



## Coyote Composite

Basalt (volcanic rock) braided composite

Harmonized Code: 6815.99.4070 Basalt Filament

Manufactured for Coyote® 419 N. Curtis Rd., Boise, Idaho 83706

(208) 429-0026 | [www.coyote.us](http://www.coyote.us) | Made in China



### Attention:

It is the responsibility of the practitioner and or technician to determine specific lay-ups, materials, amounts, and design based on the patient weight, activity level, and specific activities that is best for the patient. Any recommendation for lay-up methods are guidelines, not specifically designed for particular patients. Coyote® does not have knowledge of specific patient information or knowledge of customer's specific fabrication techniques and capabilities.

### Ordering Options

#### Braid: B

	Type	Size (in)	Length/(ft)
CD	B	3	10
CD	B	3	20

CD	B	3	82
CD	B	4	10
CD	B	4	20
CD	B	4	82
CD	B	5	10
CD	B	5	20
CD	B	5	82
CD	B	6	10
CD	B	6	20
CD	B	6	82
CD	B	7	10
CD	B	7	20
CD	B	7	82
CD	B	8	10
CD	B	8	20
CD	B	8	82
CD	B	10	10

CD	B	10	20
CD	B	10	82

**Fabric: F**

	Type	TPI*	Length/(ft)
CD	F	350	3

**Rope: R**

	Type	Weight	Length/(ft)
CD	R	3	25

10 ft = 3.048 meters

20 ft = 6.096 meters

82 ft = 24.9936 meters

To order use the code, the type, select the size and the length. For example, a 20' roll of the 6" braid is item # CDB0620. (B= Braid, R= Rope, F=Fabric)

**Coyote® Composite (basalt braid)**

**Lamination Instructions**

Coyote® Composite, our proprietary braiding made from basalt is designed to be used with multiple materials to create composite lay-ups. Essentially taking the best characteristics of different materials to get the best functioning layups possible.

## **Saturation**

Because of the superior saturation of Coyote® Composite it is important to check for resin starvation. Run the vacuum at normal levels, but do monitor the process closely. Resin that takes too long to gel may pull back out of the material, starving the lamination. This will lead to fuzzy edges that are hard to finish. To prevent the lamination from starving we recommend stringing the lamination to the desired level, and then heat the proximal end of the lamination to help the resin gel faster. This reduces the risk of too much resin being pulled from the lamination.

## **Reinforcement**

We recommend using carbon tape on the distal 3rd of sockets. This allows for extra rigidity without much additional weight. It can also remain embedded so that no carbon is exposed during sanding.

## **Layers**

We designed the basalt braid to be a one to one replacement of carbon braid, meaning we do not typically use more than two layers of basalt braid in any lamination. However, the layers of other materials may change based on weight, activity level, and design. In some cases, more layers of basalt may be needed. In our testing, we also found nylon stockinette to offer a lot of the characteristics we are looking for without adding a great deal of weight or expense when compared to other commonly used materials.

## **Weight**

The weight of basalt and carbon are quite similar. However, the increased saturation of basalt can result in more weight. It is key to pay attention to your lay-up to make sure you are doing the proper amount of stringing of the lamination to prevent starvation without creating more weight with unnecessary resin build-up.

## **Lay-ups**

While it seems everyone wants an exact recipe, it also seems no one wants to follow one. We have established a number of lay-up options for sockets and AFOs. If you would like more details, contact Coyote® at (208) 4290026 or via email at mailbox@coyotedesign.com

## **Resins**

Most prosthetic resins will work with the basalt, such as AME, or Polyester. Resin selection is more dependent upon other characteristics, such as heat moldability, or flexibility of the resin.

## **Finishing**

Basalt finishes similar to carbon, with slightly less abrasiveness but more of a tendency to fray, especially in cases of starvation. In some cases, wet sanding may be performed for optimal finish.

## **Heat Molding/Relieving**

The basalt fabric is extremely heat resistant, meaning it will not be damaged by even extreme heat. However, the lay-up itself may not tolerate heat relieving. We recommend using the basalt with a heat-moldable resin as well as with materials that are more compatible with heat relief.

## **Inhalation**

Particles that are smaller than 6 microns are considered an inhalant risk. Basalt filament used in our basalt materials are 9 microns in size or larger.



Criss crossing strips of carbon tape



Composite on outside of lay-up



Composite on inside of lay-up



Composite rope being laid up



Use equal amounts of Coyote Composite in place of carbon fiber in your existing layups and make sure to reinforce your distal end with carbon fiber tape, or you can try one of these sample layups.

#### **Coyote® Composite sample lay-ups**

## **PROSTHETICS**

### **Pigment layup with Epoxy Resin: Standard Lamination**

- 1) 2 layers of Flex-stretch
- 2) Reinforce with at least 2 strips of carbon tape over distal end.
- 3) Cover distal third with one layer Coyote Composite, tie over connector then reflect over full socket.

4) 2 layers of Nylon Stockinette

5) 2 layers of Flex-Stretch

6) 2 layers of vacuum/finishing nylons

Note: For heavy duty layup add 1 extra layer of Coyote Composite

**Pigment Layup with Acrylic Modified Epoxy Resin:**

1) 2 layers of flex-Stretch

2) Reinforce with at least 2 strips of carbon tape over distal end.

3) 2 layers of Coyote Composite

4) 2 layers of Nylon Stockinette

5) 2 layers of Flex-Stretch

6) 2 layers of vacuum / finishing nylons

Note: For heavy duty layup add 1 extra layer of Coyote Composite.

**Non pigment (Carbon finish look with Coyote Composite) layup with either resin type:**

1) 2 layers vacuum / finishing nylons

2) 1 layer Coyote Composite

3) Reinforce with at least 2 strips of carbon tape over distal end.

4) 2 layers Nylon Stockinette

5) 1 layer Coyote composite

6) 1 layer vacuum nylon

Note for heavy duty layup ad 1 extra layer of Coyote

**Attention:**

Adding carbon tape over distal connector should be used for added reinforcement.

When using a drop-in lock pay special attention to reinforcing your layup.

For an ultra-lightweight and more flexible socket remove the stockinette from the layup.

Fuzzy edges or a gold-colored socket with no pigment is an indication the layup is starved, and the lamination should NOT be used.

## Orthotics

### **AFO – using Acrylic Modified Epoxy Resin**

- 1) Flexastretch nylon reflected (two layers total)
- 2) Use one Coyote Composite Braid that is the right size for the calf section above the malleolus and slightly over the calcaneus
- 3) Lay Coyote Composite Braid along the foot plate and over the calcaneus
- 4) Reinforce your met head area and foot with carbon tape.
- 5) If needed use 1" wide carbon tape or 1" wide fiberglass tape across the heel and down past the malleolus for reinforcement.
- 6) Use one Coyote Composite Braid that is the right size for the calf section above the malleolus and slightly over the calcaneus
- 7) Lay Coyote Composite Braid along the foot plate and over the calcaneus
- 8) Nylon stockinette reflected (two layers total)
- 9) Flexastretch nylon reflected (two layers total)
- 10) For a smoother

### **AFO Heavy Duty – using Acrylic Modified Epoxy Resin**

- 1) Follow previous lay-up, but add another layer of Coyote Composite Braid over the whole brace, same technique as #2 and #3 in previous AFO layup instructions.\*
- 2) If you're using Epoxy Resin (ER Resin) instead of Acrylic Modified Epoxy Resin follow steps 1 – 10 for a heavy duty AFO.\*

\*This depends on patient weight and activity level on which



technique to use one or two.

Tech Tips on back – Tips on vacuum, resin and layup with Coyote Composite

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## Tech Tips

### – Vacuum & Resins with Coyote Composite

Tips on vacuum, resin, and lay-up



We typically use two layers of basalt, with basic nylon stockinette in a different order depending on the finish, and carbon tape over the distal end.



Epoxy resin run full vacuum at 20 to 24 in/HG until everything is saturated and cured.



Acrylic modified epoxy resin run full vacuum at 20 to 24 in/HG until everything is saturated. When done stringing and walking away turn vacuum down to 10 to 15 in/HG.



Very important to follow resin manufacturer's instructions for proper measurements and mixing.



Epoxy resin manufacturers typically recommend a heat bag.

## Resins

Layups are affected by the type of resin used.

**Modified Acrylic;** thinner, easier to saturate, fast cure

**Epoxy Resin;** stronger, clearer, thicker, slower cure time

*Epoxy works well for heavier and more active people.*

## Lay-Ups

Use equal amounts of Coyote Composite in place of carbon fiber in your existing layups, or you can try one of Coyote's sample layups.

How you lay it up will also greatly change the strength weight and flexibility.

## – Finishing Edge Using Coyote Composite

Coyote Composite edges finish smoother and tend to be less jagged than carbon fiber.



Use the roughest sanding cone to take the edge down to the trim lines.



Use medium scotch bright wheel, buff outside to inside, inside to outside, smoothing and rounding off edges. When polishing and finishing Slow speed may give better results.



Finish with techra wheel. If you want more do a wet sand with scotch bright.

**Note:** Fuzzy edges or a gold-colored socket with no pigment is an indication the layup is starved and the lamination should NOT be used.

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