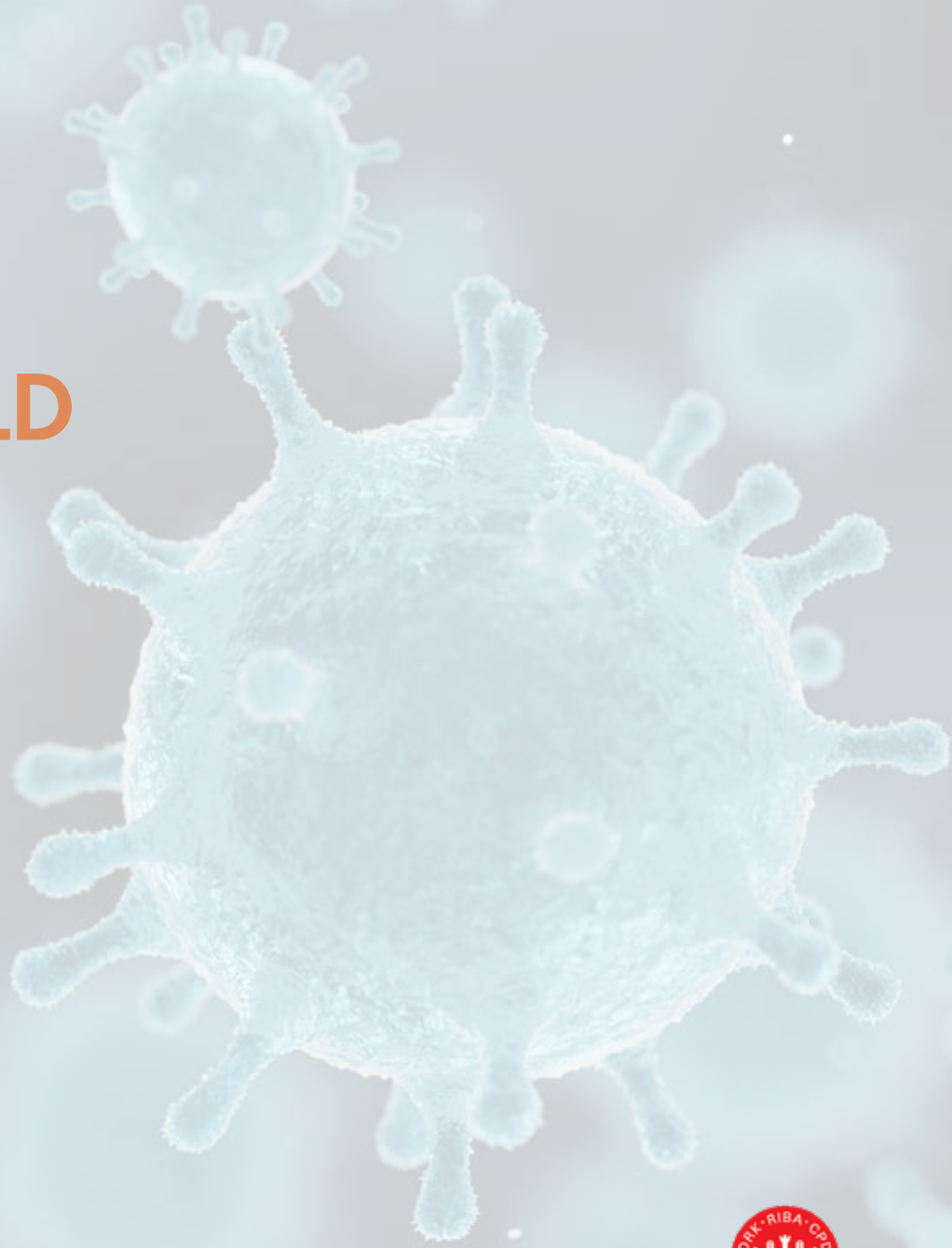
IRONMONGERY IN A POST PANDEMIC WORLD

GAI SPECIFIER'S GUIDE

The specifier's guide to creating a specification which limits the impact and instances of direct contact with ironmongery within a building.



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IRONMONGERY IN A POST PANDEMIC WORLD

GAI SPECIFIER'S GUIDE

Based on the RIBA Approved CPD of the same name, the specifier's guide to Ironmongery in a Post Pandemic World covers how to create a specification which limits the impact and instances of direct contact with ironmongery within a building.

To ensure that your project meets the latest standards, regulation, legislation and best practice, it is strongly recommended that the ironmongery should be specified by a GAI Registered Professional such as a Registered Architectural Ironmonger (RegAI). All RegAI's have successfully completed the GAI Diploma in Scheduling qualification, and continue to maintain and update their knowledge through the GAI continuing professional development (CPD) programme. RegAI status is a clear demonstration of professional competence in matters which are critical to building safety, accessibility and security. Visit www.gai.org.uk/RegAI.

If you would like to receive a presentation of the CPD, this is available through GAI member companies. Please visit the GAI website (www.gai.org.uk) for more details.

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1. INTRODUCTION

COVID-19

With the outbreak of the Coronavirus pandemic, our entire world has changed dramatically, and we are all aware of the huge impact that COVID-19 has had on our lives both professionally and personally over the past number of years.

The outbreak was first identified in Wuhan, China, in December 2019. Millions of cases of COVID-19 have been reported across the World, tragically resulting in hundreds of thousands of deaths. The virus is primarily spread between people during close contact, most often via small droplets produced by coughing, sneezing and talking.

The droplets usually fall to the ground or onto surfaces rather than travelling through air over long distances. People may become infected by touching a contaminated surface (such as a door handle) and then touching their face.

POST PANDEMIC SPECIFICATION

Governments throughout the world are easing the stringent and necessary measures which have been implemented throughout these past years in a bid to curb the transmission.

As we emerge from varying types of lockdown worldwide into a different normality, questions will be asked of specifiers of ironmongery as to what will be the most suitable products to be used in these times.

In this specifier's guide we will look at what could be considered if specifiers are asked to create schedules which either:

- Limits or eliminates the amount of direct contact with ironmongery and doors; or
- Provides some form of anti-bacterial or anti-microbial solution when a product is touched.

Electromagnetic hold open units

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2. SPECIALIST CLOSING DEVICES

In order to minimise physical contact with a door, people may be tempted to keep the door held open. Holding doors open is of course a major consideration in respect of fire doors.

Fire doors should never be held open through any mechanical means including mechanical hold open arms, door wedges, cabin hooks, foot operated door holders or other sundry items (such as fire extinguishers!) which prop them open.

Any modifications to a fire door which hampers its ability to close properly into its frame will inhibit its proper function. Always remember that a fire door which does not close correctly will not work in the event of a fire.

ELECTROMAGNETIC HOLD OPEN UNITS

Electromagnetic hold open units are used to hold open fire doors on circulation routes.
They work via connection to the fire alarm. Once the fire alarm is activated, the electromagnetic hold open unit will release, allowing the door to close under the control of the door closer.

These units can be either in an electro-magnetic unit or else as using an independent electro-magnet. They can be surface or flush mounted. Devices must be tested to BS EN 1155 which is a harmonised/designated standard. Single swing doors require closing devices that conform with BS EN 1154.

SWING FREE DEVICES

Another means of lessening (although not eliminating) the frequency of contact with the door and ironmongery is through the specification of swing free closing devices

Swing free closing devices allow a door to operate without resistance, as if the closer were not present. This means the door can be left in any position. Once the fire alarm is activated, the electromagnetic control will release the door, enabling the door to close securely.

Devices must be tested to BS EN 1155 which is a harmonised/designated standard. They are available in overhead, concealed in door and floor springs. New models are now available featuring an anti-slam finger protection function.

Swing free device

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3. DOOR AUTOMATION

Although a more expensive means of avoiding physical contact with doors, power-operated door operators are an intrinsic part of a touch-free ironmongery specification.

Non-contact proximity switch

Motion sensor activated power operated swing door

Sliding door operators

There are five types of door automation product groups available with the two largest utilised being swing and sliding powered door sets.

SWING DOOR OPERATORS

These can be easily retro-fitted to existing doors and are the most frequently specified type of operator by the architectural ironmonger.

These are commonly used in corridors, building entrances, operating theatres and internal traffic routes. They represent a major proportion of door operator sales in the UK.

SLIDING DOOR OPERATORS

Contact with doors or activation devices are not required at all with these types of automatics. Sliding doors are often used as main entrances due to their ability to handle high volumes of traffic with fast safe opening speed.

Derivatives such as telescopic, prismatic and curved are used more for visual impact and can give an even greater opening width from the same structural opening width.

REVOLVING DOORS

Revolving doors are a good solution for providing an effective draught lobby, and again require no physical contact with the door for the user

In essence the door is always open and always closed at the same time, providing a seal to the building. Please note that a pass door beside the revolving door for accessibility is a requirement of BS 8300-2.

FOLDING AND BALANCED DOORS

Where doors are held open, the leading edge of the door must contrast visually with the face of the door. Two examples of how this could be achieved are as follows:

- **Folding doors** - are a mixture of swing and sliding principles.
- **Balanced doors** - are part swing and part folding.

Again no contact with the door is required with folding or balanced doors.

MEANS OF ACTIVATION

The best default activation option for an automatically activated door is for overhead activation sensors which will mean that no physical interaction with the door is needed at all. This will mean that the sensor will pick up the motion of the person coming towards the door and the door will open automatically.

If the door is access controlled, it can be activated through proximity devices such as cards, fobs or even Bluetooth devices.

Certain types of automatic door operators can be activated by the following means which would either avoid contact totally or else provide a form of anti-bacterial protection on the device.

- The usage of a non-contact proximity switch which can be fitted in either flush or surface mounted sockets. This can be fitted into walls, behind tiles, wood, plaster, plastic and glass without its activation range being affected. This detects persons and objects in a detection area of 10-50 cm. Note that both options can be retrofitted, thus replacing existing switches.
- The usage of an anti-bacterial copper activation button.

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4. ACCESS CONTROL

It is possible to eliminate the need for physical contact with ironmongery through the specification of access control, particularly with regards to the activation of the electronic lock.

Means of lock activation requiring physical contact such as digital keypads may no longer be the preference on a specification. This means that proximity devices (which the user has exclusive use of) can be specified such as:

- Fobs.
- Cards.
- Bluetooth devices (including mobile phones).

ELECTRONIC LOCKING

Electronic motor locks or magnetic locks could also be considered within a specification.

These locks, when combined with door automation will mean the door can be unlocked and opened without physically having to touch the door at all.

For egress through a door, mechanical exit buttons can be replaced with touch free buttons or a sensor to disengage the electronic locking device.

CYLINDERS AND KEYS

Some end-users issue and retain user keys on a daily basis and many of these installations have key users using the same key for instance in a control key situation.

Instances such as these provide a high touch environment for disease transmission. Mechatronic cylinders can be an option to reduce physically touching thumbturns and keys by integrating them within an access control system. This also provides low cost audited time bound access to provide increased control where conventional hard-wired access control is too costly.

PANIC HARDWARE

Electrical panic hardware with electronic latch bolt retraction can be specified instead of mechanical bars. This would mean no physical contact with the push bar itself.

These devices can be operated by access control readers such as proximity readers, or else remotely. They can still also function as mechanical push bars and released in the event of emergency when pushed.

Contactless exit button

Mechatronic cylinder

Electronic panic hardware

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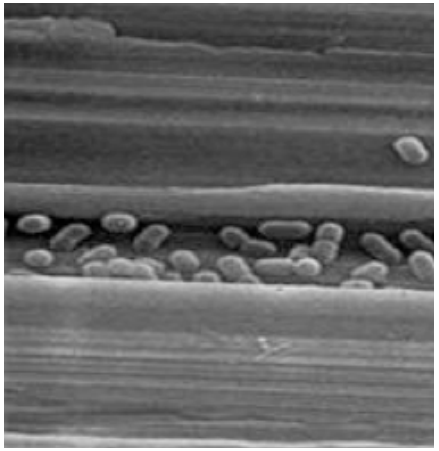
5. ANTI MICROBIAL FURNITURE

The specification of anti-bacterial and anti-microbial product is becoming more and more prevalent in the current climate. As with any product, it is down to the product manufacturer to ensure they have proper test evidence before making claims, and to the specifier to check this before specifying the product on to a project.

Any company who is making any claims that their product kills the COVID 19 virus MUST ensure they have solid evidence of the products efficacy against it. Please be aware that GAI are NOT endorsing any particular solution, nor stating that any of the following will kill the COVID 19 virus.



Stainless steel under a microscope

BACKGROUND

Below is an image of a freshly cleaned piece of stainless steel under a microscope. You can see scratches, and bacteria are thriving in them.
These are infectious and can remain so for days, weeks even months.

It has been stated that 80% of infections from bacteria are spread by touch. Furthermore, a contaminated hand can contaminate the next seven surfaces touched. The commonly-touched surfaces in a hospital are touched by patients, staff and visitors and present a reservoir of infection, waiting to be spread. It is not practical to clean each of these surfaces every time they are contaminated.

There are strong indications that bacteria found on frequently touched environmental surfaces such as door handles can play a role in infection transmission.

- Prior to COVID-19, approximately, 300,000 patients a year in England were affected by a HCAI - healthcare-associated infection as a result of care within the NHS (NICE England).
- The value of the above was approximately £2.4 billion per annum to the UK.
- A recent study published in the New England Journal of Medicine in April 2020 revealed that in a study on one strain of human coronavirus, plastic was the surface the virus remained viable on for the longest - up to 72 hours. On stainless steel the virus was detected up to 48 hours after application. For cardboard it was 24 hours and for copper just 4 hours.

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5. ANTI MICROBIAL FURNITURE CONT'D

A variety of anti bacterial materials and coatings have been developed primarily to help combat the rise of HCAIs– Healthcare acquired Infections.

Silver coated door handle

COPPER

Copper is a solid material, not a coatings on an existing material, and its anti microbial properties last the lifetime of the product.

The first rigorous clinical study using copper as an anti bacterial material was carried out at Selly Oak hospital in Birmingham in 2007. The results showed that, compared to control surfaces, the copper items had 90–100% less microbial contamination.

Copper and alloys with a high concentration of copper kill pathogen microbes and break down their genetic material. It is continuously active, easy to clean, is compatible with standard hospital cleaning and is very durable.

Copper can be found in high concentration in alloys such as bronze and copper-nickel. Copper and bronze furniture is available from a number of GAI member companies.

SILVER

Silver is another naturally occurring material used as an anti microbial. Silver surfaces contain silver ions which destroy the cell membrane of the germ which stops further cell division. The surface also remains effective even when cleaned at regular intervals.

Independent tests under laboratory conditions have shown that silver reduces microbial growth by more than 99%. These laboratory conditions reflect ISO 22196 where an element is tested at a temperature of 37 degrees and at 90% humidity, which does not reflect real life scenarios.

A practical test on silver coated furniture in Philipps University, Marburg concluded that it "achieved an impressive result, not just during laboratory testing but also in daily clinical practice....It's high level of anti microbial effectiveness was certified by the institute, in particular as regards its effect over time."

BUILT IN PROTECTION

Active anti bacterial/anti microbial ingredients such as silver or Microban can be incorporated into solid polyamide/nylon products during manufacture. This means that both constituents, i.e. the agent and the product are securely bonded with each other.

As it is not a surface coating, external effects such as cleaning products or UV light do not impair the effect. This protects the products over their entire lifetime.

APPLIED FINISHES

Applied anti microbial finishes are also available. Touchclean creates a chemical reaction on the surface once UV light strikes the particles in the coating and emit electrons. This breaks down bacteria and viruses into water and carbon dioxide. This then evaporates from the surface harmlessly. Test have also shown that within 24 hours, colonies of bacteria were reduced by 99.99%.

Originally developed for handles but can now be used to coat other surfaces such as walls, doors, floors, glass and clothing.

CONCLUSION

Antimicrobial and antibacterial product needs to be seen as a supplement to, not a substitute for, standard infection control practices. It works to reduce contamination, between cleans and between recontamination, thus augmenting standard infection control measures.

It will still be necessary to follow all current practices, including those practices related to cleaning and disinfection of environmental surfaces such as handles.

Care also needs to be taken that relevant product specified is compatible with cleaning agents. Also, it is important to ensure that anti bacterial and anti microbial surfaces are not waxed, painted, lacquered, varnished, or otherwise coated as this could most likely impair their efficacy.

Built in protection door handle

Copper door handle

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6. ANCILLARY PRODUCTS

The specification of hardware is often about much more than what goes on the door and the following are some relevant ancillary products which can be introduced into a specification.

Specialist signage

Perimeter smoke seals with rubber seals

Touch free hand sanitiser dispensers

CONCEALED PRODUCTS

If there are concerns in a specification regarding products which could provide surfaces where bacteria may linger then there are options available for concealed product to be specified including:

- Concealed hinges.
- Concealed closing devices and floor springs.
- Electro-magnetic locks – using shear magnets instead of face to face units.

WASHROOM

Ironmongers can also consider the specification and sale of touch free soap, toilet roll and paper towel dispensers thus inhibiting direct contact with product in the washroom.

Touch free hand sanitiser dispensers can also be specified for outside the washroom. Equipment such as toilet roll holders, shower rails and even toilet brushes are also available with an anti-bacterial coating. Entire grab rail kits and shower rails are also available with anti-bacterial protection.

SEALS

Whilst perimeter seals are rarely touched on doors it is possible to specify anti-bacterial versions from certain manufacturers. It is also worth considering that intumescent brush seals may have more ability to withhold dust particles which hold bacteria than those with rubber seals.

Where transmission of air-borne particles is a very real concern, consideration could be given to specification of acoustic perimeter seals and drop seals.

SPECIALIST SIGNAGE

Architectural ironmongers are often called upon to provide signage solutions for buildings. In addition to frequently requested signage items, architectural ironmongers may now be asked to specify other relevant and current signage relating to:

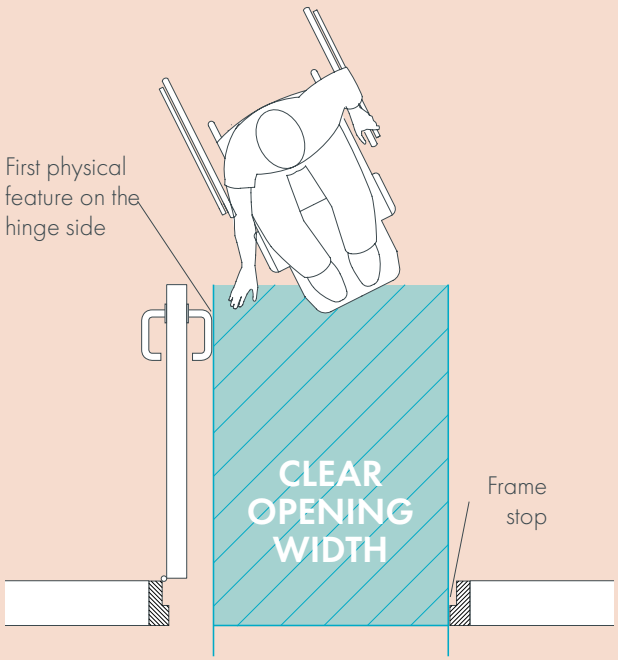
- Hand washing and sanitising.
- Social distancing.
- Spreading of germs.

DOOR PROTECTION

Impact Protection Sheets are available to protect walls and doors and assist in infection control. Radius doors or frames can also be completely encased with Impact Protection Sheets, facilitating total or partial protection for doors and frames. PVC-u door edge guards are also available with intumescent fire and smoke seal to retrofit on to doors.

Microban® pre-coated steel has also been used for some time by steel door manufacturers to manufacture doors for cleanroom applications These doors could now be considered for relevant projects. Doors can also be sprayed using titanium dioxide agents.

PVC-u door edge guards with intumescent smoke seal



Clear opening width

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7. RETROFIT PRODUCTS

Retrofit products which allow a door to be opened by foot, elbow or forearm are available to be installed in addition to existing hardware. Whilst these and other products may appear to provide a solution, care should always be taken as follows:

FITTINGS ON HANDLES

Fitting a product which modifies the function of a lever handle to allow it to be depressed by forearm or elbow could have an impact on the certification of this item where relevant.

This includes EN 1906 but is especially significant with EN 179 devices where the GAI would not recommend its usage.

Note that adding a substantial piece of plastic or rubber on to a fitting installed on to a fire door can cause major issues with regards to its performance.

Note also that retrofitting any product to a door can impede the clear opening width which is stipulated in ADM and BS 8300 2 (left). This is because the clear opening width is measured from the frame stop on the door closing side to the first physical feature on the hinge side, which can be projecting door furniture.

FOOT OPERATED DEVICES

If fitting a foot operated device instead of a handle, careful consideration must be taken if this is a self closing door as the closing forces of the door closer may make the door difficult to open.

Consider the issues this may raise as a potential trip hazard and potential for door damage if the door itself does not have a bottom rail in its manufacture.

Always ensure that any product fitted to a fire door has the correct fire test evidence for the type of door it is to be fitted to. Fitting a device which is untested can result in unauthorised modification of life safety equipment, that the fire door is no longer "as tested" and that any third-party certification for the fire door is nullified.

Be aware that most fire door certificates will state "please note that hardware items other than those discussed within this certificate of approval are not permitted."

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The Guild of Architectural Ironmongers (GAI) is the only trade body in the UK that represents the interests of the whole architectural ironmongery industry - architectural ironmongers, wholesalers and manufacturers.

Formed in 1961, the GAI is internationally recognised and respected as the authority on architectural hardware, building its reputation on three key pillars; education, technical support and community.

Its technical information service is the only specialist service of its kind, providing comprehensive advice on issues relating to the legislation, regulations and standards governing the use of architectural ironmongery and related hardware.

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