

APD (Anti Penetration Devices) Rules, Regulations and Policies

The Society Earl Marshal has ruled that all shafted combat arrows are required to have an 'approved' APD. This ruling went into effect on August 1st, 2001.

An APD is a device that is mounted no more than .5" from the end of a missile (arrow or bolt). It's designed to prevent injuries from penetrations of missiles into SCA legal fighting helms.

General Requirements:

1. APDs may not have sharp edges.
2. PVC may not be used in the construction of any APD.
3. If you want to make a modification of an approved design, such as using it on wood, when it's only been tested on fiberglass or anything different than the design specifications (like not using a routed channel or a tab); etc, that is considered a significant difference and must be approved for testing, before it can be used on the field. If you have any questions or would like to conduct testing on an APD design, please contact your Kingdom Earl Marshal and/or your Kingdom Combat Archery Marshal.

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Approved for use with wooden shafts:

1. Golf Tube APDs
2. 75 & 80 psi Polyethylene APDs
3. Flexible Disk APD:

Approved for use with Fiberglass shafts:

1. Golf Tube APDs
2. 75 & 80 psi Polyethylene APDs
3. Flexible Disk APD:
4. 100, 160 and 200 psi Siloflex APDs
5. 1 .25" Octagonal and Round UHMW APDs
6. Foam Wedge APDs
7. Rigid Funnel APDs
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A. Tubular APDs:

The attachment mechanism must include at least one wrap of fiber/strapping tape running through the tube of the APD along its bottom side and around the shaft in front of and behind the tube. This is for all of the tubular designs, except those with an internal tab. APDs with an internal tab have tape around the tab. They can have tape through the center bottom of the APD, but it's not required with that design.

Another strip of tape must go around the back end of the tube and the shaft, with all tubular APD designs. This must go around at least two times. Additional tape may be added to enhance the attachment. Glue or other adhesives may be used but does not remove the requirement for strapping tape.

The APD must return to a round tubular shape after it has been squeezed. Be aware that this ability may vary with temperature and APDs that pass on cool days may fail on hot days or during the heat of the afternoon.

The APD should be firmly attached to the shaft. There should not be any significant movement of the APD on the shaft. If the APD is loose and rotates around the shaft or moves forwards or backwards on the shaft it will fail.

1. Golf Tube APDs:

The minimum length for the top of the APD (the wall away from the shaft) is 1.25". The length for the bottom of the APD (the wall next to the shaft) shall be equal to or greater than the length of the top wall. The back end of the tube (the end nearest the nock) must be cut straight (perpendicular to the axis of the tube).

All edges of the APD must be rounded and free of sharp edges. This may be achieved by either covering the edge with fiber/strapping tape or by melting the edge to form a minimum wall thickness of 1/16 inch. Melted edges must also be free of sharp edges.

The APD may be reinforced by adding a second layer of golf tube around the back end of the tube. If this reinforcement is present it must be a minimum of 0.50" long and securely attached to the tube of the APD. The back end of the APD tube and reinforcement tube may be melted together to increase the rigidity of the APD.

2. Siloflex* or other approved Polyethylene Tubular APDs:

The back end (end nearest the nock) of the tube must be cut straight (perpendicular to the axis of the tube). If the front end (end away from the nock) is cut straight, the minimum length of the tube wall is 1.25". If the front end is cut at an angle, the minimum length of the top wall (wall away from the shaft) is 0.625" and the minimum length of the bottom wall (wall nearest the shaft) is 1.875".

Siloflex APDs shall have beveled or rounded edges. This is the inner and outer edge for the front and the back of the APD. Using tape to cover the edges of the tube is not sufficient. Melting the edges is not allowed.

a. 75 & 80 psi APDs:

Requirements:

This type of APD must be made from either 75 or 80 psi Polyethylene tubing or an approved equivalent as described on the Siloflex *Equivalents page. The minimum outside diameter of the APD must be 1.25". If the outside diameter of the tube is less than 1.25" but greater than 1", the tube must be flared to expand the back end (end nearest the nock) to 1.25" as long as the flaring does not weaken the APD by causing stress cracks or breaks.

The attachment to the shaft may be enhanced by a routing a channel, 0.125" or less in depth, to place the shaft in. The APD tube may also have tabs cut into the wall or extending out of the wall along the shaft to provide additional surfaces for taping. None of these methods remove the attachment requirements listed under tubular designs.

b. 100, 160 and 200 psi APDs:

Requirements:

This type of APD must be made from either 100, 160 or 200 psi Siloflex tubing or equivalent as described on the Siloflex Equivalents page. The minimum inner diameter of the APD must be 1".

You **must** then use one of the following designs: external or internal tab and/or routed channel.

External tab: This design has a 2" tab sticking out from the front, bottom of the APD. This APD and tab shall be made using one solid piece of Siloflex tubing. The minimum width of the tab is 3/8". The tab must be taped in a spiral wrap going around it and the shaft. This spiral of tape shall cover the entire tab and extend at least a 1" in front of the tape to prevent slippage of the APD.

Internal tab: This is a tab cut at least .5" into the bottom edge of the APD. This tab should be a minimum of 3/8" and a maximum of .5" in width. This APD shall be taped in place, by overlapping the tab and the shaft several times.

Routed Channel: A channel is routed down the center bottom of the APD. The minimum depth of the channel is 1/16". The minimum width of the channel is a .25".

B. All Other Approved APDs:

1. Flexible Disk APD:

Requirements: This design is only approved for 1/4" solid fiberglass shafts and 5/16" or 11/32" wood shafts.

These APDs shall be made using 2.5" suction cups (catalog number SC250P) manufactured by Suction Cups, Inc., which have been cut down to 1 3/4"

diameter. Only that specific suction cups (catalog number SC250P) manufactured by Suction Cups, Inc is approved for APDs. The 2.5" suction cups are thicker than the smaller sizes. A 1 3/4" suction cup, which has not been cut down to size from a 2 1/2", diameter cup is not approved because it is too thin and flexible.

These APDs shall be attached by punching or drilling a hole in the center, then glued in place on the nock of your arrows using liquid (not gel) super glue and a glue gun. Since they are slightly flexible, they shall be glued into place .25" from the end of the nock. In other words, they are glued into place just past the slot in the nock.

****Warning: wait a day between using the super glue and hot glue, otherwise noxious fumes result****

This APD cannot be twisted around the shaft. If it does it fails. This usually means that the hot glue broke the bond of the nock to the shaft and this means the APD can fail.

2. UHMW Round and Octagonal APDs:

UHMW APDs shall have beveled or rounded edges.

These APDs shall be made from 1.25 diameter UHMW rod.

These APDs shall be 1.25" in length.

An adhesive shall be used to attach the APD.

If these APDs move at all, either rotating around the shaft or backwards on the shaft, they will fail. Tug on them to make certain they are firmly attached to the shaft.

Recommendations:

An additional method to secure the APD is recommended.

It is recommended that you cut a slot into the bottom of the APD to use as a nock.

a. UHMW round APD:

Requirements:

This APD shall be 1.25" in diameter and 1.25" in length. A hole is drilled in the center of the APD. This shall be the same as the diameter of the fiberglass shaft. The APD is then tapered from the back of the APD to slightly larger than the diameter of the shaft (front of the APD). The shaft shall fit at least .5" into the APD.

Recommendation:

Make or use a special bow rest, so these APDs don't strike the bow on release.

b. UHMW Octagonal APD

Requirements:

The bottom of this APD shall be cut to form an octagonal and to lighten the weight of the arrow. Instead of the hole, for the shaft being in the center of the APD, it's in one of the corners.

3. 1.5" Foam Wedge APD:

Requirements:

This APD must be made from closed-cell foam. It looks similar to 1/4" of a circle. When you measure the bottom of it will measure 1.5" on the sides. The shaft goes across from the curve, what would be the center of the circle if there were one. From the shaft to the outside curve is 1.5".

The bottom of the foam as you look at the side of the APD is 3/4". From the 3/4" mark, it tapers to the shaft. The height of the APD is 2". This APD is attached .5" from the end of the nock. It must be attached securely using adhesive and strapping tape.

Check the compression of the APD. If the APD is less than 1.25" in diameter, under pressure, it will fail.

4. Sir Erika's Rigid Funnel APD:

Requirements:

This design will only work on .25" fiberglass arrows.

The diameter of the funnel at the top is 1.25". The bottom of the funnel is a stem with .25" diameter. This is a specific design/funnel offered by Northstar archery. It must be attached so that it is a maximum distance of .50" from the end of the nock and it must be secure on the shaft.

5. Asgard APD:

Requirements:

This design will only work on .25" fiberglass shafts.

This is a manufactured/molded APD. It's one solid piece that fits tightly to a 1/4" fiberglass shaft. It is not approved for wooden shafts. This one piece unit slides onto the straight cut end of a fiberglass shaft and includes a nock. It does require an adhesive before mounting it. Strapping tape can be used, but it is not required.

- There is a list of other types of Polyethylene tubing that have been approved as equivalent and acceptable substitutions for Siloflex. Check with your KEM or KCAM for the latest list. Do not assume that something is an equivalent. If it isn't listed on the equivalent page it isn't approved for use as an APD. If you have Polyethylene tubing that you believe is the equivalent of the Siloflex, contact your KEM/KCAM for permission and approval to test it as an experimental material.
- There are pictures of these APDs at this website:
www.combat-archery.com

Definitions:

APD: Anti-Penetration Device

DSMCA: Deputy Society Marshal for Combat Archery

KCAM: Kingdom Combat Archery Marshal

KEM: Kingdom Earl Marshal

Polyethylene Tubing: A flexible material that is often used as water pipe.

PSI: Pounds per Square Inch

SEM: Society Earl Marshal

Siloflex: A specific Brand name of Polyethylene Tubing.

Strapping tape: Good quality strapping tape with fibers.

UHMW: Ultra High Molecular Weight Plastic