

2019 UPDATE

# *ShearBan* by Tamarack®

## 749 Series PRODUCT GUIDE



 **Tamarack®**  
HABILITATION TECHNOLOGIES, INC.

MADE IN MINNESOTA ★ U.S.A. ★

[www.ShearBan.com](http://www.ShearBan.com)



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## ShearBan® Sheets

- 749S ShearBan 8"x12" Sheet (Qty 1)
- 749 ShearBan 8"x12" Sheet (Qty 5)
- Beige, Black or Blue



## ShearBan® Rivet Cover Patches

- 749-7 ShearBan Rivet Cover 3/4"
- 749-7-XL ShearBan Rivet Cover 15/16"
- Beige or Black



## I. Indications for Use

ShearBan® is useful anywhere you deal with “pressure” and/or friction issues for skin integrity and comfort. Anytime you provide a close-fitting device that bears weight and/or provides orthopedic control, there is risk of damage to skin and underlying soft tissue. Using ShearBan, it is easy to incorporate friction management in orthotic, prosthetic, and pedorthic device design by placing the patches on the device where “hot spots” or “pressure areas” are evident or probable.

### Strategically use ShearBan® to:

- Enhance patient comfort and extend periods of functional activity
- Provide a greater margin of safety for your patients who have some sensory (pain) deficit
- Maximize orthopedic support and correction beyond what is possible without strategic friction management
- Reduce the number of early return visits by using ShearBan prophylactically

ShearBan is extremely thin and easy to use; a strong pressure sensitive adhesive (PSA) adheres the ShearBan film wherever needed to interface between any device and the sock/skin. Due to the fact that it is applied on the device rather than on the skin, it provides a long lasting way to reduce friction/shearing forces in areas where damage to the skin and underlying soft tissue is either occurring or likely to occur (a risk area).

ShearBan reduces friction/shear forces. Padding, contouring, and off-loading reduces pressure forces. Pressure and friction/shear forces are present simultaneously, so managing both forces simultaneously (not just pressure) is most beneficial. It is ideal to reduce friction/shear forces only in specific locations. We consider this to be **strategic friction reduction**.

See V. Additional Resources for links to more detailed information.

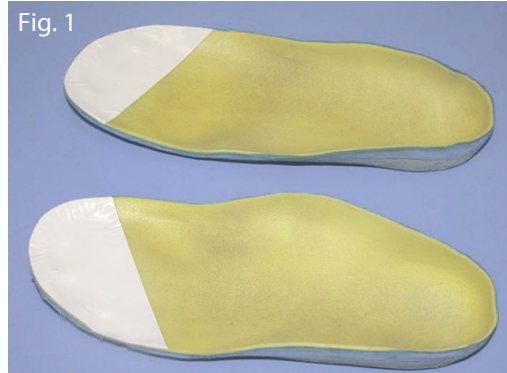


The following identifies some examples of pedorthic, orthotic, prosthetic, and miscellaneous applications where ShearBan® is useful:

## Pedorthic Applications

**Fig. 1- 2**

Use on insole or foot orthosis for plantar surface "hot spots" such as metatarsal heads, bases, toe tips from hammer toes or clawing, etc.



**Fig. 3 - 4**

Post-ulcerations anywhere on the foot.



**Fig. 5 - 6**

Arch area, especially when deformity is present from arthritis, Charcot, etc.



**Fig. 7**

Use on counter of the shoe where heel/Achilles tendon rubs: tendon area, calcaneal tuberosity, Haglund's deformity, etc.



**Fig. 8**

In the toe box area for dorsum and lateral problem areas such as hammer toes and bunions.





## Orthotic Applications

Fig. 9 - 10

Any brim area where soft tissue exits the orthosis.

Areas in any lower extremity, upper extremity, or spinal orthosis where firm contact is necessary due to functional and/or corrective alignment forces.



Fig. 9



Fig. 10

## Prosthetic Applications

Fig. 11 - 14

Any brim area where soft tissue exits the prosthesis eg: popliteal area of a TT prosthesis, medial/ischial brim of a TF prosthesis.

In rigid sockets (anterior distal tibia, head of the fibula, etc.).

On socket brims to protect gel liners from premature wear from rubbing.

To cover padded or unpadded ischial contact areas.

Where any suspension or control strap rubs or causes irritation (not shown).



Fig. 11



Fig. 12



Fig. 13

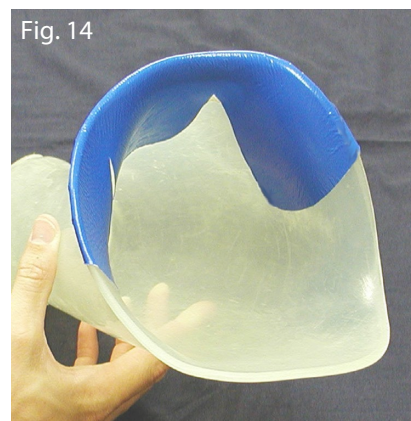


Fig. 14

## Miscellaneous Applications

Fig. 15 - 16

Cranial remolding helmets to reduce hair loss and dermatological concerns.

Can be used to cover rivets or joints for improved cosmesis and to assist cleaning. \*

Prevent toes from curling under when donning an AFO or shoe. \*

Placed along lateral edges of a post-op spinal orthosis to help it "slip on" (much easier to don and reduces pain). \*

Athletic gear (footwear or protective gear where rubbing/chafing/blistering occur). \*

\*not shown



Fig. 15



Fig. 16



## II. Fabrication Procedures

### General Instructions

- Clean the application surface (Isopropyl Alcohol will clean most surfaces).
- Size the ShearBan patch to extend beyond the area where you wish to reduce friction/shear. This will avoid edges in the high force zone.

See III. Recommendations for Optimal Results, Sections 1-3

### Techniques for Applying ShearBan®

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## 1. Single Plane Surfaces

It is easy to apply ShearBan to surfaces which are flat or have very modest contours.

- Cut a piece of ShearBan that is slightly larger than the “friction area” on the skin.
- Remove backing and adhere the ShearBan to the device. Press firmly into place.

Fig. 17



Fig. 18

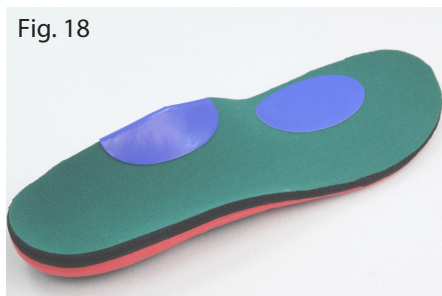


Fig. 19



## 2. Surfaces with Complex Contours

### A Spot Heat Technique (Tamarack's preferred technique)



Fig. 20

1. Apply patch first to the perimeter of relief (center will not be attached).



Fig. 21

2. Spot heat the center area of the patch with a heat gun or small torch.



Fig. 22

3. Press and rub firmly with a soft cloth until cool.

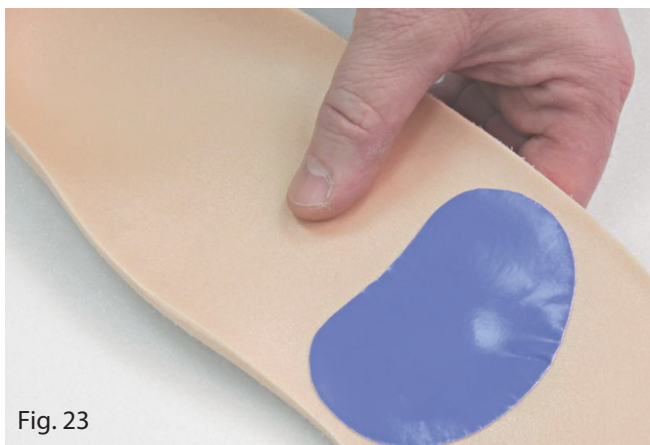


Fig. 23

4. Inlay to finish if desired. (See Technique D)





## B Darting Technique "A"



Fig. 24

1. Gather excess material into a tight standing fold.



Fig. 25

2. Press firmly to create a crisp seam.



Fig. 26

3. Trim with small, sharp and curved scissors.



Fig. 27

4. Inlay to finish if desired (See Technique D).

## C Darting Technique "B"

This technique is most useful when you will not be able to easily trim a standing fold with scissors (such as inside a prosthetic socket).

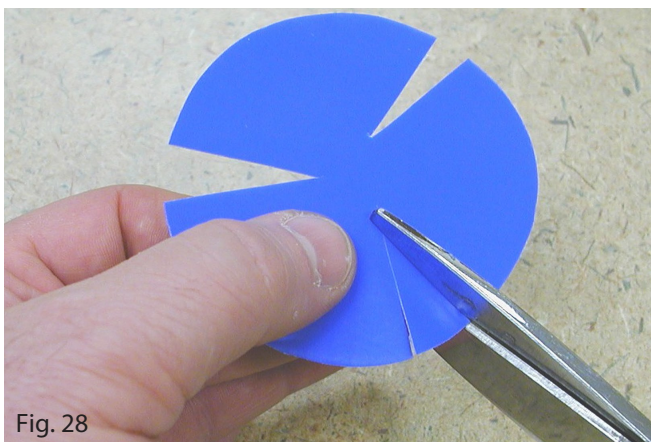


Fig. 28

1. Cut pie shaped darts into patch before installation. Paper patterns may be helpful. Round any corners.

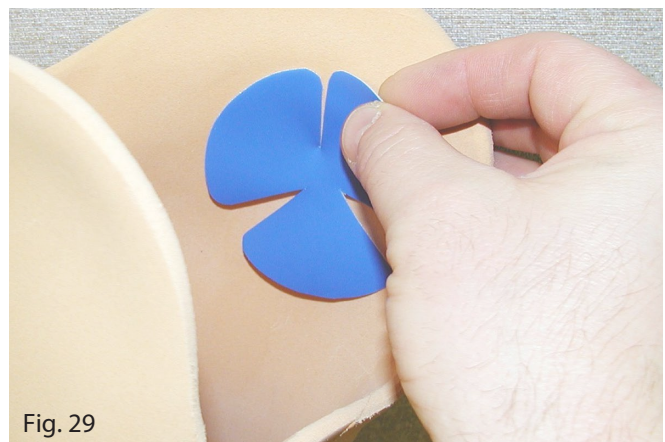


Fig. 29

2. Install onto the device (Note: rounded corners).





## D Inlay Technique

This technique is most available to finish applications like accommodative inserts, and it produces the smoothest application result. It is important to note that the heat of the body and pressure from weight-bearing also produces “inlaying” after a short time.

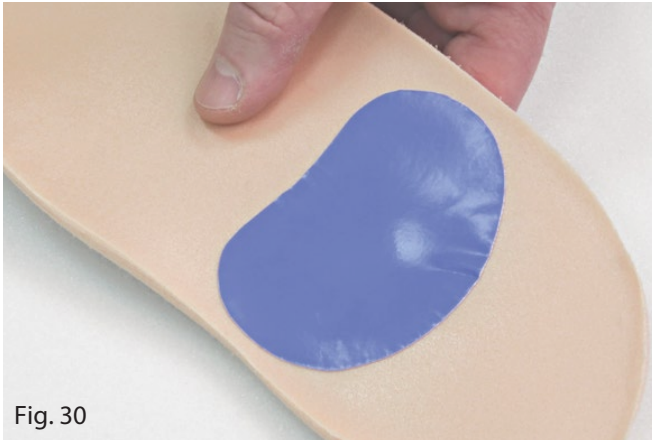


Fig. 30

1. Apply patch completely using any technique



Fig. 31

2. Heat the area of the mold where the perimeter of the ShearBan will be located to the temperature recommended by the manufacturer of the foam being used. Do not heat the entire mold.



Fig. 32

3. Position the foot bed / insole on the mold.



Fig. 33

4. Re-vacuum on the press and hold under vacuum for 10-15 minutes.

Inlay Technique continued on next page.



The final result shown below illustrates how this process “inlays” the patch into the foam, recessing the edges of the patch and any wrinkles or seams, for an extremely smooth application.

See III. Recommendations for Optimal Results, Sections 1 - 3

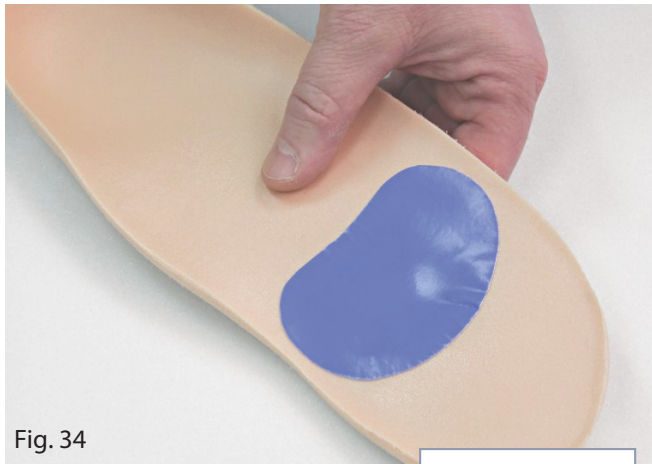


Fig. 34



Fig. 36

**BEFORE**

**AFTER**



Fig. 35



Fig. 37

Wrinkles and edges are inlaid into the foam

Close-up of blue ShearBan patch “inlaid” into the foam



Fig. 38

If you do not have a vacuum press available when applying ShearBan, you can perform this process manually with nearly the same results if you have the mold.





### 3. Brims / Edges



Fig. 39

1. Cut out ShearBan to the desired shape. Allow extra material for wrapping over the edge of the device. Install it on the inner surface first.



Fig. 40

2. Pull around tightly to keep the edge smooth. Heating the patch may help if stretching is necessary.

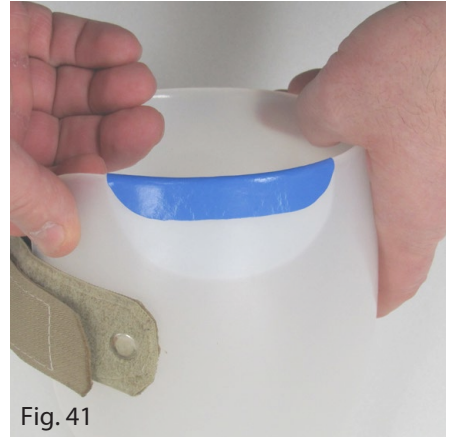


Fig. 41

3. Once over the edge, smooth the outside surface. If there is excessive material, collect it into a tight standing fold and trim off (not shown in this example).

### 4. Shoes



Fig. 42

**Arch Area:**  
Apply to insole and wrap around medial edge. Apply a second patch to the inside of the shoe, extending below the insole.



Fig. 43

**Collar Area / Heel Counter:**  
Apply ShearBan so that it wraps over the top edge.



Fig. 44

**Toe Box Area:**  
**See 5. Hard-to-Reach Locations** on the next page (cut out is for visual demonstration of this area).





## 5. Hard-to-Reach Locations

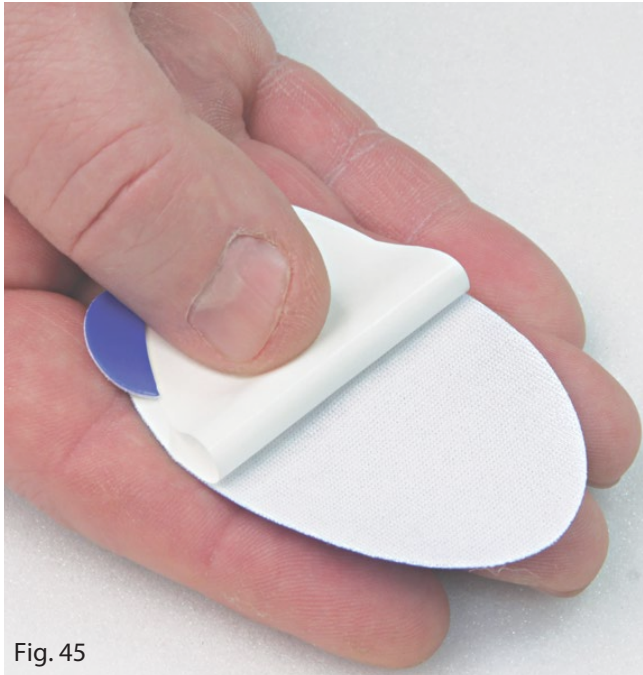


Fig. 45

1. Peel back release paper halfway and use as a handle. Avoid touching adhesive with fingers.



Fig. 46

2. Guide into position and place the leading edge against the device.



Fig. 47

**OR:** Use a long tweezers to reach into the confined space - this works well for deep narrow openings, such as on prosthetic sockets. (see Fig. 11-14 for prosthetic socket application examples)

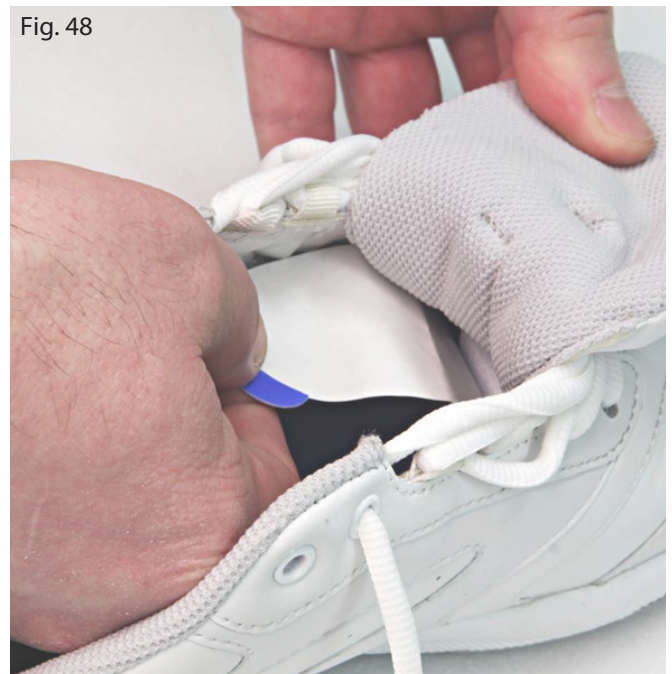


Fig. 48

3. Remove remaining paper backing and press the ShearBan interface firmly to adhere onto the device.



### III. Recommendations for Optimal Results

#### 1. Coverage Area

Friction is helpful and necessary for stabilizing and controlling the device, and to minimize the loss of propulsion energy. Friction does not cause damage everywhere. Strategically reduce friction / shear loads only in the areas where the skin is either at risk (preventative design) or in the areas where skin damage is occurring (**strategic friction reduction**). We believe using “friction management” in this way yields the best results for orthotic, prosthetic and pedorthic applications.

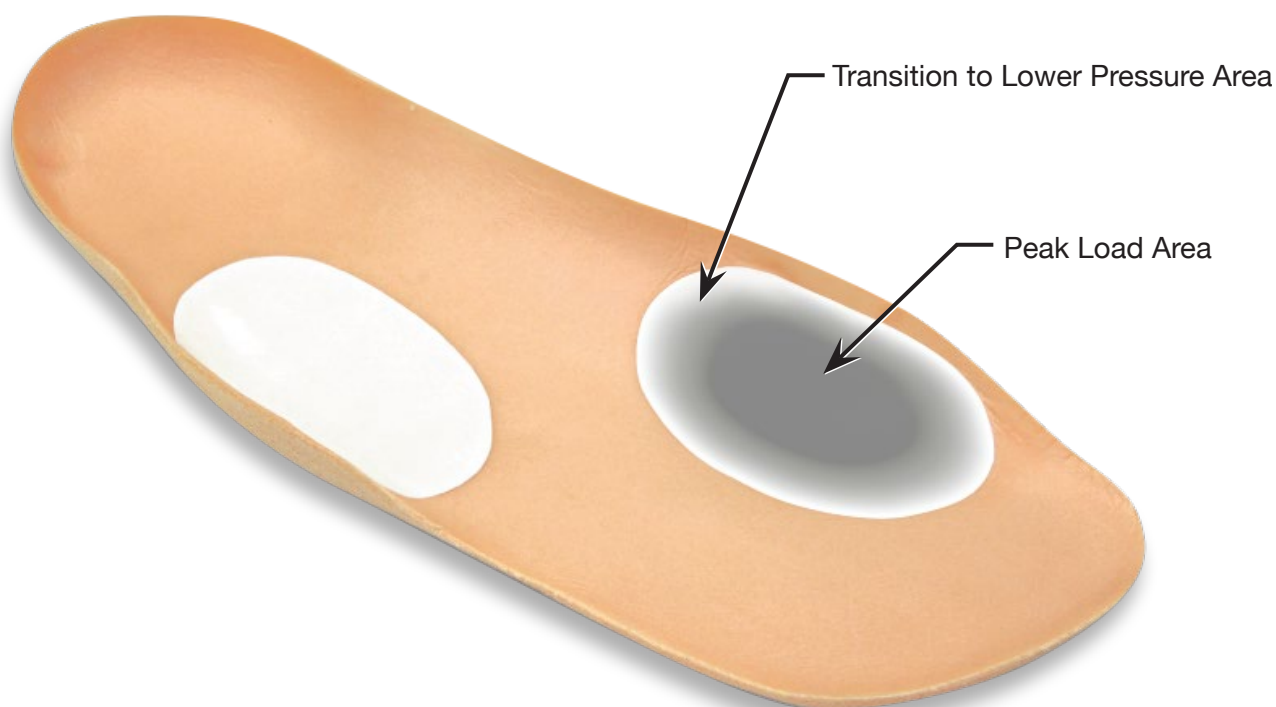
Reducing friction over an excessive portion of the contact surface area (global friction reduction) reduces the “useful friction” and may lead to problems elsewhere.

#### 2. Edges

Even though ShearBan is extremely thin, concern about edges is understandable in an area where high pressure forces exist.

These concerns are easily mitigated by making sure that the borders of the friction reduction interface extend beyond the area where skin damage is seen or expected. Locate the perimeter of the ShearBan interface just beyond the peak load area to provide a “transition zone” between higher and lower contact pressure areas.

Fig. 49







### 3. Wrinkles and Formability

As with edge concerns, wrinkles can be concerning when high friction forces are present and it is ideal to have as smooth a surface as possible. The area contacting the wrinkle “grabs” and then transfers the forces to the skin. The low friction coefficient (CoF) of ShearBan and sock makes it unlikely that a wrinkle will cause a problem because the contact area can’t get a “grip.”

The ability of ShearBan to conform to complex shapes is controlled by its material characteristics, as well as the severity of the contour, the contact surface material, the technique used and the technical skills of the installer.

There are application site shapes where it will be necessary to form flat seams and where modest surface irregularities will be present. High standing folds should not be allowed. Inlaying does an excellent job of smoothing irregularities.

See Section II. Inlay Technique D.



Fig. 50



Fig. 51

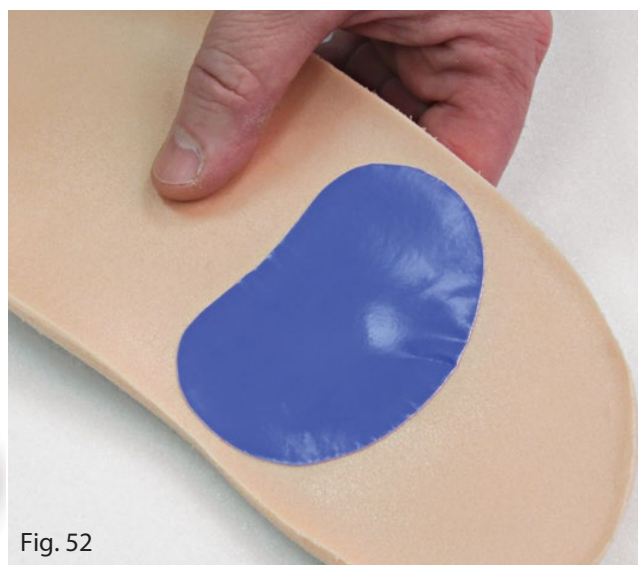


Fig. 52

### 4. Patch Preparation

- Clean the application surface (Isopropyl Alcohol will clean most surfaces)
- Round any corners of the patch to prevent the corners from pulling loose
- A scrap-booking die with a small radius works well for cutting neat, symmetrical corners

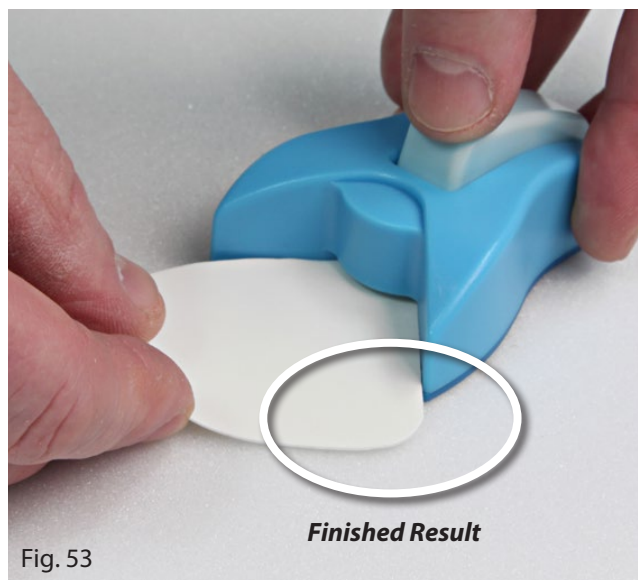


Fig. 53

**Finished Result**





## 5. Patch Removal

It is easy to remove patches from most materials by using a heat gun to warm the patch. This softens the PSA and allows the patch to be removed.

It is very difficult to remove a patch applied to very soft foams (eg: soft Aliplast™), polyurethane and cellular urethane foams (PPT®, Poron®).



Fig. 54

## 6. Removal of Residual Adhesive

It is important to remove residual adhesive before applying a new patch. After removing the worn patch, use it to “blot” off any PSA remaining on the device (the PSA remaining on the patch will pull off the PSA from the device surface).

Heating the area with a heat gun before blotting is helpful.

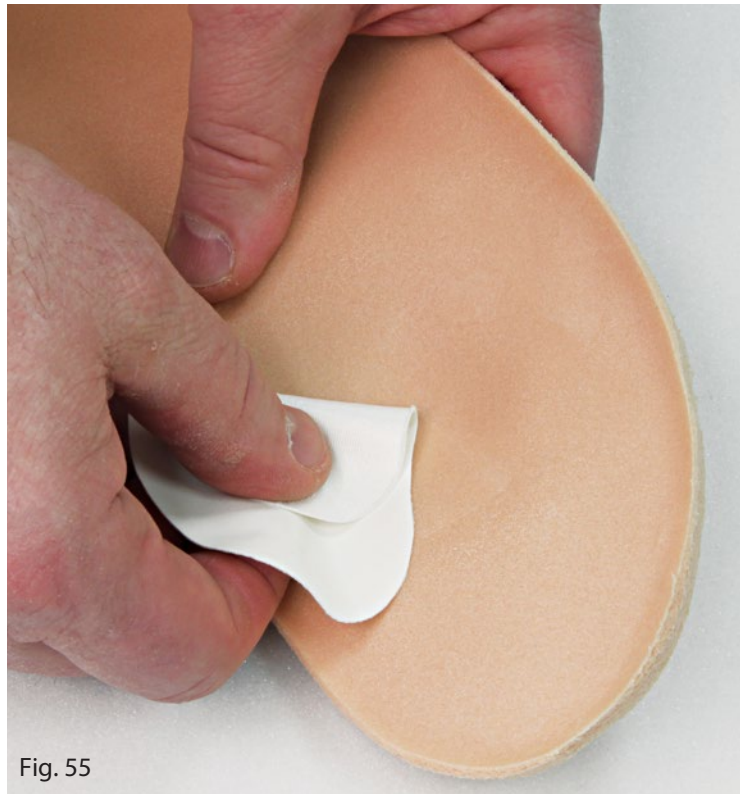


Fig. 55



## IV. Frequently Asked Questions

### 1. When should ShearBan be used?

We believe that the best practice includes **strategic friction reduction** along with **pressure management**. It will increase your ability to more comfortably provide maximum orthopedic support. As a professional orthotist, prosthetist or pedorthist, you already incorporate pressure management techniques. It makes sense to incorporate friction management as well.

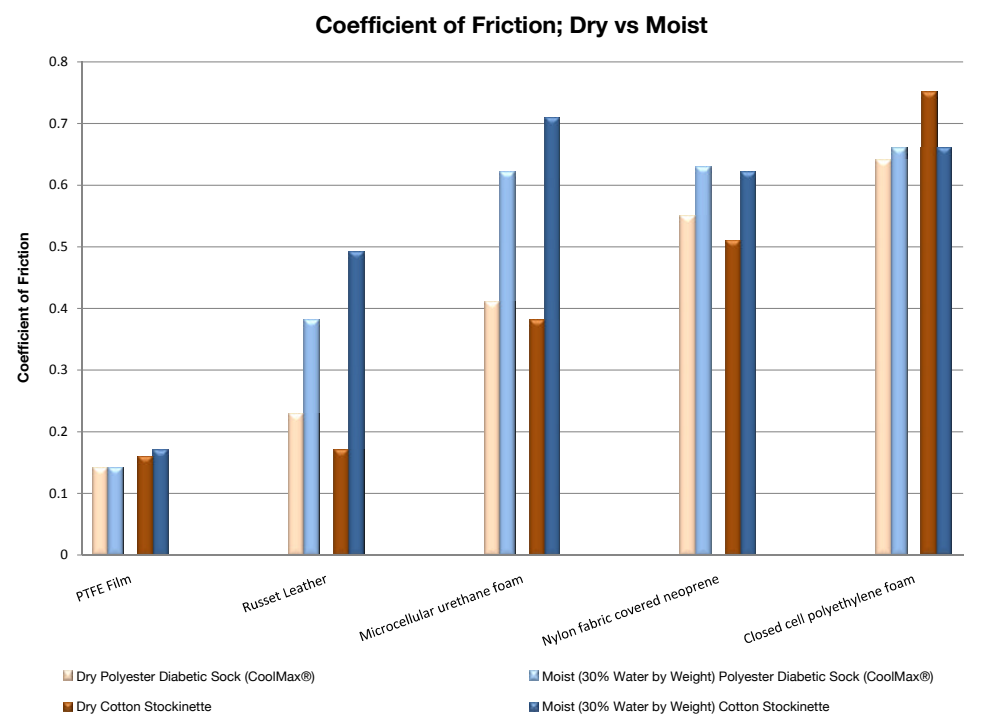
### 2. I can use pressure mapping to identify pressure areas to identify where reliefs are needed – how do I do this with friction management?

Use the skin as the map. Excessive friction/shear loading shows up on the skin as a reddened area. You may also see chaffing and callusing. Callusing is a normal body response to friction/shear loading. If excessive callusing is left unchecked, it can lead to, inviting infection. You may also see signs of local friction in/on shoes, foot beds, insoles, or liners in prostheses or orthoses. Inspection of these contact surfaces will help plan areas to address.

### 3. What is the Coefficient of Friction (CoF) of commonly used O&P materials?

The following chart shows the static CoF for combinations in dry and moist conditions.

Fig. 56



#### BRAND NAME MATERIALS USED TO COLLECT THIS DATA:

PTFE film - ShearBan® ShearBan® is a registered trademark of Tamarack Habilitation Technologies, Inc.

Microcellular urethane foam - Poron® Poron® is a registered trademark of Rogers Corporation

Multi stretch nylon fabric bonded to neoprene sponge - Spenco® Insole Material Spenco® is a registered trademark of Spenco Medical Corporation

Closed cell polyethylene foam - Plastazote® Plastazote® is a registered trademark of Zotefoams, Inc.

Polyester Diabetic Sock - CoolMax® CoolMax® is a registered trademark of Invista



### **4. Does ShearBan affect pressure?**

No. ShearBan is a friction management material useful for reducing the friction/shear load. It is not a pad or pressure management material. Incorporating friction management along with pressure management results in lower peak friction loads seen by the skin and subcutaneous tissues. ShearBan is useful for reducing the friction/shear stress load.

### **5. What surfaces can ShearBan be bonded to?**

ShearBan can be applied onto most surfaces except silicones (it will not adhere). With fabrics, heating the PSA will help it to bond into the fabric weave or knit. Some fabrics are treated with water repellent chemicals that ShearBan doesn't bond well to. A good solution for these rare situations is to use contact cement in the area where you want to apply ShearBan.

### **6. Does ShearBan wear out? How long does it last?**

ShearBan will wear out gradually based on the intensity of rubbing. "Claw toes" are an example of a very aggressive environment where ShearBan may only last days or weeks. In most applications, ShearBan can last months or even years. ShearBan normally matches or exceeds the life of an accommodative insert.

It is advisable to monitor ShearBan for signs of wear. Replace the patch when the white fabric base material becomes visible through the film.

### **7. What happens if ShearBan gets wet?**

Moisture does not affect the ShearBan function. If the environment is extraordinarily wet, the patch may release from the device. If this environment cannot be avoided, contact cement can improve patch adherence.





## V. Additional Resources

### Journal Articles

#### **The Mechanism of Soft Tissue Damage: It is all in the rub.**

Sarah A. Curran, Wales Centre for Podiatric Studies, Cardiff Metropolitan University  
J. Martin Carlson, CPO, Tamarack Habilitation Technologies  
Prosthetics and Orthotics International, vol. 39, 1: pp. 82-84, January 2015

#### **Functional Limitations from Pain Caused by Repetitive Loading on the Skin**

J. Martin Carlson, CPO, Tamarack Habilitation Technologies  
JPO 18(4): 93-103 October 2006

#### **The Friction Factor**

J. Martin Carlson, CPO, Tamarack Habilitation Technologies  
Ortho Kinetic Review 1.7 (Nov-Dec 2001): 1-3

### Tamarack HTI Website

[www.tamarackhti.com/resources](http://www.tamarackhti.com/resources)

### Becker Orthopedic Website

[www.BeckerOrthopedic.com/education/continuingeducation](http://www.BeckerOrthopedic.com/education/continuingeducation)

- Etiology & Prevention on Skin Trauma from Repetitive Loading (1.5 CEUs)
- Friction Management for Neuropathic Foot Problems (2.0 CEUs)



# ShearBan

by Tamarack®

## Features & Benefits

### Ultra-Low Friction Surface

- Neutralizes shear - the primary cause of calluses and foot ulcers - by forming a low CoF interface
- Maintains low CoF in moist conditions

### Thin

- Does not interfere with foot function
- Does not interfere with pressure relief modalities
- Does not interfere with footwear fit

### Supple

- Conforms to contours or depressions
- Easy application

### Applies to Footwear, Not Skin

- Reduces skin irritation
- Works well with variety of wound dressings & treatment modalities
- Long-lasting durability

### Easy Application

- Peel backing & apply
- Cut & trim to customize

### Durable

- Multi-week (most often longer) protection



### Available in Single & Five-Sheet Packs, Pre-Cut Ovals

PART #	DESCRIPTION	QUANTITY
749S-BEIGE	8" x 12" ShearBan® Sheet	1 Sheet
749S-BLUE	8" x 12" ShearBan® Sheet	1 Sheet
749S-BLACK	8" x 12" ShearBan® Sheet	1 Sheet
749-BEIGE	8" x 12" ShearBan® Sheet	5 Sheets
749-BLUE	8" x 12" ShearBan® Sheet	5 Sheets
749-BLACK	8" x 12" ShearBan® Sheet	5 Sheets
749-7	3/4" ShearBan® Rivet Cover Patch	138 pieces
749-7-BLK	3/4" ShearBan® Rivet Cover Patch	138 pieces
749-7-XL	15/16" ShearBan® Rivet Cover Patch	86 pieces
749-7-XL-BLK	15/16" ShearBan® Rivet Cover Patch	86 pieces

For more information, visit  
[www.ShearBan.com](http://www.ShearBan.com)

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