

Rain Barrel

OVERVIEW

Rain barrels are a great way to collect runoff from a rooftop, are relatively inexpensive, and easy to install. The most common type of rain barrel collects runoff from your roof by connecting to your gutter downspouts.

These simple, illustrated instructions will help you construct a 55-gallon rain barrel. The first step is to clean and prepare the barrel. Then, install the overflow and the spigot. Lastly, attach the barrel to the downspout and you are ready to harvest rainwater. [Click here for video instruction.](#)

If you want to harvest more rainwater, multiple barrels can be connected to increase catchment capacity. This system relies on gravity, so no pumps are necessary.



Figure 17 Installed rain barrel

Advantages

- Easy to install, relatively inexpensive
- Requires minimal space
- Low maintenance
- Can be used to irrigate lawn or garden
- Using rainwater conserves drinking

Disadvantages

- Requires functioning gutters and a downspout
- Must be disconnected in areas with cold winters
- Mosquitoes can be an issue if not properly secured to prevent entry
- Water is not potable unless a filter is used

FUN FACT: A 1,000 sf roof sheds 600 gallons of water for every inch of rain!

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MATERIALS

Barrel

- 55-gallon drum, plastic
- 3/4" spigot
- Fine mesh screen
- Downspout adaptor sized to fit your gutter downspout
- Corrugated plastic pipe, elbow sized to fit downspout adapter
- Silicone caulking
- Pipe tape
- Power drill
- Hole saw drill bit for PVC, sized to fit your gutter adapter (usually between 4 1/2" and 6")
- 1 1/8", 1 7/8" hole saw drill bits for PVC
- Metal cutters
- Cinder blocks, wooden stand, etc. (to raise height of barrel)

MATERIALS

Overflow (*Choose one: Rigid or Flexible*)

Rigid

- PVC primer
- PVC cement
- 1.5" PVC adapter
- 1.5" PVC elbow

Flexible

- 1.5" nylon adapter
- 2-2.5" flexible tubing

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CONSTRUCTION

STEP ONE: PREPARE THE BARREL

MATERIALS

- Plastic 55-gallon drum
- Power drill
- Hole saw drill bit for PVC, sized to your gutter adapter (usually between 4 1/2" and 6")
- 1 7/8" hole saw drill bit
- 1 1/8" hole saw drill bit
- Cut-to-fit screen
- Silicone caulking

1. Thoroughly rinse the inside of the barrel to remove previous contents.
2. Create a hole to insert the corrugated pipe from the downspout. Using the power drill and the largest hole saw (4 1/2" or 6"), drill a hole in the top center of the barrel.
3. Create a hole for the overflow pipe. Select which side of your barrel you want to install the overflow. On that side, measure one inch down from the top of the barrel and drill a 1 7/8" hole.
4. Create a hole for the spigot. Drill a 1 1/8" hole at the base of the front of the barrel.
5. Remove any plastic shavings that may have fallen into the barrel.

6. Cut the mesh screen to overlap the hole in the top of the barrel by an inch and glue down tightly using silicon caulking or other appropriate glue. Allow glue to dry thoroughly before first rain. *The screen will keep mosquitoes out of your rain barrel!*



Figure 19 Drilling on the top of the barrel



Figure 18 Overflow hole



Figure 21 Drilling a hole for the spigot



Figure 20 Attached mesh to the top of the barrel

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STEP TWO: INSTALL THE OVERFLOW

Before installing the overflow, choose whether you would like a flexible drain spout that you can use to direct overflow away from the barrel (Option 1 below) or a rigid spout (Option 2 on the next page).

FLEXIBLE OVERFLOW MATERIALS

- ❑ 1 1/2" nylon adapter
- ❑ 2" flexible tubing (length of your choosing)
- ❑ PVC primer
- ❑ PVC cement
- ❑ Pipe tape
- ❑ Silicone caulking
- ❑ Adjustable #16 clamp or zip-tie

Overflow Option 1: Flexible Spout

1. Tightly wrap the threaded end of the 1 1/2" nylon adapter with pipe tape and screw into the 1 7/8" hole at the top side of the barrel. Seal the joint with silicone caulking.
2. Firmly push the flexible tubing onto the adapter to attach. Slide the adjustable clamp or zip-tie into place and tighten.



Figure 22 Inserting threaded nylon adapter

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STEP TWO: INSTALL THE OVERFLOW

RIGID OVERFLOW MATERIALS

- 1 1/2" PVC adapter
- 1 1/2" PVC elbow
- PVC primer
- PVC cement
- Pipe tape
- Silicone caulking

Overflow Option 2: Rigid Spout

1. Prime the inside of the female (unthreaded) end of the 1 1/2" adapter and the outside of the male (thinner) end of the elbow with the PVC primer.
2. Glue the adapter and elbow together using PVC cement to create the overflow spout.
3. Tightly wrap the threaded end of the adapter with pipe tape and screw the overflow spout into the 1 7/8" hole near the top of the barrel. Point the spout downwards (and away from your foundation) and seal the joint with silicone caulking.

Note: You can add additional PVC piping to the 1 1/2" elbow to direct the overflow farther away from the rain barrel if desired.

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STEP THREE: INSTALL THE SPIGOT

SPIGOT MATERIALS

- 3/4" spigot
- Pipe tape
- Silicone caulking

1. Tightly wrap the threaded end of the spigot with pipe tape and screw into the 1 1/8" hole towards the bottom of the barrel.

2. Point the spout downwards and seal the joint with silicone caulking.



Figure 23 Caulking spigot

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STEP FOUR: INSTALL THE RAIN BARREL

The rain barrel should be below the gutter downspout of your building and elevated for easy access to the spigot with a watering can. Note that the higher the barrel is off the ground, the greater your water pressure will be.

MATERIALS

- ❑ Downspout adaptor sized to fit your gutter downspout
- ❑ Elbow corrugated plastic pipe, sized to fit downspout adapter
- ❑ Cinder blocks, wooden stand, or other method for elevating the barrel
- ❑ Metal cutters or hacksaw for cutting downspout

1. Clear your gutter of debris to avoid clogging your new rain barrel.
2. Elevate the barrel on cinder blocks or other method. Using the metal cutters, cut the gutter downspout 1-2 ft. above the barrel. Make sure the barrel is level so it does not slip off its foundation when it is full!
3. Fit the downspout adaptor securely onto the gutter downspout.
4. Fit the downspout adapter securely together with the corrugated pipe.
5. Position the corrugated pipe so that water flows into the hole in the top of the barrel.



Figure 24 Cutting the gutter downspout



Figure 25 Downspout directed into rain barrel

RAIN BARREL MAINTENANCE TIPS

Here is a list of recommendations for maintenance and long-term success of your rain barrel.

DO

- Clear your gutters
- If algae becomes an issue, periodically clean the barrel and piping
- Check for leaks
- Keep mosquito screen securely attached
- Drain each winter to prevent cracking (see below)
- Secure the barrel to ensure that it doesn't tip over

DO NOT

- Drink or give your pets water from your rain barrel
- Allow children to climb on the rain barrel

WINTERIZE YOUR BARREL

In winter, when freezing temperatures are a concern, drain the barrel to avoid cracking. You can take your barrel offline, but this may require adding piping to your gutter downspout to direct water away from the building.

Another option for winterizing your rain barrel is to simply leave the spigot open if your barrel is in a good location to drain onto the ground. You can also attach a hose to the spigot and direct the water where you want it to go.