



**would like to present**



The complete sanitisation system

What is **medi**



**medi9** - The complete sanitisation system

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## What is Medi9?

**Medi9** is a complete sanitisation solution. Effective against fungi, spores, viruses, and bacteria and yet it is:

– **ALCOHOL FREE**

– **TRICLOSAN FREE**

– **CHLORINE FREE**

– **NON TOXIC**

– **NON HAZARDOUS**

– **LEAVES NO RESIDUE**

– **FRAGRANCE FREE**

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## What is Medi9?

**Medi9** is available in **an incredible portfolio of application methods** (all with the same remarkable performance) ranging from:

- **DEVICE WIPES**
- **SURFACE SPRAYS & WIPES**
- **HAND FOAMS & WIPES**
- **ENVIRONMENTAL AEROSOLIZATION DECONTAMINATION SOLUTIONS & MACHINES, PROVIDING HIGH LEVEL DISINFECTION OF ALL AREAS**

Why alcohol free ?

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## Why alcohol free ?

### — **IT IS WIDELY ACCEPTED THAT ALCOHOL IS NOT EFFECTIVE AGAINST NOROVIRUS & *Clostridium difficile***

In fact in many instances, it actually exacerbates the problem!

### — **ALCOHOL IS OFTEN INEFFECTIVE AGAINST BACTERIA**

Alcohol-based hand sanitisers claim to kill 99.999% of bacteria, yet laboratory tests have difficulty reproducing these results. According to Dr. George Lukasik of Biological Consulting Services in Florida, one of the problems is that without agitation, alcohol only kills the top layer of bacteria and the dead cells then form a protective layers that keep the alcohol from killing the harmful bacteria underneath.



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## Why alcohol free ?

### — HIGHLY FLAMMABLE & UNACCEPTABLE TO SOME CULTURES

Alcohol-based hand sanitisers have been banned from many public areas and school districts in the country, as they pose a significant danger to children who might accidentally or intentionally ingest the product. To put things into perspective: light beer is "6 Proof", wine is "24 proof", vodka is "80 Proof" – a number of alcohol based products are "125 Proof"!

The risk of alcohol poisoning is quite real and it is a danger to small children.

In addition to this many religions and cultures are not comfortable with dealing with alcohol.

# The Range

## The range: **Sanitised Surfaces**



—**Spray & Foam**

—**Bulk Solution**

—**Wipes**

The range: **Sanitised Surfaces**

**Medi9** is safe to use and effective on all kinds of surfaces – as shown by testing completed by Boeing for cleaning interiors of commercial transport aircraft.

**SMI, Inc.**  
12210 SW 131 Avenue  
Miami, Florida 33186-6401 USA  
Phone: (305) 971-7047  
Fax: (305) 971-7048

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Attn: Nine Group International  
Freedom House  
Par Moor Road  
Par  
PL24 2SQ  
Date: 10-Jun-2008  
SMI/REF: 0805-461

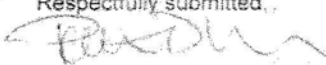
Product: **MEDI9** (received 02-Jun-2008)  
Dilution: As received  
Page 1 of 5

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**Boeing D6-7127 Revision M (April 11, 2003)**  
CLEANING INTERIORS OF COMMERCIAL  
TRANSPORT AIRCRAFT  
Category: Disinfectants

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11.3.1	Sandwich Corrosion	Conforms
11.3.2	Immersion Corrosion Test	Conforms
11.3.3	Rubber Test	Conforms
11.3.4	Sealant Test	Conforms
11.3.5	Painted Surface Test	Conforms
11.3.6	Tedlar Surface Test	Conforms
11.3.7	Vinyl Surface Test	Conforms
11.3.8	Fabric and Carpet Test	Conforms
11.3.9	Leather and Naugahyde Test	Conforms
11.3.10	Flash Point Test	Informational
11.3.11	Polycarbonate Crazing Test	Conforms

Respectfully submitted,  
  
Patricia D. Viani, SMI Inc.

## The range: **Sanitised Personal**



– Hand Foam



– Wipes



– Manual & Automatic Dispensers

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## The range: **Sanitised Personal**

**Medi9** and the dispensers are popular as they are safe for all to use – even children and vulnerable persons.

**Medi9** is dispensed as a foam to increase efficiencies in use and user acceptance. Available for manual and auto dispensing.

Gel traditionally dispenses at 1.2ml per dose and often requires users to apply more than one dose to obtain sufficient quantities and contact times, with a proportion of the gel depositing on the floor.

**Medi9** foam dispense at 0.75ml per dose and due to the foaming process just 1 application is sufficient. Being alcohol free means it doesn't dry as quickly thereby lasting the required contact time for it to be effective.



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The range: **Sanitised Spaces**



**Back Pack  
Sanitisation Unit**



**Vehicle  
Sanitisation  
System**



**Handheld  
Sanitisation Unit  
[Mains or Battery]**

will take around 90 seconds to  
sanitise a room of approx. 50m<sup>2</sup>

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The range: **Sanitised Spaces**

Whilst decontamination is taking place there is no need to remove equipment, furniture or soft furnishings as **Medi9** is chlorine and alcohol free and is safe to use in all environments.

The amount of **Medi9** atomised into the atmosphere has been carefully calibrated to ensure that the freestanding items, equipment and the fabric of the building will not be damaged through excessive moisture levels.

It is not necessary to seal the room or to disable the fire alarm or ventilation system.

Minimum PPE is required as **Medi9** does not contain dangerous chemicals that would effect the respiratory system – in fact many of Medi9's ingredients are found in common cosmetics, body sprays, pharmaceuticals and medicines.

The area is safe to access very shortly after decontamination has taken place.





Technical Data

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## What actually is Medi9?

**Medi9** is a new biocidal technology. It combines conventional biocides with a polymer backbone to produce a highly effective, food safe, non toxic, non tainting product that can be used to sanitise both skin and surfaces in any environment.

It can also be used to clean and sanitise machinery and is highly effective in clinical and non-clinical environments.

**Medi9** is suitable as a one stage cleaner and disinfectant or as a two stage cleaning and sanitising process.

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## How does Medi9 work ?

**Medi9** is not a biocidal chemical. It is a biocidal technology. It could be said that the whole is greater than the sum of its parts. This is due to the synergy between the polymer and the biocides attached to it. The polymer effectively coats the surface it is applied to and spreads. It not only coats the surfaces in need of cleaning but also anything that is adhered to it - including microorganisms.

Bacteria, when left to colonise a surface, forms what is known as a biofilm. **Medi9** coats this biofilm and stops reproduction in the colony. As the colony becomes older it becomes more susceptible to biocides and at this point the biocide in **Medi9** can enter the cell and destroy it. This cationic technology coats the surface of a bacteria or a virus molecule and de-natures the proteins involved.

This mode of action means that **Medi9** is also effective against spores. By coating the bacteria in its spore state it stops the spore from germinating and then changing from an endospore to a vegetative cell.

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## Residual Protection & Reduced Corrosion

**Medi9** has a cumulative and residual effect. The polymer coating leaves a monomolecular layer that will work for a time after the initial application; it also combats re-deposition of soil and the formation of biofilms. This means that over time the incidences of re-infection will reduce.

The cationics in the **Medi9** formulation act as corrosion inhibitors, this is especially the case for the longer alkyl chain length cationics in **Medi9** such as DDAC and Benzalkonium chloride. The cationics are positively charged and hence are attracted to the surfaces in the solution, as most surfaces are negatively charged when in an aqueous environment. This thin layer of cationic protects the metals from corrosion to some extent.

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## Why is Medi9 different?

For biocides to work effectively against microorganisms, they must be found in a product above a level known as the Minimum Inhibitory Concentration (MIC). For example: the MIC of Sodium Hypochlorite (bleach) is around 2500mg/L. The polymer technology used in **Medi9** means that the biocides in the product mixture can be at concentrations below their individual MIC yet still produce an effective biocidal product.

Many biocides when used on their own are extremely toxic to humans and there are many health & safety issues to consider, especially when dealing with the higher-end disinfectants. **Medi9** is classified as Non-Hazardous due to the relatively low amounts of these biocides. **Medi9** is, therefore, a safer product.

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## Medi9 v Hypochlorite Bleach

Hypochlorite bleach typically used would be diluted to achieve an in-use concentration of 0.1% or 1000ppm. For hypochlorite to be stable it has to be maintained at a reasonably high pH – typically 11.5 – 12.5. The dilution to 1000 ppm sacrifices the bleach stability in two ways:

- 1 – By lowering the pH, chlorine bleaching / gas generation is possible: this reduces the strength of the solution.
- 2 – Metal ions in the water, especially iron, will greatly accelerate the decomposition of chlorine bleach by acting as a catalyst.

Contamination of the 1000ppm solution of various kinds is expected from cleaning rags and even the water that is used to dilute the bleach. Soils – especially protein soils – will react with bleach, decomposing it and reducing its concentration.

Sunlight and heat will significantly increase the rate of decomposition of a bleach solution.

**Medi9** is not diluted and there is no decomposition that takes place, thus the activity of the product can be assured. Bleach, on the other hand, has a short shelf life and needs to be replaced frequently to ensure that the concentration of available chlorine is maintained at an effective level.

The action of chlorine bleach on the skin frequently causes rashes and soreness even at high dilutions.

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**So what are Medi9 active ingredients ?**

Didecyldimonium Chloride

Lauralkonium Chloride

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Active ingredients: **Didecyldimonium Chloride**

An antiseptic/disinfectant that is used in many biocidal applications. Causes disruption of intermolecular interactions and dissociation of lipid bilayers. A broad spectrum bactericidal and fungicidal, it is used as a disinfectant cleaner for linen. Recommended for use in hospitals, hotels and industrial applications. Also used in gynaecology, surgery, ophthalmology, paediatrics, OT, surface disinfection and for the sterilisation of surgical instruments and endoscopes.

Quote from STEPAN: "The cornerstone of STEPAN's biocide technology is Quaternary chemistry."

More specifically, STEPAN features an extensive array of alkyldimethylbenzylammonium chloride (ADBAC) and didecyldimethylammonium chloride (DDAC) compounds. The alkyl chain distribution can be modified to achieve a wide range of biocidal performance characteristics.

Building on our quaternary chemistry capability, we can also utilise non-biocidal compounds to further improve the biocidal efficiency of quaternary compounds in frame formulations. The unique combinations of quaternary biocides and non-biocide compounds designed to achieve superior results is referred to as 'BTQ' ("Beyond The Quat") programme.



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Active ingredients: **Lauralkonium Chloride**

From the Benzalkonium Chloride family - a cationic surface-acting agent belonging to the quaternary ammonium group. It has three main categories of use: as a biocide, a cationic surfactant and as a phase transfer agent in the chemical industry.

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## What does Medi9 break down into?

Amongst other ingredients, **Medi9** contains cationics: these are electrically charged molecules that cause Medi9 to be attracted to negatively charged surfaces. These help to provide residual protection. However, **Medi9** is readily biodegradable and over time the larger, more complex molecules will break down into smaller molecules such as esters, amines and carboxylic acids. Regular applications of Medi9 will result in the aqua present in the solution removing previously applied molecules. A plateau is then reached where there is an equilibrium between the applications of **Medi9** and its removal. The raw materials are not classified as toxic so there is no risk of toxicity increasing through regular use.

**Medi9** works as a catalyst and will increase the breakdown of HPV in a similar way to Sebum and Lanolin – it does not result in increased toxicity or produce any harmful substances.

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## What is Medi9 effective against?

**Medi9** has also been tested for virucidal activity. This test involved applying Medi9 to a surface onto which a known number of viral phages had been inoculated. This simulated the cleaning of a surface with, for example, a wipe.

These tests assessed **Medi9** against a number of bacterial and fungal strains to see if the product had the broad-spectrum antibacterial capability that is needed for a disinfectant/sanitiser in modern health care and food production areas. However, these tests are not exhaustive and we will be constantly testing Medi9 against other bacterial strains to give concrete proof to our claims.

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**Medi9** has been tested to a number of European Standards:

- **EN1276** Quantitative suspension test for the evaluation of bactericidal activity of chemical disinfectants.
- **EN13704** Quantitative suspension test for the evaluation of sporicidal activity of chemical disinfectants.
- **EN1650** Quantitative suspension test for the evaluation of fungicidal activity of chemical disinfectants.
- **EN14476** Quantitative suspension test for the evaluation of virucidal activity of chemical disinfectants.
- **EN14476** Quantitative suspension test for the evaluation of effectiveness against Ebola surrogate virus
- **EN14563** Quantitative carrier test for the evaluation of mycobactericidal or tuberculocidal activity of chemical disinfectants used for instruments in the medical area.
- **EN1500** Hygienic Hand Rub Standard Test
- **ISO22196** Residual Surface Activity

## Medi9 has been tested against - Bacteria

### Bacteria

Medi9 has been independently tested to EN1276 against the following gram positive and gram negative bacteria

- *Staphylococcus aureus*
- *Staphylococcus aureus (MRSA)*
- *Pseudomonas aeruginosa*
- *E.coli*
- *Enterococcus hirae*
- *Salmonella*
- Listeria
- Legionella

Bacteria	gram -ve/+ve	Associated Infections
<i>Staphylococcus</i>	+	Impetigo, skin infections, wound infections
<i>Pseudomonas</i>	-	Wound infections, abscesses, UTI, conjunctivitis
<i>E.coli</i>	-	UTI, wound infections, sickness, diarrhoea
<i>Enterococcus</i>	-	<i>Bacteraemia, UTI, sickness, diarrhoea</i>
<i>Salmonella</i>	-	Sickness, diarrhoea
Listeria	+	Meningitis, sickness, diarrhoea
Legionella	-	Legionnaires disease, Pontiac fever



## Medi9 has been tested against - Bacteria

- Testing to EN1276 showed a log reduction greater than 5 in under 1 minute in dirty conditions.

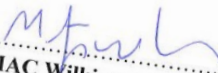
*Hospital Infection Research Laboratory, Queen Elizabeth Hospital Birmingham, B15 2WB*

### CONCLUSION


When tested in accordance with EN 1276 (2009), Medi9 sanitised surfaces spray achieved a  $\geq 5 \log_{10}$  reduction within 1 minute at 20°C under both clean (0.03 % albumin) and dirty (0.3 % albumin) conditions for all of the test bacteria.

To satisfy the requirements of EN 1276 (2009), at least a 5  $\log_{10}$  reduction in specified test organisms is required within 5 minutes when the disinfectant is tested at its intended use dilution. Medi9 sanitised surfaces spray, therefore, meets the requirements of EN 1276 (2009).

*Testing by the Hospital Infection Research Laboratory does not imply approval or endorsement.*

  
.....  
MAC Wilkinson  
Biomedical Statistician

  
.....  
Dr A Fraise  
Director

  
.....  
CR Bradley  
Laboratory Manager

Q:\HIRL\TEST REPORTS\COMPANIES\K-O\NING\EN 1276 Medi9 2014.docx

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## Medi9 has been tested against – Spores

**Medi9** has been independently tested to EN13704 against the following spore forming bacteria

- **Bacillus subtilis**
- **Clostridium difficile**

<b>Bacteria</b>	<b>gram -ve/+ve</b>	<b>Associated Infections</b>
Bacillus (spp}	+	Septicemia, food poisoning
Clostridium	+	Diarrhoea, tetanus, botulism

## Medi9 has been tested against - Spores

- The test according to EN13704 showed a log reduction greater than 3 in under 1 minute in dirty conditions, upon further analysis if the sporicidal test suspension was greater then the log reduction would equate to 6.447

### CERTIFICATE OF ANALYSIS

Nine Group International  
Freedom House  
Par Moor Road  
St Austell  
Cornwall  
PL24 2SQ

SAMPLE: Medi9 Solution

DATE OF ISSUE: 08/09/06

TEST DESCRIPTION: QUANTITATIVE SUSPENSION TEST (EN:13704)

#### ORGANISMS:

*Clostridium difficile* NCTC 11209  
*Bacillus stearothermophilus* NCTC 10339

10<sup>6</sup> Reduction  
10<sup>3</sup> Reduction

PASSED ALL CRITERIA



### Appendix to Test Certification EN 13704

From: Julie Hulme  
Sent: 21 March 2014 14:30  
Subject: European Standard EN 13704 : 2002

Good afternoon, to confirm I have reviewed the data in the report detailed below;  
Quantitative suspension test for the evaluation of the sporicidal activity of chemical disinfectants and antiseptics used in food, industrial, domestic and institutional areas. Nine Group International – Medi9 Solution  
And based upon the stated bacterial test suspension levels and the stated recovery of <150 for all contact times, a greater than 10<sup>4.5</sup> reduction in viable numbers was demonstrated;  
*Bacillus stearothermophilus* 1,800,000 cfu/ml calculated reduction in numbers based on a recovery of 150 equates to 1,799,850 (6.255Log)  
*Clostridium difficile* 2,600,000 cfu/ml calculated reduction in numbers based on a recovery of 150 equates to 2,99,850 (6.447Log)

Regards

ALcontrol Laboratories

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ALcontrol Laboratories  
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## Medi9 has been tested against – Fungi

**Medi9** has been independently tested to EN 1650 against the following fungi

- **Aspergillus niger**
- **Candida a/bicans**

<b>Bacteria</b>	<b>gram -ve/+ve</b>	<b>Associated Infections</b>
Aspergillus	N/A	Wound infections, aspergillosis, respiratory infections
Candida	N/A	Thrush, skin infections, dermatitis

**Medi9 has been tested against - Fungi**

- Tested to EN1650 and showed a log reduction of 4 in under 1 minute in dirty conditions.



## Medi9 has been tested against – Viruses

Medi9 has been independently tested to EN14476 against the following enveloped and non-enveloped viruses:

- **Norovirus**
- **SARS**
- **Influenza**
- **Hepatitis**
- **HIV**
- **Ebola**

<b>Virus</b>	<b>Enveloped/ Non-enveloped</b>	<b>Associated Infections</b>
Norovirus	Non-enveloped	Winter vomiting sickness
SARS	Enveloped	Severe acute respiratory syndrome
Influenza H1N1	Non-enveloped	Coughs, colds, flu, avian flu, swine flu
Hepatitis A- E	Enveloped	Blood-borne infection, liver damage
HIV	Enveloped	Human immunodeficiency virus

## Medi9 has been tested against - Viruses

- Tested to EN14476, the Norovirus test was carried out on the surrogate Feline Calcivirus and showed a log reduction of 4 in under 5 minutes with a 5% soil load replicating dirty conditions. It would therefore suggest that a higher log reduction would be achieved if conducted in low soiling or clean conditions.

### Test Result

Table 2

5 Min Contact	Test Virus Titre	Virus Recovery (Tcid <sub>50</sub> /MI)	Cytotoxicity (1% Disinfectant)	Neat Disinfectant (Tcid <sub>50</sub> /MI)
1	1.3 x 10 <sup>8</sup>	2.0 x 10 <sup>7</sup>	<2.5 x 10 <sup>3</sup>	<2.5 x 10 <sup>3</sup>
2	1.0 x 10 <sup>8</sup>	2.0 x 10 <sup>7</sup>	<2.5 x 10 <sup>3</sup>	<2.5 x 10 <sup>3</sup>
3		5.0 x 10 <sup>7</sup>	<2.5 x 10 <sup>3</sup>	<2.5 x 10 <sup>3</sup>
4		3.1 x 10 <sup>7</sup>	<2.5 x 10 <sup>3</sup>	<2.5 x 10 <sup>3</sup>
Mean	1.2 x 10 <sup>8</sup>	3.0 x 10 <sup>7</sup>	<2.5 x 10 <sup>3</sup>	<2.5 x 10 <sup>3</sup>
Log		7.5	<3.4	<3.4
log difference				>4.1

Feline calicivirus surface test results for the efficacy of NINE GROUP DISINFECTANT SOLUTION at a 5 minute contact with a soil load of 0.6g/L as foetal bovine serum.

VIRUCIDAL ACTIVITY IS BASED ON A REDUCTION IN VIRUS VIABILITY OF A MINIMUM OF 4 LOG<sub>10</sub>

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## Potential Applications

**Medi9** can be used in many different areas. With its broad spectrum of antibacterial properties, it provides an answer to the many infection control questions that customers and infection control specialists interested in cleansing and sanitising their products and workspace may have.

### Areas include:

- Kitchens
- Stairways
- Communal Areas
- Washrooms
- Inside Areas
- Ballrooms
- For personal hygiene
- Restaurants
- Lifts
- Corridors
- Changing Rooms
- Outside Areas
- Shops
- Wards
- Consulting Rooms
- Storage Areas
- Bathrooms
- Gyms
- Around Swimming Pools
- Laundry Areas
- Theatres

# Thank you

Thank you for taking the time to view our presentation.  
We look forward to working with you soon.



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