TRAILER CONSTRUCTION GUIDE

DIY TRAILER WALK-IN COOLER

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INTRODUCTION

Whether you need portable refrigeration to transport your produce to market, keep your game meat cool in the field, transport your culinary delights to a catered event, or keep kegs of your brew cold at a festival - we've got you covered at CoolBot!

By taking almost any enclosed trailer, a window air conditioner, foamboard insulation, the patented CoolBot, and your handyman skills you can build your very own CoolBot Refrigerated Trailer.

Read this guide entirely and familiarize yourself with the project before you make a trip to the hardware store. Plan your project wisely and make a list of all your materials and tools. Depending on your needs or particular situation, you may want to modify or skip certain parts of this guide.

If a DIY Trailer Cooler project is not your cup of tea, you lack the construction experience necessary for a project like this, or just simply lack the time to complete one, we got you covered! Click on this link where you can get a Quote for a CoolBot powered trailer from **American Trailers of The Carolinas**.

https://www.storeitcold.com/american-trailers/

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MATERIALS LIST

The materials listed below were purchased for less than $2,300 in March of 2017 at our local Denver area home improvement store. Trailer cost not included.

REFRIGERATION	**QTY**	**SIZE**
COOLBOT CONTROLLER	1	-
LG A/C 10K BTU	1	-
SOUTHWIRE EXTENSION CORD	1	8FT- 16/3 GAUGE
KEEPER RUBBER STRAP	2	10”
FROST KING FOAM A/C WEATHER STRIP	2	1-1/4” x 1-1/4”x 42”
FRAMING	**QTY**	**SIZE**
EVERBILT SQUARE STEEL TUBE	4	1” x 72” x 0.0625” thick
EVERBILT PLAIN STEEL ANGLE	1	2”x 1/8”x 48”
INSULATION	**QTY**	**SIZE**
RMAX THERMASHEATH 3 POLYISO RIGID FOAM BOARD	20	2” x 4’ x 8’
GREAT STUFF	4	16oz can
LIQUID NAILS HEAVY DUTY CONSTRUCTION ADHESIVE	20	10 oz tube
PREMIUM FOIL UL LISTED HVAC TAPE	2	2.5” x 60 yd
T.R.U AF-20R HVAC TAPE	1	6” x 50 yd
INTERIOR FINISH	**QTY**	**SIZE**
FRP WALL BOARD	11	4’ x 8’ x 0.090”
FRP DIVIDER MOULDING	7	1/4” x 1-3/8 x 8’
FRP INSIDE CORNER MOULDING	6	1/2” x 7/8” x 8’
FRP CAP MOULDING	10	1/4” x 3/4” x 8’
FRP ADHESIVE (*SEE PAGE 32!!*)	1	3.5-gal
FLOOR	**QTY**	**SIZE**
KILZ WHITE OIL BASED PRIMER, SEALER	1	1-gal
CDX PRESSURE TREATED PLYWOOD	2	1/2“ x 4’ x 8’
TRAFFICMASTER VINYL SHEET FLOORING	1	12’ x 12’
DAP WELDWOOD CONTACT CEMENT	1	128 fl. Oz
FINISHING	**QTY**	**SIZE**
PRIMED FINGER-JOINT TRIM BOARD	1	1” x 6” x 8’
ALUMINUM ANGLE	2	1-1/2” x 96”

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HARDWARE	QTY	SIZE
PHILLIPS FLAT HEAD SELF DRILLING SCREWS	6	#12 2-3/4” (40 pack)
GRIP RITE STEEL ROUND PLASTIC CAP NAILS	1	#12 x 7/8” (1lb pack)
POWER PRO OUTDOOR WOOD SCREW WITH STAR DRIVE	1	10” x 6”
PHILIPS COATED EXTERIOR SCREW	1	#8 x 1-1/4”

TOOLS YOU WILL NEED

Safety glasses	Ear plugs	Gloves	Pencil	Tape measure
Claw hammer	Drill	4’ level	Hand Saw	Paint roller
Caulk gun	Pliers	Chalk line	Trowel	Sawzall
Snap-off blade knife	Circular saw or table saw	Combination or framing square	Phillips screwdrivers	Jigsaw

SAFETY TIP

At all times wear appropriate personal protective equipment to ensure a safe and enjoyable construction experience.

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DEMOLITION AND PREPARATION

We recommend removing non-structural wood from the cooler to reduce weight and prevent water damage if your cooler ever sweats.

In most trailers, the wood on the walls is non-structural and can be removed, whereas the wood on the ceiling is often structural. **Do not remove the wood from the floor.**

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AIR CONDITIONER OPENING

Most people mount the air conditioner centered on the front of their trailer.

Take care to position the air conditioner low enough to account for the thickness of the ceiling insulation.

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Layout the location for the air conditioner on the inside trailer wall making sure that the opening is at least 1/2" wider and 1/2" taller than the size of the air conditioner.

Drill a hole in each of the four corners that is large enough for a jigsaw blade to go through.

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From either the inside or the outside, cut from hole to hole with a jigsaw.

Support members may require a sawzall to cut through.

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Remove and discard the cutout piece.

We recommend constructing a metal frame around the perimeter of the air conditioner opening for fastening of the air conditioner to the trailer.

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As an alternative, some people choose to build a shelf on the outside of the trailer that supports the air conditioner.

Our trailer has a rounded front - so we added horizontal supports to square the front of the trailer making installation of the insulation easier.

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PAINTING

Oil-based Kilz or a comparable primer will protect the wood from water damage if your cooler ever sweats.

Paint all exposed wood as well as any metal added for supporting the air conditioner.

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FLOOR

THRIFTY TIP

Do not skimp on insulation. The quality, thickness, and tightness of your insulation will impact the efficiency of your cooler. Spending a few extra dollars on quality insulation to achieve a higher R-value will help reduce your electricity use for years to come.

Use rigid foam insulation for your trailer – DO NOT use fiberglass batt or other loose-type insulations.

The floor in a trailer is a critical area as it gets a lot of heat radiating from the ground. We recommend 4 inches of rigid foam insulation for the floor R25 (at a minimum 2”- R13)

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Measure and cut the insulation to cover the floor.

Apply heavy duty construction adhesive to the existing wood floor.

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Lay the insulation over the adhesive and apply weight to ensure a strong bond.

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Tape all insulation joints with metal HVAC tape to provide maximum insulation value.

Measure and cut three quarter inch treated exterior plywood to cover the insulation.

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Apply heavy duty construction adhesive to the insulation.

Lay the plywood over the adhesive and apply weight to ensure a strong bond.

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Using coated screws - fasten the top plywood through the foam insulation to the lower plywood.

Screws should be spaced eight to twelve inches apart.

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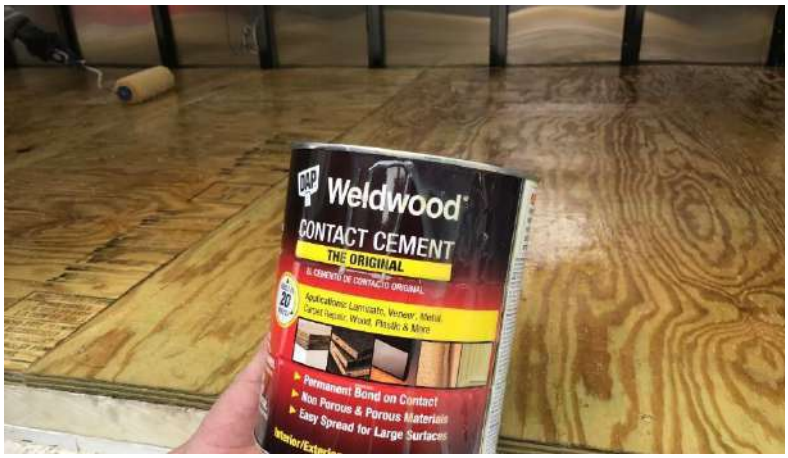
To finish your floor there are different alternatives. We chose a non-slip heavy duty linoleum floor to allow for easy cleaning and durability. Measure and cut linoleum to cover the floor.

The walls will extend in - four inches on each side - so the linoleum can be cut undersized to make installation easier.

Apply contact cement per the manufacturer's recommendations to the back of the linoleum and to the plywood floor.



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Carefully install the linoleum on top of the plywood.

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Apply weight to ensure a strong bond

WALL AND CEILING INSULATION

THRIFTY TIP

Do not skimp on insulation. The quality, thickness, and tightness of your insulation will impact the efficiency of your cooler. Spending a few extra dollars on quality insulation to achieve a higher R-value will help reduce your electricity use for years to come.

We recommend two layers of 2" or one layer of 4" rigid Rmax insulation for the walls and ceiling - minimum R25

Measure and cut the insulation to cover the walls - tapering and notching as appropriate to ensure a tight fit

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Mark the trailer stud line on the insulation.

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Apply heavy duty construction adhesive to the studs.

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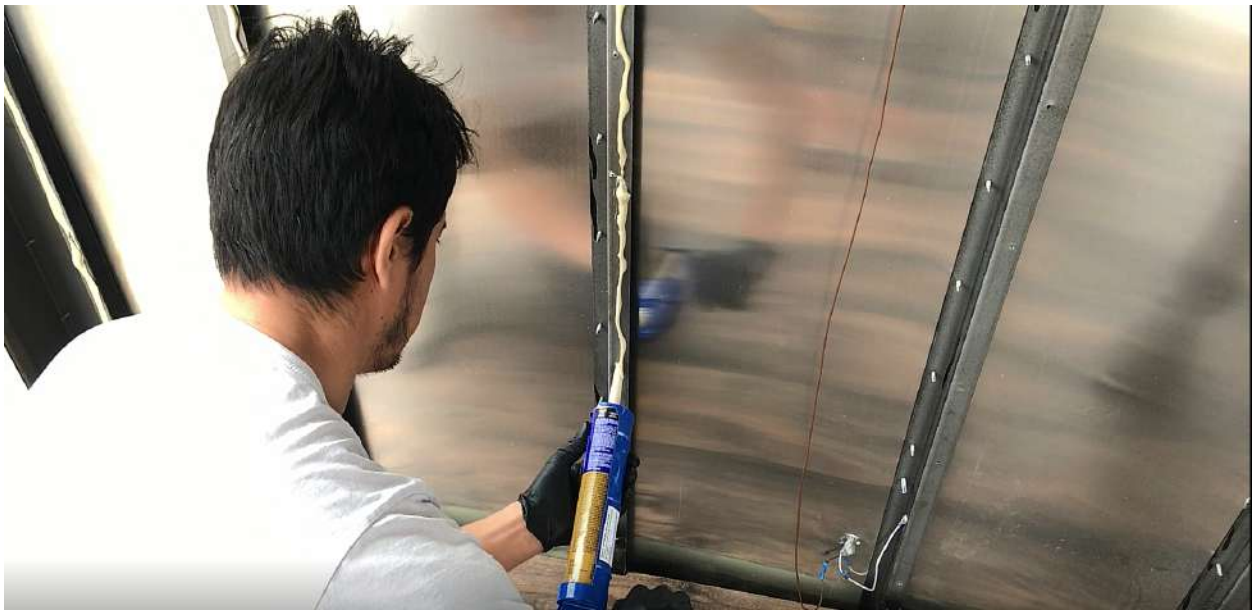

Using self-drilling screws with large plastic washers, fasten the insulation to the trailer studs.

Screws should be spaced 10 - 14" inches apart.

Use spray foam to fill any gaps in the insulation.

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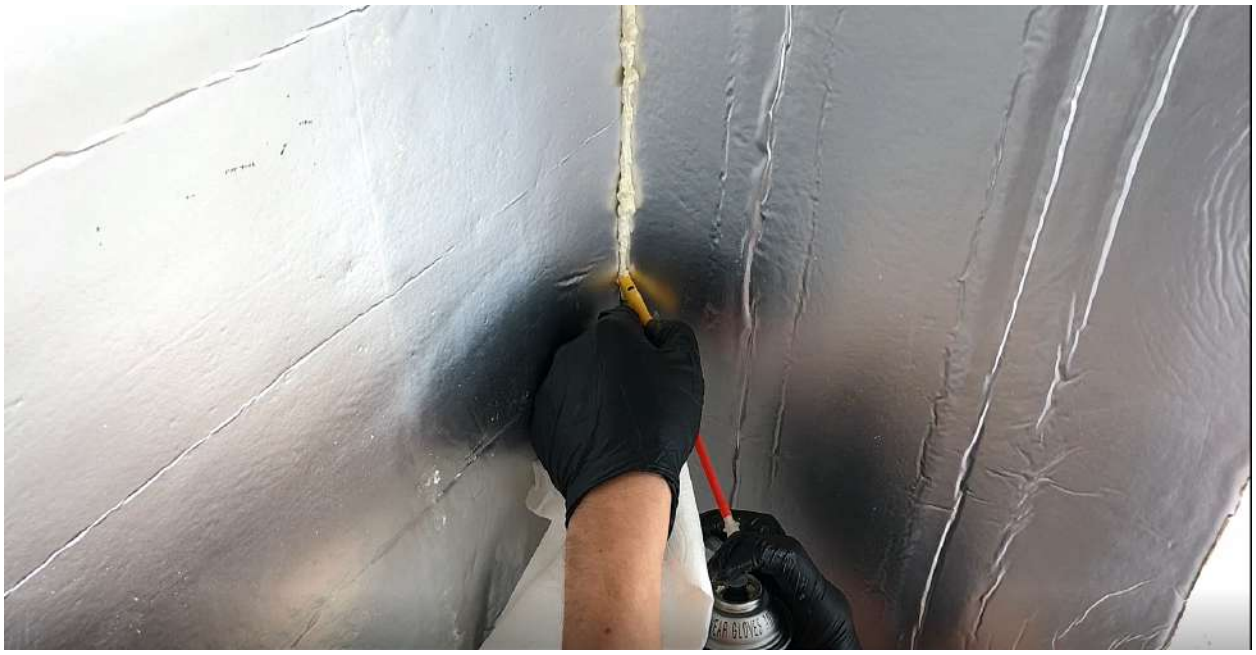

Tape all insulation joints with metal HVAC tape to provide maximum insulation value.

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Apply heavy duty construction adhesive to the first layer of insulation

Place the second layer of insulation over the first and press firmly to ensure a strong bond.

If needed, brace the insulation in place.

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Repeat the process just completed for “insulating the walls” to insulate the ceiling:

- mark the ceiling joist line on the insulation
- apply construction adhesive to the joists
- screw the insulation to the joists
- spray foam any gaps
- tape the joints
- apply adhesive to the first layer of insulation
- place the second layer of insulation over the first
- brace the insulation in place until the adhesive cures

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When all of the insulation is in place and the adhesive is cured, fill any remaining gaps with spray foam and tape any remaining joints.

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We recommend fully taping the perimeters of the doors and the air conditioner opening with 6"wide metal HVAC tape.

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WALL AND CEILING FINISHING

After your walls and ceiling have been insulated, all gaps have been sealed, all seams and joints have been taped and you have given enough time for the adhesive in between insulation layers to cure, it is time to finish the interior. While not necessary, finishing the walls prevents accidental damage to the insulation keeping the integrity of your cooler walls for years to come.

We used **FRP (Fiberglass Reinforced Plastic)** to finish the walls and ceiling. This material gives a great appearance, is accessible at most hardware stores, is easy to install and easy to clean. This material is very common in the restaurant industry. Some people finish the inside of their coolers with painted plywood as well. We will show you how to finish your cooler with FRP - the process for plywood is similar except that you can aid yourself with long wood screws (catching the studs) to hold the plywood in place. It is also recommended to apply a coat of mildew/mold resistant paint or primer to the wood panels.

Measure and cut the FRP to cover the walls and ceiling - cutting undersized as appropriate to allow room for the FRP center and corner strips

Following the manufacturer's recommendations, apply **with a trowel** FRP adhesive to either the insulation or the backside of the FRP. ***WARNING! Some FRP adhesives are not intended for use directly over foam, since our rigid foam had foil backing on the front this FRP glue was ok. Please make sure you are using the proper adhesive for your situation!***

TiteBond Advanced Polymer Adhesive *has been recommended by many customers.*

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Place the FRP over the insulation and press firmly to ensure a strong bond.

Install FRP center and corner strips between the FRP panels.

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Install adjacent panels by interlocking into the FRP center and corner strips.

It will probably be necessary to brace the FRP in place - **especially the ceiling and doors**

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Any exposed insulation around the doorways should be covered with a combination of painted wood and metal trim.

The wood and metal can be secured with a combination of construction adhesive and coated screws.

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AIR CONDITIONER & COOLBOT

Your trailer is now ready for the Air Conditioner and CoolBot. Go to our website for detailed videos on air conditioner and CoolBot installation or follow the links below.

For A/C selection, Sizing & install please go to: https://www.storeitcold.com/build-it/ac-selection/

For CoolBot installation please go to: https://www.storeitcold.com/build-it/install-your-coolbot/

Once your air conditioner is installed, we recommend installing a strong metal screen to protect the air conditioner fins from rock damage while traveling.

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IMPORTANT! Only screw into the air conditioner housing with the air conditioner removed so you do not inadvertently puncture a refrigerant coil.

If you plan on using your cooler while on the road, keep in mind that the wind might affect the functioning of your A/C and temperatures inside might change while in transportation. This may not be a big issue for most users if all the product in the cooler was already cooled at the right temperature and they are not traveling long distances. However, some users decide to install a shield on the back of the A/C back to deflect the wind over the coil (while protecting it). Here is an example of one made by one of our customers (American Trailers of the Carolinas)

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POWERING YOUR TRAILER

There are many options for powering your new CoolBot trailer cooler.

1. While extension cords are not recommended to run an Air conditioner unit, if you are at a stationary location and you MUST use one, make sure that the extension cord is of the appropriate Rating and Gauge to handle the amperage of the A/C.

2. For remote applications, an appropriately sized generator is a convenient option. You can even mount the generator on the front of your trailer to provide electricity while traveling. Make sure your generator is properly sized to handle the A/C load. A good rule of thumb is to choose a generator that has a **Peak Rating** (not the Continuous Rating) of 3 times the Watts of your A/C to safely handle the start of the A/C. Inverter generators are a good choice for this type of application.

   Please ready our Inverter and Generator Guide available at:
   https://www.storeitcold.com/support-library/

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3. If you are running a small A/C unit (12K BTU or less) a more economical way than a generator is to connect an inverter (DC to AC) to the battery of your car - your vehicle must be running for the inverter to provide electricity (see picture on next page). Make sure your Inverter is properly sized to handle the load of the A/C and make sure that the alternator and Battery of your vehicle are in good condition. A good rule of thumb is to choose an inverter that has a **Peak Rating** (not the Continuous Rating) of 3 times the Watts of your A/C to safely handle the start of the A/C.

   Please ready our Inverter and Generator Guide available at:
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WELCOME TO THE FAMILY!

Your trailer is now ready to use. The possibilities for inside your refrigerated trailer are endless. Shelves, hanging systems, rails, you name it! Just be creative!

Please don't forget to share your CoolBot story with us and the other 80,000 happy CoolBot owners and as a way to say "Thanks!", we will double your CoolBot warranty from 1 to **2 years**!

You can find the Testimonials Form at: https://www.storeitcold.com/testimonials-form

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