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Controlling Humidity and Condensation

Modern construction methods have resulted in tighter, more energy-efficient homes that require planning for the control of humidity and condensation. Because a Superior Walls wall panel is constructed with a high-performance concrete mix and lined with closed-cell foam insulation, it prevents the free flow of moisture through the wall panel. Though this is a good thing when seeking to keep ground water out of your basement; it also acts to keep moisture vapor inside the house.

In certain conditions of high interior humidity and low exterior temperatures, it is possible that condensation may form on the interior surface of the Superior Walls panel. Condensation can occur anytime moist air contacts a surface that has a temperature less than the dew-point of the air.

Condensation may be controlled in a number of ways:

1. By reducing the amount of moisture in the air:
 - a. Limit moisture-producing sources or activities like non-vented clothes dryers or hot-tubs.
 - b. Use a dehumidifier.
2. By preventing the moisture from reaching the cold wall surface:
 - a. Remove the moist air with an exhaust fan or other ventilation.
3. By increasing the temperature of the room:
 - a. Add heat and the air will hold more moisture.
 - b. Increase the room temperature and you will also increase the temperature of the wall surface.

It is usually most effective to use more than one of these methods in order to effectively control condensation.

“Original Equipment” Foam Insulation

All Superior Walls products are tested to the UL1715 fire test standard and comply with the requirements of the 2006 International Residential Code - Section R314 (Foam Plastic) and Section R315 (Flame Spread and Smoke Density). No additional thermal barrier is required UNLESS additional foam insulation has been added after the panel was manufactured. Superior walls are delivered to your job site with either 1” or 2½” foam insulation installed as a part of the system. This gives the walls an R-5 or R-12.5 rating respectively.

Exterior Helpful Hints

- **Grade** – Slope the ground away from the home a minimum of 6 inches within the first 10 feet from the wall (additional slope may be required by your local building code). Re-grade if soil settles over time.
- **Gutters and Downspouts** - Keep gutters and downspouts free of leaves and debris. Splash blocks or down spout extensions should be used to divert water away from the foundation.

Interior Finishing of Superior Walls

- **Corner Studs and Blocking** – Always use preservative-treated lumber for corner studs and nailers placed against the concrete. For areas where there will be objects fastened to the finished walls between existing studs, install appropriate wood blocking. (i.e. For curtain rods, cabinets, doorstops, or electrical and plumbing fixture locations.)
- **Wiring and Plumbing** – Using the pre-cast holes in the studs, install all electrical wiring and small plumbing lines according to local codes. Holes may be drilled through the top bond beam for wiring and plumbing drops.
- **Drywall and Interior Finishes** – After the corner studs and all blocking are in place, the Superior Walls are ready for drywall. Regular ½” drywall is recommended to span the stud spacing. It is best to leave a ½” gap between the concrete floor and the bottom of the drywall to prevent moisture absorption into the drywall. This moisture can cause drywall deterioration and paint finish problems. Attach the drywall using 1” drywall screws. A solid bead of

construction adhesive should be applied to the top bond beam and the face of the stud. The use of paneling or other similar products should still be backed with a layer of drywall.

- **Exterior Holes in Superior Wall Panels** – Any exterior holes that may be required for such things as sanitary soil lines, electrical service entrance cables, or chimney flues, should be made following these simple procedures:
 1. Mark-out the location and size of the hole required.
 2. Use a masonry hole saw or a hammer drill with a small bit (to drill a series of holes around the perimeter of the hole). With a hammer and chisel start to work the area inside the small holes until the hole is the required size and shape.
 3. After the pipe is installed, completely seal the entire area around it with a flexible sealant to prevent water penetration. A one part urethane or polyurethane is recommended. (Do not use Acyotoxy-cure silicones.)

Adding Insulation to a Superior Walls Panel

When adding insulation to a Superior Walls wall panel, it is important to consider two factors to ensure that water vapor does not condense within the wall cavity:

1. Controlling the moisture content of the air trapped in the cavity while adding the insulation. (It may be necessary to use a dehumidifier.)
2. Restricting moisture-laden air from entering the cavity from the living space or from the earth beneath the wall. (This may be accomplished through the use of paints, sealants, and spray foams. Daylight drains require a trap on the drain line to prevent a back-flow of moist air.)

The essential issue is that you must stop moisture from entering the stud cavity.

- Fiberglass batt, cellulose, Icynene®, or other materials may perform satisfactorily if the considerations noted above are properly dealt with.

There are two other methods that will consistently yield satisfactory results and prohibit condensation from forming within the wall cavity:

- Spray-on 2-part polyurethane foam. This is a closed cell material and completely closes off the cavity from moisture penetration. It can be obtained both professionally and as a DIY kit. Several DIY kits are available on the internet.
- Add extruded/expanded polystyrene foam board between the studs, and seal between the foam board and studs with a (“great stuff-type”) canned polyurethane. The polystyrene foam board is closed cell; moisture cannot pass through, and when used in conjunction with the canned foam, completely closes off the cavity from moisture penetration. Foam board is readily available for the DIY market, as is the canned polyurethane foam.

Generally speaking, after adding any type of exposed foam insulation to the interior of a wall assembly, the building code requires that you cover the insulation with a thermal barrier to protect the insulation from fire - see your local building code for details.

NOTE: This information is general in nature and may not be applicable in every situation. Your design professional (i.e. builder, architect, engineer, or supplier) can assist you in special conditions. When in doubt, please ask for guidance concerning your particular application.