Water Vapour Permeability

“Water method” according to ASTM E-95-96 (Villalobos et al., 2006)

1. Weight the empty measuring cup (**M0**).
2. Place, exactly 5g of deionised water inside the measuring cup.
3. Cut the film in a circular shape to match the dimensions of the opening of the measuring cup.
4. Measure the diameter of the film in cm (**D**).
5. Place the film sample on the opening of the cup and fix it by closing the lid.
6. Weight the measuring cup with its content (**M1**)
7. Place the measuring cup in a desiccator with a saturated Mg(NO3)2 solution (400% w/w, aw = 55%, at 20 °C) or NaCl solution (30% w/w, aw = 75%, at 20 °C)
8. Weight the cup every hour for 6h (or until steady weight)
9. Calculate the permeability (WVP) using the formulae below:

Where,

WVTR = Water vapour permeability rate

Slope = slope of the weight (g) vs time (h) curve

Film area =

WVP = Water vapour permeability

Δp = partial difference of water vapour between both sides of the film (1579.09x103 kPa for Mg(NO3)2 and 605.28x103 kPa for NaCl)