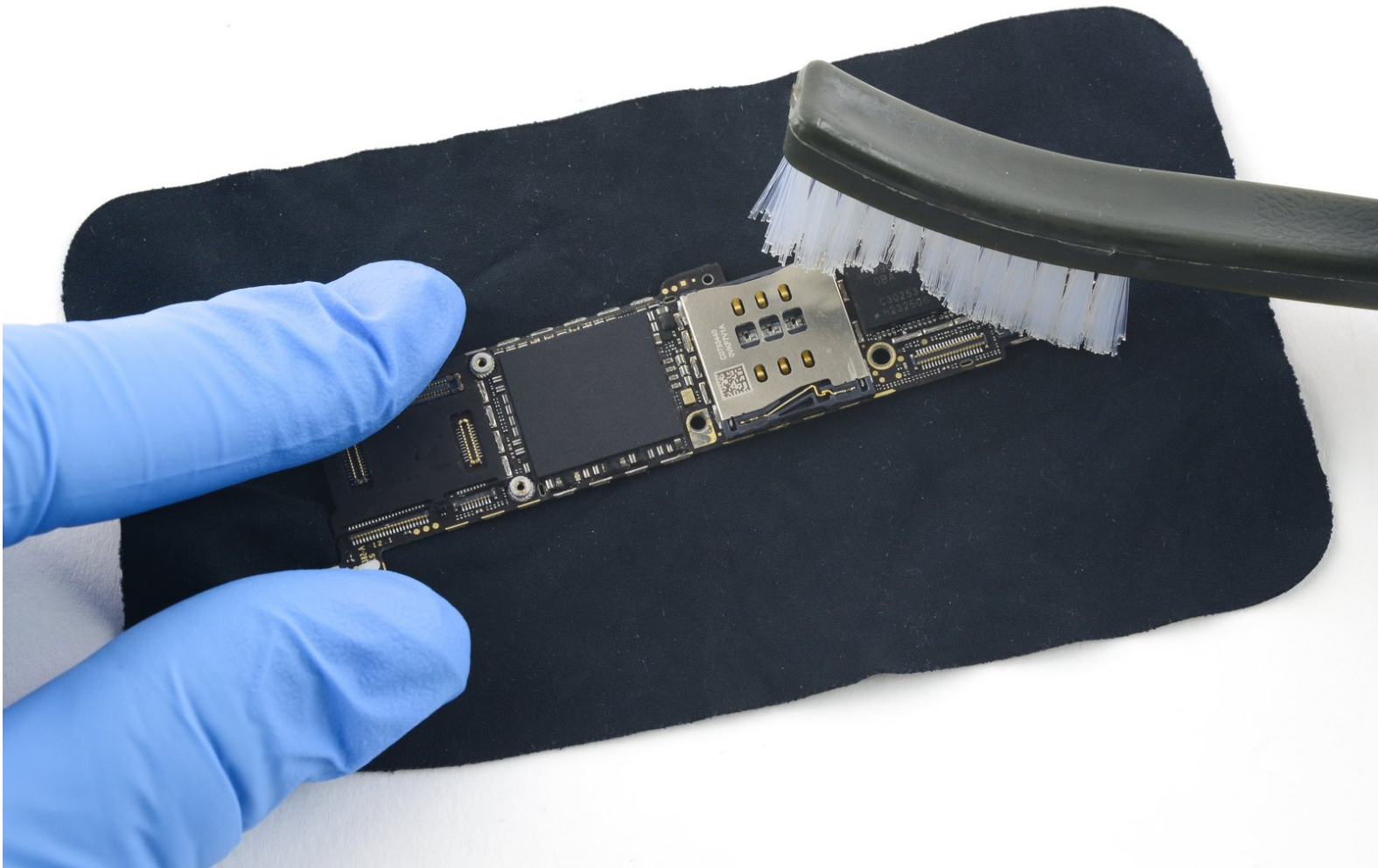




iPhone Liquid Damage Repair

Fix liquid damage (including water damage) in your smartphone.

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INTRODUCTION

Use this guide to repair your iPhone after accidental exposure to water or other liquids. Liquid damage tends to worsen with time, so it's best to get started as soon as possible. That said, liquid damage is among the more challenging DIY repairs to undertake, so if you feel unsure or need access to important data on your phone, you may want to consult with a professional before breaking out your tools.

Throughout this guide, refer to the [iPhone repair guides](#) specific to your model for detailed disassembly instructions.

This guide was developed for iPhones, but the procedure for any other smartphone should be very similar.

In addition to isopropyl alcohol, you will need a container big enough to submerge your iPhone's logic board.

Isopropyl alcohol is highly flammable. Perform this procedure in a well-ventilated area. Do not smoke or work near an open flame during this procedure.

This guide covers the basics of liquid damage repair. For a discussion of more advanced repairs, check out [this video](#). If you'd like to see another guide that disassembles a corroded phone, check out [this guide](#).



TOOLS:

- [Detailing Brush](#) (1)
 - [Latex or nitrile gloves](#) (1)
 - [Safety Glasses](#) (1)
 - [Tweezers](#) (1)
 - [Microfiber Cleaning Cloths](#) (1)
 - [91% Isopropyl Alcohol](#) (1)
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Step 1 — iPhone Liquid Damage Repair




- Remove your iPhone from the liquid as soon as *safely* possible. Minimize the length of time the iPhone and liquid are in contact to minimize corrosion.

⚠ Pay attention to your personal safety first! If you are standing in water or your clothes are wet, please remove yourself from any potential shock hazard before even thinking about retrieving a submerged smartphone.

⚠ If the electronic device is still submerged and is connected to an external power source, find a safe way to disconnect it. If possible, find a circuit breaker or switch for that source of power. Use caution if you choose to remove a plug or power adapter from an outlet that has not been switched off.

⚠ Liquid damage can short-circuit the battery, creating a fire and/or chemical hazard. If you see or feel any heat, smoke, steam, bubbling, bulging, or melting, avoid handling the phone.

- If your phone is still on when removed from the liquid, attempt to turn it off. If it's off, do **not** attempt to turn it on.

-  To force shut down an iPhone 6s and older, press and hold the Home and Sleep/Wake buttons until the screen turns off, and then immediately release both buttons. For the iPhone 7, press and hold the Sleep/Wake and Volume Down buttons until the screen turns off.

Step 2



- Hold the phone upright and gently tilt it from side to side to drain as much liquid through the bottom as possible.
- Use a cloth to dry any liquid on the outside of the phone.

Step 3




- Remove the display and battery, using the [repair guide](#) appropriate to your model of iPhone.
 - ⓘ Liquid damage may complicate disassembly. Beware of cables and connectors that may be "adhered" to other components in unexpected ways.
- ⚠ Be extremely careful if the battery appears damaged or swollen. If the battery shows any sign of bubbling, bulging, melting, or discoloration, gently remove it and place it in a fireproof (glass, ceramic, or metal) container for transportation to a battery recycling facility.
- ✦ Even if your battery looks fine, you should not reuse a lithium-ion battery that has come into contact with liquid.
 - ⓘ See [this site](#) for safety guidelines regarding damaged batteries. Make sure to recycle your old battery and other e-waste at a [certified recycler](#).

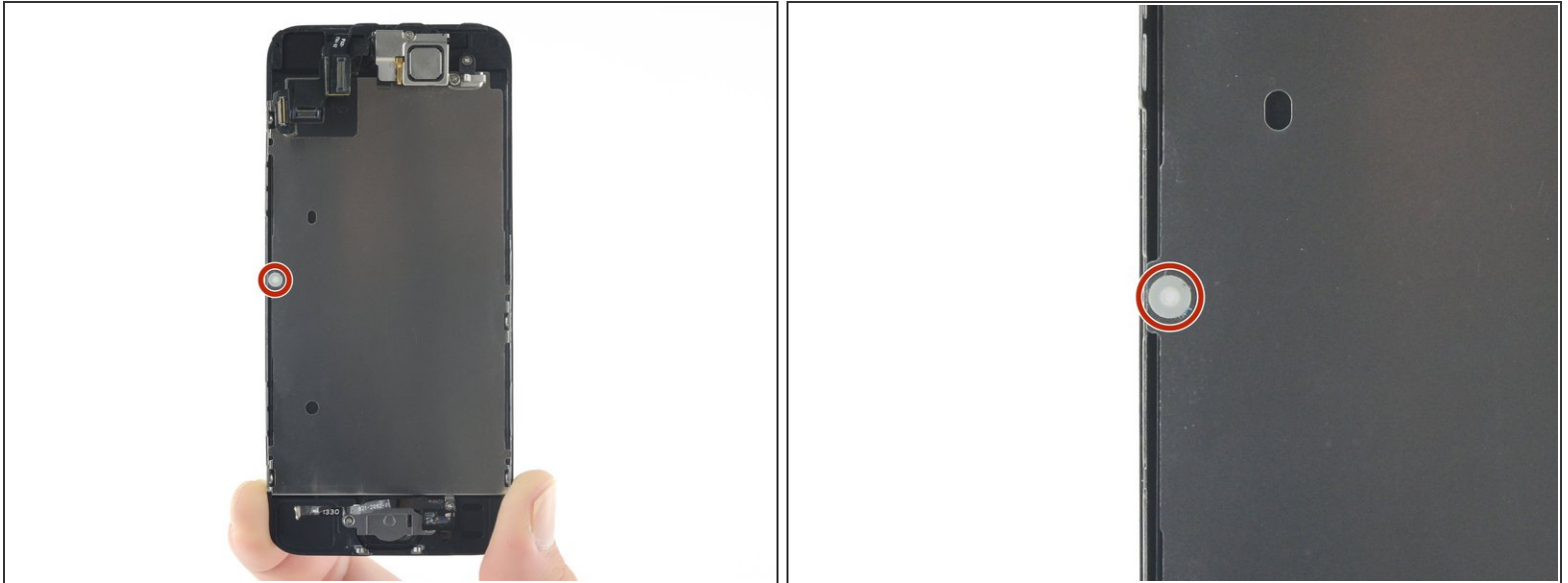
Step 4



- Remove the SIM card tray:
 - Insert a SIM card eject tool or a paperclip into the small hole in the SIM card tray.
 - Push to eject the tray, then remove it from the phone.

 The location of the SIM card tray may vary depending on your model of phone.

Step 5



- i** iPhones have liquid contact indicators (LCI)—small white stickers that turn permanently red upon contact with liquid.

 - Check if any of the LCIs have [turned red](#) for evidence of local liquid intrusion.
- i** The location of liquid contact indicators will vary depending on your model of iPhone. Refer to [this Apple site](#) to find the location of your phone's LCIs.

Step 6



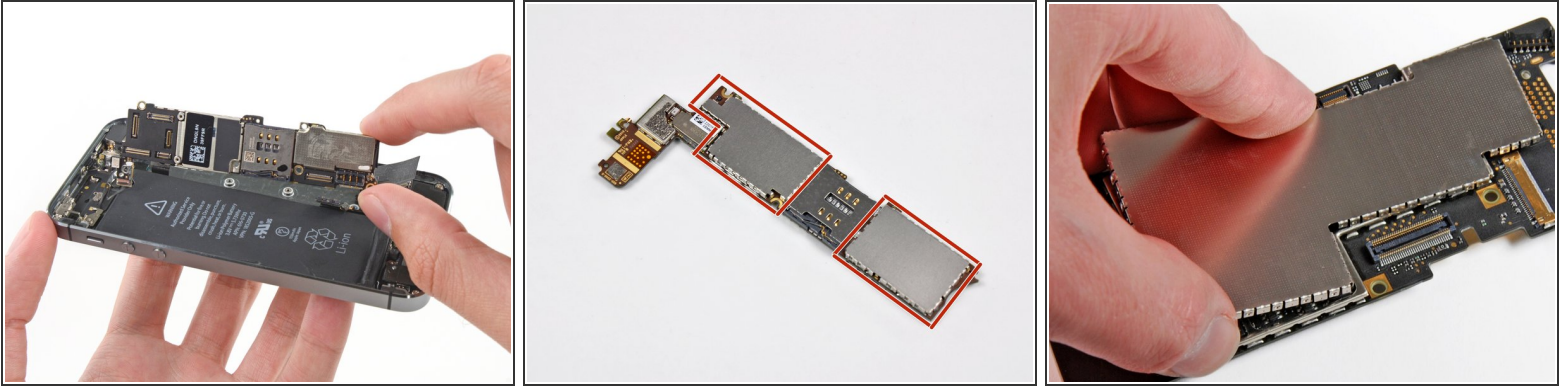
i If your phone was fully submerged for any amount of time, it is likely some of the internal components [corroded](#). Corrosion looks like a white, chalky film covering metallic surfaces, and is especially prevalent on pins and connectors that carry current. Corrosion dissolves metals and will cause malfunctions in your phone.

- Inspect the logic board and any connectors for [signs of corrosion](#), especially in areas where the LCIs are red.
- Check any external ports (charging port, headphone jack, SIM card slot, etc.) for corrosion as well. These may have to be cleaned out with alcohol and a brush, or replaced if cleaning is not practical.
- If all LCIs are white, and there is no moisture or corrosion, leave the phone disassembled in a warm, dry place for a day or two to make sure any potentially trapped liquid evaporates, then reassemble the phone.

- If any LCIs are red, if there is corrosion or other liquid residue, if the phone fell into dirty/acidic/sticky

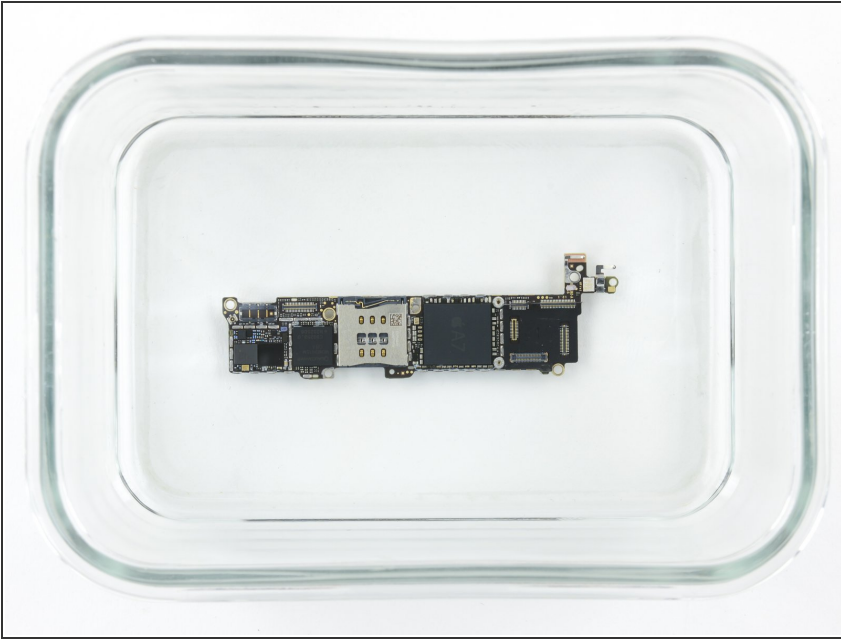
liquid, or if you just want to be safe, continue for more thorough cleaning.

Step 7



- Follow your iPhone's logic board replacement [guide](#) to remove the logic board. If you notice corrosion or liquid residue on other parts, follow the appropriate guides to remove those as well.
- ⓘ If you have an iPhone 4 or earlier, you can remove the EMI shields for more thorough cleaning of the chips underneath. iPhone 5 and later models do not have removable EMI shields. If you have a newer iPhone and believe there is damage under the shields, you may need to consult a repair professional.
 - On an iPhone 4 or older, use a set of tweezers or your fingers to pull off the EMI shields.

Step 8



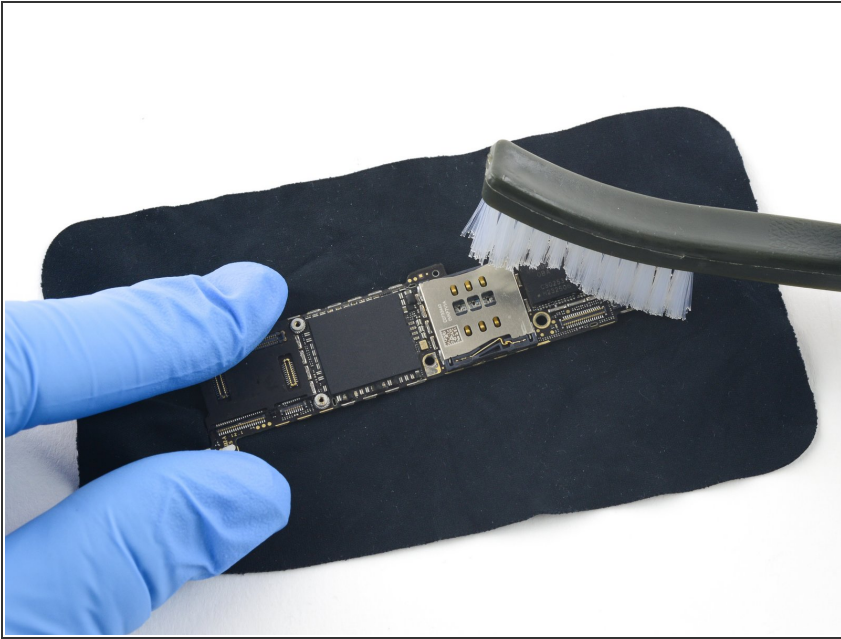
! Isopropyl alcohol is a mild skin and eye irritant. Use gloves and eye protection while working with isopropyl alcohol.

- Fill your container with high concentration isopropyl alcohol (90% or greater) and submerge the logic board and any other components that show signs of corrosion, debris, or other liquid damage.

! Do not submerge the display or camera modules, even if they are damaged. Submerging them in alcohol will likely damage them further.

- Allow everything to soak for 5-10 minutes, or long enough to loosen hardened residue. Swish the parts around a little as well, to displace any trapped liquid.

Step 9



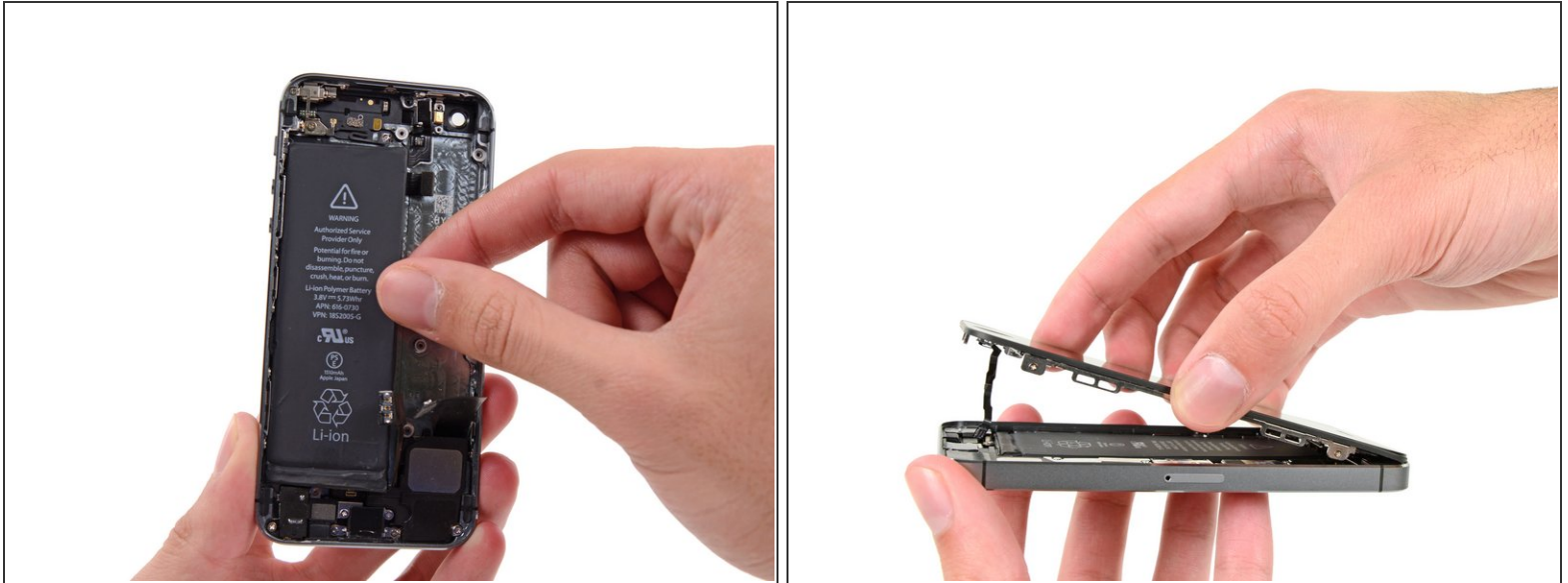
- Use a soft brush (like a toothbrush or [detailing brush](#)) to gently scrub away any corrosion and liquid residue on the logic board and other components.
- ⚠ It's possible to break small solder joints with too much force from the brush. Use just enough force to remove the corrosion and residue.
- ⓘ Pay special attention to cable ends, battery contacts, connectors, pins, and fuses, as these parts are prone to corrosion and can easily cause the phone to malfunction.
- Keep the logic board and any other alcohol-covered components over a cloth. There's a chance the alcohol can damage or mark your work surface.
- If needed, repeat steps 8 and 9 until all corrosion and residue is gone.

Step 10



- Moisten a cloth with isopropyl alcohol and wipe off the screen.
- Unfortunately, there isn't much you can do to repair liquid damage inside the display itself. If damage to the display is significant, use the [repair guide](#) appropriate to your phone to replace the display.
- If there is any residue or corrosion on the case assembly, use the damp cloth to wipe that off as well.

Step 11



- If you were unable to remove all the EMI shields, use compressed air or a blow-dryer on its cold setting to blow underneath the shields and dry out any trapped alcohol.
 - When all components look clean and dry, reapply any EMI shields that you removed and begin to reassemble the phone with a new battery, and a new display if necessary.
 - Do not completely assemble the phone yet. Make sure internal components are screwed down and everything is plugged in, including the battery and display cables, but do not apply adhesive, screw down cover plates, replace external screws, or seat the display.
- i** It is safe to start the phone like this, but turn the phone off before you start working inside it again. You just want to test the phone while keeping the internals accessible in case there are any problems.

Step 12



- Turn on your phone and watch for any smoke, strange noises, or burning smells. Check the battery and look for any swelling.
- ⚠ If something seems wrong, immediately disconnect the battery.
- Test all the buttons and features (such as the microphone, speakers, wireless connectivity, camera, etc.).
- Note any component or feature that doesn't seem to be working. If anything isn't working, disassemble the phone and check for obvious problems, such as a broken logic board component or corrosion on the cable contacts—or even an error in reassembly.

Step 13



- If there are any clearly damaged components, see our other [iPhone guides](#) for instructions on replacing specific [components](#).
- If the problem seems to stem from a single board component or chip, a skilled microsoldering technician may be able to repair the damage.
- If you can't find the source of the problem, it's possible that components under the EMI shields have been damaged. Contact a repair professional to de-solder the shields and give the board an ultrasonic cleaning bath.
- If everything is working, congratulations! Go ahead and reassemble your phone.

Browse or post a question to our [Answers Forum](#) if you have any questions!