A solid basis for healthy buildings

The foundations of effective floor hygiene

nora® by Interface®

Hygiene in facility management

While hygiene has always been a self-evident standard in the medical sector, the pandemic has made other sectors more aware of it.

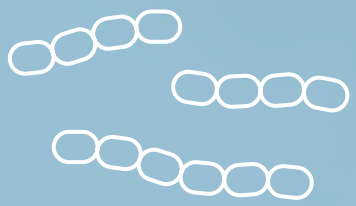
Today, a high level of hygiene is also required in educational and cultural institutions, workplaces, public buildings and shops. This means that those responsible for facility management, health and safety, and building administration need to know more about hygiene standards.

Microbes, germs, fungi, bacteria, viruses, pathogens – what's what?

There is often confusion about these terms. Hygiene fundamentally concerns viruses, bacteria and fungi:

Fungi and **bacteria** are **microorganisms** (also known as **microbes**). Some microbes are harmless or even beneficial. These include yeasts and intestinal bacteria.
Viruses are infectious particles and, strictly speaking, not organisms.
Pathogens (commonly known as germs) are viruses and microorganisms that cause infections and diseases in humans.

The enemies of hygiene

	Viruses	Bacteria	Fungi
			
Common examples	Herpes, Influenza, Corona, Smallpox	Streptococci, Staphylococci, E. coli	Yeasts, Mould, Athlete's foot
Organism?	No	Yes	Yes
Transmission	Via air or liquid, from person to person, via surfaces, insects, etc.	Via air or liquid, from person to person, via surfaces, insects, etc.	Fungal spores can be transported and spread via air. Fungi can also be spread from person to person.
Propagation	Use of foreign cells	Cell division	Spores
Control	Virucides	Bactericides	Fungicides

The twin pillars of hygiene

Hygiene refers to sanitary measures that benefit human health. In facility management, this comprises two processes: cleaning and disinfection. While thorough cleaning removes the breeding ground for microbes, disinfection is aimed at killing bacteria / fungi and inactivating viruses.

What's the difference between cleaning and disinfection?

Cleaning	Disinfection
Mechanical removal of (primarily visible) dirt and microorganisms without killing them. Thorough cleaning can reduce the number of germs on a surface to one thousandth.	Reduction of the number of viable pathogenic micro-organisms by intervening in their structure or metabolism
Result	**Result**
Visual cleanliness Reduction of microorganisms by 50 – 80 %[1]	**Low germ count** Reduction of bacteria by 99.999 %[1] Reduction of viruses and fungi by 99.99 %[1]

[1] Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz 2004; 47:51-61 DOI 10.1007/s00103-003-0752-9

1

Cleaning starves germs

Bacteria, fungi and viruses have one thing in common: dirt and moisture provide ideal conditions for them to spread.

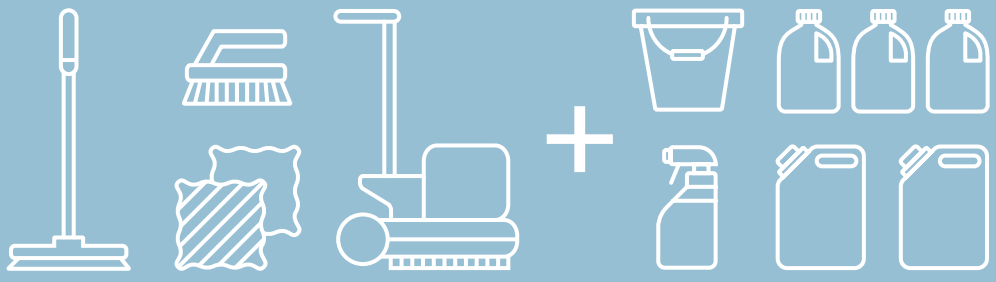
- Dust, grease and moisture that adhere to surfaces offer bacteria the best conditions for undisturbed growth.
- Fungi also love moisture. On damp surfaces, their spores quickly grow to form fungal networks, which in turn form new spores that are harmful to health.
- Even viruses, which have no metabolism, require moisture in order to be active.

Thorough cleaning of surfaces removes these “nutrients” and inhibits the spread and effectiveness of pathogens of all kinds.

Floor hygiene is more important than you might think, because we come into contact with the floor every day through shoes, bags and other items we pick up from the floor.

What do you need for cleaning?

A combination of physical and chemical cleaning agents are typically used for cleaning:



2 Disinfection kills germs

Disinfection does not remove anything from a surface; instead it is designed to kill microorganisms and inactivate viruses using agents.

The best-known disinfecting agent is alcohol, which has a rapid germicidal effect. It can also quickly penetrate bacteria where a layer of fat makes it difficult for other agents to penetrate. Alcohol is only effective for disinfection in concentrations of 70 – 80 %. In concentrations of over 92 %, alcohol is also effective on enveloped and some non-enveloped viruses. Alcohol is mainly used for skin and hand disinfection.

Hand disinfection vs. surface disinfection

Hand disinfection with alcohol leaves no residue because alcohol evaporates quickly. This also means that your hands are quickly dry again.

Alcohol is not typically used for surface disinfection. This is because the surfaces are so large that alcohol quickly evaporates to pollute the air we breathe and present a risk of explosion. It is for this reason that other agents as e.g. aldehydes are used for disinfecting surfaces.

Which disinfectants are effective?[2]

Agent	Bacterium / Fungus	Virus
Alcohols	✓	×
Aldehydes	✓	✓
Oxidising agents	✓	✓
Amines	✓	×
Phenols	✓	×
Quaternary ammonium compounds	✓	×

✓ = effective × = effective to limited degree

[2] Siebert et al. 'Auswahl von Desinfektionsmitteln' Pharm Ind. 72, No. 6, 1081–1085 (2010)

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Disinfection is becoming increasingly important

More and more areas that were previously only cleaned are now also being disinfected. Germ control is now becoming standard on items from lift buttons and handrails to tables.

How long do germs survive on surfaces?

Some bacterial spores can survive for centuries. Fortunately, most everyday pathogens have much shorter survival times:[3]

2	7	6	4
days	**days**	**months**	**years**
Flu virus	**Norovirus**	**Streptococci** (bacteria)	**Salmonella** (bacteria)

[3] Kramer, A., Schwebke, I. & Kampf, G. How long do nosocomial pathogens persist on inanimate surfaces? A systematic review. BMC Infect Dis 6, 130 (2006). https://doi.org/10.1186/1471-2334-6-130

Cleaning floors hygienically

As one of the largest surfaces in a room, the floor is important for a hygienic environment. Effective cleaning is particularly important where floors are exposed to high levels of dirt and pathogens. Despite this, Germany's national institute for infectious diseases, the Robert Koch Institute (RKI), does not deem regular disinfection of floors to be mandatory.[1]

Which is more effective for mopping: cold or warm water?

Cold water
Commercially available cleaning agents are optimised for cold water and do not leave streaks or stripes if used correctly. Cold water also saves energy.

Warm water
Warm water generally cleans better. However, cleaning agent ingredients become volatile when warm. This pollutes the indoor air and reduces the amount of active substances on the floor.

Conclusion
Floors should always be cleaned using cold water.

[1] Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz 2004; 47:51-61DOI 10.1007/s00103-003-0752-9

Different methods of cleaning floors

In order to meet the requirements of various spaces and activities, several floor cleaning methods are used, often in combination.

Dry methods

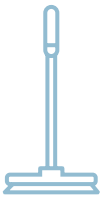
Sweeping

- A broom / power sweeper is used to collect dry, loose dirt.
- Stirs up dust and is therefore not effective (and in some cases is no longer permitted) indoors.

Vacuum cleaning

- A vacuum cleaner is used to remove dry, loose dirt.
- Does not stir up dust.
- HEPA filters also remove pollen and microorganisms.
- Very ineffective on adhering dirt.
- Suitable for all floors.
- Should be performed before damp / wet cleaning.

Damp/wet methods

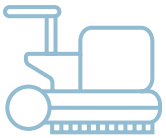


Damp mopping to remove dust

- A damp mop is used to collect non-adhering dirt.
- Suitable for removing fine dirt from smooth floors.

Wet mopping (manual)

- Adhering dirt (road dirt, stains) is dissolved and absorbed using a wet cleaning textile.
- Dry, loose dirt should be removed beforehand.



Scrubbing (mechanical)

- Mechanical wet cleaning with a vacuum scrubber.
- Loose and adhering dirt is loosened and collected in a single process.
- Especially suitable for large areas.
- Quick drying means it is possible to walk on the floor soon afterwards.
- More hygienic than manual wet cleaning.

nora floorings for optimal hygiene

A combination of several factors are necessary for effective floor hygiene. As well as various cleaning agents and cleaning methods, there are also different floorings, some of which make a greater contribution to optimal hygiene than others.

nora rubber floorings are ideal in this respect because they offer several advantages.

Inspired by nature, perfected by technology

Nature often provides the best ideas. This also applies to nora floorings, which are made of high-quality natural and industrial rubber. Minerals from natural deposits and other components such as environmentally friendly colour pigments are also added to form the basis for an extremely robust, German-made classic with long-lasting elasticity.

Inherent elasticity is what makes rubber unique. The use of rubber in nora floorings means that no phthalate plasticizers are required. Vulcanisation gives the floorings long-lasting elasticity and this maintains their unique functionality and aesthetic for decades. nora's complete flooring system is no less unique. With a comprehensive range of accessories and unparalleled service, this system provides consistent, cross-functional designs for any surface, stairway or building area.

Hygienic floors with a wealth of advantages

Dense, closed surface

The closed surface of nora rubber floorings offer no place for microbes to hide. This makes it possible to clean it more thoroughly than other surfaces.

No coatings

Coatings often make cleaning easier at first. However, as time goes by, the coating wears and scratches appear, in which pathogens can settle. It is therefore necessary to renew coatings on a regular basis.

norament and noraplan floorings have no coating – and therefore none of the associated hygiene issues. No dirt nor germs can settle on these surfaces.

No welding required

Joints offer places for pathogens to hide and are difficult or impossible to clean hygienically. nora floorings require no welding and so this problem is avoided.

Stain-resistant

The nora material is extremely resistant to discolouration, staining and cigarette burns. This considerably reduces the effort required to clean the floor over its entire lifetime.

Not sensitive to cleaning agents

It is possible to clean nora floorings with almost any commercially available cleaning agent without discolouring or damaging the surface. Often even cold clean water (without any chemicals) is enough to clean the floors perfectly.

Slip-resistant

On some floors, a film of water after wet cleaning can increase the risk of slipping. This is not the case with selected nora rubber floorings. Even with residual moisture (no puddle formation), they are still slip-resistant.

Not sensitive to water

Thanks to their closed surface, even abundant use of water is no problem on nora floorings, as they do not absorb water.

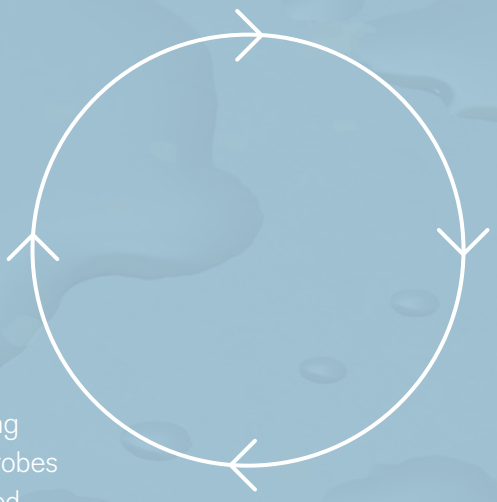
Floorings for ideal hygiene in any area

The unique properties of norament and noraplan rubber floorings offer the perfect conditions for efficient hygiene. nora has the proper solutions for the special requirements of educational institutions, public buildings and industrial facilities. nora floorings' defining properties make them easy to clean, which helps to combat viruses and bacteria consistently.

The surface disinfection cycle

1
Damp mopping to remove dust

2
Wet mopping to clean the surface



3
Disinfection to kill / inactivate germs

4
Repeat wet cleaning to remove any microbes that have been killed

Floor hygiene in the education sector

The amount of dirt that enters kindergartens, schools, libraries and lecture halls from outside is high. This provides an ideal breeding ground for micro-organisms. Primary schools and kindergartens in particular need to pay considerable attention to hygiene, because children often play on the floor, put their school bags down and touch them afterwards or pick up fallen items without thinking about dirt.

Rooms where hygiene is particularly important:

- Classrooms
- Lecture halls
- Libraries
- Laboratories
- Canteens / cafeterias
- Sanitary facilities
- Changing rooms
- Kindergartens

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Hygienic floors in public buildings

Hundreds and thousands of citizens visit a wide range of public buildings – from city halls and courtrooms to museums and airports – every day. The pandemic has resulted in widespread use of hand disinfectants in these areas. nora floors are ideal in this situation, because the disinfectants cannot damage the floors.

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Typical public facilities

- Museums / exhibition halls
- Courtrooms
- City halls / citizens' offices
- Airports and railway stations
- Police stations / barracks
- Sports facilities / stadiums
- Residences
- Libraries

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Special hygiene requirements in the industrial sector

Industrial buildings are often demanding when it comes to hygiene. Offices, production halls, laboratories, warehouses, etc. present major challenges for those responsible for hygiene. It is possible to remove stains from oil, grease, etc. from nora rubber floors without leaving any residue. It is also simple to wipe away food residues (commonly found in kitchens and common rooms) so that they do not provide a breeding ground for microbes.

Business premises

- Offices
- Production facilities
- Laboratories
- Warehouses
- Canteens / cafeterias
- Common rooms / changing rooms
- Stairways
- Showrooms
- Cleanrooms

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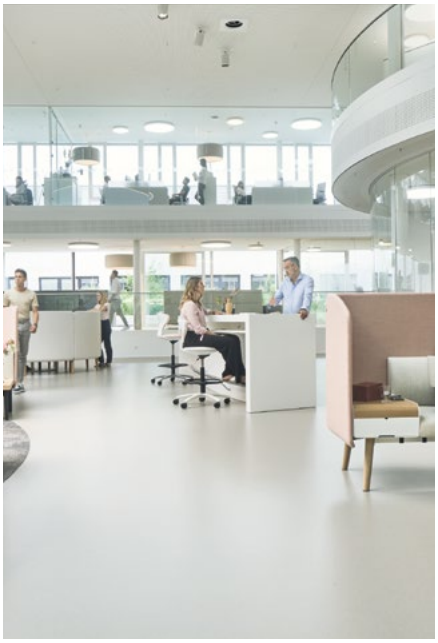

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