



IP68 Feature Summary



Who will benefit

Hearing aids demand excellence in protection from solid and liquid ingress and corrosion resistance that exceed other consumer electronic devices not worn on the person. Because hearing aids are worn on, and in the ear, they are exposed to oils, sweat, earwax, humidity, water, dust, and other foreign materials. Since hearing aids are typically worn for the duration of the day, it is vital that they withstand a variety of conditions, especially for active wearers. Most hearing aids are tested against standards that ensure continuous operation of the hearing aids after being subjected to harsh conditions and given an Ingress Protection (IP) rating. Starkey takes a three-pronged approach to providing next-level protection for hearing aid wearers since we know that our technology needs to withstand real-life scenarios and be everyday-proof.

Where to find it

All Starkey RIC, BTE, and custom Evolv AI hearing aids are tested against moisture and corrosion by undergoing aggressive simulations of the environment and certified by an independent external lab with a strict pass rate of 100%. The full suite of environmental stress tests that Starkey devices go through are more rigorous than the standard IP68 testing, and these aggressive tests are developed to simulate real-use cases accelerated for the life of the hearing aid in the field.

What is IP rating

The Ingress Protection (IP) rating was developed by the International Electrotechnical Commission (IEC) to provide a quality standard for classification of degrees of protection by electrical equipment at a rated voltage. The ratings grade the resistance of enclosure of an electronic device against the intrusion of dust or liquids. The hearing aid industry has adopted the ANSI/IEC60529 standard to demonstrate how "resistant to penetration" hearing aids are and uses this as a standard measure of quality. Based on this standard, hearing aids are given an Ingress Protection (IP) rating. This rating begins with the letters "IP" and is followed by two digits: the first digit of the IP certification indicates the level of protection against foreign objects, such as dust or dirt and the second digit indicates the level of protection against liquids, such as water and moisture.

The maximum applicable IP rating for hearing aids is IP68. The "6" means that the enclosure of the hearing aid body is completely protected from dust and the "8" means that the enclosure is watertight when submerged in liquids (usually at a depth of 3 ft (1m) for over 30 minutes). This usually means that the device will continue to work when exposed to day-to-day wear such as the occasional splash of water, snow, rain, humidity, windblown dust, etc.

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Real-world testing

Starkey understands that our hearing aids need to withstand anything life throws at them. Therefore, we created a suite of real-life test scenarios to ensure quality and protection on our Evolv AI hearing aids, tests that go over and above the standard IP68 test standard.

- **High Humidity** – with their position in the ear canal and over/behind the ear, hearing aids are heavily exposed to moisture and humidity in and outside of the ear canal. Our hearing aids are subjected to an accelerated aging test in an environmental chamber at 95° F and 95% RH level for 21 days. This test simulates accelerated aging factoring five years of use.
- **Salt Mist (Salt Fog)** – being the first hearing aid to introduce fitness and activity tracking onboard the hearing aid, we encourage our hearing aid users to be active. That's why we test our hearing aids in a highly corrosive environment with salt spray for

48 hours to simulate sweat, chlorinated water, and humid environments. This testing represents the real-world operating conditions that our hearing aids may be exposed to every day.

- **Rain Spray** – we know that rainstorms, showers, and accidents happen – that's why we put our RIC devices through a rain spray test. We developed a novel test with a rotating 25-nozzle head simultaneously spraying water from different angles onto the entire length and width of the hearing aid for an extended duration while monitoring the acoustic performance in real time. All devices returned to their full functionality post-test.

We measure our hearing aids against a strict “100% pass rate” criteria and ensure that all hearing aids tested can function after undergoing these aggressive simulations of the environment.

Unique three-pronged approach

Starkey utilizes a comprehensive design and manufacturing approach to protect every hearing aid against ingress and corrosion.



Device Nanocoating

A Hydrophobic and Oleophobic nanocoating is chemical vapor deposited on the entire housing which helps reduce most of the liquid ingress into the device. This nanocoating not only covers the entire outer housing but also penetrates the case seams, less than 1 mm width, and effectively seals the tight case gaps from any liquid or oily substances ingress.



Electrical Component Coating

All the internal electrical components and connection pads are sealed with a thin polymeric barrier coating layer that protects the delicate electronics from moisture, corrosion, and organic growth.



Robust Interfaces

O-ring sealed lithium-ion battery encapsulation and RIC cable plug interface, as well as additional gasket seals inside the housing ensure a robust ingress resistance design.

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How it helps you

Starkey uses many design techniques to protect batteries and electronic components from foreign material ingress. We employed multiple layers of protection to increase patient satisfaction through extended product reliability and reduced ingress of wax and other foreign materials. Patients benefit through less frequent hearing aid repairs and longer time between changing microphone covers or wax guards.

What you can do

Patients and professionals desire hearing aids that work reliably in challenging environments and peace of mind in knowing that the small electronics in the hearing aids are well protected throughout the years of ownership. The reality is that even the highest quality hearing aids can still succumb to environmental damage depending on the conditions they are exposed to and how well they are cared for. The best way to support the lifespan of a hearing aid is for wearers to practice regular maintenance, in the same manner we maintain other devices that are critical to our day-to-day function. Doing the following steps every day is the most effective way to maintain the device:

1. Wipe hearing aids with a clean dry cloth.
2. Use a dehumidifier or regularly replace the desiccant puck in the Evolv AI charger.
3. Use a wax brush to clean receiver.

To learn more

- Visit <https://www.starkeypro.com/products/hearing-aids/evolv-ai>
- Read [How to clean your hearing aids](#)
- Contact your Starkey representative today

