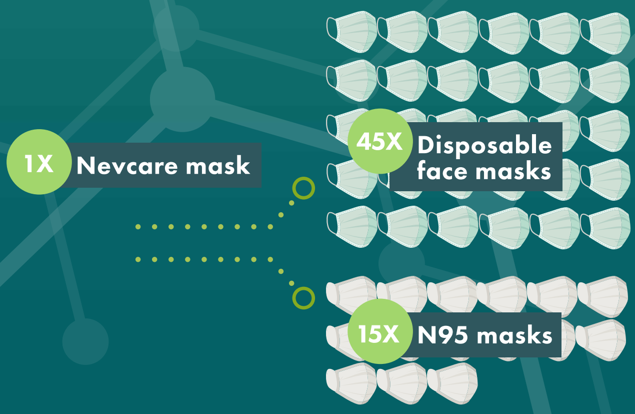
PRODUCT INFORMATION

GRAPHENE 3D MASK

KN95



ANTI-MICROBIAL PROTECTION

LOW HEAT/HUMIDITY

5 LAYER FILTRATION

0.3 MICRON PROTECTION

SUPERIOR BREATHABILITY

REUSABLE MASK

ADVANCED GRAPHENE NANO-TECHNOLOGY
MICROBIAL FILTRATION PROTECTION

GRAPHENE
3D MASK
KN95

Description

Nevcare Graphene layer planting technology with premium quality, non-woven. melt-blown and thermal Graphene layers creating a superior barrier of advanced microbial protection.

Graphene, a nanoparticle material, is the strongest and thinnest substance on earth. A single layer of Graphene atoms is only 0.35 nanometers thick.

Bacteria, viruses & particles that travel onto the mask are further filtered through nano-size Graphene blades. Cutting edge, modern technology. Particles are safely contained and captured within the layers of the mask.

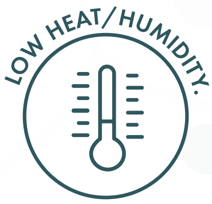
Nevcare's exclusive and unique melt-blown Graphene Cloth is also 3 dimensional, porous and waterproof.This enables unique and 'locked' electrostatic performance and physical bacteriostatic properties, providing even further advanced protection.

The NevCare Graphene 3D mask filters particles down to a size of PM2.5.

The material does not become hot and humid. Graphene's unique properties help prevent any heat retention or odors.

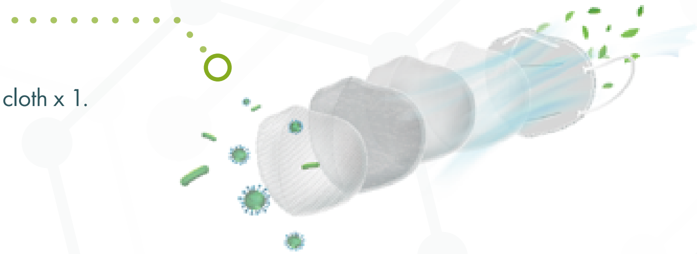
The 3D design ensures a tightly fitted and comfortable seal on the users face. A flexible nose bridge ensures a secure seal for your protection.

All NevCare packaging is recyclable. Discarded personal protective equipment inflicts a huge toll on the environment and resources.



Mask Materials

Inner Layer: Graphene cloth, non-woven.
Middle Layers: Graphene melt-blown cloth x 2, Graphene thermal cloth x 1.
Outer Layer: Graphene cloth, non-woven.
Elastic Bands: Polypropylene Spandex Bands.
Nose Piece: zinc/aluminimum





5x MASKS
(1 SLEEVE X 5 PIECES)

50x MASKS
(10 SLEEVES X 5 PIECES)

1000x MASKS
(20 BOXES X 50 PIECES)

Other Information

Manufacturing Partner: The Aleen International Corporation.
Strategic Partner: Global Risk Group Pty Ltd.
Strategic Partner: Southland Corporation Pty Ltd.
enquiries@nevcare.com.au
Global Product standards: GB2626-2006.

GLOBAL RISK GROUP
(Strategic Partner).

Southland
(Strategic Partner).

GRAPHENE ANTIMICROBIAL MECHANISMS OF ACTION

Mark Harrison | MD Chief Medical Officer Nevcare
August 6, 2020

What is Graphene

Graphene, a nanomaterial, is composed of a single layer of carbon atoms, 0.35 nanometers thick, tightly bound in a hexagonal honeycomb pattern.
Graphene is:

- The strongest material known to man - 200 times the tensile strength of steel
- The thinnest material at one atom thick
- The lightest material known
- The best conductor of heat
- The best conductor of electricity
- Harder than a diamond yet more elastic than rubber
- It is impervious so that even the smallest atom (helium) cannot pass through it
- Graphene has been shown to exhibit significant antimicrobial activity against multiple pathogens including bacterial and viruses

To put this in perspective: if a sheet of cling film (like kitchen wrap film) had the same strength as a single layer of graphene, it would require the force exerted by a large car to puncture it with a pencil.

Graphene's high surface area means that you could cover an entire soccer field with 6 grams.

The synthesis of graphene won the Nobel Prize in 2004.

Mechanisms of Graphene Mediated Antimicrobial Activity

There are 4 reported principle mechanisms for graphene's antimicrobial activity: (1) Nanoknife killing (2) Insertion and Extraction of membrane surface components (3) Oxidative stress by free radical production. (4) Wrapping/Physical capture of the pathogen.

Nanoknife Action of Sharp-Edged Graphene causes Cell Membrane Disruption

The antimicrobial effects of graphene are critically influenced by Nanoknife action related to graphene's sharp edges, which act as blades or cutters. The Nanoknife mechanism of action results in physical intrusion of the blade-like graphene surface into to the membrane or envelope with the consequences of leakage of the cellular contents including its DNA/RNA and death of the pathogen.

Insertion and Extraction of membrane surface components

Graphene has a large specific surface area and hydrophobicity, which can effectively adsorb phospholipid molecules on the surface of bacteria and viruses by contact or Insertion, thus destroying their membrane structure and causing bacterial and virus death.

Oxidative Stress Killing by Free Radical Production

Free Radical Production is considered a principal contributor to graphene's antimicrobial activity. Graphene can induce pathogens to produce free radicals, such as OH- and O - which lead to progressive membrane and cellular damage and pathogen death

Wrapping/Physical Capture of Pathogen Due to the Thin, Flexible Properties of Graphene

As stated in the introduction, graphene is the thinnest known material composed of a single layer of bonded carbon atoms in a honeycomb structure. This structure gives graphene the property of unique flexibility, enabling it to act as a barrier which wraps and isolates pathogens preventing proliferation. Pathogens need specific chemical and nutritive conditions to survive. When these conditions are interrupted, the pathogens die.

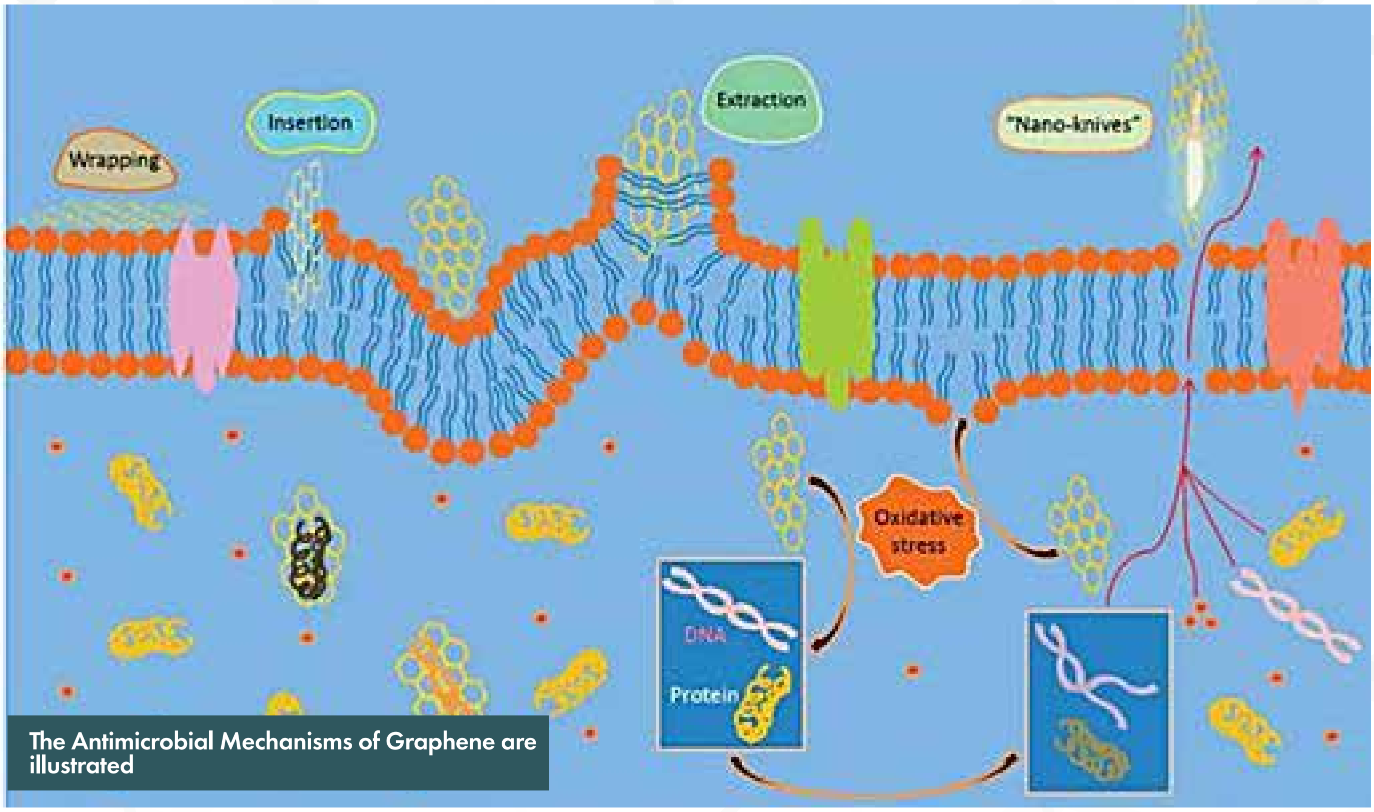
In addition to the above main antimicrobial mechanisms, graphene's charge conduction properties are also important. Graphene conducts bacterial and viral surface charge, destroying the physiological activities and functions of the cell membrane, which causes metabolic disorders and thus promotes death of the pathogen.

Graphene exhibits multiple mechanisms of antimicrobial activity which potentially could allow ppe to not only block viruses but actually kill them

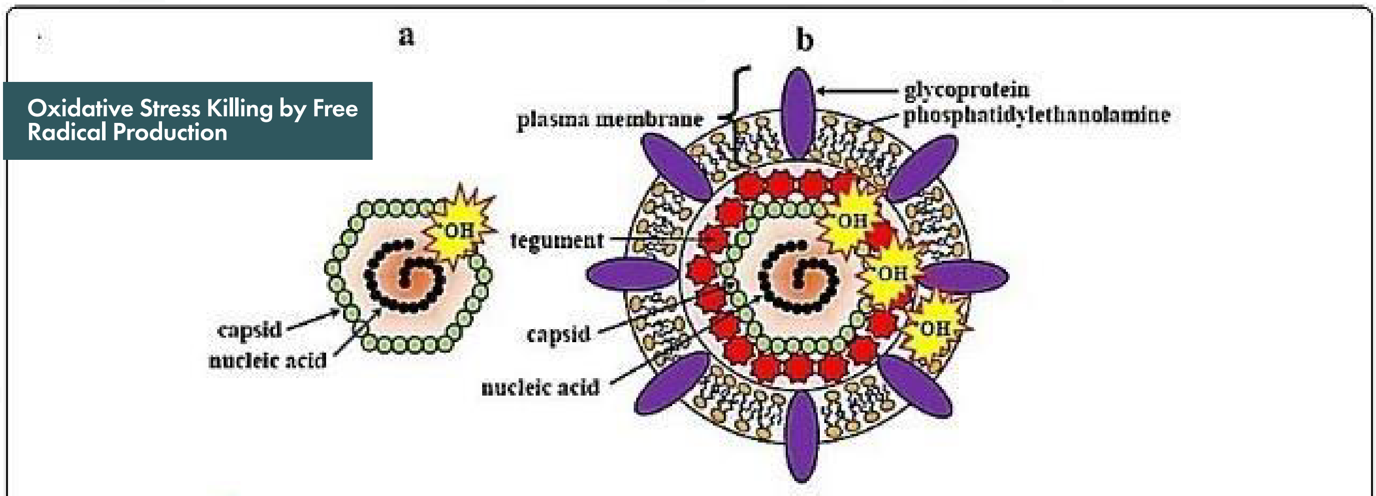
Graphene Self Cleaning and Sterilizing Properties

Graphene is self-cleaning due its superhydrophobic properties which can cause incoming aqueous droplets to bounce off. Another potential benefit is that graphene can be sterilized simply by exposing it to sunlight for 40–100 seconds. This is possible because graphene absorbs more than 95% of light across the solar spectrum from 300–2500 nm, so the graphene quickly increases in temperature, reaching 70°C after 40 seconds of solar illumination and more than 80°C after 100 seconds. That is high enough to inactivate most types of viruses.

This means that a face mask incorporated with graphene can then be reused or (if damaged) safely recycled. In contrast, masks without graphene do not show this photothermal effect, since they absorb sunlight only weakly.



The Antimicrobial Mechanisms of Graphene are illustrated



Oxidative Stress Killing by Free Radical Production

Susceptibility (star symbol) of layers encircling the nucleic acid in non-enveloped (a) and enveloped (b) viruses to damages induced by hydroxyl radicals (OH). Susceptibility of the various layers encircling the viral nucleic acid to oxidative damages is almost identical (plasma membrane ≈ tegument ≈ capsid)

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Testing Reports & Information

FIGURE A: GTTC GB2626-2006 testing report >99% PFE
FIGURE B: GTTC Graphene Melt Blown cloth testing report >99% PFE

To obtain further information or document copies,
please contact: enquiries@nevcare.com.au

Testing Reports & Information

FIGURE C

FIGURE D

FIGURE E

FIGURE F

FIGURE G

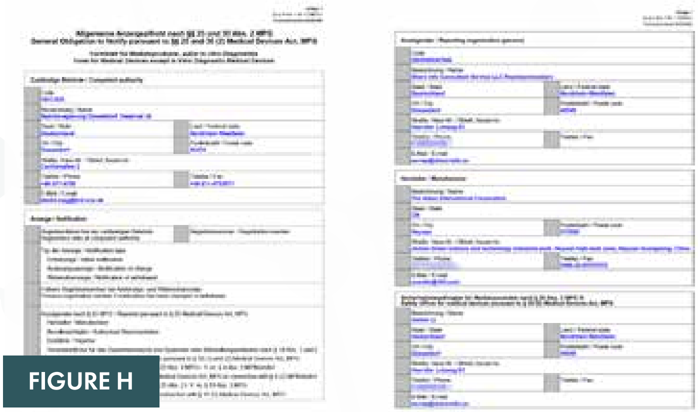

FIGURE H

FIGURE I

FIGURE J

FIGURE C: Certified NOISH mask manufacturer
FIGURE D: TUV qualified 3D face mask manufacture
FIGURE E: FDA
FIGURE F: GMP standard/accrediated mask production rooms
FIGURE G: CE Certificate
FIGURE H: EU registration number
FIGURE I: Chinese Medical Exporter License document
FIGURE J: CFDA, HACCP and ASTM approved
To obtain further information or document copies, please contact listed contact.

PRODUCTION FACILITY

GRAPHENE 3D
FACE MASK N95

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