3M™ Tegaderm™ Ag Mesh Dressing with Silver
Product Profile

Delivering the Power of Silver
3M set out to create a dressing with the proven barrier protection of antimicrobial ionic silver that is versatile, easy-to-use and affordable. We surveyed clinicians and identified the following key performance criteria, which are detailed on the facing page.

**EFFECTIVE    SAFE    EASY-TO-USE    VERSATILE    COST-EFFECTIVE**

Health care professionals around the globe already look to 3M for innovative solutions that reduce the risk of infection, provide better patient outcomes and reduce health care costs. Now they can look to us for a better choice in silver dressings, too.

**3M™ Tegaderm™ Ag Mesh Dressing with Silver.**
## Why use 3M™ Tegaderm™ Ag Mesh Dressing with Silver?

Tegaderm™ Ag Mesh Dressing meets the key performance criteria identified by clinicians:

### Effective*
- Fast-acting antimicrobial load reduction
- Long-term antimicrobial barrier
- Effective against a wide range of microbes, including antibiotic-resistant bacteria (MRSA and VRE)
- Effective against yeast and fungi

### Versatile
- May be used as a primary dressing
- May be used with absorbent wound fillers
- May be used in undermined and tunneled wounds
- Compatible with other 3M advanced wound care products
- Multiple sizes

### Easy-to-Use
- Porous
- Conformable
- Can be cut, folded or fluffed

### Safe
- Non-irritating
- No to minimal skin or wound staining
- Effective up to seven days
- Safe to use with sterile normal saline, sterile water and liquid hydrogels

### Cost-Effective
- Value priced
- Versatility reduces number of silver products needed

*Based on standard *in vitro* microbiological methods.
Ionic silver works three ways to control bacteria

Clinical literature shows silver ions reduce microbial load through multiple mechanisms of action. This literature suggests that the risk of microorganisms becoming resistant to ionic silver is minimized because of silver’s ability to destroy microbes in these ways:¹

1. **3M™ Tegaderm™ Ag Mesh Dressing** releases ionic silver rapidly and over time.*
   Particles of silver sulfate are coated on the surface of cotton fibres in the Tegaderm™ Ag Mesh Dressing. When wound exudate, sterile normal saline, sterile water or liquid hydrogel comes into contact with the dressing, the silver sulfate dissolves, releasing silver ions in the dressing rapidly and over time.

*Based on standard *in vitro* microbiological methods.
**In vitro** efficacy against virulent pathogens

3M™ Tegaderm™ Ag Mesh Dressing contains silver sulfate, one of the most soluble forms of ionic silver. When moistened, antimicrobial silver ions are released in the dressing to begin reducing the number of pathogens within minutes – including many of the most virulent bacteria, such as MRSA and VRE. Tegaderm™ Ag Mesh Dressing continues to provide sustained antimicrobial barrier control over seven days. It inhibits the following strains of microbes:

### Aerobic

<table>
<thead>
<tr>
<th>Acinetobacter sp.</th>
<th>Enterococcus faecalis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeromonas hydrophila</td>
<td>Enterococcus faecium</td>
</tr>
<tr>
<td>Alcaligenes sp.</td>
<td>Enterococcus hirae</td>
</tr>
<tr>
<td>Bacillus cereus</td>
<td>Enterococcus raffinosus</td>
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<td>Bacillus circulans</td>
<td>Escherichia coli</td>
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<tr>
<td>Bacillus licheniformis</td>
<td>Escherichia vulneris</td>
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<tr>
<td>Bacillus pumilus</td>
<td>Klebsiella ornithinolytica</td>
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<tr>
<td>Bacillus subtilis</td>
<td>Klebsiella oxytoca</td>
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<tr>
<td>Burkholderia cepacia</td>
<td>Klebsiella pneumoniae</td>
</tr>
<tr>
<td>Citrobacter amalonaticus</td>
<td>Klebsiella pneumoniae subsp. ozsaeae</td>
</tr>
<tr>
<td>Citrobacter diversus</td>
<td>Listeria monocytogenes</td>
</tr>
<tr>
<td>Citrobacter freundii</td>
<td>Moraxella (Branhamella) catarrhalis</td>
</tr>
<tr>
<td>Citrobacter koseri</td>
<td>Pasteurella aerogenes</td>
</tr>
<tr>
<td>Corynebacterium minutissimum</td>
<td>Proteus mirabilis</td>
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<tr>
<td>Enterobacter aerogenes</td>
<td>Proteus hauseri</td>
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<tr>
<td>Enterobacter agglomerans</td>
<td>Proteus vulgaris</td>
</tr>
<tr>
<td>Enterobacter cloacae</td>
<td>Providencia alcalifaciens</td>
</tr>
<tr>
<td>Enterococcus avium</td>
<td>Providencia rettgeri</td>
</tr>
<tr>
<td>Enterococcus durans</td>
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</tbody>
</table>

### Anaerobic

| Bacteroides fragilis |
| Clostridium clostridioforme |
| Clostridium perfringens |
| Clostridium ramosum |
| Peptostreptococcus anaerobius |
| Tissierella praeacuta |

### Yeast and Fungi

| Aspergillus fumigatus |
| Aspergillus niger |
| Candida albicans |
| Candida glabrata |
| Candida krusei |
| Candida tropicalis |
| Saccharomyces cerevisiae |

### Antibiotic-Resistant (both aerobic and anaerobic)

| Enterococcus faecalis (MDR) |
| Enterococcus faecium (VRE) |
| Staphylococcus aureus (MRSA) |
| Staphylococcus epidermidis (MRSE) |
| Stenotrophomonas maltophilia |
Fast-acting against the most challenging pathogens

Pathogens can multiply rapidly in a wound, so quick microbe reduction is important to wound management. Based on standard laboratory time-kill assays, 3M™ Tegaderm™ Ag Mesh Dressing reduced the number of pathogens – including common, drug-resistant bacteria – rapidly over two hours. In statistical comparisons, the performance of Tegaderm™ Ag Mesh Dressing at 120 minutes was comparable to that of the leading fast-acting silver dressing, and exceeded the performance of several other silver dressings.
**Microbial Load vs Time**

- **Pseudomonas aeruginosa**
- **Methicillin Resistant Staphylococcus epidermidis** (MRSE)
- **Multidrug Resistant Enterococcus faecalis** (MDR)
- **Candida albicans**
Long-term microbial suppression for added effectiveness

Long-term suppression of wound microbes minimizes pathogen regrowth and possible interference with wound healing.\textsuperscript{14} Based on an \textit{in vitro} time-kill assay with longer exposure times, 3M™ Tegaderm™ Ag Mesh Dressing demonstrated extended effectiveness with sustained microbial reduction over 14 days. The performance was comparable to that of a leading long-lasting silver dressing.\textsuperscript{13,14}

![Graphs showing microbial load over time for different bacteria](image-url)
Efficacy in controlling varied wound flora

The following in vitro zone of inhibition studies\(^{15}\) demonstrate the effectiveness of 3M™ Tegaderm™ Ag Mesh Dressing in controlling varying populations of bacteria – both from laboratory samples and from wound exudate isolates of patients with non-healing wounds.

**In vitro assays with pure microbial cultures**

**PATIENT A**
A male patient presented with a 1 cm by 1 cm ulcer on the left great toe that had been present for about two months. There was little drainage; no slough, tunneling or undermining. Predominant microorganisms inhibited were *Staphylococcus aureus*, a Gram-negative rod and a Gram-positive cocci.

**PATIENT B**
A 52-year-old male presented with a 2.5 cm by 5 cm pressure ulcer on the left heel that had been present for about two months. There was a moderate amount of purulent drainage, odour, erythema and slough, but no tunneling or undermining. Predominant microorganisms inhibited were two different Gram-negative rods, a Gram-positive cocci, *Stenotrophomonas maltophilia*, *Staphylococcus cohnii*, *Escherichia coli*, *Baccillus pumilus* and *Staphylococcus aureus*.

**Conclusion**
*In vitro* studies show Tegaderm™ Ag Mesh Dressing has the ability to inhibit growth of bacteria from patients’ wounds.
The safety you demand and expect from 3M

Meets ISO standards

3M™ Tegaderm™ Ag Mesh Dressing meets ISO 10993 standards for the following:
- 10993-3: Tests for Genotoxicity, Carcinogenicity and Reproductive Toxicity
- 10993-5: Tests for Cytotoxicity – In Vitro Methods
- 10993-10: Tests for Irritation and Sensitization
- 10993-11: Tests for Systemic Toxicity

A safe and effective form of silver

With Tegaderm™ Ag Mesh Dressing, the surfaces of cotton fibres are coated with silver sulfate, one of the most soluble forms of ionic silver. When the dressing is moistened, safe and effective levels of ionic silver are quickly released, forming an effective barrier to reduce pathogens. Sulfate molecules naturally occur in tissue components. Application of this dressing is not expected to significantly increase the existing level of sulfates in a wound. There is no information to suggest that sulfite and sulfonamide (sulfa) allergic reactions are caused by sulfate molecules.

Safe to use with sterile normal saline

Sterile normal saline may be used to moisten Tegaderm™ Ag Mesh Dressing, because it does not cause a significant change in pH. When some silver dressings come in contact with saline, the pH of the saline shifts into a caustic alkaline range that may be damaging to healing cells and has been associated with chronic non-healing wounds.

Non-staining to skin

While skin staining is not clinically harmful in and of itself, discolouration may lead to inaccurate assessments. Some silver dressings result in substantial discolouration. Using conventional test methodology, Tegaderm™ Ag Mesh Dressing resulted in significantly less skin discolouration.
Versatile and easy for clinicians to use

Useful for many wound types
3M™ Tegaderm™ Ag Mesh Dressing is soft, non-woven and conformable. It may be used as a primary dressing over superficial wounds or packed into wound cavities, tunnels or undermined areas. It also can be used with absorbent wound fillers. The mesh dressing is easy to cut, allowing it to be customized to each wound bed.

Indications
Tegaderm™ Ag Mesh Dressing is indicated for use as a primary dressing on a variety of wounds, including:
- Ulcers (pressure, venous, arterial and neuropathic [diabetic])
- Open surgical wounds
- Trauma wounds
- Superficial partial thickness burns (second degree)
- Abrasions
Patient case study: Visible wound improvement

A 62-year-old female presented with a 27-month history of a lower extremity wound resulting from a traumatic laceration with subsequent cellulitis. Medical history was significant for obesity and Systemic Lupus Erythematosus with long-term immunosuppressive therapy (corticosteroids and methotrexate). The patient also had a past history of total knee arthroplasty and there was concern for infection of the implant.

A variety of topical modalities had been attempted, including an antimicrobial enzymatic debriding agent and non-contact normothermic therapy. Insurance issues necessitated several changes of health care providers, leading to interruptions in wound care. While the wound bed was viable and wound edges open, the size had been unchanged for seven months and there was an absence of healthy granulation tissue. Microbial imbalance was suspected as a factor in the wound’s failure to progress.

3M™ Tegaderm™ Ag Mesh Dressing was applied with an expectation of controlling bioburden. The dressing was easy to apply and versatile, allowing use with other dressing materials such as a compression wrap. It was well tolerated by the patient without irritation, discomfort or evidence of staining. 3M™ Tegaderm™ Hydrogel Wound Filler was used to moisten the dressing and maintain a moist wound bed. Complete healing occurred over six weeks with the Tegaderm™ Ag Mesh Dressing helping to create an environment that promoted healing in a recalcitrant wound.

At admission 10/29/04

Tegaderm™ Ag Mesh Dressing applied to wound

At 7 days

Significant improvement noted.

Wound is smaller, granulation tissue evident.

At 6 weeks
Compatible with many 3M products

3M™ Tegaderm™ Ag Mesh Dressing can be safely used with the following skin and wound care products:

- 3M™ Tegaderm™ Absorbent Clear Acrylic Dressing
- 3M™ Tegaderm™ High Integrity Alginate Dressing
- 3M™ Tegaderm™ High Gelling Alginate Dressing
- 3M™ Tegaderm™ Hydrogel Wound Filler
- 3M™ Tegaderm™ +Pad Film Dressing with Non-Adherent Pad
- 3M™ Tegaderm™ Foam Dressing (nonadhesive)
- 3M™ Tegaderm™ High Performance Foam Adhesive Dressing
- 3M™ Coban™ Self-Adherent Wrap
- 3M™ Coban™ 2 Layer Compression System
- 3M™ Coban™ 2 Layer Lite Compression System
- 3M™ Cavilon™ No Sting Barrier Film
References


10. Data on file at 3M.


12. Data on file at 3M.

13. Data on file at 3M.


15. Data on file at 3M.


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24. Data on file at 3M.
Delivering the Power of Silver
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For more information, contact your 3M Skin & Wound Care Representative or call the 3M Health Care Customer Helpline at 1 800 364-3577. These products can be ordered from your local distributor.