



## Toyota Prius (2003 - 2009)

### Atomic scientist

Car review | Toyota had a specific goal in mind with the Prius. The car had to be extremely environmentally friendly without compromising performance, space or safety. In 1997 Toyota introduced the revolutionary first generation "Prius". Technically the car was very advanced, but because of its non-European look not very successful. Now Toyota introduces the second generation Prius. Its appearance is now much more appealing and the fuel consumption reducing technology has been developed even further.

### Scientists

It is as if every progressive scientist within Toyota was brought together to create the new Prius. Wherever possible, lightweight materials are being used. The design is aimed at minimal air resistance. The shape, even behind and under the car, contributes to favourable fuel consumption.

In addition to its new looks, this second generation Prius is bursting with new technology. The interior has minimal buttons, because many instruments can be operated by voice recognition. Accelerator and brake are not directly connected to the engine and brakes, but work through a computer. The standard climate control system regulates not only temperature, but also humidity. Specialist JBL was asked to provide a made to measure audio system. Finally instead of the traditional car key the driver is given merely a "cube" with which the car recognises its owner.

### Start!

Whoever carries the electronic key has only to touch the car for the doors to unlock. In a way, the owner acts as a conductor. The gauges that can usually be found behind the wheel are replaced by a display placed deep under the windscreen. In the central console is a colour touch screen that controls most other instruments. If the Prius did not have a steering wheel and pedals, this masterpiece of Toyota technology would hardly be recognised as a car.

To avoid any confusion after getting into the car, the only button lit is the "start" button. The "key" can be left in ones pocket. With one push on the button the test drive begins, but inside the Prius it remains quiet. The big "secret" of the environmentally friendly Prius is that it uses two engines. A traditional petrol engine is economical at a continuous and relatively high speed. In city traffic however an internal combustion engine is very inefficient. Moreover it causes emissions in a place where it is most unwanted and harmful. An electric motor is free from emissions and lends itself better to low speeds like the ones in city

traffic. Because of this combination of engines, the Prius has the ideal source of power for every occasion.

## Quieter than a Lexus

After putting the small gear lever in the dashboard to "D", the Prius is set in motion in complete silence. Despite all its extraordinary technology the Prius doesn't require any extra energy from the driver. The Prius acts as any other car with an automatic transmission. The latter may, in the eyes of many Europeans, seem like a "necessary evil" but it is the only solution for a car with two engines. The automatic transmission is an "e-CVT", an advanced version of the continuous variable transmission.



The central display shows an exact schedule of how the energy is used. Currently the power from the battery goes to the electric motor and from the electric motor to the wheels. In city traffic the Prius is quieter than a Lexus thanks to the electric motor! When later on more power is needed to join motorway traffic, the petrol engine switches on almost unnoticed. Both engines are now actively working and the Prius is frankly a smart and easy car. The electronic brain determines when which engine is active and when both are used. The schedule later shows how the power of both engines is transferred to the front wheels.

Once up to speed another strong point of the Prius becomes evident: whilst driving on the petrol engine, the batteries of the electric motor are charged. This

way the Prius doesn't need charging on the mains overnight, which is common with conventional electric cars. According to Toyota the life of the battery equals the life of the entire car. The manufacturer offers an 8-year guarantee on the hybrid synergy drive in full confidence.

## Day-to-day traffic

Toyota promises that the Prius offers the same comfort as a comparably spacious business car. In city traffic the Prius surpasses this promise thanks to its perfectly silent electric motor. On the motorway the Prius offers a lot of comfort too, the car moves smoothly over the road surface like a true limousine.

During the first days of the test period the Prius is used like any other test vehicle and there is no extra attention given to fuel consumption. The average consumption, which includes city traffic and several acceleration tests, is a little over 56.5 mpg. This is an exemplary result for a car this size, but considerably higher than what the manufacturer claims. Moreover, with a diesel engine a similar consumption is achievable (however with more harmful emissions) and many a city car has a better fuel economy (however less spacious).



## Pulling out all the stops

The next test aims to determine minimal fuel consumption. To pull out all the stops: speed is between 56 and 62 mph, due to good anticipation, unnecessary braking is prevented, the acquired knowledge of the chassis is used to limit braking before the bends and accessories are used as little as possible.

The attempt to achieve minimal fuel consumption meets with "nice disadvantages". The Prius is so quiet and comfortable that it is almost impossible to drive slowly! 80 mph is hardly walking speed but only by keeping a good eye on the speedometer (or by using cruise control) is speed kept in check. The extensive fuel consumption meter offers a good aid to driving economically.

By taking off with a flying start it is easy to register spectacular -though unrealistic- data on the on-board computer. To make the data more realistic, a course is set out which covers both motorway and city traffic. On country roads the Prius is economical thanks to the modern engine, good streamlining and the efficient transmission. Even so, there are several other cars around that prove to have almost the same fuel

consumption.

Particularly in city traffic the Prius is revolutionary. The electric motor takes over and the display triumphantly shows a value of "0,0 mpg". Where fuel consumption in any and every other car increases in city traffic, the Prius achieves an even better average consumption. Over a distance of 178 miles the average consumption turns out to be 67.3 mpg; a fraction better than stated by the manufacturer. This however required pulling out all the stops. Throughout the overall test period the average fuel consumption resulted in a still remarkable 61.4 mpg.

## Space

Toyota promises to be as spacious as the average business car. The manufacturer has succeeded in doing this. Not only in the front, but also in the back the Prius offers a lot of space. The interior has many pockets and compartments. The batteries to the electric motor are situated right behind the backseat. A well-concealed container around the (500 volt) batteries guarantees their safety.

Only in the boot have Toyota made its first concession. The floor is considerably higher than most other cars, which makes the boot slightly smaller (408 litres). The floor however has a "false bottom" under which there is extra space. The second and last concession comes from the DVLA: thanks to the low level of CO2 emission the rate of Vehicle Excise Duty (tax disk) is remarkably low. The future is here, the future is tax-free!



## Conclusion

Comparing the new Toyota Prius to other cars suddenly makes all of them hopelessly out of date. Toyota has achieved its goal in every way possible. Firstly the Prius is extremely economical and environmentally friendly. Based on the (rather optimistic) fuel consumption stated by Toyota, the CO2 emission of the Prius is a ton a year less than a similar diesel engine at 12,500 miles per year! This amazing and instantly practical solution to environmental issues requires no concessions from the driver. In addition to that the Prius not only offers the space of a business car, but thanks to the advanced technology it also offers more luxury and comfort! ■



# Specifications

## Toyota Prius (2003 - 2009) T4 THSD

### Size and weight

Length x width x height	445 x 173 x 149 cm
Wheelbase	270 cm
Kerb weight	1.275 kg
Trailer	unknown
Trailer - braked	unknown
Fuel capacity	45 l
Luggage space	408 l
Tyre size	195/55R16

### Engine and performance



Capacity	1497 cc
Cylinders / valves	4/4
Max power	77 PS @ 5000 rpm
Max torque	115 Nm @ 4000 rpm
Drive	front wheels
Acceleration 0 - 62 mph	10.9 secs
Top speed	170 km/h
Average mileage	4.3 l / 100 km
Mileage urban	5 l / 100 km
Mileage extra urban	4.2 l / 100 km
CO2 emissions	104 gr / km

### Price

Price	Â£ 19,055
Price base model	Â£ 18,255