English-EU

Last Revision Date: September, 2024

Supersedes: June, 2024

Technical Data Sheet

3M™ Extreme Sealing Tape 4412G

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

- Gray, 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		Gray
Adhesive Type		Multi-Purpose Acrylic
Foam Type		Very Conformable Acrylic Foam
Density	ASTM D3574	820 kg/m³ [1]
Backing		Ionomer

[1] Foam with adhesive

Attribute Name	Test Method	Value
Total Tape Thickness	ASTM D3652	2 mm
Adhesive Thickness		1.9 mm
Total Thickness with liner		2.05 mm
Backing Thickness	ASTM D3652	0.1 mm
Liner		polyester film
Liner Thickness		0.05 mm
Primary Liner Color		matte, translucent

Attribute Name	Value
Thickness Tolerance	±10 %

Typical Performance Characteristics

Temperature: 23 °C
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 [1]
Normal Tensile	ASTM D897	Aluminum		480 kPa [2]

[1] 304 mm/min (12 in/min)

[2] 6.45 cm² (1 in²), Jaw Speed 51 mm/min (2 in/min)

Attribute Name	Value
Minimum Application Temperature	10 °C
Short Term Temperature Resistance	149 °C [1]
Long Term Temperature Resistance	93 °C [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 78g/cm² (500 g/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

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
Maximum Available Width	100 mm
Minimum Available Width	19 mm
Normal Slitting Tolerance	±0.79 mm
Standard Roll Length	16.5 m

Product Family

This product is a part of the the Extreme Sealing Tape Family which includes: 3M™ Extreme Sealing Tape 4411B, 3M™ Extreme Sealing Tape 4411N, 3M™ Extreme Sealing Tape 4412B, 3M™ Extreme Sealing Tape 4412N

Information

Intended Use: 3M™ VHB™ Tape products are intended for use in general industrial bonding applications when used in accordance with the guidance provided by 3M in this Technical Data Sheet and other product instructions. Since there are many factors that can affect a product's use, the customer remains responsible for determining whether the 3M product is suitable and appropriate for the customer's specific application and system, including customer conducting an appropriate risk assessment and evaluating the 3M product in customer's application and system. Restricted Use: 3M advises against the use of this 3M product in any application other than the stated intended use(s), since other applications have not been evaluated by 3M and may result in an unsafe or unintended condition. Important Information: All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application. All questions of liability relating to this product are governed by the terms of the sale subject, where applicable, to the prevailing law. Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications. This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a result of our recommendations.

ISO Statement

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

3M™ Centre
Cain Rd, Binfield, Bracknell RG12 8HT, United Kingdom
3m.co.uk/iatd