

Bio Trunking Solutions

Antimicrobial trunking systems



Bio Trunking Solutions from Marshall Tufflex

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About Marshall Tufflex

Marshall-Tufflex is the UK's leading manufacturer of cable management products. We supply a broad range of products to ensure that, whatever the design and specification; there will always be the perfect product to suit.

Our area sales engineers, project managers and technical specialists work closely with electrical consultants, contractors and clients in order to provide the best possible technical and sales support.

Marshall-Tufflex products are designed to meet the latest BS EN ISO standards and to accommodate all building designs and construction parameters. Our bespoke solutions can also be designed and pre-fabricated to meet individual requirements and save time on site.

Standards & Environmental

Quality Assurance

Marshall-Tufflex is recognised by the BSI as a firm of Assessed Capability to BS EN ISO 9001:2008.



Recycling

Marshall-Tufflex actively supports various industry bodies in the use and control of PVC-U based materials, with the aim of increasing awareness and use of recycled material.



Environmental Standards

Marshall-Tufflex is totally committed to achieving high environmental standards and is recognised by the BSI as a firm of Assessed Capability to BS EN ISO 14001:2004.



The company continues to support the Voluntary Commitment to the European Commission with its ongoing Vinyl 2020 programme.

Introduction

Why use antimicrobial PVC-U trunking?



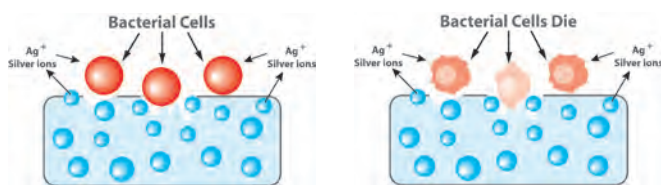
Certain microbial organisms are harmful to people and can proliferate to cause infections and disease. There is a need to control these organisms wherever infection control is of importance, particularly in environments such as

- ⚡ Hospitals
- ⚡ Nursing and care homes
- ⚡ Food processing plants
- ⚡ Surgeries
- ⚡ Schools
- ⚡ Sports and health centres

Microbial organisms can also cause product deterioration, discoloration and bad odours and antimicrobial treatments help to prevent this and provide an extra level of protection when combined with normal cleaning procedures.

Built-in protection

Where hygiene is a priority, we offer cable management systems with integral antimicrobial properties. By incorporating silver ions within the PVC-U based material the perimeter trunking will deliver ongoing antimicrobial protection that prevents 99.9% of harmful bacteria. Because the Marshall-Tufflex Bio trunking solution is integral to the PVC-U material, there is no reduction in effectiveness of the trunking throughout its life - even if it is scratched or damaged.



Bio Trunking uses a silver ion solution throughout the product, ensuring that ninety 99.9% of harmful bacteria – like MRSA – will not survive on the surface.

Bio Trunking Solutions offer:

- ⚡ Prevention of harmful bacteria growth (for more details please see page 6).
- ⚡ Antimicrobial properties inherently formulated within the PVC-U.
- ⚡ A durable, non-leaching antimicrobial treatment.
- ⚡ Testing to ISO 22196:2007.
- ⚡ Proven silver ion-based technology to neutralise any bacteria with which it comes into contact.
- ⚡ Registration with the Environmental Protection Agency (EPA).
- ⚡ Compliance with the European Biocidal Products Directive (BPD).
- ⚡ Proven reductions in bacterial viable count by more than 99.9%.
- ⚡ Antimicrobial treatments provide an extra level of protection when combined with normal cleaning procedures.
- ⚡ Bio trunking can be recognised by checking for the 'Bio' mark on the inside of the trunking lid. They can also be tested by using a UV light on the external surface of the trunking. The Bio system will reflect blue under UV light rather than violet.



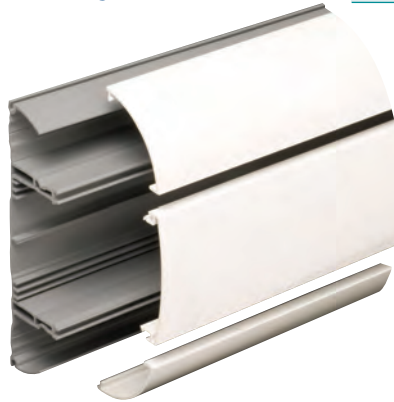
The pink protective film easily identifies the product as Marshall-Tufflex Bio trunking with inherent antimicrobial properties.

Which trunking system?

Odyssey Trunking 180mm x 57mm

A top of the range trunking system with a unique curved profile. Moving away from the traditional box shape, this trunking not only presents a uniquely striking appearance but is mechanically stronger, with a profile that prohibits clutter, avoids dust traps and makes cleaning easy.

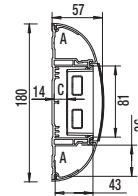
- ⚡ Three segregated compartments
- ⚡ Curved profile does not allow placement of objects
- ⚡ Flush accessories to maintain a smooth profile
- ⚡ Internally reinforced for extra mechanical strength
- ⚡ Tamper resistant trunking and fittings that locate with a special clip design
- ⚡ Cat 6 and Cat 6a compliant
- ⚡ MT32 pre-wired, pre-tested power connection optional.



Odyssey Bio available ex-stock on main components.

Cable Capacity:
CAT 6 UTP (BASED ON Ø 6.5MM CABLE)

| COMPARTMENT | 45% FILL | 100% FILL |
|----------------------|----------|-----------|
| A | 13 | 30 |
| *C (with accs box) | 12 | 23 |
| C (without accs box) | 42 | 85 |



Data Information:
Standard bend radius 25mm (Cat 6).
Steel divider is available to provide EMC screening between compartments.
Adjustable data box 32-40mm.

Sterling Profile 1 Trunking 167mm x 50mm

A popular and stylish looking trunking system that is easy and cost effective to use and has been tried and tested over the years.

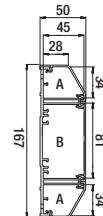
- ⚡ Three segregated compartments
- ⚡ Separate lid access to each compartment
- ⚡ Can be fed from larger trunking systems for increased cable distribution
- ⚡ MT32 pre-wired, pre-tested power connection optional
- ⚡ Bio also available to order in other Sterling Profiles
- ⚡ Cat 6 and Cat 6a compliant



Sterling Profile 1 Bio made to order.

Cable Capacity:
CAT 6 UTP (BASED ON Ø 6.5MM CABLE)

| COMPARTMENT | 45% FILL | 100% FILL |
|----------------------|----------|-----------|
| A | 13 | 28 |
| *B (with accs box) | 10 | 23 |
| B (without accs box) | 37 | 91 |



Data Information:
Standard bend radius 25mm (Cat 6).
Steel divider is available to provide EMC screening between compartments.
Adjustable data box 32-40mm.

Mono Plus 20 Trunking 140mm x 50mm

An economical and stylish three compartment trunking, compact in size to fit within areas that have trunking height restrictions.

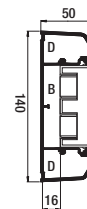
- ⚡ Three segregated compartments
- ⚡ Suitable for height restricted applications
- ⚡ One piece fittings with single lid access for improved security
- ⚡ MT32 pre-wired, pre-tested power connection optional
- ⚡ Bio also available to order in Mono 10
- ⚡ Cat 6 and Cat 6a compliant



Mono Plus 20 Bio made to order.

Cable Capacity:
CAT 6 UTP (BASED ON Ø 6.5MM CABLE)

| COMPARTMENT | 45% FILL | 100% FILL |
|----------------------|----------|-----------|
| D | 11 | 21 |
| *B (with accs box) | 12 | 28 |
| B (without accs box) | 43 | 82 |



Data Information:
Standard bend radius 25mm (Cat 6).
Adjustable data box 32-40mm.

*Capacity calculated using 30mm deep accessory boxes.

Twin165 Trunking 160mm x 65mm

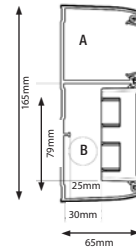
Twin165 is a mid-size two-compartment perimeter trunking system, designed as a compact variation of Twin Plus. Twin165 offers high capacity for Cat 6 and Cat 6a data cabling for specification in commercial, industrial and educational environments.

- ⚡ Cat 6 and Cat 6a compliancy
- ⚡ Full segregation for data cables
- ⚡ Compliance with Part M of the UK Building Regulations
- ⚡ Compatibility with MT32 Prefabrication Wiring Systems
- ⚡ Cat 6 and Cat 6a compliant

Twin165 Bio made to order.



| Cable Capacity: CAT 6 UTP (BASED ON Ø 6.5MM CABLE) | | |
|---|-------------|--------------|
| COMPARTMENT | 45% FILL | 100% FILL |
| A | 35 | 77 |
| *B (with accs box) | 33 | 72 |
| B (without accs box) | 58 | 125 |



Data Information:
Bend radius control
50mm (Cat6 and
Cat6a).

Twin Plus Trunking 210mm x 57mm

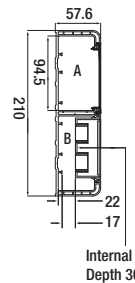
For areas requiring large quantities of Cat 6 data cabling, this high capacity, segregated, two compartment containment system looks good and incorporates 50mm bend radius fittings that exceed international standard requirements.

- ⚡ Two large segregated compartments
- ⚡ Separate lid access to each compartment
- ⚡ Extra depth for increased cable capacity
- ⚡ MT32 pre-wired, pre-tested power connection optional
- ⚡ Cat 6 and Cat 6a compliant

Twin Plus Bio made to order.



| Cable Capacity: CAT 6 UTP (BASED ON Ø 6.5MM CABLE) | | |
|---|-------------|--------------|
| COMPARTMENT | 45% FILL | 100% FILL |
| A | 53 | 117 |
| *B (with accs box) | 20 | 45 |



Data Information:
50mm bend
radius fittings.
Steel divider is
available to
provide EMC
screening between
compartments.
Adjustable data
box 32-47mm.

Bench Trunking 105mm x 105mm

In a laboratory or medical work area, Bench Trunking can be usefully mounted directly on the bench or angled under shelving. This is a sturdy and easy to install trunking that, with dividing fillets, can bring segregated services to desks and benches.

- ⚡ Can also be designed to individual specifications and pre-wired
- ⚡ Back to back configuration available
- ⚡ Positive fixing lids for easy re-configuration of cabling
- ⚡ 1, 2 and 3 gang boxes available
- ⚡ MT32 pre-wired power connection optional

Bench Bio made to order.



In addition to the systems shown, Marshall-Tufflex can also offer systems XL, Compact 2, Mini and Maxi Trunking as a bio option (set-up charges apply). **Please enquire for more details.**

Bio Trunking is available with unique copper spray coating for protection from electromagnetic interference (EMI) without any reduction in cable capacity. **Please contact the Technical Team for more information.**

Test results

TEST RESULTS: Marshall-Tufflex Report 2709051

LABORATORY: Thomson Research Associates Inc., Ontario, Canada

TEST ORGANISM: Methicillin Resistant Staphylococcus Aureus (MRSA)

| Quantitative Assessment of Activity – ISO 22196:2007 MRSA | | | | | |
|--|---|-------------------------------|-----------|----------------|------------|
| Concentration of starting inoculum | | 4.94 x 10 ⁵ CFU/mL | | | |
| Sample Description | | Number of bacteria recovered | Log Value | R = [log(B/C)] | % Survival |
| 1. | Flat profile – Blue Tape, White PVC – untreated control | 7.19 x 10 ⁶ | 6.9 | ----- | ----- |
| 2. | Curved profile – Red Tape, White PVC – Treated with Ultra-Fresh CA-16 | <2.00 x 10 ¹ | <1.3 | >5.6 | <0.1% |

The treated curved profile (Sample 2) showed excellent control of both MRSA and Klebsiella Pneumoniae with a greater than 99.9% reduction in bacteria compared to the untreated flat profile (Sample 1). The bacteria grew on the untreated sample.



Bio trunking has demonstrated effectiveness against:

- ⚡ Methicillin resistant *Staphylococcus aureus* (MRSA): an antibiotic resistant, opportunist pathogen that can survive on surfaces within the hospital environment.
- ⚡ *Klebsiella pneumoniae*: an opportunist pathogen affecting people with a weakened immune system.
- ⚡ *Streptococcus pyogenes*: tonsillitis, scarlet fever, necrotising fasciitis (the ‘flesh-eating bug’).
- ⚡ Vancomycin-resistant *Enterococcus faecalis*: *E. faecalis*: a concern when antibiotic resistance is acquired.
- ⚡ *Escherichia coli*: All of us are colonised by *E. coli* in our gut but this bacterium can cause infections if it is transferred to a wound or a different part of the body causing severe food-associated illness.
- ⚡ *Pseudomonas aeruginosa*: a common bacterium found in water and other environments and is associated with burns infections, medical device infections and food spoilage.
- ⚡ *Acinetobacter baumannii*: is associated with HAI and is often resistant to antibiotics.
- ⚡ *Bacillus subtilis* is a spore forming bacterium with the ability to form resistant spores that cause a problem for cleaning and disinfection.
- ⚡ *Salmonella*: the Salmonella species cause food-borne illness.
- ⚡ *Legionella*: Legionellosis is a severe form of pneumonia caused by inhalation of infected aerosols, for example via air conditioning systems.
- ⚡ Lactobacilli are essentially non-pathogenic: they are often used as probiotics. Some species cause spoilage, for example in the brewing industry.
- ⚡ *Corynebacterium pseudodiphtheriticum*., associated with respiratory infection.

WHITE PAPER

Joanna Verran is Professor of Microbiology in the School of Biology, Chemistry and Health Science at Manchester Metropolitan University. Her research is interdisciplinary, involving collaboration with materials scientists, polymer and dental technologists and surface engineers focusing on the interactions occurring between microorganisms and inert surfaces. In 2008, Professor Verran wrote a 6-page White Paper on the effectiveness of silver ion pregated antimicrobial trunking for Marshall-Tufflex. Here are a few extracts from that paper:

“In the hospital environment, patients are particularly susceptible to infection, thus reduction in the transfer of microorganisms directly from person to person and indirectly via inanimate objects, is a key objective. The microorganisms present may also be more resistant to antibiotics.

“... ‘silver ions’ ... exert a bactericidal effect at very low concentrations. Unlike antibiotics, which have specific targets present in microbial cells thus demonstrating ‘selective toxicity’ ... silver, like other biocides, is toxic to multiple components of bacterial cell metabolism. These include damage to the bacterial cell wall and membrane permeability.

“... damage leads to blockage of transport and enzyme systems, alterations of proteins, ... and binding of microbial nucleic acid, which prevents protein synthesis and cell division.

“... rapid or sustained release is important ... demonstrated by impregnated surfaces where the silver is mobile and essentially renewable to the surface. Coatings might, in contrast, be lost

Case studies

Case study 1

FOR: Pathology Laboratories, Kettering General Hospital
SPECIFIER: Building Design Services, Corby, Northamptonshire
INSTALLER: Mann Electrical Services, Northampton

As part of a major £1.1m refurbishment to the pathology departments by Kettering General Hospital NHS Trust, Odyssey Bio antimicrobial cable containment system was chosen to enhance infection control measures within the sterile services section of the hospital.

The project has involved the fitting of more than 400 linear metres of Odyssey Bio in a phased 18 month programme of works whilst the department remained up and running. The project also used Odyssey's coloured back boxes, in red, to provide Part M compliance at a competitive cost and Marshall-Tufflex also supplied Bench Trunking with Part M box assemblies.

Jens Haugaard, from Building Services Design, the Consulting engineers for the refurbishment, chose Odyssey bio in the research laboratories for these reasons: "Its new qualities were appealing. I like the fact that the antimicrobial formula is integral to the plastic so that, despite what happens to it, it will continue to do its job. Additionally its curvature is easy to wipe clean."

Bob Farmer of Mann Electrical Services who installed the products, is also happy with the performance of Odyssey Bio. He said: "It looks good and the necessary specification changes to the special bench trunking units were dealt with efficiently."



Case study 2

FOR: Selby Community Project
SPECIFIER: DSSR
INSTALLER: Airedale Mechanical & Electrical

An innovative project to co-locate a community hospital, health clinic and civic centre into a shared new building in Selby, North Yorkshire, made full use of the many benefits of cable management solution Twin Plus.

The £22 million Selby Community Project was a joint venture between the NHS North Yorkshire and York, and Selby District Council to re-build the town's War Memorial Hospital and health clinic and provide new council offices at the same time.

Twin Plus trunking proved the perfect choice for a number of reasons, not least because it is available in standard and antimicrobial versions, allowing consulting engineers DSSR to specify standard Twin Plus into the council offices and the antimicrobial Twin Plus Bio into the hospital, which includes 24 GP-led beds, a minor injuries unit, diagnostic facilities and minor surgery suite. Overall, the trunking system was installed in almost 65% of the project, the hospital side of which has achieved a rating of 'excellent' against BREAAAM, the national environment assessment tool.

Mahesh Mehta, executive electrical engineer for DSSR chose Twin Plus for the following reasons, "Having the Twin Plus profile available in the Bio antimicrobial version enabled us to achieve a constant design aesthetic throughout the building as well as making economic sense on such a large order. It also meant the electrical contractor was required to install just one profile throughout while still offering the really valuable properties of an antimicrobial trunking system where it mattered most. Infection control is a huge issue and Bio Twin Plus supports cleaning regimes by continually working 24/7 in the fight against harmful bacteria."



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Marshall-Tufflex reserves the right to change the design
or specification of its products without notification.

EL207/13103