

**OTTERBOX**



**Methods of certification and protection  
for iPad® operating system devices for UL,  
ATEX and IECEx**

## Methods of certification and protection for iPad OS mobile digital devices for UL, ATEX and IECEx

**OtterBox achieves third-party certified device protection for hazardous locations**

As the global need for connected workers grows, mobile digital devices are in demand for heavy industry. However, due to the proprietary nature of device designs, it is not possible to evaluate or certify iPad operating system (OS) devices as intrinsically safe. Since intrinsic safety cannot be applied, OtterBox created a mobile digital device enclosure designed to act as a hardline defense by preventing flammable gasses and combustible dust atmospheres from making contact with the device, minimizing the risk of an explosion.

The OtterBox Hardline Series case and enclosed device has been evaluated against over 200 mandated regulatory requirements to gain international third-party certifications from UL Solutions (UL), providing the peace of mind needed to move from paper to mobile iPad OS technology in approved hazardous locations.



## Rigorous verifiable certification

With mobile technology becoming pervasive in hazardous work locations, the need for safer, more efficient innovations is gaining urgency. To ensure the Hardline Series adheres to the most stringent guidelines available, OtterBox Industrial experts work with the experts at UL, a leader in global safety science. The hazardous location certification issued by UL is recognized and accepted by US and Canada operators, installers and regulators. In addition to providing certification for US and Canada, UL issues an ATEX certification for Europe and an IECEx international certification for the OtterBox Hardline Series.

For certification and improved safety purposes, OtterBox certifies the case and device as one. The case and device together make the “certified solution,” therefore the case is not offered alone.

## Restricted breathing method

Since most devices are not suitable for flammable gas or combustible dust atmospheres, additional measures must be taken to safely use the devices in these environments. The OtterBox Hardline Series is designed to prevent potentially dangerous materials in the surrounding atmosphere from penetrating the enclosure, therefore minimizing the potential of the mobile digital device becoming an ignition source. To protect the iPad OS device in flammable gas atmospheres, the enclosure is certified for restricted breathing (nR). This means the enclosure is designed and certified to restrict the entry of gases, vapors and mists. To prevent combustible dust from interacting with live parts and creating an ignition hazard, the enclosure utilizes protection by enclosure (tc).

To maintain the integrity of the device certification, OtterBox utilized wireless charging capabilities, bypassing the need for power port access. The engineers at OtterBox Industrial designed a case thin enough to transfer power through, while also being strong enough to withstand drops and impacts. Active charging is achieved by a receiver coil that plugs into the device’s USB-C port prior to installation and is enclosed within the case, interfacing with the transmitter coil embedded in the wireless charging stand.

The commitment to safety doesn’t stop with the absence of ports. The Hardline Series uses tamper-resistant, stainless-steel hardware for an added layer of protection to keep the case enclosed through drops, impact and tampering.

## Engineering and testing

Development, in the form of engineering and testing, is critical to the Hardline Series construction. From finding suitable materials to meticulous analysis of product and performance, taking the Hardline Series from idea to innovation was an evolution years in the making.

### MATERIALS MATTER

**There are no other documented iPad OS devices with plastics that are third-party certified for potentially explosive environments around the globe.**

When the certification standards were written, they were intended for metallic enclosures. With the rise of mobile technology, another solution was needed. Plastic materials are lighter in weight and enable more versatile product design for portability. They also minimize the risk of static electricity inherent with a portable metal enclosure that cannot be easily grounded.

Finding those plastics was a challenge. OtterBox tested 59 resins from 15 suppliers and molded more than 14,000 samples to identify the substrates best suited to meet the certification requirements and ultimately withstand harsh industrial use.

### TEMPERATURE TESTING

**OtterBox Hardline Series offers the only UL certified, non-metallic case protection solution evaluated for the full device temperature range of -20°C to 45°C.**

OtterBox Industrial subjects all materials to a grueling internal process totaling thousands of hours of testing before a material is selected. The cases are aged at extreme high and low

temperatures for 30 days, then put through a range of tests at these intense temperatures. Once a material is chosen, it's sent to UL for additional evaluation and certification testing, since plastic mechanical performance is unpredictable at extreme temperatures.

In accordance with the IECEx and ATEX test requirements for restricted breathing (nR) and protection by enclosure (tc) certification, UL conducts the following tests in sequence on the same samples: thermal endurance to heat and cold, drop test at minimum service temperature, impact test at minimum and maximum service temperature and restricted breathing test, IP6X dust test and IPX4 water test. The thermal endurance, drop and impact testing simulates rigorous use in a hazardous industrial environment. After the samples have completed those tests, they are subjected to protection method testing. These tests verify that the enclosures maintain their ability to prevent potentially hazardous materials in the surrounding environment from contacting the device.

### 8 TYPES OF PROTECTION

OtterBox Industrial tests our solutions on a total of eight points of protection. These include explosive gases, water, dust, impact, drop, ultraviolet exposure, flame rating and electrostatic discharge. Product engineers conduct some of these tests internally, while UL assesses the others. An important note on the UV exposure test — it's carried out to understand how polymer materials withstand the damaging effects of UV light over time.

These eight points of protection are in addition to the button functionality and charge test.

## Repeatable results — third-party quality management systems

Third-party certification is not a one-and-done task. OtterBox uses a certified quality management system (QMS) to ensure that no safety-critical aspects of the certified solution are changed after the certification is issued. QMS is audited by UL on an annual basis to demonstrate continued compliance with the requirements.

What exactly is a quality management system? The OtterBox QMS ensures that industrial Hardline Series products are built identically to what was tested and certified. OtterBox has established and enforced processes that maintain accountability for all aspects of design and product related information. Internal checks of the QMS are conducted consistently throughout the year, and a formal annual audit is completed internally prior to the external UL audit.

When a company elects to self-certify a product or its own QMS, further responsibility to ensure safety of the equipment is on the customer. This means that customers must either trust the manufacturer's evaluation or spend their own resources to evaluate the equipment prior to use. OtterBox has made the investment to have our QMS and equipment independently evaluated and certified by UL. This means our customers can trust that the evaluations were done correctly and to the highest achievable standard, so they can get to work and focus on what they do best.

## Trusted protection

The OtterBox Hardline Series combines experience and innovation to deliver an integrated solution for hazardous locations. With extensive testing and third-party certifications for iPad OS devices enabling full deployment for connected workers, these solutions bring you one step closer to the goal of a safer, more productive and connected workplace.

