

1. WHAT IS CAPILLARITY RISE?

Capillary action or capillarity is an ability of a substance to draw another substance into it. It occurs when the adhesive intermolecular forces between the liquid and a substance are stronger than the cohesive intermolecular forces inside the liquid. The effect causes a concave meniscus to form where the substance is touching a vertical surface. The same effect is what causes porous materials such as sponges to soak up liquids.

When building a metal roof with anticondensation membrane such as DRIPSTOP it is important that roof panels are made and installed in this way, that there is no possibility of capillarity rise effect.

Capillary rise occurs on bare metal steel plate as well.



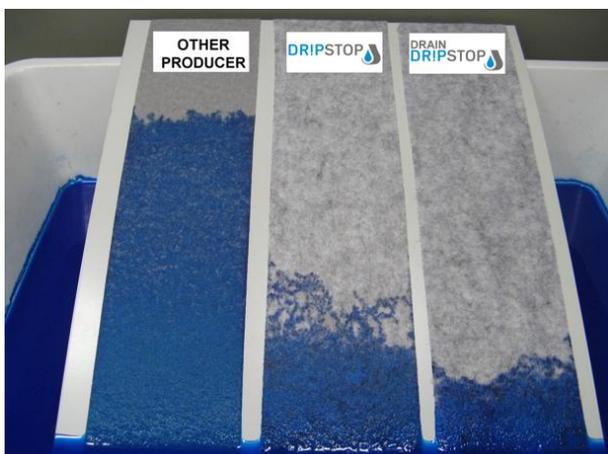
1.1. The consequences of capillarity rise

If roof panels with DRIPSTOP are installed and the capillarity effect has not been prevented, the membrane will start to attract water from the outside of the roof. As in the water there is also some impurity present, that will gradually make the membrane dirty and conditions in favour of bacteria to grow will be created.

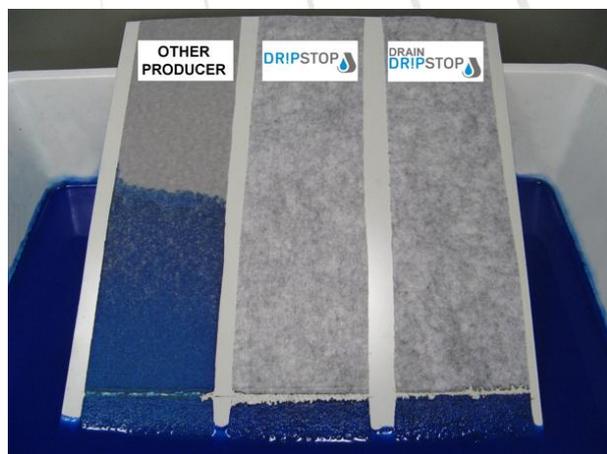
Capillarity rise is a natural characteristic of any anticondensation membrane. However, this effect should not be too strong as it can also have negative consequences. On the next two pictures you can see how high the capillarity rise can be. In a test three samples have been immersed in coloured water to test the capillarity rise of different materials.

1.2. Capillarity rise effect comparison

Without capillarity rise prevention



With capillarity rise prevention



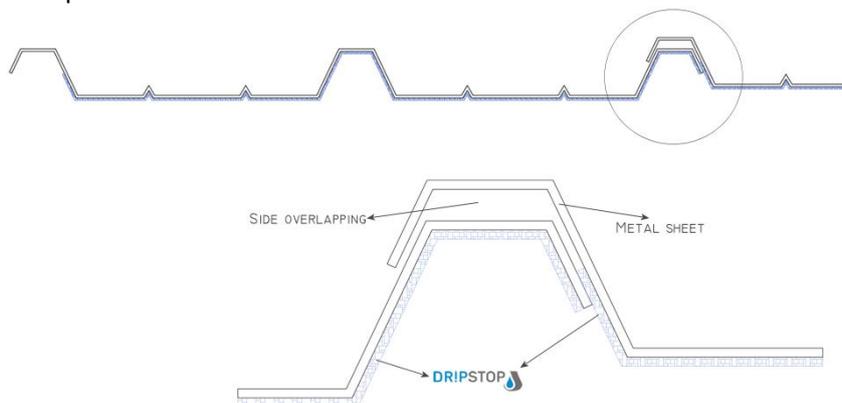
All samples were tested at an inclination of 20° for 24 hours.

The results of our test shows that some anticondensation membranes on the market have a stronger capillarity effect (on both pictures first from the left) when compared to dr!pstop. If capillarity rise is too strong (high), it is difficult to control it even if preventive measures described below are used. DR!PSTOP behaves much better and the capillarity rise is easy to control (in the middle on both pictures).

1.3. How to prevent capillarity rise?

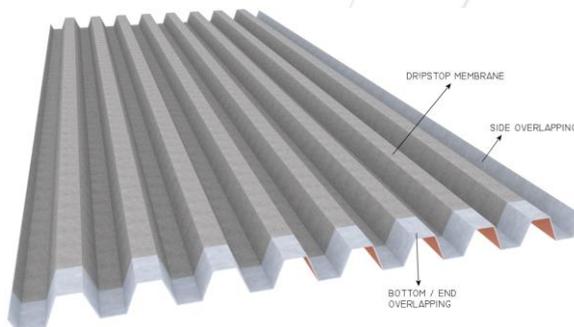
1.3.1. Longitudinal overlapping

To prevent capillarity it is important that DR!PSTOP is not applied where the panels overlap each other. Alongside the panel (side overlapping) this is easily solved in this way, that the width of DR!PSTOP membrane is few centimetres narrower compared to the width of a coil.



1.3.2. Transverse overlapping

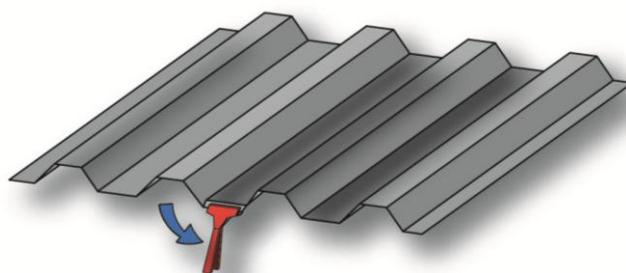
More attention needs be paid to prevent capillarity rise where the transversal (bottom) overlapping takes place (if overlapping is > 200 mm, elimination of DR!PSTOP is not necessary) and where water runs off from the roof to the gutter (min. 50 mm of DR!PSTOP should be eliminated).



Unless an application device with a possibility of automatic prevention of capillarity rise is used, DR!PSTOP needs to be removed manually (last few centimetres on each panel). The idea is to annul the basic function of the membrane in this part of the roof panel.

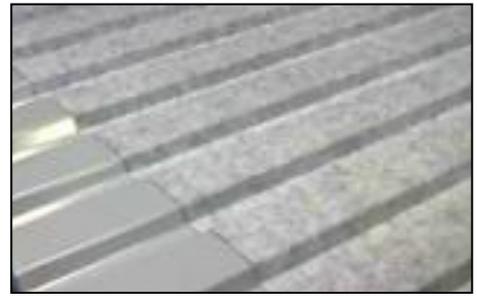
1.3.3. Eaves/ flashing

If roof inclination is lower than 20°, it is necessary to additionally bend the sheet metal in the eaves between the trapezoids at an angle of 45-60° downwards using a suitable tool.



2. AUTOMATIC METHODS

With a more sophisticated application device it is possible to prevent capillarity rise automatically in-line with f.e. hot wire, gas burner or cutting knife.



3. MANUAL METHODS

3.1. MELTING

This method is very easy and efficient way to prevent the capillarity rise. You need a hot air fan or gas burner. When the device is warmed up and ready to use, you can start with melting of dripstop anticondensation felt. About 50 mm of the membrane should be removed, consider the roof slope, climatic conditions and building constructions. Be careful not to damage protective coating on the metal.

Please check our website to see a demonstration video:

http://www.filc.si/downloads/Capillarity_rise_prevention_with_heater.wmv

http://www.filc.si/downloads/Capillarity_rise_prevention_on_roof.mp4



3.2. PAINTING

This method is slower and usually more expensive compared to melting. The last 50 mm should be varnished with a water-based lacquer. The edge should be sealed as well. After the varnishing you should wait, so that the varnish gets dry. Please note, that not whatever lacquer will do the job. Please note that this protection is not permanent and should be repeated if necessary.

Please run some tests before you decide for any method described.



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