



Technical Data Sheet

3M™ Extreme Sealing Tape 4412N



[Product Details](#)

Product Description

3M™ Extreme Sealing Tape is a family of single-coated, pressure sensitive adhesive tapes designed for difficult sealing applications. The backing on this tape is an ionomer film that is very tough yet flexible and abrasion-resistant. The very soft and thick acrylic adhesive has excellent sealing properties and good outdoor durability. This single-coated tape is designed to seal over an existing joint, seam, or penetration. The adhesive is designed to adhere well to the ionomer film so that overlapping tape joints can be made while maintaining a strong seal.

Product Features

- Translucent, 0.080 in (2.0 mm) thick tape is designed for difficult sealing applications
- Sticks on contact to many metals, plastics and other hard-to-stick-to surfaces
- Provides immediate seal with no wait time or oozing associated with liquid sealants
- Tough, yet flexible clear ionomer backing is abrasion resistant and instantly paintable

Technical Information Note

The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Typical Physical Properties

| Attribute Name | Test Method | Value |
|----------------|-------------|---|
| Color | | Translucent |
| Adhesive Type | | Multi-Purpose Acrylic |
| Foam Type | | Very Conformable Acrylic Foam |
| Density | ASTM D3574 | 820 kg/m ³ (51 lb/ft ³) ¹ |
| Backing | | Ionomer |

¹ Foam with adhesive

| Attribute Name | Test Method | Value |
|----------------------------|-------------|----------------------------|
| Total Tape Thickness | ASTM D3652 | 2 mm (80 mil) (0.08 in) |
| Adhesive Thickness | | 1.9 mm (76 mil) |
| Total Thickness with liner | | 2.05 mm (82 mil) |
| Backing Thickness | ASTM D3652 | 0.1 mm (4 mil) |
| Liner | | polyester film |
| Liner Thickness | | 0.05 mm (2 mil) (0.002 in) |
| Primary Liner Color | | matte, translucent |

Temperature: 38 °C

Environmental Condition: 100%RH

| Attribute Name | Test Method | Value |
|--------------------------|-------------|-----------------------------|
| Water Vapor Transmission | ASTM F1249 | 10.6 g/m ² /24 h |

| Attribute Name | Value |
|---------------------|-------|
| Thickness Tolerance | ±10 % |

Typical Performance Characteristics

Temperature: 22 °C (72 °F)

Dwell Time: 72 h

| Attribute Name | Test Method | Substrate | Backing | Value |
|-------------------|-------------|-----------------|---------------------|---|
| 90° Peel Adhesion | ASTM D3330 | Stainless Steel | 5 mil Aluminum Foil | 32 N/cm (18 lb/in) ¹ |
| Normal Tensile | ASTM D897 | Aluminum | | 480 kPa (70 lb/in ²) ² |

¹ 12 in/min (300 mm/min)

² 1 in.² (6.45 cm²), Jaw Speed 2 in./min. (50 mm/min.)

| Attribute Name | Value |
|-----------------------------------|------------------------------|
| Minimum Application Temperature | 10 °C (50 °F) |
| Short Term Temperature Resistance | 149 °C (300 °F) ¹ |
| Long Term Temperature Resistance | 93 °C (200 °F) ² |

¹ No change in room temperature dynamic shear properties following 4 hour conditioning at indicated temperature with 100 g/static load. (Represents minutes, hour in a process type temperature exposure).

² Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).

Test Method: ASTM D3759

| Attribute Name | Value |
|---------------------|--------------------|
| Elongation at Break | 400 % |
| Tensile Strength | 23 N/cm (13 lb/in) |

Handling/Application Information

Application Techniques

Preparing the Surface:

The first step in making a successful seal is to prepare the surface for bonding. At a minimum, this means making sure the bonding surface is clean of all contaminants. For most surfaces, cleaning with a 50:50 mixture of isopropyl alcohol* (IPA) and water works well. If the substrate is contaminated with heavy oils or grease, a degreaser or strong solvent may be used to remove the oil, but a final wipe of IPA/water should be used. For many substrates, a simple cleaning will allow 3M™ Extreme Sealing Tape to bond. However, adhesion promoters can be used to increase both initial and final bond strength.

The following three primers are commonly used with 3M™ Extreme Sealing Tapes:

- Metals and Paints - 3M™ Adhesion Promoter 111 (AP111) increases adhesion on most metals and many hard coatings and paints.
- Plastics and Rubbers - 3M™ Primer 94 increases adhesion on many plastics and rubbers.
- Glass - 3M™ Silane Glass Treatment AP115 (AP115) provides bond stability on uncoated glass.

See technical data sheets for adhesion promoter and primer application instructions.

Application Temperature:

Ideal application temperature range is 70°F to 100°F (21°C to 38°C). Pressure sensitive adhesives use viscous flow to achieve substrate contact area. The tape generally reaches full bond strength after 24 hours but provides a seal immediately. Minimum suggested application temperature for the 3M™ Extreme Sealing Tapes is 50°F (10°C). Once properly applied, low temperature holding is generally satisfactory.

Select the Proper Tape Width:

In order to provide a seal, the tape must cover all points of water intrusion. To do this robustly, the tape should be wide enough to cover the intrusion points and provide for some variation in workmanship. Choosing a tape width that allows the tape to extend at least 2 cm (3/4 in) beyond the sealing points can help to accomplish this.

Applying 3M™ Extreme Sealing Tape:

3M™ Extreme Sealing Tape has a release liner on the backing side of the tape. To avoid overstretching, this liner is usually left on while laying down the tape.

Application Steps

- Lay tape down so that it covers all areas meant to be sealed.
- Remove release liner (file cleaning brush can help)
- Roll down tape with a soft roller (such as a medium nap paint roller). If there is a step, roll down top and bottom separately.

Creating an Overlap Joint:

It is often required to overlap 3M™ Extreme Sealing Tape onto itself. In this case, the ionomer backing of the first piece

is one of the substrates to which the second piece of tape is bonding. The tapes should overlap at least 2 cm (3/4 in).

- **Surface Preparation** - The ionomer does not need to be cleaned prior to bonding unless it has been contaminated with oil, dirt, grease, etc. If the bonding area of the ionomer has been contaminated, IPA/water can be used to clean the surface. A quick wipe of AP111 on the ionomer is suggested for best performance of the overlapping tape. AP111 will approximately double Extreme Sealing Tape's adhesion to its own ionomer backing.
- **Pressure** - Firm pressure should be applied to all points of overlap between the two tapes to join the adhesives and create a robust seal.
- **Additional Sealing** - To increase sealing robustness, a small dab of liquid sealant 3M™ 4000UV is suggested at the points of overlapping tape. This step maximizes process robustness by decreasing the chance that an improperly pressurized overlap might leave a gap. Do not apply 3M™ Extreme Sealing Tape over the top of uncured liquid sealants. If using over a liquid sealant, check with sealant's manufacturer to determine when sealant is 100% cured. Certain chemicals produced by the curing process of some liquid sealants may cause detrimental effects to the long term stability of the bond.

Storage and Shelf Life

Store in original cartons at 4-38°C (40-100°F) and 0-95% relative humidity. Optimum storage conditions are 22°C (72°F) and 50% relative humidity. When stored under proper conditions, product retains its performance and properties for 24 months from date of manufacture.

Available Sizes

| Attribute Name | Value |
|---------------------------|---------------------|
| Core Size (ID) | 76.2 mm (3 in) |
| Maximum Available Width | 100 mm (4 in) |
| Minimum Available Width | 19 mm (0.75 in) |
| Normal Slitting Tolerance | ±0.79 mm (±1/32 in) |
| Standard Roll Length | 16.5 m (18 yd) |

Information

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Selection and Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: 3M warrants for 24 months from the date of 3M manufacture that 3M™ VHB™ Tape will be free of defects in material and manufacture. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. This warranty does not cover damage resulting from the use or inability to use 3M™ VHB™ Tape due to misuse, workmanship in application, or application or storage not in accordance with 3M recommended procedures (except to the extent 3M approves and issues a specific application warranty, for which the customer must apply, receive 3M approval, and meet all applicable warranty and process requirements, the additional details, terms, and conditions of which are available from 3M). If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Disclaimer: 3M industrial and occupational products are intended, labeled, and packaged for sale to trained industrial and occupational customers for workplace use. Unless specifically stated otherwise on the applicable product packaging or literature, these products are not intended, labeled, or packaged for sale to or use by consumers (e.g., for home, personal, primary or secondary school, recreational/sporting, or other uses not described in the applicable product packaging or literature), and must be selected and used in compliance with applicable health and safety regulations and standards (e.g., U.S. OSHA, ANSI), as well as all product literature, user instructions, warnings, and limitations, and the user must take any action required under any recall, field action or other product use notice. Misuse of 3M industrial and occupational products may result in injury, sickness, or death. For help with product selection and use, consult your on-site safety professional, industrial hygienist, or other subject matter expert. For additional product information, visit www.3M.com.

ISO Statement

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

3M™ Industrial Adhesives and Tapes Division
3M Center, St. Paul, MN 55144-1000
3M.com/iatd

3M and VHB are trademarks of 3M Company.
©3M 2024 (6/24)