Case Study: GORE® Acoustic Vents in Smartphones

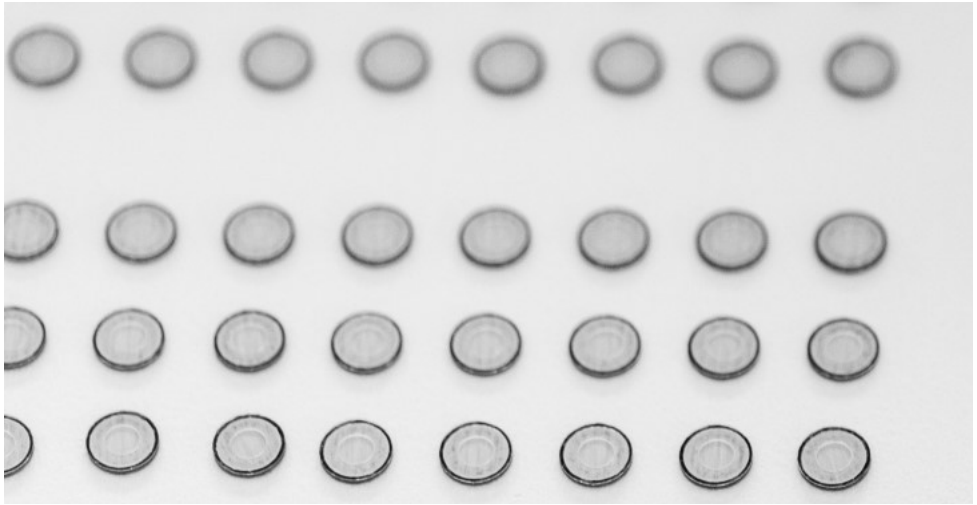
New Material and Assembly Development for a Smartphone OEM



CHALLENGE

Today, customers expect their **mobile phones** to be **waterproof** and to provide the best **sound quality**. A leading smartphone manufacturer was at risk of failing their customers in that basic regard: during the assembly process, the acoustic vents broke and reduced the sound quality of the device — with only three months left before mass production.

The manufacturer approached Gore to provide **a more robust solution for a waterproof device with excellent sound quality**. Gore provided a suitable acoustic vent, thus solving problems during the assembly — facing time pressure to keep the production timeline.



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SOLUTION

Gore replaced the delicate foam layer in standard vents with **a rubber-based material — a novelty** in Gore's portfolio. Although robust, it was more difficult to laminate than foam. But the engineers managed to **successfully apply the new material** — relying on their efficient supply chain and their **rapid development capabilities**. The client benefited from Gore's **collaborative** approach and dedication to **cost control**. Agile testing and sampling ensured the perfect balance between **acoustic performance and cost efficiency**.

Gore also **fixed the root cause of the assembly failure:** the high breakage during trial runs. They recreated the failure and traced it to the vacuum pick-up nozzle. The remedy: keep the existing vacuum setting but reposition the nozzle.

THE TECHNOLOGY BEHIND THE SOLUTION: GORE® ACOUSTIC VENTS (FOR SMARTPHONE MICROPHONES)

Gore's **customer-centric** tailoring delivered an acoustic vent with a rubber layer, preserving the target acoustic response while **improving robustness and cost efficiency** and to strengthen assembly robustness and seal integrity without sacrificing sound quality.

Their key benefits include:

- **Reliable protection:** Durable rubber top layer resists assembly damage; breakage cut to 0%.
- **Design flexibility:** Multiple hardnesses and tuned adhesives support wide compression and sealing.
- **Acoustic performance:** Maintains foam-level response; rapid 2-day iterations confirmed target acoustics.
- **Automation-ready:** Die-cut parts suit high-volume pick-and-place; nozzle tweak eliminated pick-up damage.

For specifications and more detailed information on installation, please visit **gore.com/acoustic-vents**.

"With the failure in the pick-up machine, the membranes disappeared — leaving no clue of what the root cause might be. Still, our team was able to find it, and we offered a solution to get the failure down to 0%."

Kelvin TF Wei, Application Engineer at Gore



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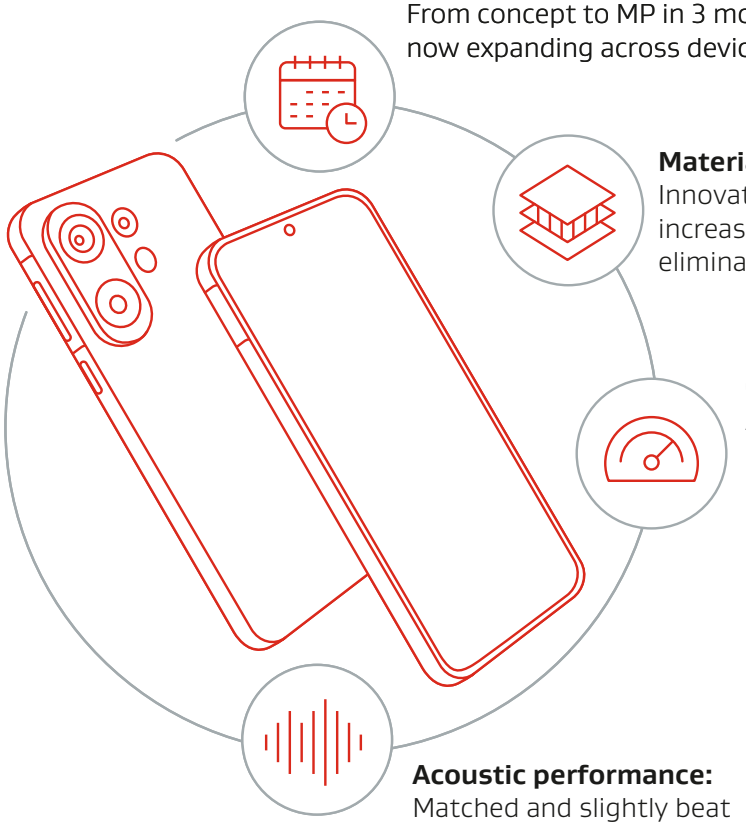


RESULTS

The program delivered **a fast, scalable fix** that cut failures while enhancing acoustics, thus ramping up from pilot to multi-million-unit **mass production**.

> "We have developed the optimal solution for our customer. And we hope to roll out the implementation of rubber acoustic vents for the other customers' benefit."
>
> **Eric ZZ Chu, Field Sales Associate**





Schedule secured:
From concept to MP in 3 months; now expanding across devices.

Material breakthrough:
Innovative rubber material increases robustness and eliminates assembly failures.

Quality improved:
Achieved 0% air leakage, stabilizing performance and improving yield.

Acoustic performance:
Matched and slightly beat the incumbent.

WANT TO KNOW MORE?

Visit our site to see how GORE® Acoustic Vents can help you face assembly issues without compromising acoustics.

To learn more about GORE® Acoustic Vents and our support for mass production, please visit **gore.com/acoustic-vents** or explore additional case studies at **gore.com/mestories**.

Why Choose GORE® Portable Electronic Vents for Your Electronic Devices?

Leading OEMs have purchased over 10 billion GORE® Portable Electronic Vents because they know our products and services can help accelerate their development of innovative and differentiated devices in fast-paced, highly competitive markets.

PRODUCT AND APPLICATION LEADERSHIP

Grounded in a deep understanding of material science and acoustics, Gore can provide the optimum venting solution. We balance trade-offs between diverse problems such as adverse operating environments, immersion events and acoustic performance.

RELIABLE PERFORMANCE

To ensure products are "fit for use", every Gore product must adhere to the highest standards of quality, performance and reliability. Through a comprehensive understanding of end-use applications and requirements, our products do what they say they will do.

FAST DEVELOPMENT

The mobile electronics industry develops and releases new products quickly. Our fast response to customer requests during the development process sets us apart. Gore supports this need for quickness with designs and prototypes to ensure engineering teams can meet their project timelines and their application requirements.

SUPPLY SECURITY

Leading OEMs specify Gore because we have consistently proven our ability to quickly ramp up to supply vents for projects of over 10 million devices per year and to continue to supply high quality products on-time without disruption.

MATERIAL SCIENCE

Gore is a global materials science company dedicated to transforming industries and improving lives. Gore develops materials with microporous structures that provide desirable attributes and performance characteristics to engineer vents and other products used in a variety of markets and industries.

GLOBAL SUPPORT

Our global teams of sales associates, application engineers, manufacturing engineers, and research personnel enable us to provide agile and robust support to customers around the world.

Interested in Testing Our Products or Talking to Our Experts?

For additional assistance, please contact a Gore representative.

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