

Log Reduction 101

Understanding what “Log Reduction” is and why it’s important for you to know.

Regarding infection control, ‘Log Reductions’ convey how useful a product is at reducing pathogens. The more significant the log reduction the more effective the product is at killing bacteria and other pathogens that can cause infections.

‘Log’ or logarithm is a mathematical term for a power to which a number can be raised. So, if using 10 as a given number, a Log 3 increase can be shown as 10^3 or $10 \times 10 \times 10 = 1,000$.

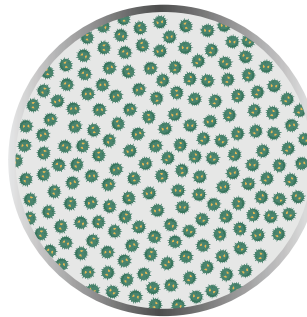
A log reduction takes the power in the opposite direction. A log reduction of 1 is equivalent to a 10-fold reduction or, to put it another way, moving down one decimal place or a 90% reduction.

During product efficacy testing, microbiology laboratories count the number of colony forming units (CFUs) of the given pathogen present at the start of the test. They then apply the disinfection agent being tested, alongside a control product and wait the required test time before recounting the number of CFUs present.

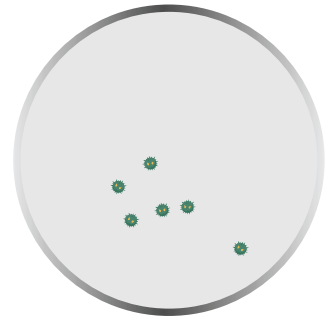
Log Reduction	Number of CFU's	Percentage Reduction	Times Smaller
0 Log (Log0)	1,000,000	0%	N/A
1 Log (Log1)	100,000	90%	X 10
2 Log (Log2)	10,000	99%	X 100
3 Log (Log3)	1,000	99.9%	X 1,000
4 Log (Log4)	100	99.99%	X 10,000
5 Log (Log5)	10	99.999%	X 100,000
6 Log (Log6)	1	99.9999%	X 1,000,000

The result of the difference between the control and the test product is shown as a Log reduction. If the number of CFUs in the control was found to be 1,000,000 (or 10^6) and the end result using the product was only 1,000 (10^3), that would be a Log reduction of 3 or a reduction of 99.9%.

CONTROL SAMPLE
1,000,000 CFU's
(or 10^6)



TEST AGENT SAMPLE
1,000 CFU's
(or 10^3)



As a basic rule of thumb, for every additional Log reduction number you add a 9 to the percentage reduction – so a log reduction of 3, as illustrated above, is a 99.9% reduction compared with a log reduction of 6 which is equivalent to a 99.9999% reduction.

Similar laboratory tests conducted on i-fiber® technology using **only water** resulted in a **3 Log or 99.9% kill rate of pathogens**. Clearly demonstrating the remarkable benefits of using microfiber alone in your cleaning procedures.

