

MacBook Water Damage, don't panic. Here's what you need to know.



MacBook water damage - The definitive guide

MacBook - MacBook Air - MacBook Pro - All Sizes and years | Note: limited parts availability for latest models.

Author: [Forza Vale](#) (and 3 other contributors)

- MacBook water damage is not easy to repair; even minor spills can present advanced issues requiring lots of tools and expertise. Repairing MacBook water damage is doable—however, if you are a novice, read this entire post to ensure you don't get in over your head. Beware of any advice telling you to simply allow it to dry or clean it with alcohol; modern MacBooks have many components that can be damaged by a spill. This guide will explain all you need to know about MacBook water damage, and help you decide whether to attempt your own DIY repair or find an expert.

It's safe to assume that if you are here, then you or someone you know has experienced MacBook water damage. If you are like most folks, you packed up your soggy Mac, made your way to your local Apple Store, and waited in line—only to be told that they won't touch a Mac that has been exposed to liquid. They may offer you a "Tier 4 Repair", to the tune of \$1240.00. These options don't sit well with most consumers, so you probably returned home and began to scour the web for a better solution. Now that you're here, let's get started.

The type of liquid spilled does make a difference!

While this may seem like a no-brainer, there is more to this than one may think.

The makeup of drinkable tap water or bottled water including mineral waters (all potable) is different around the world, chemicals in any one water source ultimately determine the ingredients it holds Calcium, Manganese & Magnesium Salts all of which can induce electrolysis when electrical power is present. Even rain can carry chemicals which can lead to damage from acids to smoke solids that it collects. Saltwater or brackish river water has Sodium Chloride (Sea Salt). It is by far the most aggressive salt you will encounter. Your water can also contain Bicarbonate and Nitrates, Plant and Soil solids.

Tap or bottled water, straight tea or coffee are not particularly acidic and tend to be the easiest and quickest to repair and restore if caught quickly. Other liquids like fruit juices, milk products, soft drinks and wine can pose a new set of challenges due to the acidity, sugars and solids also present.

What happens inside my MacBook when the spill occurs?

Here is a video of a MacBook Pro coming in contact with .05 ounces of plain tap water

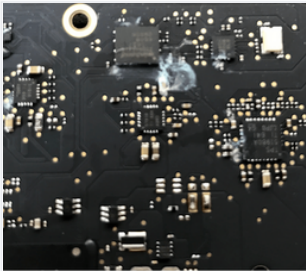
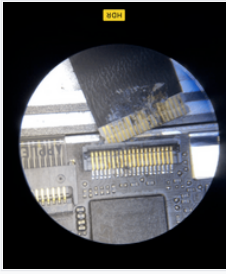


Inside your MacBook when the spill occurs

Once MacBook water damage has occurred, the liquid will likely make its way to the logic board and other components. The liquid's minerals and salts immediately begin to eat away at the metal and soluble components. Often, the Mac will work for a few days after the spill and then stop working. This is due to the metals oxidizing and slowly corroding as well as the created shorts. If there is a power source available, such as a battery, which is supplying power to the system (even if the computer is off), the electric current will interact with the liquid and accelerate this corrosion process. This causes the copper and other metals to migrate across the board. If this corrosion process is not stopped, you will likely end up with a very expensive paperweight.

Liquid spilled in MacBook and Corrosion: The Science behind your DELAYED nightmare

Corrosion is a process, which converts refined metals to their more stable oxide form. It is the slow and gradual deterioration of materials (usually metals) by chemical reaction within their environment. In this case the corrosion occurs when you combine electricity, metal, water and oxygen, creating aluminum oxide, copper oxide and iron oxide (or what is more commonly known as *rust*). There is no reliable timetable for this process to occur; a MacBook's internal components typically begin corroding immediately after the spill, but in some cases your Mac can function normally for days or weeks without showing any obvious sign of a problem. How fast the corrosion process takes depends on a ton of factors we have no control over, like humidity, the severity of the spill, and how long the device remained in contact with the liquid. The best practice is to not power on or use the MacBook at all until you can address the damage. Below are a few examples of corrosion caused by a water spill.



Now that we understand what happens inside your MacBook when a spill occurs, we can begin to analyze what will be needed to correctly repair any issues you may come across

You MAY need the following tools:

1. [Pro Tech Tool Kit](#) – The Pro Tech Toolkit is the one kit you need to tackle any electronics repair challenge.
2. Distilled Water (pure water – not tap!) – Used to clean off water soluble sugary deposits and neutralize acids
3. [Isopropyl Alcohol 90% reagent grade](#) – Used to clean any visible corrosion on your components. It is pricey @ \$49.95 a gallon, but is an absolute must-have to effectively clean damaged components. As a solvent, it evaporates quickly and is safe for plastics. As it dries, it gives off a very light odor, which is not bothersome but serves as a cue to limit over-exposure due to poor ventilation. Lower quality Alcohols tend to have solids, other solvents as well as a lot more water.
4. [Stereo Microscope](#) (Optional) – This model is the most affordable option and can be found on Amazon for \$189.00 – A stereo microscope is an often-overlooked tool but is critically important. You will want to inspect all solder points to ensure that you have resolved any shorts on the main logic board. Additionally, if you have a failed SMD component, a microscope will be required to replace it.
5. [Hot Air Rework Station](#) (Optional) – If you run into a situation where you need to repair or replace individual components on the main board, a quality hot air station will be required. Prices vary drastically, but you can purchase a low-end system for around \$150.
6. [Soldering Iron](#) – This piece of equipment is pricey, but you get what you pay for when it comes to functionality. Weller units run \$514, and will be capable of any micro soldering tasks you will encounter.
7. [Ultrasonic Cleaner](#) – This is a must-have for any MacBook Pro liquid damage repair. An ultrasonic cleaner will remove corrosion from underneath components on your logic board. Skip this very important step and you may regret it. A quality ultrasonic cleaner can be purchased for about \$89.
8. Replacement parts – This is where you can run into some issues. It's imperative that you source genuine Apple Parts. Trying to save money by buying counterfeit or off-brand parts will come back to bite you. Discreet electrical components can be hard to source or you may need to buy a gross which could be 20 (a canes worth) or more (a spool) or be a custom Apple part.

Thorough Diagnostic

Any MacBook that is exposed to liquid requires a thorough inspection. Even a small amount of corrosion, if left untreated, can cause a system failure further down the road.

You will need to completely disassemble your MacBook to ensure a thorough diagnostic.



A1502 MacBook Pro liquid damaged

Inspect the keyboard and track pad for ANY corrosion or sticky residue—if found, a keyboard or track pad replacement is recommended.



A1502 MacBook Pro Keyboard Replacement

Inspect the logic board for any sign of liquid exposure—This should be done with a high-powered stereo microscope, and each SMD component should be checked for any signs of damage. If damage is found, the logic board should be cleaned ultrasonically, and damaged SMD components should then be replaced.

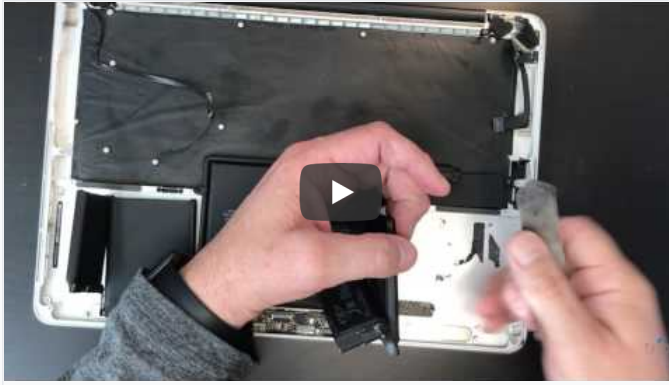
Here is a video of the SMD (Surface Mount Device) repair process:



Here is an example of logic board repair/refurbishment

All display connections and wiring should be thoroughly inspected, and if there is any sign of liquid exposure a display replacement is recommended.

Test the battery - Batteries are often victims of liquid spills and can be very challenging to replace. Here is an example of what you can expect.



A1502 MacBook Pro Battery replacement

Data Integrity – Data integrity should be checked and re-checked. In the vast majority of cases, data is not effected. If corrosion is present on the SSD or HD, replacement is recommended.

Now that you have completed the diagnosis of what was damaged by the spill, it's important to think before you act.

There are many resources to assist in DIY repair of MacBook water damage—just take your time and ensure you have a good grasp of the task ahead of you, and you too can restore your MacBook after a liquid spill. Good Luck!