3M™ Tegaderm™ Transparent Film Dressings
Product Profile

Secure. Protect. Stabilize.
Background

Numerous scientific investigations conducted since the 1970s have examined the role of dressings for I.V. site and wound care. This research demonstrated the importance of the dressing for I.V. protection and enhanced wound healing, and stimulated the search for dressing materials with properties similar to healthy, intact skin.

Semi-permeable transparent film dressings were designed to provide this improved environment. They prevent the passage of liquids, bacteria and viruses to the I.V. site or wound, while allowing moisture vapor and gas exchange through the dressing. These properties, together with transparency and conformability, make transparent film dressings an excellent complement to I.V. catheter care and wound management protocols. 3M™ Tegaderm™ Transparent Film Dressing is the preferred transparent dressing worldwide.

Indications for Use

Tegaderm™ transparent dressings can be used to cover and protect catheter sites and wounds, to maintain a moist environment for wound healing, as a secondary dressing, as a protective cover over at-risk skin, to secure devices to the skin and as a protective eye covering. They can also be used to provide a moist wound environment to facilitate autolytic debridement. Common applications include a variety of I.V. catheters and other percutaneous devices, such as:

- Peripheral and midline catheters
- Subclavian and jugular catheters
- PICC lines (peripherally inserted central catheters)
- Pulmonary artery catheters
- Tunneled catheters and implanted ports
- Epidural catheters
- Dialysis catheters
- Subcutaneous insulin catheters
- Umbilical catheters

Applications for wound management and site protection include:

- Clean, closed surgical incisions
- Skin graft donor sites
- Stage I or II pressure ulcers
- Superficial wounds such as abrasions, skin tears and blisters
- First- and second-degree burns
- Protective cover to prevent skin breakdown
- Secondary dressing over gauze, alginates or hydrogels
- Protective eye covering

While both 3M™ Tegaderm™ and Tegaderm™ HP Transparent Film Dressings are appropriate for any of these applications, Tegaderm™ HP Film has a different adhesive that provides greater holding power in moist conditions, such as:

- Diaphoretic patients
- Conditions of high humidity
- Lightly draining wounds
- Sacral wound and skin protection

* In vitro testing shows that the transparent film of 3M™ Tegaderm™ brand dressings provide a viral barrier for viruses 27 nm in diameter or larger while the dressing remains intact without leakage.
Physical Properties/Definitions

Semi-Occlusive (Semi-Permeable)

Tegaderm™ and Tegaderm™ HP Transparent Film Dressings are made of semi-permeable films. They can be thought of as selective filters—they are occlusive to liquids, bacteria, and viruses; yet water vapor, oxygen, and carbon dioxide can easily be exchanged.

Tegaderm™ and Tegaderm™ HP Film dressings are breathable. The breathability of a material is generally described in terms of oxygen and moisture vapor transmission rates (MVTR). Both rates are determined by the amount of gas that travels through the dressing in a given period of time, under specific conditions of temperature and humidity.

MVTR (Moisture Vapor Transmission Rate)

Moisture vapor transmission rate (MVTR) is the measurement of water vapor diffusion through a material.

Two laboratory test methods are commonly used to measure MVTR. The results of these two tests are often used to compare transparent dressings for I.V. use. However, they do not represent real life conditions, and numerous variables can impact the results. This raises the question of whether laboratory test data for MVTR can accurately predict dressing performance in clinical practice.

The inverted beaker test produces higher numbers with greater variability. These variances are seen within samples of the same dressing, as well as among different products. This inconsistency occurs because the films can stretch and swell due to the water pressure against the test dressing, increasing the surface area measured.

The MVTR values produced by the upright method are lower and more consistent among different products, and within samples of the same dressing. Because the liquid does not come in contact with the film in this test method, stretch and swell are not factors in the results.

Aside from the test method chosen, many other variables can dramatically affect moisture vapor transmission rates.

- Volume of liquid in the test beaker (generally 10–50 ml)
- Type of liquid medium (water, saline)
- Concentration of substances in the liquid (salt, proteins)
- Environmental conditions (temperature, humidity)

MVTR bench tests are generally performed under tightly controlled temperatures and low relative humidity. In clinical settings, where temperatures and humidity vary considerably from typical test conditions, MVTR numbers will be much different than those produced in the laboratory. For example, under conditions of high humidity, moisture vapor transmission will proceed at a much slower rate.

A third, less common method, uses computerized evaporimetry to measure moisture handling properties of transparent dressings. This instrument records actual evaporation through the film on skin, and moisture build-up underneath the dressing. When moisture vapor transmission is measured with this device, dressings with significant differences in bench MVTRs show no significant difference in actual moisture accumulation on the skin.  

Research studies have been conducted to investigate the effect of MVTR on clinical outcomes for I.V. therapy. The results of these trials do not demonstrate a correlation between higher MVTR and lower incidence of complications, including catheter-related bacteremia.

For example, in a large, prospective, randomized, clinical trial conducted by Dennis G. Maki, M.D. on Swan-Ganz catheters, there was no evidence to document a beneficial effect of a “higher MVTR” dressing (OpSite™ IV3000), compared with a standard film dressing (Tegaderm™ dressing). The data showed no statistical difference in clinical outcomes (skin colonization, catheter tip colonization or the incidence of catheter-related blood stream infection) between Tegaderm™ dressings and OpSite IV3000 dressings.  

To date, there is no specific clinical evidence to suggest the optimal moisture vapor transmission rate. More important than MVTR in preventing I.V. infections are proper site preparation, sterile insertion technique, and strict adherence to protocols for I.V. line maintenance.

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General Application Hints

1. Select a dressing size that will adequately cover the catheter and insertion site or wound. Ensure at least a one inch margin of dressing adheres to healthy, dry skin.

2. Prepare the catheter insertion site or wound according to your institution's approved protocol.

3. To ensure good adhesion, clip excess hair where the dressing will be placed. Do not shave the skin because of the potential for microabrasions.

4. Make sure skin is free of soaps, detergents, and lotions. Allow all preps and protectants to dry thoroughly before applying the dressing. Wet preps and soap residues can cause irritation if trapped under the dressing. Additionally, adhesive products do not adhere well to wet or oily surfaces.

5. Do not stretch the Tegaderm™ dressing during application. Applying an adhesive product with tension can produce mechanical trauma to the skin. Stretching can also cause adhesion failure.

6. The adhesive of Tegaderm™ dressing is pressure-sensitive. To ensure best adhesion, always apply firm pressure to the dressing from the center out to the edges.

7. To tailor a dressing for a special application, use sterile scissors to cut the dressing into desired shapes or sizes before removing the printed liner. For best results and ease of application, cut the pieces so that a portion of the frame remains on at least two sides.

Removal Hints

Support the skin when removing Tegaderm™ dressing. For removal from I.V. sites, also stabilize the catheter to prevent dislodgment. Use one of the following removal techniques based on your patient’s skin condition and your own personal preference:

- Gently grasp one edge and slowly peel the dressing from the skin in the direction of hair growth. Try to peel the dressing back over itself, rather than pulling it up from the skin.

  or

- Grasp one edge of the dressing and gently pull it straight out to stretch and release adhesion.

  or

- Apply an adhesive remover suitable for use on skin to the adhesive edge while gently peeling from the skin.

To aid in lifting a dressing edge, secure a piece of surgical tape to one corner and rub firmly. Use the tape as a tab to help you slowly peel back the dressing.

I.V. Dressing Tips

- For added catheter stability, a small strip of non-stretchy tape can be placed over the hub without obscuring the site. If placed under the dressing, use sterile tape.

- For subclavian and jugular sites, apply the dressing with the patient’s head turned away and neck extended as expected in normal movement. This helps prevent contamination of the site from respiratory secretions and stress on the dressing when the patient moves.

- When preparing a site, always clip excess hair including the beard area to ensure good dressing adhesion. Watch for regrowth, which can lift the dressing off the skin.

- For multilumen, pulmonary artery and dialysis catheters, select bordered/notched dressings. These dressings are designed to prevent dressing lift caused by the weight of the catheter or manipulation of the lumens.
Wound Dressing Tips

- Protection of periwound skin from maceration by exudate is important. A skin protection or barrier film product (such as 3M™ Cavilon™ No Sting Barrier Film) can decrease the risk of skin maceration, and protect fragile skin. If using a liquid product, allow it to dry completely before dressing application.

- In situations where exudate may compromise dressing adhesion, the use of 3M™ Tegaderm™ HP Transparent Film Dressing may provide longer wear times due to the special adhesive.

- It is normal for exudate to accumulate in many types of wounds, and is more visible with transparent dressings.

- When applying the dressing to the coccyx, extend but do not stretch the skin away from the gluteal fold. Secure the dressing into the gluteal fold first and then smooth outward.

General Risk Reduction Notes

- Transparent dressings allow easy site assessment. Inspect the site frequently for early signs of complications.

- Change the dressing according to your institution’s protocol, or when it becomes compromised. Edge lift is not necessarily failure, unless there is a channel from the edge of the dressing to the I.V. entry site or wound.

- For maximum barrier protection, Tegaderm™ dressing must maintain good adhesion around the periphery of the I.V. site or wound, and be free of punctures or tears.

Risk Reduction Notes for I.V. Therapy

- Before insertion of the catheter and at each dressing change, thoroughly prep the skin with an approved antiseptic solution. Pay careful attention to skin disinfection around and under the catheter.

- Carefully disinfect ports before access.

- Protect against skin irritation. (3M™ Cavilon™ No Sting Barrier Film can be used to help prevent skin irritation.) Compromised skin near the catheter entry site increases the risk of complications.

- Use maximum barrier precautions for central I.V. insertion and sterile technique for site care. Use aseptic technique for peripheral I.V. insertion and dressing application.

- No dressing can substitute for your professional site care.

Precautions:

1. Hemostasis of the catheter site or wound should be achieved before applying the dressing.

2. Do not stretch the dressing during application. Mechanical skin trauma may result if the dressing is applied with tension.

3. Tegaderm™ transparent dressings should not be re-sterilized by gamma, E-beam or steam methods.

4. Antimicrobial ointments containing polyethylene glycols may compromise the strength of Tegaderm™ HP Transparent Film Dressing.

References

Background


Wound Care


I.V. Sites


