

How to Build a Wine Cellar

Wine COOLER D I R E C T



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Introduction

If you enjoy wine, you should consider adding a wine cellar to your home. Not only will this allow you to keep your wines at the proper temperature and humidity so that you will be able to enjoy them at their best flavor, but this will also add value to your home.

Installing a wine cellar isn't as complicated as you might think. You only need to follow a few careful steps in order to completely change your home. In this guide, we will go over the nine steps you need to take in order to install your own wine cellar, whether you are creating a new construction or you are converting an already standing space, like the basement in your home.

Before you begin, understand that there are a few rules. You must find out what types of permits you will need to add a wine cellar. If you do not have those permits, then you could be fined and the installation process could be halted. Additionally, you will need to follow all building codes in your wine cellar. Do your research on these matters in advance.

Now, are you ready to add a wine cellar to your home? Let's get started...

Chapter 1:

Choosing Location

Before you can actually start building your wine cellar, you will need to choose the right location. This will be a very important decision, obviously. You could technically place the wine cellar anywhere in your home, but that wouldn't be advisable because this could end up costing you more money in housing expenses. Keep in mind that the cellar needs to stay cool, so that should be something you think of when picking a location.

“Location is your most important consideration. You're going to want to find a corner of your home that has no direct sunlight – basements are perfect.”

(McCallum, n.d.)

In other words, the basement is your very best option, but it isn't the only one. If you have another space in your home in mind, that space could work as long as it meets a certain set of parameters.

Temperature and Humidity

In addition to staying out of direct sunlight, there are two main factors that come into play when choosing a spot for your wine cellar: temperature and humidity. Your best option will be to choose the coolest spot in your home as well as the most humid. That's because you will need to maintain your wine cellar at around 55-58 degrees and around 55-75% humidity.

Obviously, the closer you can come to those two sets of numbers in the first place, the better off you will be.

Heat Gain and Expenses

Why does this matter so much when you are still going to have to purchase a cooling unit for your wine cellar? Quite simply, the average heat of the space in the first place will calculate how much your cooling unit has to work. If the average temperature for the area is in the 70s or 80s, the cooling unit you choose will have to be bigger (more expensive) and will have to work harder (more electricity costs) just to maintain the proper temperature for the wine cellar.

Humidity is a must for your wine cellar, as well, so if you choose a spot in your home that is very dry, then you will have to spend more money regularly introducing humidity to the area. These costs can add up and your wine cellar may become much more than you bargained for.

By choosing the coolest, most humid spot in your home to build your wine cellar, you may also be able to purchase a smaller cooling unit, and you will definitely save money in operating costs.

For most people, the right spot will be in the basement or cellar of the home. However, it doesn't necessarily have to be the only place to consider. Just make sure you factor in average temperature, humidity levels for the area, and whether or not it is in direct sunlight.

Direct sunlight will damage wines and that means your wine cellar will need to have zero windows. If the room you have chosen does currently have windows, before you do anything else, you will need to wall them in.

Once you have evaluated your home and chosen the right spot for your wine cellar, then you can get started with building, and the first step will be installing studs, soffits, and frames.

Chapter 2:

Studs, Frames, and Soffits

The next thing you have to do is prepare the space so that you can build your wine cellar. This will include studding out the space, installing frames, and adding soffits. Before you begin with these steps, you will need to make sure you have a permit to be adding this to your home. You will also need to take the time and ensure you understand building codes on a state, city, and national level so that you do not break any of them. Here are the steps to doing this.

Studding the Space

Before you can add the studs that will provide a basis for your walls, you need to seal the concrete foundation and walls with a sealant such as a spray foam. If you plan on adding a six-mil vapor barrier, then you will need to do this during the studding process. So, make sure to look at chapter four before you do anything else. Six-mil vapor is not necessarily the best choice for your wine cellar, but it is the more economical option. Otherwise, you can seal everything up with spray foam and then begin studding.

You have an option to use either 2x4 studs or 2x6 studs. The latter of these two options can be helpful when you are concerned with insulation because they will add a higher insulation value and lower the amount of power needed in a cooling unit.

Generally, studs are made from wood, but some people choose steel studs for their own construction. Once you have the studs in place, then you will have the basic frame for your wine cellar and can move on to the next step.

Soffits and Framing

A soffit will allow you to cover various obstructions within the wine cellar. This could include ductwork, piping and anything else. When you build the soffits, there are a

couple of things you should keep in mind. For example, if you will be installing any type of lighting on the soffit, then you have to do so properly. That means following these rules:

- Ensure the soffit is placed in a way that it will not interfere with the ducting itself or the racking that you plan on adding to the wine cellar.
- Ensure that your measurements for the soffit also include crown molding as it will add about another inch to the whole soffit and framing system.
- When installing the soffit, leave a gap of about one inch from the crown molding to the lighting for safety measures.
- Use the right type of lights for safety as well. IC can lights will allow you to add insulation around them, and they are the best option for wine cellars for numerous different reasons.

It is always a good idea to measure your racking before you start planning out soffits. This way, you can ensure none of your framing will actually get in the way of the racking itself. The last thing you want to do is build the wine cellar and then discover your racking doesn't fit.

Once you have completed these steps, you can move on to the actual refrigeration matters, which we will discuss in the next chapter. Obviously, refrigeration will be one of the more expensive parts of your wine cellar and it will one of your most important choices, so we need to look at it carefully.

Chapter 3:

Refrigeration

Once you have framed out your wine cellar, then the next matter to tackle will be the refrigeration. After all, keeping your wine cool will be one of your main goals. There are several steps you will need to take in adding the refrigeration, including roughing in the air handler, and other important things such as a ductless split or a self-contained cooling unit.

You will have to decide which type of cooling unit you will be using in your wine cellar before you can begin with this step. That's because you may need to do some of these steps but not all of them based on your cooling unit specifically, so you will need to use your judgment on what needs to be done and what does not.

The Air Handler

If you will be using an air handler that includes ductwork, then one of your first steps will be running the ducting itself. This will set everything up so that you will be able to add the air handler. The air handler itself will be in a separate room and the condenser will need to be outdoors. Of course, you will have to run ductwork for both of these things. Additionally, you will need to:

- Place a drain line that goes outdoors to remove condensation
- Do some minimal electrical work to prepare the space for the cooling unit
- Add a water line for the cooling unit to use

- Add in extra electrical lines for things like control wires, alarms, de-humidifiers, and humidifiers if you will be using these things in your wine cellar. All of these things are extras, but many people like to include them.

All of these steps will be for a ducted air unit, and this can take extra work. This is why many people choose to use a non-ducted air unit, which we will discuss later in this chapter.

The Ductless Split

A ductless split may be used, and if that is the case, then you will need to prepare for it in this step as well. There will need to be a line that is installed between the indoor section of the wine cellar and the condenser, which will most likely be outdoors.

Self-Contained Cooling Unit

Now, if you prefer to avoid having to add things indoors and out, then you could choose a self-contained unit for refrigeration. This type of option, you won't need to do as much work, but you still have to prepare an opening for this unit. That means doing the following:

- Measure the size of the unit and create a hole in the wall that is this proper size.
- Ensure there is an electrical outlet near the unit or install one if it is not available.
- Find a way that you will allow for a drain line for the unit.
- Consider creating a space for a humidifier as well, as the self-contained units do not add humidity.
- Ensure you are leaving enough room around the area for the exhaust side of the cooling unit.

Refrigeration is extremely important to your wine cellar, so you need to make sure you do all of these steps properly and you choose the right cooling unit based on your preferences and needs.

Don't try to save money by choosing the cheapest cooling unit you find either. If you do, you could be losing money in the future. You may have to buy a bigger cooling unit later on, and that means purchasing again. You may find that the cheapest cooling unit wears out very quickly or you may find that it just doesn't work very well. It is a hassle that is just not worth your time or money. So, take the time and choose the right unit now and save yourself problems in the future.

Insulation and vapor barriers were mentioned earlier in this guide, and we need to look at them in the next section.



Chapter 4:

Insulation and Vapor Barriers

Unless you want to spend way too much money on energy bills in an attempt to keep a wine cellar cool, then insulation is a must. You have two different options for insulation, and the first is a 6-mil vapor barrier. As mentioned previously, you must decide before you even begin the process if that is the method of insulation you want to use. That's because the studs and framing have to be prepared properly. Your other option is spray in foam for insulation. Let's talk about some differences in the two so that you can determine which is best for your own cellar.

If you choose the vapor barrier method, then you can save some money because it costs a great deal less than spray in foam. However, that doesn't mean the vapor barrier method is necessarily always the best choice. If that barrier is punctured, then it will essentially lose all of its insulating ability, and puncture is easier than you may think. All it would take is for someone to put a screw or nail in the wall and a puncture could occur.

The spray in foam has an advantage of expanding to fill every single small spot or crevice, so this can mean a tighter seal.

So, the best option is the foam, but it can be expensive, so if you are looking to save money, then you could consider the 6-mil vapor barrier.

The Vapor Barrier

If you choose to go with the vapor barrier method, then there are several steps to this process. If you followed directions, then you should have already laid the groundwork for this. After that, the steps you will need to follow are:

- The vapor barrier will require that you install it before you put the wall studs in place.

- You will need to pay attention to the ceiling joists, as well. They need to be wrapped properly to maintain the barrier.
- Check with local code. Some codes require that if you install a vapor barrier, it should be placed on the warmer side of the ceiling. If that is the case, your vapor barrier will not work very well for the ceiling and you should consider spray foam.
- Every corner needs special attention to ensure there are no leaks. This means leaving excess barrier in each corner. Then, you will be able to make sure all seams overlap and tuck tape is used to seal them shut.

Now, that has to do with adding vapor barriers to new constructions since you can put everything in place before you install the studs for the walls. If you are using an existing construction, then you can wrap the studs as you would with a ceiling. The vapor barrier will need to be located on the exterior walls because they are warmest.

A final step after putting the vapor barrier in place will be to add insulation to cavities between the studs and ceiling joists. In this case, the best option would be fiberglass batting. If your studs are 2x4, then you will end up with an R-13 insulation value after adding the fiberglass batts. If you used 2x6, then your insulation value goes up to R-19.

When you add the fiberglass batts to the cavities, then it is absolutely vital that you ensure every hole and crevice is filled. Even one gap can cause an expensive air leak.

The Foam

If you determine that you would like to use spray in foam for your insulation instead of vapor barriers, the first thing to keep in mind is that you will be spending more money in the beginning, but it will likely save you money over time. You will have much better insulation as long as you choose a quality foam that will expand properly and fill in every

space. On that same subject, make sure that you use plenty of foam so that there will be no costly gaps.

After you have your vapor barrier in place, you are still not quite ready to finish the walls. That's because you will need to install outlets and ensure your electrical wiring is done properly. If you don't do this, then you will have no way to provide power to lighting and other things you may need in the wine cellar. So, in the next step, we will cover the electrical portion of your progress.



Chapter 5:

Electrical Wiring and Outlets

After you have your studs in place and everything has been insulated properly, then your next step will be to ensure you have the proper electrical outlets and wiring. There are many different reasons why you may need electricity in a wine cellar, including lighting, humidifiers or dehumidifiers, standalone cooling units, and more.

The first thing to note is that you have to follow local codes as far as where you can place your outlets. Never go against code or this could be very costly later on. So, find out in advance, and then work with this information to choose where you will put your outlets.

If you have freedom of placement, then the corners would be the best option. That's because there is a small gap where wine racks will meet, and that is the perfect spot for the outlets. If you place them elsewhere, you may find that they are blocked by the racking itself, and that could result in somewhat of a hassle.

Outlets for Lighting

If you have high reveal racking, then you will need to place an electrical outlet here for your lighting. Of course, the space for the electrical outlet could be fairly far away, so make sure you spend some time measuring the cord for your lighting to determine the best place to put the outlet.

You may need outlets for other lighting as well, including archways and other spaces. If you don't take this in consideration when running the electrical wiring, you could find getting the lighting you need to be very frustrating.

Keep this in mind too: you may wish to have lighting on different switches so that you can easily control what turns on and when. If you don't do this, then you will likely have to have all of your lighting either on or off even when you only need one thing.

Unplugging and plugging in lighting when you need it can be a hassle, so having everything on proper switches can make things much easier.

No matter the case, you will need to carefully consider how you place your outlets. You could place them for convenience so that you can reach them easily, but then they may be a hassle for where you want to place electrical items. On the other hand, you could place the outlets specifically where needed, but then it may be somewhat of a hassle to reach them.

After you have done all this, then you can start covering the walls, which is what we will discuss in the next step.

Chapter 6:

Drywall and Paint

After you have everything in place behind the scenes of your wine cellar, you will be ready to finish up the walls and ceiling. You can't just choose any drywall for this project, however, so make sure you pick the right things. If you don't, you will have to replace the walls very quickly and you could end up with a mold problem.

The first thing you need to do is look for green board, which is a type of water resistant drywall. It is most commonly used in bathrooms and kitchens because those areas often deal with high humidity and water. You should have no problem finding green board for your project because it is regularly used in home building and renovation.

If you want to do something decorative and special, then you could choose drywall ceiling and flooring materials that complement the look of your wine rack. This material should be tongue and groove type to ensure you have a sealed finish. Additionally, before you can put this decorative cover on the walls of the ceiling, you will need to attach plywood. This will give the material something to be connected to. When you choose the plywood, make sure it is marine grade so that it doesn't have problems with the humidity in the room.

Another option is to create a raised panel ceiling. This option will allow you to create a variety of different decorative finishes on the ceiling of the wine cellar, and you can create patterns such as squares, octagons, rectangles, etc. It won't really do anything for your insulation, but it will look very attractive.

Installation

When you install the drywall for your walls and ceilings, make sure you screw the board directly into the walls and ceiling. This will ensure it stays securely in place. When you

install drywall in a regular room, you leave a small gap at the bottom because you will be placing base molding over it, but a wine cellar is different.

In this case, your base molding will actually be located on the front of the wine racks. If you put molding at the bottom of your drywall, then your wine racks will not fit flush to the wall. So, when you install the green board, it absolutely must go all the way to the floor.

If you chose a decorative material like tongue and groove with wood finishes, then keep in mind that you will need to install marine grade plywood first. You cannot just place the decorative material directly on top of the studs and ceiling joists. Be sure you only use marine grade plywood in this room.

Finishing the Material

Once you have your drywall in place, if this is the material you chose, then your next step will be to finish it up with paint. There are a few things you need to keep in mind about painting so that everything looks its very best.

- Use a primer first. This is a must to color the bright green of the drywall.
- Use a water based paint made for the exterior of the home. If you use oil or solvent based options, ensure you leave enough time to air out the room or the odor can be very strong.
- Paint all the way to the floor. Since the moldings will be located on the wine racks and not the wall itself, you do not need to leave any gaps, or you will have an unsightly finish.

Now, that you have finished the walls and ceiling, then you can move on to one more aesthetic space in the room: the flooring.

Chapter 7:

Flooring

The flooring can be a spot that will allow you to be highly creative in your wine cellar. That's because you will have many different options, including sealed and decorative concrete, porcelain tiles in a decorative pattern, cork to go along with the wine theme, and hardwood.

There are some flooring options you must avoid because this is a high humidity space. Carpet, of course, will not work. Vinyl flooring can buckle and move with humidity, so it is not a good option either.

That doesn't limit your options though. Let's look at the choices you have:

- Wondrous things can be done with concrete now. It can be sealed for an industrial finish. It can be stained and it can even be finished with a pattern that looks like natural stone of all types.
- Ceramic or porcelain tiles can look like natural stone or they can be highly decorative. No matter the case, you can lay them out in a unique and fun pattern.
- Wood flooring can be good as long as you choose a high humidity option. Again, you can create decorative patterns using wood, and parquet flooring is always a classic pattern.

Be sure to choose a flooring you really like, and be creative if you would like, but always make sure you keep the humidity in mind. If you choose to use wood, then you will need to use a gap along the edges of the flooring so that the wood can expand as it gets used to the humid environment. Make sure the gap is about half an inch wide.

So, you have your flooring and you have the walls and ceiling. It is time to put the finishing touches on your wine cellar, including the door, next.

Chapter 8:

The Entrance and Racking

You have many, many different options for the entrance of your wine cellar. Doors can be very plain or very decorative depending on your own preference. There are a few things you need to keep in mind, though, when you start looking for the right door.

Things to Remember

To begin with, you absolutely must choose an exterior door. These doors have weather stripping and other methods to provide insulation. Remember that you have to maintain a certain environment in the wine cellar, and an interior door just will not work. To understand this better, remember that your wine cellar must be around 55-58 degrees and around 55-75% humidity while the rest of your home is probably somewhere around 70 degrees and 20% humidity.

Any type of exterior door will do, but many people choose glass doors because of their decorative qualities. If this is what you want, then you need to make sure you choose one with thermopaned glass. Otherwise, you will end up with condensation on the door all the time, and that will certainly take away the decorative look.

Take your time and choose your door carefully. If your wine cellar is in a high traffic area of the home, you will want to ensure that the door matches well with the rest of your décor. If the wine cellar is in the basement, this may not be as much of a concern and you may just pick something as simple as a wood exterior door.

The Racking

Now, your wine cellar is essentially complete. You can add in the racking you likely have already chosen, and you can finish off the racking with molding. You have many different options for racking, and you need to keep a few things in mind:

- Choose the wood or stain finish that you like, but you probably want to make sure it looks good with the wall color, flooring, and ceilings that you chose. Some people pick out their racking first and then design the rest of the wine cellar based on it.
- You will want to choose enough racking for your wine collection to expand. Don't just install enough for what you have right now.
- Ensure you get molding that matches the racking perfectly. Since your molding goes on the base of the racking and not the walls, you want to create a cohesive, finished look.

Once you have the racking in place, your wine cellar will be essentially finished. You only have one step left to go. That would be adding the lighting so that you can actually see your wines when you come into the room.

Chapter 9:

The Lighting

You can go two different ways with the lighting you choose for your wine cellar. You could use lighting for its main purpose and only choose things that will do their job properly. Alternatively, you can choose decorative lighting that will add an attractive level to the space. It is really up to you, and most people choose a little of both. That way, their wine cellar will look attractive and they will have all the lighting they need to see their wines.

For the most part, you can use any lighting you would like. The only time there are limitations you need to keep in mind would be if you choose can lights. They have to be thermally fused, and they are called IC rated can lights. They need to be fused because of the humidity in the room.

Additionally, most people recommend staying away from UV lights. Right now, there is no evidence that states UV lights will actually do damage to your wines. However, there are many who believe that UV rays can actually damage wines that are being kept in long-term storage. It is best to avoid them just to stay on the safe side.

If you planned out your electrical outlets properly, then you should have no problem supplying power to your lighting.

Once you have your lighting in place, then your wine cellar will be complete.

Conclusion

A wine cellar is a fantastic thing to add to a home, especially if you enjoy keeping a variety of wines available at all times. When built properly, this cellar will offer the perfect environment for you to store your wines, and it will taste its very best.

Building a wine cellar really isn't that difficult either. You don't have to be a master carpenter to install one in your home. You just need to follow the series of steps we have discussed in this guide, including: framing out the space, adding soffits, adding your insulation, adding electrical outlets, finishing the walls, adding an entrance, and putting in your wine racks.

Within just a few days, you could have your very own, personalized wine cellar.

Keep in mind, as always, that you do need to follow building codes, because the last thing you would want to do is tear down your cellar because you didn't pay attention to something important. With that in mind, go out there and get started.

The wine cellar you build will provide the perfect home for your wines and it will add value to your home.

References

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