

The advertisement features a collage of technical outdoor clothing. At the top, a man in an orange jacket stands on the left, and a man in a green jacket with a white beanie holds a snowboard in the center. To the right, two men in blue and red jackets stand together. Below them, a man in a red jacket is shown in a dynamic pose, balancing on a snowboard. At the bottom right, a man in a dark brown jacket looks upwards. The background is light blue with faint line drawings of various clothing items like shirts, jackets, and pants. The Sewfree logo is in the top left, and the Bemis logo is at the bottom center.

Sewfree®

Adhesive Film & Tape

Eliminate stitching and guarantee the waterproof integrity of your technical outerwear garments and gear by using **Sewfree®** adhesive films and tape from Bemis. **Sewfree®** seams are sleeker and lighter than sewn seams, resulting in a less abrasive garment.

Whether you need to improve performance or want to enhance the aesthetics of your products, **Sewfree®** films are an important component in the welding, bonding, sealing, or laminating process. Our adhesives have been specifically designed to meet the most stringent applications in sportswear. Significant testing, fabric analysis and an understanding of our customers' needs have resulted in a comprehensive offering.

Welded, bonded, or laminated construction are all innovative and viable methods for manufacturing technical outerwear. The latest advancements in machinery and the increased sophistication of textiles make this technology a challenging science. We've created several formulas and forms of these specialty adhesives to give both designers and manufacturers the flexibility they need to make exciting and cost-effective bonded products. All of our films feature excellent washability and have good dry clean resistance.

From the general purpose film adhesives supplied on release paper substrates in wide-width rolls, to engineered tapes, there is a **Sewfree®** formula that will give you the results you need. There are a multitude of features and benefits realized from using film adhesives that can't be achieved with cut and sew methods.

FEATURE

- Low profile film
- 100% thermoplastic, solvent-free
- Continuous film, not spray or powder
- Advanced adhesive chemistry
- Low temperature activation
- Soft hand characteristics
- Transparent film, not thread

BENEFIT

- Less abrasion, less bulk
- Eco-friendly
- Secure bond across entire surface area
- Both mechanical & chemical bonding that lasts
- Wider window of seal-ability, faster processing
- Mimics the stretch & recovery of selected fabric
- No color matching, reduces inventory complexity

 **BEMIS**

SEWFREE® ADHESIVE FILMS

	3218	3405
Description	An elastomeric adhesive with a low activation temperature ideal for either continuous bonding operations or when using heat sensitive fabrics. 3218 is proven in applications that utilize DWR coated fabrics as well. 3218 has a low flow rate and stiff hand making it easier for handling and positioning. It is typically used on non-stretch, stiffer fabrics. 3218 can be used on materials including heat sensitive fabrics and vinyl films and coatings.	An elastomeric adhesive with excellent bond strength. It is designed to be used in applications where soft hand and high bond strength are required. 3405 features a low modulus and high recovery, ideal when elasticity is required. This product requires more heat to activate than 3206D and 3415. 3405 bonds to a wide variety of fabrics including DWR coated fabrics.
Composition	Ester Polyurethane	Ester Polyurethane
Color	Hazy, Translucent	Transparent
Weight (per 25 µm)	29 gm/m ²	31 gm/m ²
Nominal Thickness	50 µm 75 µm 125 µm	75 µm 150 µm
Release Liner	Release Paper	Release Paper
Width¹	1524 mm (60")	1473 mm (58")
Modulus @ 40%²	50 µm - 11.6 N (2.61lbs) 75 µm - 17.4 N (3.9 lbs) 125 µm - 23.3 N (5.2 lbs)	75 µm - 6.2 N (1.4 lbs) 150 µm - 11.2 N (2.5 lbs)
Modulus @ 100%³	50 µm - 10.7 N (2.41lbs) 75 µm - 16.1 N (3.6 lbs) 125 µm - 24.5 N (5.5 lbs)	75 µm - 8.9 N (2.0 lbs) 150 µm - 13.4 N (3.0 lbs)
Recovery⁴	50 µm - 73% 75 µm - 71% 125 µm - 67%	75 µm - 97% 150 µm - 97%
Softening Point⁵	92 °C	120°C
Melt Flow Index⁶ (175 °C/2.16 Kg Load)	15 dg/min	25 dg/min
Hand	Stiff	Soft
Wash	Excellent up to 40°C	Excellent up to 60°C
Glue Line Temperature⁷	120°C - 130°C	150°C - 170°C
Recommended Flat Press Bonding Conditions⁸		
Temperature Setting:	120°C - 130°C	150°C - 170°C
Dwell Time:	20 - 30 seconds	20 - 30 seconds
Pressure:	2.8 - 4.2 Bar (40-60 psi)	2.8 - 4.2 Bar (40-60 psi)

¹ Product can be slit to requested widths, no less than 4mm (.16")

² Force required to pull a 25.4 mm (50 µm) wide sample to 40% of original length

³ Force required to pull a 25.4 mm (50 µm) wide sample to 100% of original length

⁴ The % of its shape retained after being stretched to 100% of its original length, at a rate of 304 mm per minute and allowed to retract freely for 1 minute.

⁵ Measured by TMA

⁶ ASTM D1238

⁷ Glue Line temperature is the actual temperature range to which the adhesive should be exposed. The optimum glue line temperature depends on the application.

⁸ Recommended bonding conditions will vary between different machinery & fabrics. The conditions stated are a starting point only. Optimal bonding conditions will vary. Several formulas are ideal for continuous bonding, contact Bemis for the recommended conditions for continuous bonding.

3415	3206D	4220
A soft elastomeric adhesive designed to be used in applications where heat sensitive fabrics, low activation temperatures and high elasticity is required. Fabrics that are bonded using 3425 retain most of their elasticity. It has excellent bond strength to various fabrics.	An elastomeric adhesive with a low softening point ideal for heat sensitive fabrics and for continuous processing operations. Used in applications where low temperature activation and higher modulus are required. 3206D is proven in applications that utilize DWR coated fabrics. It has excellent bond strength to various fabrics and excellent wash resistance. The low softening point coupled with high melt flow makes it ideal for applications where low sealing temperature or fast sealing speed is required.	Exhibits excellent adhesion to many fabrics, including acetate, silk, cotton, rayon and wool. Bemis 4220 can be activated by dielectric, steam and thermal conduction. This adhesive is ideal for use with a variety of materials in applications where rigidity is required.
Ester Polyurethane	Ester Polyurethane	Nylon (Polyamide)
Clear	Transparent	Clear, Slight Amber Tint
31 gm/m ²	31 gm/m ²	22 gm/m ²
25 µm 50 µm 75 µm	50 µm 100 µm 150 µm	75 µm 125 µm 175 µm
Release Paper	Polypropylene Liner, Release Paper	Release Paper
1524 mm (60")	1473 mm (58")	1473 mm (58")
25 µm - 1.8 N (0.4 lbs) 50 µm - 3.6 N (0.8 lbs) 75 µm - 5.7 N (1.28 lbs)	50 µm - 7.6 N (1.7 lbs) 100 µm - 15.2 N (3.4 lbs) 150 µm - 19.2 N (4.3 lbs)	75 µm - 28.2 N (6.3 lbs) 125 µm - 45.1 N (10.1 lbs) 175 µm - 63.5 N (14.3 lbs)
25 µm - 4.2 N (0.9 lbs) 50 µm - 6.2 N (1.4 lbs) 75 µm - 6.7 N (1.5 lbs)	50 µm - 8.9 N (2.0 lbs) 100 µm - 16.1 N (3.6 lbs) 150 µm - 17.8 N (4.0 lbs)	75 µm - 28.7 N (6.5 lbs) 125 µm - 42.5 N (9.6 lbs) 175 µm - 57.0 N (12.8 lbs)
25 µm - 97% 50 µm - 96% 75 µm - 97%	50 µm - 90% 100 µm - 86% 150 µm - 88%	75 µm - 73% 125 µm - 70% 175 µm - 69%
83°C	75°C	116°C
45 dg/min	50 dg/min	35 dg/min
Soft	Medium	Firm
Excellent up to 50°C	Excellent up to 40°C	Excellent up to 60°C
120°C - 130°C	120°C - 130°C	141°C - 191°C
120°C - 130°C	120°C - 130°C	160°C - 200°C
20 - 30 seconds	15 - 20 seconds	15-20 seconds
2.8 - 4.2 Bar (40 to 60 psi)	2.8 - 4.2 Bar (40-60 psi)	2.8 - 4.2 Bar (40-60 psi)

applied pressure and the substrate(s) permeability.
Conditions should be established by the factory for the specific application.

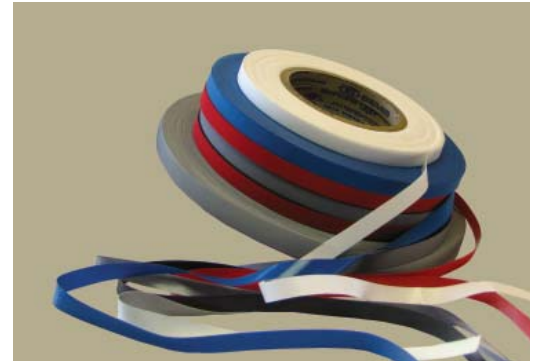
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warranty whatever in connection with its own tests and use. Neither seller nor manufacturer shall be



SEAM REINFORCING TAPES (SRT)

The Sewfree® tapes below are designed to reinforce seams created by ultrasonics or laser equipment. Bemis' seam reinforcing tapes are extremely strong and come in a variety of configurations whether you're working with soft-shell, 2-layer or 3-layer fabrics. Bonded seams are quickly becoming the technology of choice because they feature an extremely low profile and there is virtually no seam allowance. Ultrasonically line bonded seams can be manufactured at the same efficiency rates as traditional cut and sew methods. An ultrasonically line bonded seam is sleek and less abrasive. However, the seam strength is weak and the seam is not entirely waterproof.

Regardless of your fabric's content and processing parameters, tapes are required. Bemis' seam reinforcing tapes are narrow and can be applied to the seams to create superior seam strength and further weatherproof your product without adding bulk. SRTs can be applied using hot air sealers, ultrasonic machines and/or laser equipment. 2-Layer seam reinforcing tapes can be custom supplied, contact your Bemis representative to learn more.



	SRT 1008	SRT 1010	SRT 3009
Description	For water-resistant soft shell fabrics. This stretchable tape maintains the flexibility of the shell fabric along the seam. The tape can be applied using a conventional hot-air seam sealing machine.	For water-resistant soft shell fabrics. This stretchable tape maintains the flexibility of the shell fabric along the seam. The tape can be applied using a conventional hot-air seam sealing machine.	A 3-layer seam reinforcing tape for ultrasonic line bonded seams on 3-layer waterproof fabrics. This tape can be applied to interior seams using a conventional seam taping machine.
Composition	Polyurethane Adhesive / Nylon Fabric	Polyurethane Adhesive / Nylon Fabric	Nylon Tricot / Polyurethane Barrier / Polyurethane Adhesive
Color	Black, White, Grey, Red, Blue	Black, White, Grey, Red, Blue	Tricot: Grey Barrier: White
Adhesive Thickness	0.076 mm	0.076 mm	0.13 mm
Total Thickness	0.33 mm	0.35 mm	0.30 mm
Standard Width	10 mm	10 mm	13 mm
Modulus @ 50%¹	18.6 N (4.2 lbs)	10.8 N (2.4 lbs)	NA
Free Shrinkage	6%	6%	NA
Service Temperature	-30°C - 60°C	-30°C - 60°C	-40°C - 80°C
Wash	Excellent up to 40°C	Excellent up to 40°C	Excellent up to 40°C
Hot Air Seam Sealing Conditions²			
Nozzle Position:	Same as standard 2 layer seam tape	Same as standard 2 layer seam tape	Same as standard 3 layer seam tape
Nozzle Air Temperature:	550°C - 650°C	550°C - 650°C	550°C - 650°C
Nozzle Pressure:	0.09 MPa	0.09 MPa	0.60 kg/cm ²
Roller Pressure:	0.4 MPa	0.4 MPa	4.0 kg/cm ²
Line Speed:	4 m/min	4 m/min	3 m/min

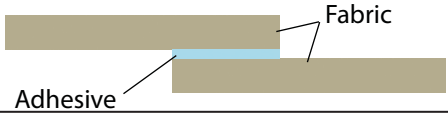
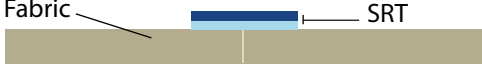

¹ Force required to pull a 25.4 mm (50 µm) wide sample to 50% of original length

² Initial processing conditions are the recommended settings for using a typical hot air sealer (seam taping machine). Conditions vary depending on your brand of equipment and your fabric selection.

Standard tapes listed here are manufactured and slit by Bemis. You can create your own tapes by laminating our adhesive to your own fabric ("self-fabric") and slitting to your desired widths. Colors listed are standard; contact one of our offices for custom fabrics or colors. **Minimum order quantities apply.**

CONSTRUCTION METHODS



There are several methods for constructing a bonded garment, depending on the specific application or design you want to achieve. For example a structural seam can be made with both a stationary fusing press and with a continuous process using a hot air sealer to reinforce an ultrasonically bonded seam. The continuous process offers the ease of positioning and increased throughput rates. Below is a chart describing the types of construction used with our Sewfree® adhesives and tapes.

Application	Type	Description	Illustration
Panel to Panel	Overlap Seam	In this seam construction, an adhesive film is used between two fabrics to bond face side to back side. Overlapped seams are usually 8-12mm wide.	
Panel to Panel	Butt Seam	This method uses an ultrasonic cutter or laser welding machine to trim and produce a butt joint between two fabrics. The resulting seam features an extremely small seam allowance. However, it has low cohesion and requires a reinforcing tape to strengthen it.	
Component Attachment & Assembly		A heat seal press or radio frequency sealer can be used to attach components to the garments. Pockets, zippers, patches, hood brims, storm flaps, cord tunnels, hems, and hook & loop attachments are examples of assemblies that can be made with Sewfree® adhesive films.	

APPLICATIONS

There are many applications where Sewfree® adhesive films can be utilized. This table is designed to assist you in selecting the proper Sewfree® adhesive for your technical outdoor project. While this table features typical applications, the correct Sewfree® adhesive selection is dependent on fabrics, bonding conditions and your desired results. We strongly recommend that each application be tested before you begin production. We offer FREE testing to ensure that the proper adhesive is selected. If you would like Bemis to recommend an adhesive for your application, you can contact your Bemis representative to initiate a technical service request.

Application	Films & Tape					Tape Only			
	3218	3405	3415	3206D	4220	SRT 1008	SRT1010	SRT2000	SRT3009
Zipper									
Pocket									
Overlap Seam									
Hood Brim									
Storm Flap									
Cuff Tab									
Hem									
USLB/SRT Seams:									
non-waterproof, sportswear fabric									
water resistant soft shell fabric									
2 layer waterproof hard shell fabric									
3 layer waterproof stretch fabric									
3 layer waterproof hard shell fabric									

 Primary recommendation
 Secondary Recommendation

Worldwide Products & Service

Laboratories and offices in the US, Hong Kong, UK, Korea, Taiwan, Sri Lanka, Mexico and Central America allow us to provide “local” support on a “global” basis. This has tremendous advantages for brands looking to harmonize product supply, maintain quality, and provide excellent service. This world-class technical support is based on our ability to analyze fabrics, test adhesive compatibility and provide sound recommendations based on quantitative lab results. We work with a “Who’s Who” of factories in the apparel market and can help brands and factories connect with the right capabilities, capacity, and commitment to quality.



Quality Products

Bemis makes the most effective and user friendly seam tape in the world. Our 2-layer tapes are available in a wide array of thicknesses and widths to tape every garment you make. Our 2-layer tapes adhere well to a wide variety of fabric coatings. We can produce tapes with polyurethane, polyester, polyamide and ethylene vinyl acetate adhesive layers. All of our tapes are washable and several tapes are fully resistant to dry cleaning. Bemis seam tapes will maintain their waterproof integrity in real world conditions for the life of the garment. We are a single source for a wide range of products and innovation. Whether its seam tape, decorative films, Sewfree® adhesives, or products of a unique construction, no company has more to offer.



Innovation

Our innovation prompted the development of Sewfree® adhesives and led the market in the explosive growth of bonded apparel. We strive to continuously improve our performance, our service, and our understanding of the needs of our customers. We possess a wide range of adhesive chemistry to ensure that we have a tape that will stick to every coated fabric on the market. If there isn't a Bemis tape that meets your needs, we'll put our product development team to work on designing one that does.



Industry Leader

We were one of the first in the market to offer seam tape. Today, we're the largest supplier of 2-layer PU tapes in the world. Bemis consistently has taken the leadership role. If brands or factories need innovation, they need Bemis. We have high standards in executing business practices, making ecologically friendly products, and fostering civic mindedness. We're a reliable vendor; we've been in business for nearly one hundred years. Our success has allowed us to reinvest in our products, equipment, and talent. We bring valuable insight based on years of industry and market experience.

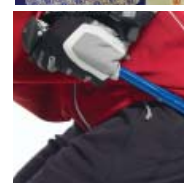


Other Tapes & Films

If you choose to utilize cut and sew methods for your technical outerwear, the selection of the correct seam sealing tape is paramount. **Seam tape is the critical link in the chain of waterproof protection.** Bemis offers the highest quality seam sealing tapes for waterproofing sewn seams. We offer co-extruded 2-layer, 2.5-layer and 3-layer tapes to satisfy a variety of applications and processing conditions.



We've also combined our adhesive chemistry with our experience in supplying decorative trim to offer decorative films and tapes. These films can be custom slit to your specifications or cut to add distinctive embellishment to any design. In many cases, they also perform additional functions such as improving water and abrasion resistance.



FOR MORE DETAIL, SAMPLES, OR TESTING, CONTACT ONE OF OUR OFFICES.



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