

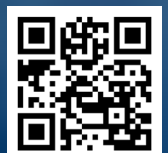


IGNITION COIL TEST

IN AUBURN HILLS

Delphi

delphiaftermarket.com





POWERING AHEAD: DELPHI LEADS IN IGNITION COIL PERFORMANCE

Ignition systems are crucial for ensuring **vehicle efficiency** and **promoting environmental sustainability**. In our latest study, we conducted a third-party evaluation to compare the **performance** of **Delphi Ignition Coils** against **Original Equipment (OE)** standards and products from four **Aftermarket** brands.

The tests were carried out at an **OE Test Bench** in Auburn Hills, MI, USA, by a team of experienced engineers and covered **eight electrical performance metrics**.

Our objective? To confirm **Delphi's products align with OE quality standards** and benchmark our **performance** against selected Aftermarket brands. Why? Because **high-quality ignition components** are integral to **optimal vehicle performance, fuel economy, and lower emissions**.



RELIABLE PERFORMANCE & SUPERIOR QUALITY

Operating within **OE tolerance levels** for **resistance**, **Delphi Ignition Coils** effectively mitigated the risk of **excessive heat buildup** during operation. Excessive heat is a common cause of premature ignition system failure, as it can degrade coil insulation and other critical components over time.

OPTIMUM PARAMETERS ALIGNING WITH OE EFFICIENCY

Throughout the **comprehensive testing process**, our products consistently **matched** or **surpassed** the **quality** and **reliability** of **OE** equivalents. Moreover, when compared within the test environment, **Delphi coils outperformed** other Aftermarket equivalent products.

For vehicle owners, this translates to **dependable engine start-up**, **smoother running**, and **quality assurance**.

EXTENDED DURABILITY & LOWER COSTS

Delphi preserves the **durability** and **longevity** of the **ignition system** by ensuring that our coils **maintain resistance** within these **carefully defined limits**. This results in **fewer maintenance issues**, **reduced downtime**, and **lower long-term ownership costs**.

DELPHI IGNITION COILS MET & EXCEEDED PERFORMANCE STANDARDS SET BY OE MANUFACTURERS.

All tests were performed on an **OE Test Bench** in
Auburn Hills, MI. Testing was carried out by
OE Test Engineers.

Electrical Performance Testing Conducted on Each Coil:

- Primary Resistance
- Secondary Resistance
- Dwell Time
- Primary Current
- Output Energy
- Secondary Voltage
- Spark Duration
- Secondary Current
- Make on Voltage

Take a look at the results for yourself...

IGNITING THE FUTURE

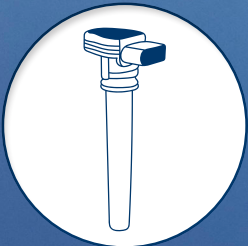
All five **Delphi Ignition Coils** passed 100% of the **Electrical Performance tests**, contrasting with other **Aftermarket brands** products, each facing at least one failure.

The results confirm **Delphi's lead** in producing **reliable, eco-friendly** ignition solutions.

DELPHI	OE	BRAND 1	BRAND 2	BRAND 3	BRAND 4
✓	✓	✓	—	✓	✗
✓	✓	✓	✗	✗	—
✓	✓	✗	✓	✗	✓
✓	✓	✗	✓	✗	✗
✓	✓	✓	✓	✗	✓

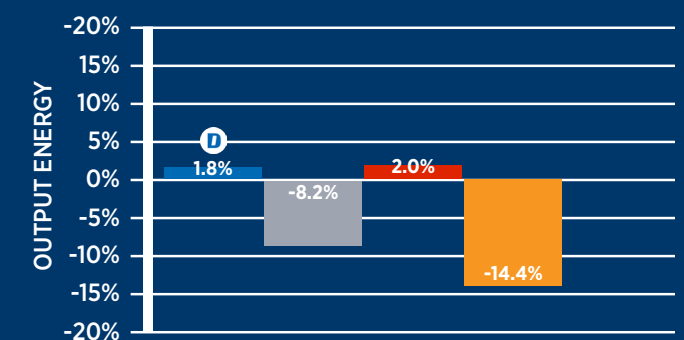
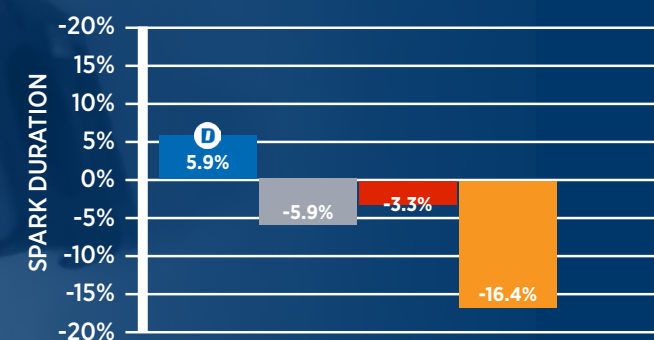
✓ PASSED — NOT AVAILABLE ✗ FAILED

DELPHI IS THE ONLY BRAND TO PASS ALL TESTS!



PRODUCT 1 (GN10571)

Delphi's GN10571 aligned with the **OE Spark Duration** and **outperformed** all other **Aftermarket brands**, including **Brand 4**, where **Delphi coil tested 22.3% points higher on Spark Duration** and **16.2% points on Output Energy**. **Higher spark duration** ensures more **efficient fuel combustion** and **smoother engine performance**.



DELPHI BRAND 1 BRAND 3 BRAND 4

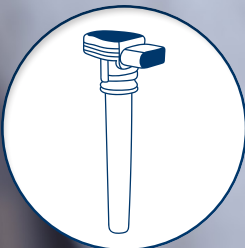
SPARK DURATION TEST

The **GN10571 Delphi Ignition Coil** matched **Spark Duration** of **OE product**, **outperforming** the four brands average by **14.4 percentage points**. This test measures the length of time the spark is generated in the ignition coil, which is crucial for ensuring **complete fuel combustion**.

As demonstrated by **GN10571**, a **longer spark duration enhances** the ignition process. This leads to more **efficient fuel** use and **smoother engine operation**. The outcome is a more responsive driving experience. And, by minimizing unburnt fuel emissions, it makes for a more **environmentally friendly product**.

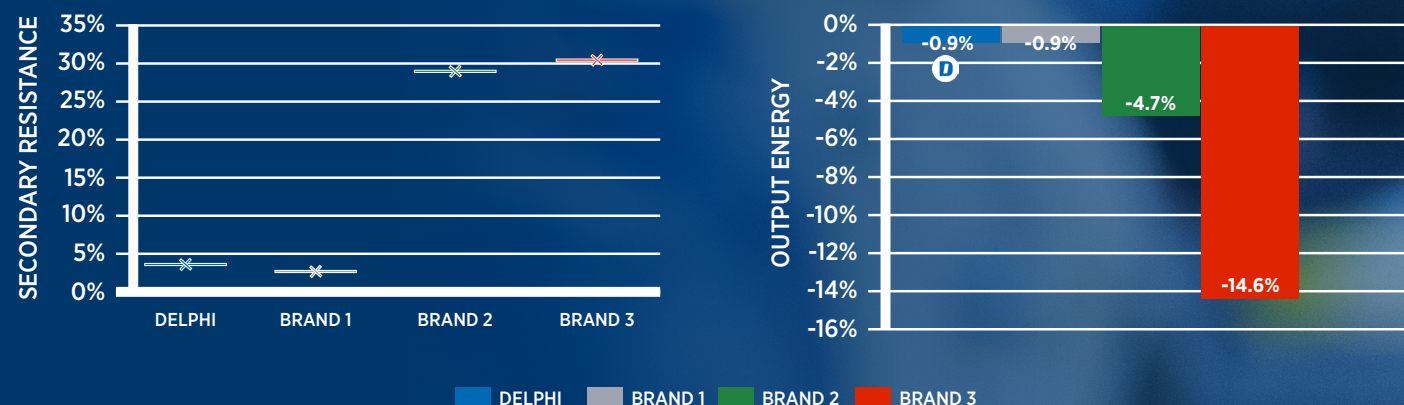
OUTPUT ENERGY TEST

In contrast, the performance of Brand 4 highlights the drawbacks of **suboptimal ignition components**. It failed the **Spark Duration test**, with a difference to **OE product of 16.4%**. Additionally, it fell short in the **Output Energy test** by **14.4%**. Incomplete combustion due to **insufficient output energy** can lead to loss of **engine performance**, **reduced fuel economy**, and, over time, **deterioration of engine components**. Operational costs rise, and the risk of **vehicle downtime is higher**.



PRODUCT 2 (GN10690)

Consistent with **OE's Output Energy**, while **13.7% points** above Brand 3 coil. **Secondary Resistance** of Delphi coil **25% points** below Brand 2 and 27% points below Brand 3 coils. This contributes to **consistent combustion** and **improved fuel efficiency**.



OUTPUT ENERGY TEST

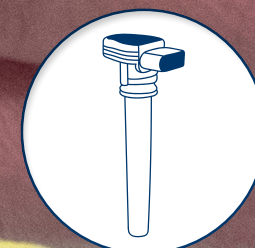
The **GN10690 Delphi Ignition Coil** delivered an **Output Energy** in line with the **OE** product and was **5.8% above** the four brands average.

Optimum Output Energy ensures that the spark generated is **powerful** enough to ignite the air-fuel mixture efficiently, even under varying engine conditions. This robust performance contributes to **consistent engine power** and **optimal fuel efficiency**, offering drivers a **reliable** and **cost-effective operation**.

SECONDARY RESISTANCE TEST

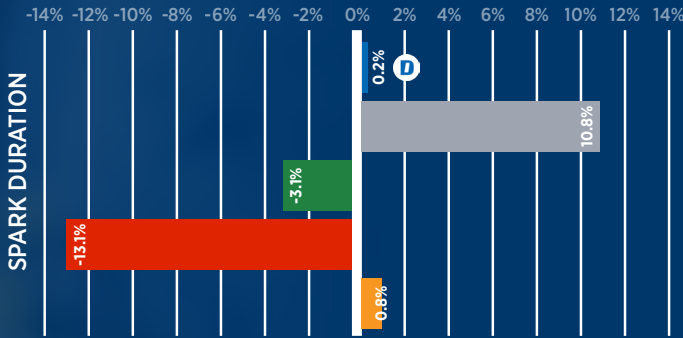
In comparison, Brand 2's performance in this test was problematic, showing failures with values **28.3%** and Brand 3 was **30.3%** higher than OE product. This demonstrates the risks associated with excessive resistance. Such **high resistance** can cause **overheating** and may eventually lead to **coil failure**.

Delphi's balanced approach in **GN10690** ensures **durability without compromising energy output**, providing a **reliable ignition source** that **enhances vehicle longevity** and **performance**.



PRODUCT 3 (GN10235)

Delphi matched the OE's Secondary Resistance, whilst it outperformed Brand 1 by 12.2% and Brand 3 by 59.4% points. High Secondary Resistance can lead to **incomplete combustion**, **premature failure of components** and **reduced performance**. Additionally, Delphi coil showed **higher Output Energy** compared to Brand 3's product by 21.6% points.



SECONDARY RESISTANCE TEST

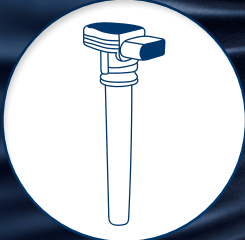
The GN10235 Delphi Ignition Coil remained **consistent with OE** product for **Secondary Resistance**, delivering **optimal electrical flow** while **minimising** the risk of overheating. This is crucial for **sustaining engine performance** and **extending the lifespan** of the **ignition system**.

In contrast, Brand 1 and Brand 3 displayed higher secondary resistance, potentially leading to **inefficient combustion**, **decreased performance**, and **increased fuel consumption**—all of which directly impact the **driver's experience** and **operational costs**.

OUTPUT ENERGY TEST

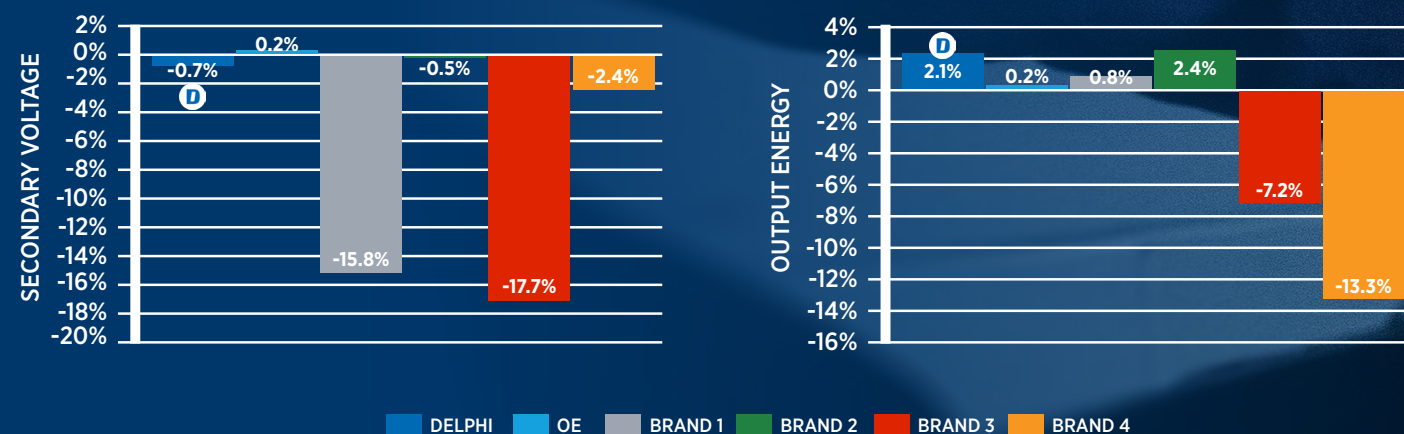
With only a **0.2%** deviation in the **Output Energy test**, GN10235 showcases **Delphi's precision engineering**. The energy delivered is sufficient for **complete combustion**, **optimising fuel economy** and **reducing emissions**.

The significant percentage difference seen in Brand 3—at 21.4% below the OE product—could result in incomplete combustion, affecting the vehicle's performance and efficiency.



PRODUCT 4 (GN10314)

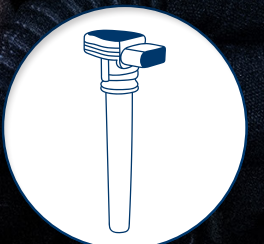
Delphi passed the **Secondary Voltage test**, whilst aligning with **OE** results, ensuring **efficient combustion**. Compared with Brand 1, which was **15.1%** points lower and Brand 3, which was **17%** points lower than our product respectively, affecting the **combustion quality** and **vehicle performance**.



SECONDARY RESISTANCE TEST

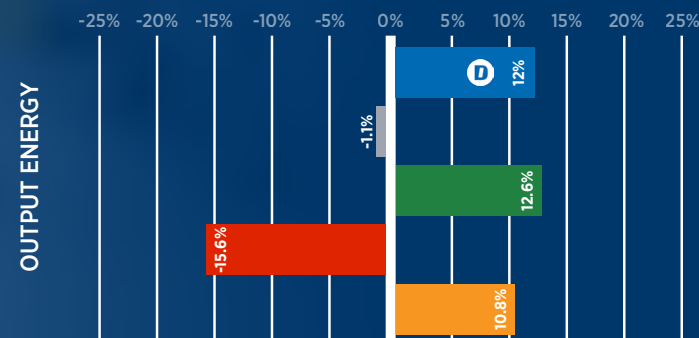
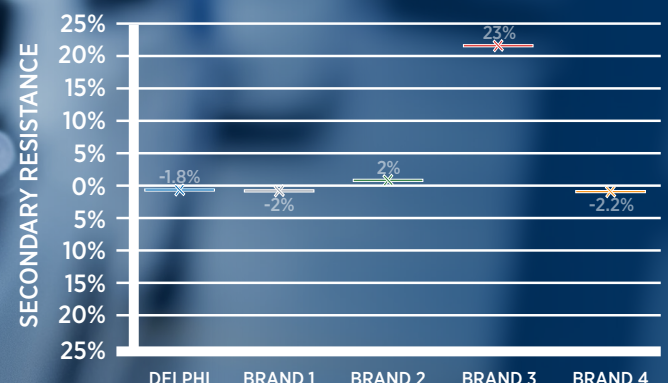
The **GN10314 Delphi Ignition Coil** passed the **Secondary Voltage test**. The voltage supplied was adequate for spark generation but did not exceed the engine's tolerance levels. **Precise voltage control** results in **efficient combustion, boosting engine performance** and **reducing wear** on the ignition system.

In contrast, the **lower voltage observed** in Brand 1 and Brand 3 could result in **incomplete combustion**, affecting the **vehicle's performance** and **efficiency**.



PRODUCT 5 (GN10590)

Delphi was **consistent** with the **OE** in all tests, unlike Brand 3 product, which performed **24.8%** points higher for **Secondary Resistance**, **27.6%** points lower for **Output Energy** and **18.2%** points lower for **Spark Duration**, potentially causing **overheating, premature component failure, decreased performance** and **poor fuel efficiency**.

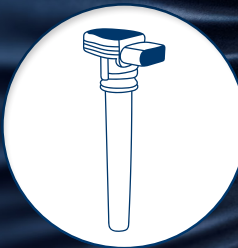


DELPHI BRAND 1 BRAND 2 BRAND 3 BRAND 4

SECONDARY RESISTANCE TEST

Showing a consistent Secondary Resistance, the **GN10590 Delphi Ignition Coil** ensures **optimal electrical conductivity** and **thermal management** within the ignition system. This **prevents overheating** and **improves durability**, leading to **consistent engine performance** and **reliability** for the driver.

The secondary resistance observed in Brand 3 was **24.8%** above **Delphi**.



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