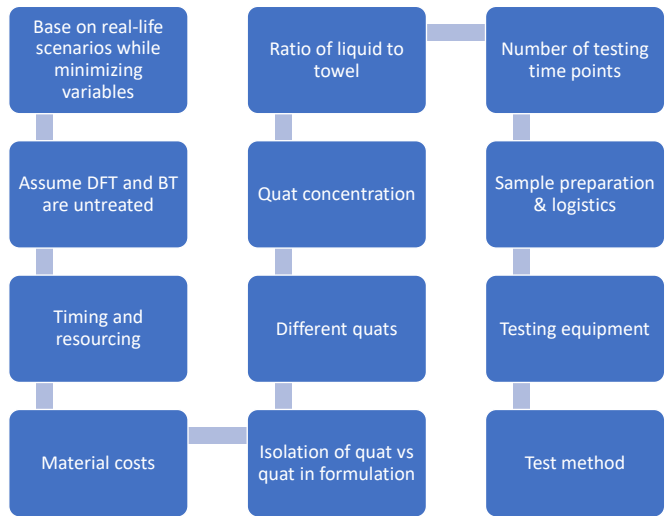
A Study To Determine The Quat Binding Properties Of Sani Professional® Dry Foodservice Towels Versus Traditional Fabric Bar Towels

Sani Professional® Dry Foodservice Towel (DFT) binds less quat than traditional fabric cleaning cloths, **making 33% more quat available for proper sanitization** compared to a 100% cotton bar towel.

Quaternary ammonium compounds (quats), are a class of chemicals used in many disinfectants and sanitizing products to kill bacteria, viruses, and mold. These include liquid solutions commonly used in foodservice settings (e.g., red bucket sanitizers).

However, quats from disinfectant and sanitizer solutions can be absorbed directly into the fabric cloths used on surfaces. Once absorbed, the fabric does not release the quat when surfaces are treated. Thus, a one-gallon pail of disinfectant solution with an active ingredient concentration of 800 ppm may drop to 400 ppm or less after a fabric cloth soaks in the solution for 10 minutes.¹ This phenomenon, called Quat Binding or Quat Absorption, may lower the amount of quat sanitizer available in the solution mixture below thresholds required to successfully kill pathogens.

CONSIDERATIONS AND ASSUMPTIONS



STUDY OBJECTIVES

Specifically, this test study sought to understand the extent of decrease in quat concentration (ppm) caused by the presence of a cleaning rag or dry towel, and if the remaining concentration was sufficiently strong to sanitize and/or disinfect. Further, the study examined the amount of decrease in quat that occurs over an eight-hour period (e.g., a typical restaurant shift), as well as how one and two sheets of Sani Professional® Dry Foodservice Towel (DFT) used in a solution compared to a 100% cotton bar towel (BT).

Design and Sample Preparation

	DFT	BT
Size (in)	15 x 7.5	9 x 9
Avg. Liquid Absorbed (g)	42	76

Foodservice sanitizing solution modified to 0.1% active quat. Tests took place at T = 0, 0.5 hrs, 1 hr, 2 hrs, 4 hrs, 8 hrs.

¹Sani Professional® Dry Foodservice Towel Quat Binding Study, October 2024

RECOVERED QUAT CONCENTRATION
FROM EXPRESSED LIQUID

Figure 1
Average Quat Concentration from Expressed Liquid after Two (2) Hours

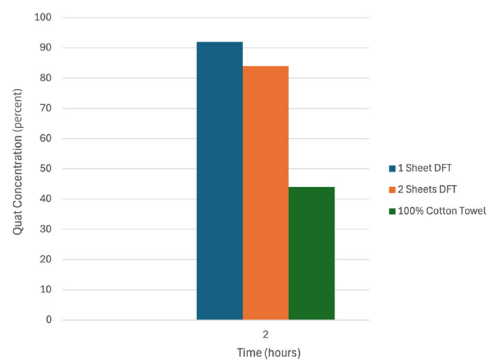


Figure 2
Average Quat Concentration from Expressed Liquid after Four (4) Hours

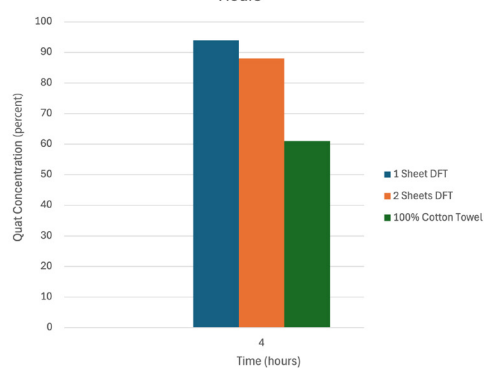


Figure 3
Average Quat Concentration from Expressed Liquid after Eight (8) Hours

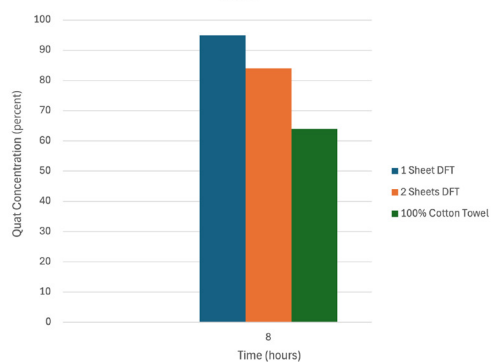


Figure 4

TIME (HRS)	QUAT CONCENTRATION (PPM)		
	1 Sheet DFT	2 Sheets DFT	100% Cotton Towel
0	330	340	0
0.5	650	630	290
1	790	630	690
2	920	840	440
4	940	880	610
8	950	840	640

SUMMARY

The controlled study was conducted over an 8-hour period to compare the quat-binding properties of the Sani Professional® Dry Foodservice Towel (DFT) and a 9" x 9" 100% cotton bar towel (BT), both submerged in a quat-based sanitizing solution as specified by the Food Code.

Quat concentrations were measured in both the sanitizing solution and the liquid expressed from the DFT and BT at designated time intervals (0.5, 1, 2, 4, and 8 hours). However, the quat concentrations in the liquid expressed from the DFT and BT varied considerably.

The DFT had much less quat binding compared to the 100% cotton towel, which suggests a reduced risk of ineffective surface sanitization. Analysis of expressed liquid samples demonstrated that the solution expressed from the 100% cotton towel contained less quat (0% - 64%) than the liquid expressed from the DFT (33% - 95% for one sheet and 34%-84% for two sheets). The measured quat concentrations after 8 hours equates to approximate 5% drop for 1 sheet of the DFT, 15% drop for 2 sheets of the DFT and 35% drop for the bar towel (reference figure 3). Based on this study, it's confirmed that the DFT and cotton towel exhibited quat binding properties. The results suggest that the DFT has approximately 3 times lower affinity for quat-binding compared to the cotton towel.

These findings emphasize that Sani Professional® Dry Foodservice Towels bind less quat when compared to traditional 100% cotton towels, allowing more quat from the sanitizing solution to be delivered to the surface.

