



ChicagoWineCellarExpert.com
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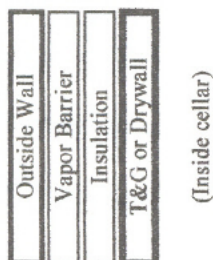
Wine Cellar Construction Specifications

Wall & Ceiling Framing:

Build wine cellar walls using standard 2x4 or 2x6 construction methods, making certain to follow building codes in your area. If metal studs are used, at least five rows of 'nailers' must be placed horizontally between the studs at appropriate heights, or firing strips must be attached on the left edge of each metal stud. Racking systems attach to these nailers or strips. Until we have a final-approved CAD drawing of the racking, we cannot provide nailer height information.

Vapor Barrier (Required, if cellar is to be chilled.)

6-mil plastic sheeting is applied to the **HOT side** of the cellar walls. The vapor barrier must be applied to the outside walls and ceiling, as if you were wrapping the cellar in Tyvex. Tape the seams before the wall is closed. If it is impossible to get to the outside of the studs or joists, then plastic must be applied from within the cellar to the outside walls. The most common method is to wrap the entire interior, leaving the plastic loose within the stud cavity. Insulation can be placed between each stud. All walls and the ceiling must be wrapped in plastic for a complete vapor barrier. (If the cellar is not in the basement or lowest level, the floor joists beneath the cellar must also be insulated and a vapor barrier applied.) Failure to install vapor barrier properly may void the wine chiller warranty. NOTE: last page of this memo for pictures of proper placement.



Insulation: (Required, if the cellar is to be chilled)

R13 or greater for the walls. **R19-R30** is recommended in the ceiling. If standard fiberglass insulation is used, choose the unfaced batts. Cellulose, blown-in insulation may be used if, but still requires a 6-mil vapor barrier.

An alternative insulation method is Polyisocyanurate, closed-cell, rigid insulation boards. This type comes in 4x8 sheets and can be found at Home Depot. The r-factor per inch approaches r-7, which is twice the

insulating capability of fiberglass batt insulation. This type of insulation board works well when the insulating space is not as deep as that required for fiberglass. Polyisocyanurate also works well if there are hot pipes or heating ducts running across the ceiling.

Use at least three-inches to attain an adequate heat-break. A vapor barrier is not required, **IF and ONLY IF**, the installer caulks the seams between the insulation board and the ceiling joist. Water in the form of condensation will appear on the top of any insulation and will attempt to fall through to the floor. Either a vapor barrier, the caulked/sealed seams of the insulation board or the drywall will stop the moisture from falling. If the drywall stops it, there's a chance for mold to develop.

Spray-in, expanding-foam insulation offers r7 per inch; Corbond II is a brand name of a product used in previous cellars by clients of ChicagoWineCellarExpert.com, although other brands offer similar specifications. While expanding-foam is more expensive than standard fiberglass batting, foam provides a much better insulation capability and its own vapor barrier. Seal Ection 500 is a spray product that is injected as a liquid and expands to fill the void; however, a vapor barrier should be used with this product. Remember, the better the insulation, the more consistent the temperature from season to season. Also, the better the insulation, the less frequent will be the cycling of the cooling system. With the high cost of energy, reduced operating time translates into lower overall costs.

Wall & Ceiling Coverings:

Common wall coverings are cedar or redwood tongue and groove material applied to the walls and ceiling. This T&G, 1 x 4 paneling, is the same wood species as the racking material, which provides a very uniform look throughout the cellar. Stone, brick or other masonry material may also be used as wall covering. (If stone or brick is to flank the wine storage, racking systems, final measurements cannot be provided until after the stone/brick is in place.)

Drywall (green board) can be used and painted to match a color theme of the cellar; however, always use latex paint. Make certain to paint or finish to the floor. (Do not leave a 2" or greater border at the base of the wall, assuming the installation of some type of base molding.) Also, make certain that the drywall is void free down to the flooring. While racking usually has base molding, the base is on the front of the racking. A portion of the bottom of the racking is open to the back wall. Do not assume that the racking will cover imperfections in the drywalling of the room or gaps in the tile/grouting.

Cellar Doors: (Exterior grade (1 ^{3/4}") is required if cellar is to be chilled)

- Must be exterior grade – solid core – 1.75"
- If the door has glass, it must be sealed insulated glass.
- The door must have exterior grade weather stripping to prevent warm air intrusion. We recommend Q-Lon weather stripping.
- The door must have a threshold with weather stripping to provide a tight seal.
- If an automatic door bottom is used, it must be adjusted properly to prevent warm air intrusion.
- If the flooring is very rough and uneven an automatic bottom may not provide a tight seal.
- When the door is installed the gap between the frame and the jamb must be sealed inside and outside with *DAP tex plus, window and door foam sealant*, to prevent warm air intrusion through the crack behind the casing.
- Seal door casing to wall with premium grade silicone caulk.

Lighting: (Remember, if you choose to use recessed cans and halogen lighting accents, the heat generated by these lighting choices must be removed from the wine cellar by your cooling unit. The hotter the lighting choice, the greater the electric bill

- Recessed can light fixtures OK but note caution above.
- Halogen light fixtures OK but note caution above. (The temperature of Halogen lighting at the face has been measured at 178-degrees for certain varieties. Temperatures of 128-degrees Fahrenheit are quite common.)
- If you are considering spot lights make certain that the bulbs burn 'cool'.
- Use cool lighting, so it won't work against the refrigeration.

- Install a dimmer switch, so you can have nice accent lighting or task lighting when required.
- It's ok to use florescent lighting – but you will need cold air ballast and florescent lights require a special dimmer switch.
- We like junction boxes in walls and ceiling that we can easily insulate nice and tight.
- Good fixtures choices are ceiling and wall mount fixtures, chandeliers, pendent and mini pendent lights.
- All globes must be open to allow cool air to circulate around the light bulb.
- Light switches should be located outside of the wine room, so you don't have to open and close the door to turn on/off accent lighting.
- Select your lighting location after the racking design has been confirmed. The depth of the racking and or evaporator location may alter the center line of the room and the available ceiling space for lighting. Additionally, you might want to center the light fixture on an arch or other racking feature.

Wine Cellar Windows

- All windows must be insulated tempered glass. The minimum should be two panes of ¼" glass with a ½" air space. However, thicker glass and larger airspace provides better insulation and should be used in areas where the window will be exposed to warm temperatures and sunlight. If possible use ¼" glass panes and ½" air space for an overall thickness of 1".
- When the window is installed, the gap between the wall framing and the window frame, must be sealed inside and outside with *DAP tex plus window and door foam sealant*, to prevent warm air intrusion.
- Seal window in place to stop with premium grade silicone caulk.
- Seal window casing to wall with premium grade silicone caulk.

Potential for condensation on the outside of single pane glass used in wine cellar construction: (If you choose to use single pain glass, rather than double-pane insulated glass, not only will the cooling load be heavier but there is the potential for condensation appearing on the single-pane surface.)

- Under most conditions, there should not be a buildup of condensation on the outside of a single pane glass wine cellar window, door or wall. But, under some conditions there can be!
- The temperature of the outside glass surface of a wine cellar set to a temperature of 55-degrees will be about 60 to 63 degrees Fahrenheit.
- Condensation will occur if the dew point outside the cellar rises above the temperature of the outside of the glass (For example, this phenomena might occur in a home with 60% to 70% relative humidity with a 72 degree temperature, or in a home with 50% to 60% RH and a temperature of 80-degrees.)
- If the cellar is going to be built in a part of the country where the relative humidity inside the structure may be 60% or higher, any single pane glass has the potential to sweat.

Flooring:

The most commonly used floor coverings are slate, tile, marble, or vinyl. NEVER USE CARPET. The flooring should be applied to a level surface. Never apply base trim or moldings to the walls where racking will be attached. Most racking is sold with base and crown moldings. Also, **make certain that any tile is grouted to the drywall.** ChicagoWineCellarExpert.com racking mounts to the wall but there is not a trim piece integrated within the racking to hide the seam between the drywall and the tile.

Electrical: (This is the category that causes the vast majority of the problems with wine cellar construction. Typically, the electrical needs for the cellar cannot be settled until AFTER the final design of the wine cellar has been determined. If the room is drywalled prior to the final design approval, outlets for any rope lighting, humidors, and the chiller will require placement afterwards, not a great alternative.)

- ChicagoWineCellarExpert.com offers LED lighting that is specifically designed to fit behind the display angle of individual bottle racking. (The high-voltage circuit into which the rope lighting will be plugged should be placed upon its **own dimmer** control.) (See the specific dimmer spec for

- those approved for use with LED lighting.) An outlets for the LED lighting can be placed about 18" AFF and mounted horizontally, not vertically, as is standard practice.)
- It is recommended that the main cellar-lighting be on a timer system so they can't be left 'on' for long periods of time. Lights cause excess heat and will cause the cooling equipment to overwork itself.
 - Chiller electrical specifications are dependent upon the chiller purchased. Each is a bit different.

Climate Controlled Systems:

If a climate controlled cellar is required, ChicagoWineCellarExpert.com can provide cooling equipment to maintain the cellar at a temperature between 55-60 degrees. There are several types of units. "Through-the-wall" systems, "split" systems, "water cooled" systems, and "Ducted", air-handler systems. Consult with a ChicagoWineCellarExpert.com Consultant to assist with the sizing of the cooling unit, and to obtain installation and power supply instructions.

While all of our chilling systems operate very gently so as not to remove too much humidity from a cellar, none of the most popular chilling systems in the wine industry offer a humidity control (i.e. none can 'add' humidity). However, good news! In the Midwest, the ability to add humidity to a chilled cellar is not required. The natural level of humidity throughout the Midwest will keep any chilled cellar at 45-60 degrees relative humidity. And that level is very sufficient to prevent cork-crack.

Last point. Condensate is a factor of refrigeration. For your information, all chillers require a drain of some sort. Be prepared. (Some chiller manufacturers brag that their chiller does not require a drain. If you want water dripping down drywall, don't take our advice. Forget the drain. Harsh, but true.)

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Wine Cellar Room Preparation

