



Learning about Contamination Control - Part 7: Keeping your Cleanroom Clean



Contents

Cleaning Techniques for Cleanrooms

Introduction	3
Cleaning Ceilings	3
Cleaning Walls	3
Cleaning Surfaces	3
Cleaning Floors	3
Triple Bucket Mop setup	4
Floor cleaning techniques	4

Daily Clean

Work Benches/Tops	5
Floors	5
Rotational Cleaning	5

Mops and Rollers

What is the difference between Mops and Rollers	5-6
---	-----

Using Equipment Correctly

Mopping Systems	6
Swabs	6
Vacuums and Pneumatic Cleaners	7

Our Range

Cleaning Equipment Selection	8-10
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Cleaning Schedule

Full Cleaning Schedule (for professional use)	11
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Cleaning Techniques for Cleanrooms

Introduction

The cleaning technique used for cleanrooms should be defined and standardised. It does not matter how effective the cleaning agents selected are if the cleaning technique practised by cleanroom operators is poor. The operators should literally clean themselves out of the room.

The cleanliness of a controlled environment is essential to assure quality. An SOP (Standard Operating Procedure) should be issued for the purpose of cleaning. An SOP gives clear instruction on what should be used, and where it should be used, thus ensuring complete continuity.

Cleaning Ceilings

Tacky rollers with extended handles can make cleaning the ceilings much easier. If you are required to wet wash the ceilings, another option is a flat mop with an extendable handle, or an impregnated wipe. Occasionally, vacuum systems equipped with HEPA filters are also used.

Cleaning Walls

Walls can all be cleaned using the above mentioned methods. However, hand wiping is often more effective. A lint-free non-woven wipe or a polyester knit wipe will work best because both are extremely low in particle generation and chemical extractables. Wipes must be used in conjunction with DI Water or a blend of DI Water and Isopropyl alcohol blends.

Cleaning Surfaces

Surfaces are typically cleaned by using impregnated wipes such as IPA or IMS.

Cleaning Floors

The same rules apply for cleaning floors as they do for the walls, a flat mop can be used or an edgeless cleanroom compatible string mop in conjunction with a mopping system. When using a mopping system this should be used with either DI water / WFI Water.

DI Water is used because this has been filtered to 0.25 microns, alternatively WFI water can be used. Avoid using tap water as it contains a lot of contaminants.

Triple Bucket Mop setup



Floor cleaning techniques

When washing the cleanroom floor GMP standard confirm there are two ways:

Straight Lines

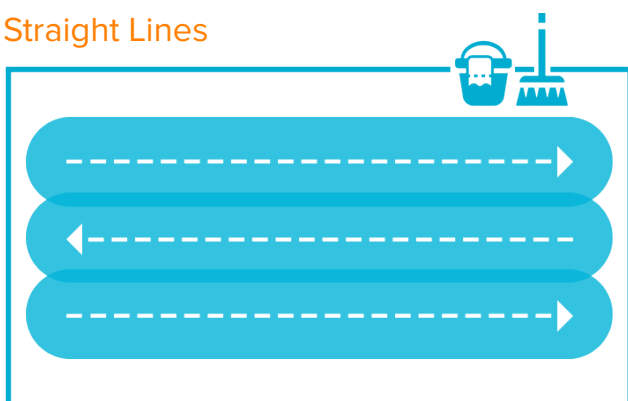
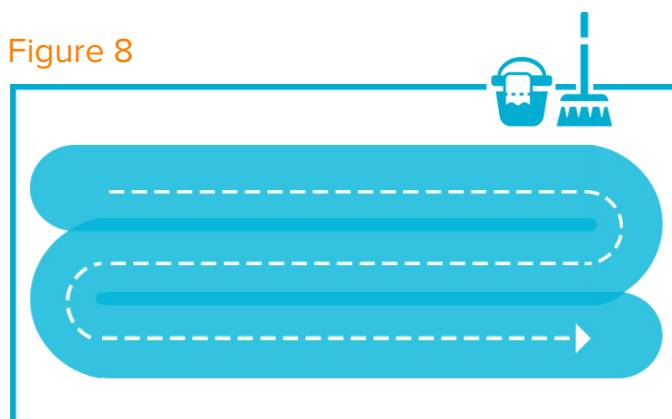


Figure 8



Whichever of these you find more comfortable to use, it is essential to remember that you need to overlap by about 10 -20% to ensure complete coverage

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Daily Clean

Work Benches/Tops

Work benches/tops should be cleaned between each job and at the end of each shift.

Floors

Floors should be damp mopped weekly with distilled water / WFI water and a cleanroom detergent and vacuumed dry.

Records should be kept detailing the above tasks have been carried out – please see example on **Page 11** (Schedule can be printed for own use).

Rotational Cleaning

Rotational cleaning is the use of more than one disinfectant in rotation to control the bioburden in the cleanroom.*

*For information on using disinfectants, please check out Part 8 of our guides
Part 8 - Chemicals in the Cleanroom.

Mops and Rollers

What is the difference between Mops and Rollers?

There are a few differences between mops and rollers which define when and where they should be used. Which one is used will depend on your SOP and Specifications.

Rollers and mops serve different purposes in cleanroom cleaning. Rollers are primarily used for dry cleaning or removing loose particles from surfaces. They typically consist of a sticky roller that attracts and captures the particles as it is rolled over the surface.

Mops are used for wet cleaning, which involves applying a cleaning solution to remove dirt, stains, and contaminants from surfaces.

In cleanroom environments, contamination control is crucial. Rollers are designed to minimize particle generation during cleaning. The adhesive material on the roller is formulated to trap particles effectively and prevent them from becoming airborne. Mops, while effective at cleaning, can potentially generate more particles due to the scrubbing action.

Contd.

Rollers are typically used for smaller areas or localized cleaning. They are convenient for cleaning specific surfaces or equipment where particle removal is critical. Mops are suitable for larger floor areas or walls, where wet cleaning is necessary for thorough cleaning and disinfection.

Finally, rollers are often disposable or have replaceable adhesive sheets. Once the adhesive becomes contaminated or loses its stickiness, it has to be removed or replaced. Mops, depending on the type, can be reusable. Some mop heads can be detached and laundered, while others may require replacement after several uses.

Using Equipment Correctly

Mopping Systems

When mopping in the cleanroom it is important to use different mopping buckets for different cleaning situations to avoid the risk of cross contamination within your critical environments.

The use of different color buckets can also aid this: when matched with a strict and clear contamination control plan fully understood by cleanroom technicians, having different color buckets set for each stage of the process makes it clear and negates further risk of cross contamination by introducing contaminants into the same water.

At Integrity, we offer a triple bucket version as well as our single bucket mopping system. While more expensive, the triple bucket version is fully customizable and has three buckets built in to make cleaning easy and efficient.

Swabs

Swabs are excellent for cleaning small slotted and grooved areas.

They have a flexible polyester head paddle and a compact handle. They are also free from organic contaminants such as silicone, amide or phthalate esters. Each swab features very low non-volatile residue (NVR), ion content and particle generation. They can be used in a selection of applications, such as:

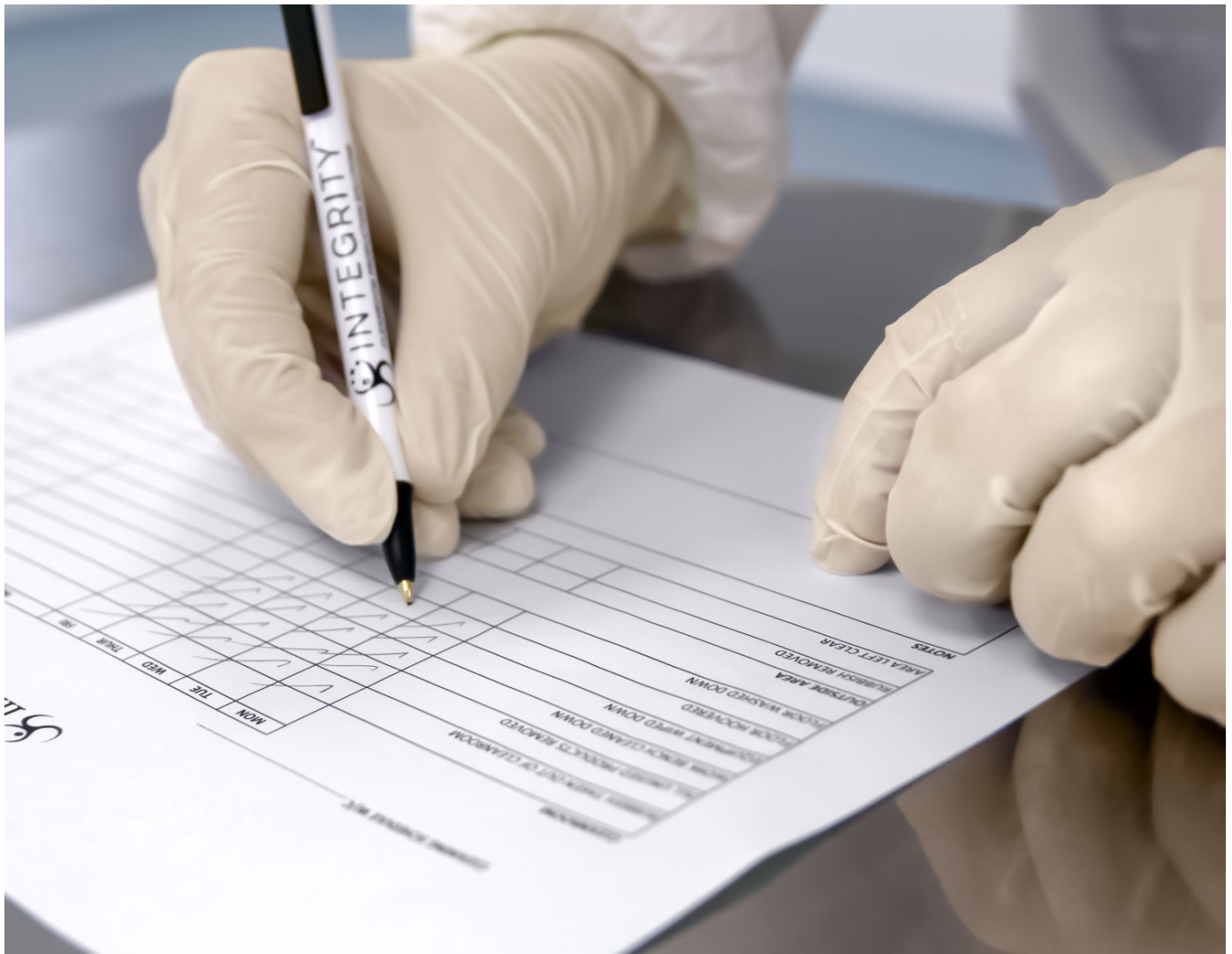
- Cleaning with solvents such as IPA
- Cleaning small and confined areas
- Applying lubricants or other liquids
- Removal of residues and excess materials
- General-purpose cleaning

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Vacuums and Pneumatic Cleaners

One way to achieve the highest level of cleanliness is by using HEPA (High-Efficiency Particulate Air) filtered vacuums or pneumatic cleaners to clean the floors and surfaces. HEPA filters are designed to trap small particles and impurities, ensuring that the air released by the vacuum is free of dust, pollen, bacteria, and other allergens.

Using a standard vacuum/pneumatic cleaner can result in the spread of contaminants, which defeats the purpose of a cleanroom. Therefore, HEPA filters are necessary to maintain the required level of cleanliness and minimize the risk of contamination in a cleanroom environment.



Our Range

Mops and Mop Handles

Adjustable Mop Handle



Cellulose Mop and Handle

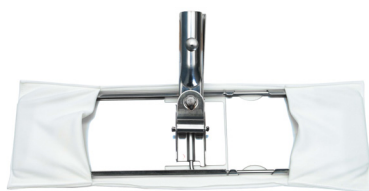


Flat Mop Head and Handle



Mop Heads

Disposable Polyester Mop Head



Cellulose Sponge Mop Head



Blue Sponge Mop Head



Polyester Mop Cover with Snaps



Disposable Poly-Cellulose Mop Head



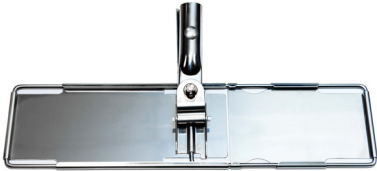
Tubular Polyester Mop Head



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Mop Head Frame

Mop Frame Hardware



Mopping System

Integrity II Mopping System



Triple Bucket Mopping System



For all our Mops, Mop Heads and Mop Systems, follow the QR code to the left. For more information please talk to our expert team.

Tacky Rollers

Tacky Film Roller



Tacky Foam Roller



Roller Handle

Steel Roller Handle



Roller Accessories

Tacky Roller Extension Pole



For all our Rollers and Tape, follow the QR code to the left. For more information please talk to our expert team.

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END OF WEEK CLEANING SCHEDULE

Date: ___ / ___ / 20__

CLEANROOM	PRODUCTS USED	BATCH NUMBER	EXPIRY DATE	INITIAL
Rubbish taken out of cleanroom				
Cleanroom cleared of any unused bags				
Work bench cleaned down				
Equipment wiped down				
Ceiling cleaned (Deep clean only)				
Walls cleaned (Deep clean only)				
Glass cleaned (Deep clean only)				
Floor mopped				
EQUIPMENT	PRODUCTS USED	BATCH NUMBER	EXPIRY DATE	INITIAL
Triple bucket system				
Wipes				



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