

# By what miracle can the Galaxy Z Fold3 and Z Flip3 be water resistant?

Due to the inherent nature of the design, folding screen smartphones obviously have more durability risks.

With a flexible plastic screen, a constantly folding hinge mechanism and many crevices in design details, dust and water can easily enter the device and cause a folding screen smartphone to fail.

Last year, Samsung took the first steps to improve when bringing the Galaxy Z Fold2 and Z Flip ultra-thin glass (UTG) technology to make the screen stronger. However, these two models still do not have water resistance, a device that most high-end smartphones on the market have.

However, on this year's generation of Galaxy Z Fold3 and Z Flip3, Samsung was able to do this. Both machines are IPx8 standard, allowing to survive underwater with a depth of 1.5m for 30 minutes.



So, how did Samsung achieve this achievement?

First, Samsung applies the traditional method that it has mastered on "normal" smartphones (Galaxy S/Note) to the Galaxy Z Fold3/Flip3.

A folding screen smartphone is essentially two halves joined together, so Samsung will apply glue around each of those parts to make sure water can't get in. Similarly, "exposed" details such as speaker / mic holes, USB-C port or SIM tray will also be covered by rubber or glue gaskets. As mentioned above, these are not special techniques, because every smartphone with water resistance today uses this way.



The difficulty in water resistance on folding screen smartphones is details such as folding screen, hinge and wire connecting the two halves of the device.

Last year, to solve the problem of dust getting into the hinge, Samsung integrated into the hinge of the Galaxy Z Fold2 / Flip a "brush", with the task of sweeping dust from getting inside every time the user folds the device. It continues to appear on the Galaxy Z Fold3/Flip 3 with the same mission.



However, this brush cannot prevent water from entering, and to create a hinge mechanism that completely fits is very difficult. Therefore, Samsung was forced to solve the problem in a different way. Instead of trying to seal the hinge, Samsung used a special lubricant on the hinge that is resistant to certain liquids.



The reason for saying "liquid", not "water", is because Samsung even tested this solution with Coca Cola. However, Samsung does not make any claims about its device being able to survive in liquids other than water. In fact, Samsung says that this solution will no longer be effective after about 200,000 times of folding and opening.

With the screen, due to the structure of many different layers, so Samsung has integrated these layers into one through a new type of adhesive / adhesive tape developed by this company. Combined, the screen and hinge of the Galaxy Z Fold3/Flip can come into contact with water without any problems.



The remaining problem is the connecting cables. As mentioned above, a folding screen phone consists of two halves, and there will have to be cables connecting these two halves together. If water can get into the connectors, a short circuit will immediately occur and cause the entire machine to fail.

And to solve this problem, Samsung once again had to create a completely new chemical - a very special glue. According to Hee-cheul Moon, a lead engineer in Samsung's mechanical group, the glue creates a protective layer that's tight enough that water can't get in, but is also flexible and flexible so that the cables between The

two halves can stretch during the opening and closing of the screen. This glue is originally a liquid, but when exposed to air, it becomes a solid. The liquid-to-solid transformation will take place during the manufacturing process in the factory.



The arrow point is a new glue developed by Samsung to protect cables and connectors from water.

Disadvantage for the repair?

It can be seen that, to be able to give the Galaxy Z Fold3 and Z Flip3 water resistance, Samsung had to create at least three different chemicals. It is not a common chemical that anyone can buy outside.



This will make it extremely difficult to repair Samsung's new folding screen smartphone duo, especially with third-party stores, when they can't access these chemicals properly. easily.

So, although foldable smartphones are becoming more and more perfect, users should still use them more carefully than ordinary smartphones. In fact, even on the first launch, Samsung also made a very long list of

things users are not allowed to do on its folding screen phone.



Samsung "reminds" users on how to take care of their phones the first time they start up.

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