



# Klenz UK

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## What makes Klenz unique?

- **Easy-to-Use**

Klenz is amazingly simple to operate. It quickly becomes a part of any day-to-day cleaning routine.

- **Fast**

A sanitisation cycle inside a Klenz takes only 8 minutes.

- **Maximum effect**

Klenz has been proven to have extremely high antibacterial & antifungal efficiency. As it sanitises using circulating air, it reaches areas that other cleaning methods often miss.

- **Zero damage**

As Klenz uses no heat, liquid or corrosive chemicals it poses absolutely no risk to any item.

- **Saves money**

Klenz requires no consumables. It is effective for over 10 years, even if used 10x daily, & as expensive refills, wipes or sprays aren't required, it can save a great deal of money over time.

- **Klenz deodorises and kills**

germs on any item placed inside it...



## Uses and applications

- **Easy-to-Use**

Klenz is amazingly simple to operate. It quickly becomes a part of any day-to-day cleaning routine.

- **Office cleaning**

e.g. call centre headsets, computer equipment

- **Household disinfecting**

e.g. toys, electrical items, kitchen utensils

- **Sport and leisure equipment**

e.g. footwear, boxing gloves, masks - paintball, fencing etc.

- **Nurseries and schools**

e.g. toys, stationary

- **Laundrettes / dry cleaners / ironing services**

A unique, memorable & chargeable service - real profits, quickly

- **Food manufacturing and catering**

Klenz minimises hygiene risk

- **Nursing Homes**

e.g. electrical items, aids

- **Beauty and hairdressers**

e.g. equipment, esp. electrical

- **Hotels**

A first class & memorable service for guests

- **Retailers - inc. toy, footwear, second-hand**

Maximise customers' confidence in products

- **Foot health**

Used by chiropodists worldwide to prevent foot infection/odour

- **Shoe repair**

Unique & profitable extra service

plus many more



“Mobile phones come into contact with more parts of our body & a wider range of bacteria than toilet seats”

Joanna Verran

Professor of microbiology at Manchester Metropolitan University

“Cuddly toys given to children in intensive care units may be harbouring large numbers of dangerous bacteria, say experts”

BBC News, Friday 18th August 2000

“Work stations contain nearly 400 times as many microbes than lavatories...

Key offenders are telephones, which harbour up to 25,127 microbes per square inch... computer mice 1,676!”

Microbiologist Dr Charles Gerba, of the University of Arizona

“The average football boot has 140,000 fungal spores”

Microbiologists at the British Analytical Control Agency (Baca)

Everyday items are hotbeds of bacteria. However, they are rarely/never cleaned because traditional methods such as washing, high temperatures & corrosive chemicals often, cause damage, take too much time, are too inconvenient, or don't sanitise thoroughly



# The Silver Bullet for Infection?

## Revolutionary Nano Silver Technology Minimises Risk of Infection From Footwear

The use of Nano Silver as an antimicrobial agent is becoming increasingly widespread as evidence of its effectiveness mounts. Research is quickly uncovering new ways of utilising its extremely potent antiviral, antibacterial, and antifungal properties, and the medical profession is keen to embrace new technology that can help fight infection.<sup>[1]</sup> The technology has inevitably spread to the podiatry profession, most recently in the form of Klenz - a shoe sanitizing unit that can be used to treat footwear as a means of eradicating infection-causing microbes. So, what evidence is there that nano silver has antimicrobial properties? How does it have such a strong effect? How can products such as Klenz be incorporated into podiatry practice to reduce the risk of infection?

Silver has been used for centuries to prevent and treat a variety of diseases, most notably infections. It has been well documented that silver coins were used in ancient Greece and Rome as a disinfectant for the storage of water and other liquids.<sup>[2]</sup> Both NASA<sup>[3]</sup> and The Russian Space Agency<sup>[4]</sup> use silver ions (Ag+) to sterilise drinking water for astronauts aboard space vessels. As the effectiveness of silver's antimicrobial properties increases as the size of its particles decreases, it comes as no surprise that upon the advent of nano technology, scientists developed means of splitting silver into nano-sized particles (75, 000 times smaller than the width of a human hair), in order to maximise its potential.

Since the development of nano silver, it has been used in many products, and its effectiveness in a number of antimicrobial situations has been studied. Most notable perhaps is a study conducted by the University of Texas and Mexico, which discovered that silver nano-particles kill HIV-1, and is likely to kill virtually any other virus.<sup>[5]</sup> Companies such as Samsung have invested heavily in research into the technology, and have launched products such as a washing machine, refrigerator, and air conditioning unit, that use nano silver to decrease bacteria and odour in the home.<sup>[6]</sup> You may have already seen products such as nano silver socks<sup>[7]</sup> - antibacterial silver coatings are showing up on everything from deodorizing insoles<sup>[8]</sup> to mobile phones to wound dressings.<sup>[9]</sup> Klenz is the next step in preventative technology that allows a podiatrist to completely sanitize patients' footwear in 8 minutes, meaning the chance of being infected by microbes inside footwear is minimised, and shoe odour greatly reduced.

So, how does silver have this amazing effect? And what evidence is there for its efficiency? Free silver ions, or radicals, are known to be the active antimicrobial agent. Silver ions kill micro-organisms instantly, by blocking the respiratory enzyme system (energy production), as well as adversely altering microbial DNA and the cell wall.<sup>[10]</sup> Not only does the nano size allow Ag+ ions to easily penetrate the cells of micro-organisms, but the positive charge increases surface area, and even draws the negatively charged elements toward them increasing their ability to affect more molecules.<sup>[11]</sup> Numerous studies have demonstrated the antibacterial and antiviral effects of ionic silver. A study at the University of Arizona recently showed it to be effective against the coronavirus, which researchers use as the surrogate for SARS.<sup>[12]</sup> Daniel M. Storey, chief technical officer at Nexxion (a corporation specialising in the creation and application of unique surface layers on medical device substrates), Colorado, said "To date, no pathogens have been able to survive contact with silver".<sup>[13]</sup>

The latest product to utilise this technology, Klenz, harnesses both silver and ozone's antimicrobial properties. Ozone, created inside the unit by a UV lamp, has two purposes. Firstly, ozone itself is itself an effective, quick, conservative and simple method to kill micro-organisms,<sup>[14]</sup> having been accepted by The U.S. Food and Drug Administration as being safe for use as an anti-microbiological agent for the treatment, storage, and processing of foods.<sup>[15]</sup> Secondly, Ozone has the effect of reacting with nano silver particles, to create charged nano silver ions. Ozone, and the highly reactive silver radicals, are blown around the unit and in and around shoes, for an 8-minute cycle, resulting a highly efficient, contained sterilising and deodorising action.



A Klenz unit can be easily and cheaply installed into podiatrists' clinics, and offered to patients as an additional chargeable service. Having been tested for its antifungal, antibacterial and deodorising effect by KICM, a nationally accredited Korean testing agency, it provides an excellent means of sanitizing shoes, insoles and orthotics whilst patients are at the clinic. As an example of its antifungal effect, in controlled conditions, Klenz reduced a culture of *Trichophyton rubrum*, the most common causative agent of dermatophytoses worldwide<sup>[16]</sup>, by 98%. As evidence of its antibacterial effect, the products' capabilities against a culture of *Pseudomonas aeruginosa* was measured at 99.7% and against *Escherichia coli* at 99.8%. As evidence of its deodorising effect, Klenz reduced a sample of *Ammonia* by 92%.

It has traditionally been left up to patients to remember to treat their shoes, using the myriad of sprays, insoles, powders and crystals available, with inconsistent results. The powders can be messy, the crystals inconvenient (requiring repeated overnight insertion into shoes), and insoles can quickly lose their antibacterial/antifungal strength. Until the arrival of Klenz, sprays provided perhaps the best form of attack, however, contact time with microbes is severely limited. Now, installing a Klenz unit into the clinic makes it possible to bombard bacteria, fungi and viruses for a full 8 minutes, every time the patient visits, providing the most effective shoe treatment to date, at the same time removing the reliance on self-treatment at home.

The Department of Health is encouraging the development of pioneering technology, like Klenz, to improve hospital infection control, and has set up a Rapid Review Panel to quickly review products to provide recommendations to the Department of Health.<sup>[17]</sup> Mr. KC Jones of I4U, supplier of the Klenz, said "It is essential that the health profession embrace new technology like this in order to combat the ever increasing risk of infection".

William Hamilton F.S.S Ch. Dip. Pod-Med. M.B C&P. A. said, "The technology is flawless. We all know what its like to handle patients' footwear and having to put them back on patients' feet untreated seems to be a bit of an anomaly to me. I would now insist that patients with verrucae, tinea or any infectious condition use this service."

Joyce Reeves, a Birmingham based chiropodist said, "the unit is a fantastic addition to my current service offering. Plus, a little extra revenue never goes amiss".

To find out more about Klenz, or to order a unit please contact 0121 355 8181 or log onto: [www.innovations4u.co.uk/klenz](http://www.innovations4u.co.uk/klenz). One unit costs £349 and has a life span of 10 years based on usage 10 times daily.

## Sources

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