English
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Technical Data Sheet

3M™ Extreme Sealing Tape 4412N

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

Property	Values	Additional Information
Backing	Ionomer	
Adhesive Type	Multi-Purpose Acrylic	
Foam Type	Very Conformable Acrylic Foam	
Color	Translucent	
Liner Color	matte, translucent	View
Test Name: Primary		
Liner	polyester film	
Liner Thickness	0.05 mm	

Backing Thickness (mm)	0.1 mm	View
Test Method: ASTM D3652		
Total Tape Thickness (mil)	80 mil	View
Test Method: ASTM D3652		
Total Tape Thickness (mm)	2 mm	View
Test Method: ASTM D3652		
Adhesive Thickness	76 mil	
Adhesive Thickness	1.9 mm	
Total Tape Thickness	0.08 in	View
Test Method: ASTM D3652		
Total Thickness with liner	82 mil	
Total Thickness with liner	2.05 mm	
Backing Thickness	4 mil	View
Test Method: ASTM D3652		
Liner Thickness	2 mil	
Liner Thickness	0.002 in	
Thickness Tolerance	±10 %	
Density	820 kg/m³	View
Test Method: ASTM D3574 Notes: Foam with adhesive		
Density	51 lb/ft³	

Typical Performance Characteristics

Property	Values	Additional Information
90° Peel Adhesion	18 lb/in	View

Test Method: ASTM D3330

Dwell/Cure Time: 24.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 72F
Environmental Condition: 50%RH
Substrate: Stainless Steel
Backing: 5 mil Aluminum Foil

Notes: 12 in/min (300 mm/min)

90° Peel Adhesion	32 N/cm	View

Test Method: ASTM D3330

Dwell/Cure Time: 72.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 72F
Environmental Condition: 50%RH
Backing: 2 mil Aluminum Foil

Notes: 12 in/min (300 mm/min)

Normal Tensile	480 kPa	View

Test Method: ASTM D897

Dwell/Cure Time: 72.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Substrate: Aluminum

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

Normal Tensile	70 lb/in²	View

Test Method: ASTM D897

Dwell/Cure Time: 72.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 73F
Substrate: Aluminum

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

Tensile Strength (lb/in)	13 lb/in	View

Test Method: ASTM D3759

Tensile Strength	23 N/cm	View

Test Method: ASTM D3759

Notes: Machine Direction

Elongation at Break (%)	400 %	View

Test Method: ASTM D3759

Short Term Temperature Resistance	149 °C	View
Notes: 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).		
Short Term Temperature Resistance	300 °F	View
Notes: 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).		
Long Term Temp C	93 °C	View
Notes: 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).		
Long Term Temp F	200 °F	View
Notes: 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).		
Minimum Application Temperature	10 °C	
Minimum Application Temperature	50 °F	

Available Sizes

Property	Values	Additional Information
Standard Roll Length	16.5 m	
Standard Roll Length	18 yd	
Minimum Available Width	19 mm	
Minimum Available Width	0.75 in	
Maximum Available Width	100 mm	
Maximum Available Width	4 in	

Normal Slitting Tolerance	±0.79 mm
Normal Slitting Tolerance	±1/32 in
Core Size (ID)	76.2 mm
Core Size (ID)	3 in

Additional Performance Characteristics

10.6

Storage and Shelf Life

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

Bottom Matter

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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.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40068325/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=4412N

ISO Statement

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