

# Growing Media Air Filled Porosity Testing

The air filled porosity (AFP) of a growing media is the percentage of its volume that is air after being saturated with water and just after it has stopped draining. Below is the method used in the Australian Standard for Potting Media for testing AFP.

<b>Materials: apparatus</b> (see photograph 1)	<b>Other materials</b>
<ol style="list-style-type: none"><li>1. Cut two lengths of 90mm UPVC storm water pipe, each 12cm in length and deburr the ends. Cuts must be made at right angles.</li><li>2. Drill four 9mm holes in a PVC cap in such a way that they will be easily reached with the fingers when removing from the water during the test.</li><li>3. Glue the cap on the end of one length of cut pipe, ensuring it is pushed all the way home. Apply extra glue around the edges of the cap to help with water shedding off the apparatus.</li><li>4. Cut away the remaining rim on the cap in such a way that legs are formed. This then allows the apparatus to sit off the bottom of the draining container. The volume of the apparatus should be close to 680ml but this should be checked to determine the actual volume.</li><li>5. A PVC joiner is then glued to the other piece of pipe so that this can be slipped over the base and allow the top section to be removed later in the test.</li></ol>	<ul style="list-style-type: none"><li>✓ Growing media</li><li>✓ Water</li><li>✓ 9L bucket</li><li>✓ Blunt knife</li><li>✓ Stocking/shade cloth</li><li>✓ Rubber band</li><li>✓ 4L ice cream container</li><li>✓ Measuring flask</li></ul>

## Photograph 1:

AFP apparatus filled with moistened media (centre) and 9L bucket, measuring flask and notepaper and pen to record results.



## Method

1. Place the top section on the base.
2. Moisten the potting media to a point that would be considered suitable for potting i.e. moisture content of 50-60%. Dry media should be moistened at least 24 hours before testing.
3. Pour moistened media into the apparatus level with the top of the top section.
4. Gently drop the apparatus from a height of 50mm, five times to settle the media.
5. Place the filled apparatus into a 9L bucket, and slowly run water into the bucket (not onto the media) until the water is level with the top of the media. Don't allow the media to float at any stage, as this may separate out the components and cause a false result.
6. Allow to soak for 30 minutes.
7. Remove the apparatus from the water and allow the media to drain for a few minutes.
8. Repeat the soaking and draining cycles twice more, allowing 10 minutes for each soaking period.
9. At the end of the third soaking, remove the top section of the apparatus and slice the media off using a knife. This should be done without exerting downward pressure on the media. After the excess media is removed it must be level with the top of the apparatus.
10. Cover the top of the base with a stocking or shade cloth held on with a rubber band. This prevents the media floating out of the base.

11. Place the apparatus in the bucket and add sufficient water to cover the apparatus to a depth of 20 - 40mm.
12. After 10 minutes, reach down with two hands into the water and cover the four holes in the base with four fingers (two from each hand). Carefully raise the apparatus vertically from the water. Allow any excess ponded water to flow through the stocking/shade cloth and off the outside of the container. The media must be saturated to the top.
13. Place the apparatus in a 4L ice-cream container or similar, unblock the four holes and lower the apparatus into the container.
14. Allow the media to drain for 30 minutes then remove the apparatus from the container. Measure the volume of water drained from the potting media in milliliters.
15. The AFP of the media is:

***(Volume of drainage (ml) X 100) ÷ Volume of the bottom section of the apparatus (ml)***

**Thea Pobjoy**

Farm Management Systems Officer

Mobile: 0488 996 009.

Email: [fmso4@ngiq.asn.au](mailto:fmso4@ngiq.asn.au)

*Reference: Container Media Management; K. Bodman & Dr. K.V. Sharman which can be purchased from NGIQ).*