REDE MODERNA

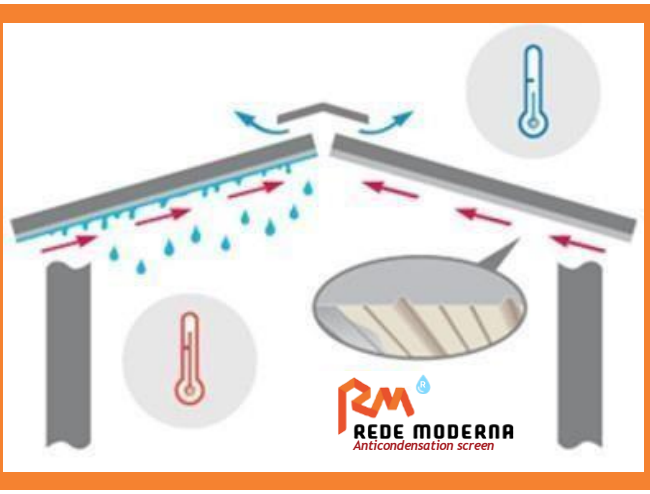
Anticondensation screen

TECHNICAL FILE *Anticondensation screen*

The ***Anti-Condensation*** Screen is a special membrane that solves condensation problems inside buildings with uninsulated roofs. When the condensation process begins, water droplets form on the underside of the roof. It absorbs around 900 g/m2 of water, which is stored in small places in the membrane. When it gets warmer, the water starts to evaporate back into the air and the membrane becomes dry again

CONDENSATION ON METAL ROOF PANELS

When the outside temperature drops, uninsulated metal roof panels become colder than the inside temperature. The warm air inside the building comes into contact with the cold roof panel and cools down quickly, which immediately increases the relative humidity of the air. When it reaches the low humidity point (dew), condensation occurs. Now, the question is whether the ***Anti-Condensation*** Screen is applied to the roof or not. If so, the condensate will be absorbed into the membrane, if not, water droplets will start to fall from the roof (see the right-hand part of the picture below).



CONDENSATION CAN...

- Causing damage to stored goods and materials
- Improve insulation capabilities
- Disrupting activities inside the building
- Damage to the roof (frost, accelerates rust)

HOW DOES IT WORK?

The ***Anti-Condensation*** Screen is made up of a large number of interwoven PES fibres, between which there is enough space to store water droplets. It serves to absorb condensed water droplets that evaporate back into the air when the temperature rises. For this process, it is important that there is some air circulation present (ventilation).

ABOUT CONDENSATION

Condensation is the change in matter from a substance to a denser phase, such as a gas (or vapour) to a liquid. Condensation usually occurs when a vapour is cooled to a liquid, but it can also occur if a vapour is compressed into a liquid or undergoes a combination of cooling and compression. The liquid that has been condensed from a vapour is called condensate.

Water vapour in the air that naturally condenses and turns into water on cold surfaces is called dew. Water vapour will only condense on another surface when it is colder than the temperature of the water vapour or when the water vapour is in equilibrium in the air, for example, the saturation humidity is exceeded. When water vapour condenses on a surface, a net heating occurs on that surface.

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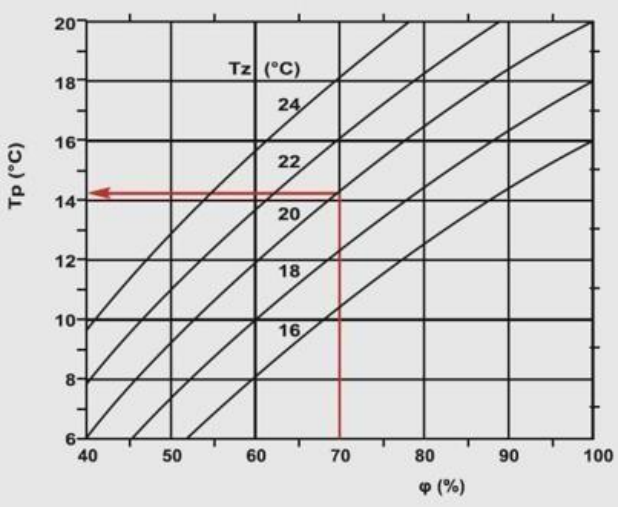
Condensation is the most common type of humidity found in buildings. Indoor air can have a high level of relative humidity due to the act ivity of the occupants (e.g. cooking, drying clothes, breathing, etc.). When this air comes into contact with cold surfaces, such as windows and walls, it can condense, **causing dampness**.

Relative humidity is a ratio between the amount of water vapour present and the amount the air can hold at a given temperature. As warm air is able to retain more water vapour than cold air before it becomes saturated (100% relative humidity), humidity decreases as the temperature rises, unless the humidity of the air is changed. On the other hand, humidity will increase as the temperature drops.



If the air comes into contact with a cold surface and causes the air temperature to drop to a point where the relative humidity becomes 100%, the water vapour in the air condenses (becomes liquid), resulting in morning dew, night-time condensation inside the building etc.

The graph on the right shows that, at a temperature of 20°C and relative humidity of 70%, the air maintains a dew point temperature of 14.2°C.

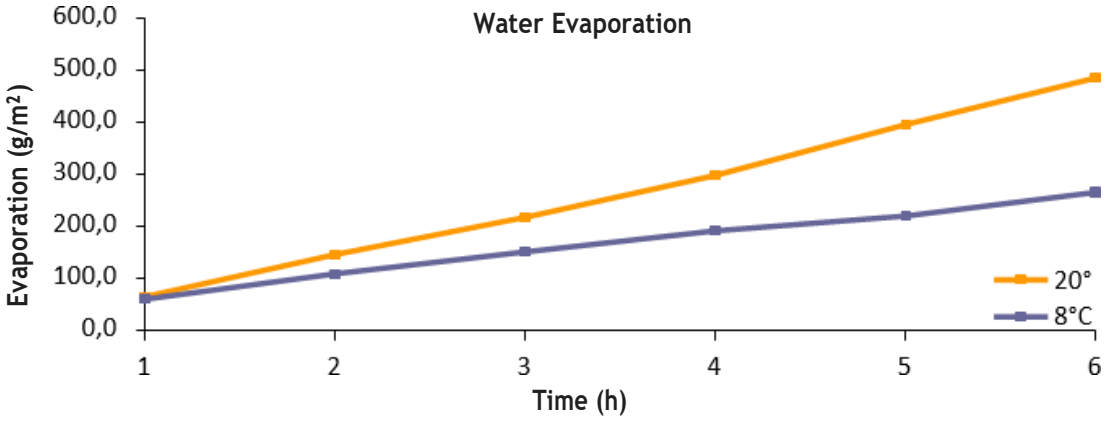
- Tp - dew point temperature in °C
- Tz - air temperature in °C
- Φ - relative humidity in terms of %

The basic function of the ***Anti-condensation*** Screen is to absorb condensed water droplets and allow the water to evaporate back into the air when the internal temperature rises. Its performance differs depending on the thickness of the material and the slope of the roof. See the table below for details:

Tabela: Absorção de água em g / m², dependendo do ângulo do telhado e da espessura da membrana

Angle \ Screen density	95 g/m²
0°	900 g/m²
45°	700 g/m²
90°	500 g/m²

Graph: Water evaporation depending on room temperature and climate



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TECHNICAL REQUIREMENTS

• Take care when installing so that the roof panels don't damage the membrane.

• Roofs must be manufactured, constructed and assembled in accordance with the applicable building standards. In this context, some ventilation must be guaranteed.

• If a building's roof is being built in weather where there is a risk of frost, this will lead to the onset of damp. To avoid this, the panels need to be well stored before assembly or there needs to be adequate ventilation after assembly.

PRODUCT TECHNIQUES

• Easy to apply
• Durability
• Combustibility A_2 - s_1; d_0 (EN 13501-1)
• Resistant to bacterias
• Additional sound insulation
• Rain noise reduction