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PROTECTOR
Health & Hygiene

Antimicrobial Work Place Solutions

Maximum protection against Bacteria, Fungi & Algae



PROTECTOR - Antimicrobial Work Place Solutions

The built environment provides a perfect milieu for the existence and spread of microorganisms such as bacteria, mold and algae. Chances of microbial growth and build up are exceedingly higher on work place surfaces, walls and floors, leading to cross contamination, unpleasant odors and product deterioration. The unseen germs reside on anything and any surface including walls, food containers, conveyor belts, table tops, door knobs, kitchen sinks, curtains, floors, etc. The close proximity and interaction between occupants and environments such as hotels, offices, homes, factories and educational facilities all support the growth and distribution of microbes which can potentially cause illness or material degradation.

In food processing units, bakeries, hotels, pharmaceuticals, beverages & meat processing industries bacteria and microbes growing on surfaces not only pose a detrimental health effect on workers but keeping the microbes away from products is a constant challenge . Cross contamination of products leads to spoilage, financial loss and damage the reputation of the manufacturer.

Protector`s Antimicrobial Technology is the most effective solution to prevent microbial growth in any environment, making it safe, healthy and hygienic. This technology can be incorporated into any permanent fixture or fittings and act as a shield against microbes. As a result it provides 24 hours protection, spanning the lifespan of the product.

Key Features:

- ✓ Complete Antimicrobial protection against Bacteria, Fungi, Mildew and Algae
- ✓ Prevent build up and spread of diseases and spoilage causing microbes
- ✓ Guard against the unsightly growth of mold, bacteria, fungi and algae
- ✓ Control unpleasant odors
- ✓ Promote hygienic environment
- ✓ Protector will add to the repute and prestige of hospitals, industries etc.

Protector Antimicrobial work place Solutions are Suitable for

- Health care setups
- Food industry: meat processing units, Beverages and bakeries
- Pharmaceutical industry/laboratories
- Hotels/offices
- Schools
- Homes

Health Care Setups

Good hygiene is imperative in any healthcare environment. The close proximity of patients provide an ideal opportunity for potentially harmful microbes to spread directly from person to person and via contaminated surfaces. Healthcare Associated Infections (HCAI) acquired during hospital stay are the most common complication of hospital care, and one of the most serious patient safety concerns. Preventing HCAI is a top priority in hospitals and PROTECTOR - Antimicrobial Work Place Solution provides integrated and lasting hygienic protection to any product used within healthcare environment.

Pharmaceutical Industry

In pharmaceutical industry microbial contamination of work surfaces, walls and floors, not only poses a detrimental health effect on workers but keeping the microbes away from product is a constant challenge. Cross contamination of product from surfaces leads to spoilage and financial loss.

Schools and Institutes

Close proximity of children and extended periods of time spent in the classroom create the perfect environment for microbes, such as bacteria to pass quickly and easily between pupils. Bacterial infections are able to spread quickly and easily, causing absenteeism and interrupt learning. Antimicrobial products and surfaces in the school classroom are an easy way to complement existing cleaning practices and to maintain cleaner and more hygienic environment.





Food industry

Hygiene is an important aspect in food processing units, bakeries, restaurants, hotels, pharmaceuticals, beverages and meat processing industries. Contamination of food from bacteria such as *Listeria monocytogenes, Campylobacter* and *Salmonella* spp. at any stage of the supply chain can have devastating effects not only to consumers, but to businesses too. PROTECTOR - Antimicrobial Work Place Solutions help food businesses meet the stringent hygiene requirements needed to reduce the potential for cross-contamination of harmful bacteria responsible for food spoilage throughout the supply chain.

Home, Leisure, Hotels and Offices

Bacterial infections can spread rapidly. Frequently touched and forgotten-to-clean surfaces both in the homes, offices, hotels and in leisure environments introduce the risk of bacterial cross-contamination. Not only this, but growth of mold and algae on products and building structures is not only unsightly, but can impact on air quality. Protector`s antimicrobial technology is effective against bacteria and mould, and, as the importance of hygiene is increasingly gaining awareness, it has become expected to maintain the highest standards at all times.

PROTECTOR - Antimicrobial Work Place Solution provides the long lasting hygienic protection to any product used within hospitals, pharmaceutical industry, food industry, homes, hotels, schools and offices.





PROTECTOR ANTIMICROBIAL WORKPLACE SOLUTIONS

Product Range Includes:
- Antimicrobial Flooring System
- Antimicrobial Wall Paints
- Antimicrobial Surface Coatings
- Antimicrobial Personal Protective Equipment

PROTECTOR ANTIMICROBIAL FLOORING SYSTEMS

Unprotected floor surfaces can easily become contaminated with bacteria and microbes. Cracks and crevices particularly give rise to microbial build up and act as a source of air-borne microbial spread in environment. **d2p protected seamless and antimicrobial flooring is 99.99% protected against bacterial build up and act as an important preventive measure in infection control.** Our Polyurethane Hard Floor Coating forms a monolithic flooring which does not require joint. Easy to clean, hygienic and healthy.

Product Properties

- Multi-Functional Polyurethane Coating Compound
- Durable
- No joints
- Tough-flexible
- Solvent-free
- Applicable with airless spray paint application equipment
- High compression strength and abrasion resistance.
- Can be used on concrete, cement or epoxy mortars
- Resistant to corrosion
- Non- Slipping
- Easy to clean, hygienic and healthy



PROTECTOR WALL PAINTS

Fungal growth on a wall paint normally appears as dark spots on the surface.These fungal spores are constant source of infections and allergies in the surrounding environments. Unlike the fungal growth, bacterial colonization on walls is another important contributor to the spread of infections. Protector antimicrobial wall paints provide round the clock protection and inhibit the buildup and growth of microorganisms on the wall surfaces.

Protector Antimicrobial Wall paints provide:

- 99.9% Protection against bacteria
- No fungal and algal growth patches on wall – preserve the aesthetics of wall paints
- Prevent allergies and hypersensitivities
- Healthy and hygienic environment
- Enhance the life of paint



Protector paints provides 99.99% microbial reduction

PROTECTOR SURFACE COATINGS

To create a complete clean and hygienic environment, Protector Antimicrobial PU and Epoxy surface coatings can be applied to any existing surfaces ranging from doors, beds, bed railings, food processing surfaces, food belts, work stations, kitchen tops, HVAC ducting, etc. The Antimicrobial protection of d2p will act as a constant shield against microorganisms.

Protector Antimicrobial Surface Coatings provide:

- 99.9% Protection against bacteria
- No fungal and algal build up on surfaces
- Prevent cross contamination of surfaces and products
- Prevent microbial deterioration of surfaces
- Healthy and hygienic environment



ANTIMICROBIAL PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment is an integral component of hospital infection control, providing barrier not only to patient but also to health care workers. Protector Antimicrobial health care range is more effective against microbial growth and infection spread.





Examination Gloves

Material: Latex powdered
Latex Powder Free & Nitrile
Non sterile
Sizes: XS,S,ML and L

Face Mask

Material: Non Woven polypropylene (PP)
3 ply, Ear Loops
Disposable
Color: White, blue & Green





Surgeon Cap

Material: Non Woven polypropylene (PP)
Style: round, soft single or double elastic
Color: Green & Blue



Apron

Material: Polypropylene (PP)
Color: Green & Blue
Customised Sizes are available

Shoe Cover

Material: Non Woven polypropylene (PP)
Non skid
Opening: soft elastic

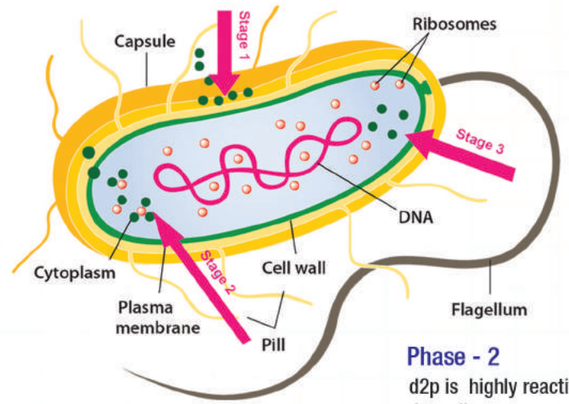


Protector Antimicrobial Technology

Protector`s d2p antimicrobial technology is easily incorporated into any plastic, paint or coating to become an integral part of the finished product and imparts a wide spectrum anti-bacterial, anti-fungal, anti-mold, anti-mildew and anti-algal protection, providing a broad spectrum of anti-microbial performance.

d2p antimicrobial treatments penetrate the cellular walls of microorganisms in order to disrupt essential reproductive cell functionality. d2p technology is built-in during the manufacturing process and does not fade away or wear off over the period. d2p antimicrobial remains active in killing bacteria and microorganisms throughout a product's lifetime, preventing product deterioration, odors and staining.

d2p has 99.9% antimicrobial efficacy against bectria and microorganisms that lasts for lifetime of product



Phase - 1

d2p enters the bacterial and microbial membrane and causes damage and disruption to the cellular wall before penetrating the cell

Phase - 2

d2p is highly reactive with the cell enzymes and can deactivate these vital molecules

Phase - 3

Interrupts the cell DNA preventing replication and cell formation

d2p has been successfully tested against over 50 dangerous microorganisms including

E.coli	Salmonella	Listeria
MRSA	Candida	Corynebacterium
Pseudomonas	Klebsiella	Aspergillus niger
Staphylococcus aureu	Penicillium chrysogenum	Enterobacter

1



d2p masterbatch is added at the manufacturing stage

2



Product containing d2p is produced at the factory

3



Bacteria land on the product surface

4



d2p starts acting against bacteria & Microorganisms

5



d2p attacks bacterial cells, disrupting their function and reproduction

6

99.99% reduction of bacteria & microorganisms

d2p conforms to following standards for its antimicrobial efficacy:

- anti-fungal testing ISO16869:2008, ASTM G21-09 and ASTM E 2180
- anti-bacterial testing ISO 22196:2011 and JIS Z 2801
- anti-algae testing ASTM D 5589-09 and prEN WD algae

d2p is registered with US Environmental Protection Agency (US EPA, FDA for food contact applications and Notified under the EU's Regulation (BPR-EU-no. 528/2012).

PRODUCT TESTING

Protector antimicrobial product range is tested by third party lab Intertek for antimicrobial efficacy



Intertek

Antibacterial testing according to ISO 22196

Test Report

Number : TWNC00426454S1

Date : Jun 04, 2015

This is to Supersede
Report No. TWNC00426454
Dated Mar 17, 2015

Applicant: Symphony Environmental Limited
Symphony Enviornmental Technologies
6 Elstree Gate,Elstree Way,
Borehamwood,Herts.WD6 1JD
UK

Sample Description:
One (1) group of submitted samples said to be :

Item Name	: Examination Gloves
Quantity	: 3 sets
Country of Origin	: Sri Lanka
Date Sample Received	: Mar 03, 2015
Date Test Started	: Mar 03, 2015

Test Conducted:
Test For Antimicrobial Activity On Plastics Surfaces

As per ISO 22196:2007.

Tested Specimen : Green plastic examination gloves

Result:

Name Of Test Bacteria (Strain Number)	*Escherichia Coli* (ATCC 8739)
Concentration of inoculum	6.20×10^5 CFU/ml
Average of the number of viable cells of bacteria immediately after inoculation on the untreated test piece (U_0)	2.06×10^4 CFU/cm² /Log : 4.31
Average of the number of viable cells of bacteria on the untreated test piece after 24 hours (U_t)	2.66×10^6 CFU/cm² /Log : 6.42
Average of the number of viable cells of bacteria on the antimicrobial test piece after 24 hours (A_t)	<0.63 CFU/cm² /Log : 0.63
Value of antimicrobial activity (R)	Log : >5.79

Calculation : $R = \text{Log } U_t - \text{Log } A_t$

Remark : CFU = Colony forming unit
< = Less than

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director

Intertek

Anti fungal testing as per the ASTM G21

Test Report

Number : TWNC00441849S1

Date : Jul 02, 2015
This is to supersede report No.
TWNC00441849 dated Jun 29, 2015

Applicant: Symphony Environmental Limited
Symphony Envioronmental Technologies
6 Elstree Gate,Elstree Way,
Borehamwood,Herts.WD6 1JD
UK

Sample Description:
One (1) group of submitted samples said to be :

Item Name	: Dadex Green PPRC Pipe BD-DADEX-05 and BD-DADEX-06
Quantity	: 1 group
Country of Origin	: Pakistan
Date Sample Received	: May 14, 2015
Date Test Started	: May 14, 2015

Test Conducted:
As requested by the applicant, for details please refer to attached pages.

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited

Matt Wang
Sr. Manager