



## **INTEGRAL CONDENSATION CONTROL**

### **CONDENSATION**

When atmospheric conditions (in this case temperature and humidity) reach the dew point, vapor from the air is able to condense to objects colder than the surrounding air temperature. Once vapor condensing occurs, droplets are formed on cool surfaces. This is partly why warming a vehicle's windshield with the defroster can prevent the 'fogging' of the glass.

### **THE PROBLEM**

When the interior air of a structure meets these conditions, the vapor from that air will condense to cool surfaces. Metal roofing that has been cooled by the exterior air temperature often provides this surface. The droplets formed will combine as they contact one another, continuing to do so until they are too large to be supported by the liquid's surface tension. At this point, dripping will occur, essentially raining on the structure's contents.

### **SOLUTION**

In the past, solutions to this problem have often involved underlayments. These underlayments reduce contact between a structure's interior air and the metal roofing, thereby reducing overall condensation. The condensation that does form and drips is then channeled by the underlayment to the eave. This solution is effective, but costly. Installing this underlayment, often termed Vapor Barrier, involves laying a paper thin sheet across the structure's purlins before the roof is installed. Ideal weather conditions are required for this as even the slightest wind can make this a challenging or altogether impossible task. This can cause jobsite delays that may bring progress to a halt while a structure remains unprotected to the elements. Even in the event that ideal weather conditions are present, installing vapor barrier is still a very dangerous task, requiring builders to expose themselves to awkward material handling on the structure's bare trusses. These risks and delays often generate additional costs for both the owner and the builder, but have often been necessary with underlayments being the only option to prevent interior dripping.

### **BETTER SOLUTION**

New materials and production methods offer a better solution. Utilizing the absorption characteristics of polyester fabrics and their integral application during roll-forming, North Star Metals offers a ready-to-install roofing panel with integral drip-protection.

I.C.C. is a pre-applied solution that reaches the jobsite ready for immediate installation. The delays and increased jobsite workload caused by the problems associated with loose underlayments are eliminated by this product. Also, due to the simplicity of the solution, panels with I.C.C. install using the same methods, fasteners and time that similar panel-only installations require. No changes to the installation process are necessary, with the exception of the time and effort saved without underlayments.

### **HOW IT WORKS**

Rather than using underlayments such as vapor barrier to channel the condensed liquids to the eave, the polyester membrane simply retains the liquid until the atmospheric conditions allow it to be re-evaporated. This is because polyester is hydrophilic, meaning water is attracted to it. It acts as a wick, harmlessly absorbing the condensing vapor.

The polyester membrane does not prevent condensation; instead, it provides an absorbent layer to detain the condensing vapor until it can re-evaporate later in the day.