## Introduction

The purpose of this guide is to help consumers to make an informed choice when buying a new car, and enable them to easily identify models which could save them money on fuel costs as well as reducing the impact on the environment. The guide lists the fuel consumption, carbon dioxide ($CO_2$), and other emissions performance figures of NEW cars, currently on the market in the UK. It also seeks to advise on key environmental issues as well as give guidance on ways of reducing the impact of cars on the environment. The figures shown are obtained from official tests, which are required before a model of car may be offered for sale. Figures are listed for most new petrol and diesel cars on sale in the UK as well as for some cars powered by alternative fuels (Liquefied Petroleum Gas or Compressed Natural Gas). Figures are also listed for some hybrid vehicles, which use both electric motors and internal combustion engines and, for the first time in this edition, pure electric cars.

Climate change, often referred to as global warming, is considered to be one of the greatest environmental threats facing the world today. When petrol, diesel or certain alternative fuels are burnt for energy in an engine the main by-products are water and $CO_2$. $CO_2$, although not directly harmful to human health, is the most significant of the greenhouse gases contributing to climate change. Transport emissions make up over a fifth of total UK carbon emissions; with road transport contributing around 90% of transport emissions. Additionally, road transport is also one of the major sources of the air quality pollutants which are harmful to human health, especially in urban areas.

## Important Note

**The fuel consumption figures quoted in this guide are obtained under specific test conditions, and therefore will not necessarily be achieved under 'real life' driving conditions. A range of factors influence actual fuel consumption - for example, driving style and behaviour, as well as the environment and conditions under which the vehicle is actually operated. The test figures are intended to be used for the purpose of making comparisons between models.**

**Since several different specifications (variants or versions) of a given model may be grouped together in the list, the figures used in this guide should be treated as indicative only. A definitive test figure for a given specification of vehicle will be available at the point of sale.**

**Unlike the $CO_2$ and fuel consumption figures, the figures for emissions of air quality pollutants should not be used to directly compare different models of vehicle. The figures for emissions of these pollutants are indicative rather than absolute. All of the cars on sale will necessarily have passed the appropriate Euro standard pollutant emissions test, and the small variations between them on that regulatory test provide a much less reliable comparison of real-world performance than do the fuel consumption and $CO_2$ figures.**

A searchable version of the data is available through the website: http://carfueldata.direct.gov.uk/, as is some historic information. Please note that the web

version of this guide is updated between publications, and so will contain the most up to date information.

## Cars and Carbon Dioxide

The accumulation of key greenhouse gases (most importantly $CO_2$ and methane) in the atmosphere due to human activities is contributing to climate change. Unless action is taken to reduce emissions of greenhouse gases, such as $CO_2$, the whole pattern of the world's weather could change, increasing the frequency and intensity of heatwaves, floods, droughts and storms. The Climate Change Act (2008) set a long-term legally binding framework for greenhouse gas reduction in the UK. The Act requires the UK Government to reduce greenhouse gas emissions by at least 34% by 2020 and 80% by 2050 from 1990 levels in the UK. The Government has set out its plan of action for greenhouse gas reduction in the Carbon Plan (December 2011). The plan identifies that transport has a critical role in meeting the Climate Change Act (2008) obligations.

Transport is an engine for economic growth. Its role in moving people and goods around the country is vital, but it is also a major source of greenhouse gas emissions. In 2009, domestic transport accounted for 24% of all UK greenhouse gas emissions with the vast majority of this, at around 90% of all transport emissions, coming from road transport. The Carbon Plan identifies a wide-ranging strategy for reducing emissions from the transport sector. In the short term, the most significant greenhouse gas savings from transport are likely to come from improving the fuel efficiency of conventional vehicles and increased use of sustainable biofuels.

The $CO_2$ emissions of a car are directly proportional to the quantity of fuel consumed by an engine. While there has been progress in reducing emissions of air quality pollutants from vehicles, there has been less progress in reducing $CO_2$ from cars despite improvements in engine efficiency. Nevertheless, despite the tendency in recent years for cars to become heavier as showroom models arrive better equipped and with more features than ever before, consumers are increasingly choosing lower $CO_2$ emitting vehicles and so the rate of $CO_2$ reduction is showing some improvement.

### Measures to reduce car $CO_2$ emissions

In 1998, the European Commission and industry associations of the major motor vehicle manufacturers agreed to reduce the average $CO_2$ emissions of new cars. This voluntary agreement aimed to cut the average $CO_2$ emissions of new cars by over 25% by 2008/9 to 140g $CO_2$/km, and as a result to see a 25% improvement in average fuel consumption.

In 2009 European regulation setting binding targets to reduce the $CO_2$ emissions of new cars (EC Regulation No. 443/2009) entered into force. The main features of the Regulation are as follows:

- The target is for an overall European fleet average of 130g/km of $CO_2$ emissions by 2015 (phase in from 2012);
- This average will be delivered by setting each manufacturer a specific target to meet, based on the types of vehicles they actually sell in any given year — rather than requiring each individual vehicle to be less than 130g $CO_2$/km. This allows a broad

range of vehicles to remain on sale with manufacturers deciding where they make improvements to ensure compliance;
- The 'type' of vehicle is currently determined by its mass. Manufacturers that sell predominately heavier cars will have a higher grammes of $CO_2$/km target;
- There are different arrangements for manufacturers that manufacture very small numbers of cars in any year, so as to protect the diversity of the market;
- There is a further target for improvement for 2020, set at 95g $CO_2$/km.

There are several facts to bear in mind for anyone owning or driving a car who is wondering how the Regulation will affect them:

- The regulation is purely a matter for manufacturers. It will not directly require drivers or car buyers to do anything different. However, manufacturers might encourage sales of their more fuel-efficient models in order to ensure that they meet the target that they have been given;
- It works on an average basis. It does not require individual cars to meet a particular threshold for $CO_2$ (unlike air quality legislation) or ban cars on the basis of their $CO_2$ emissions;
- It only applies to new cars. It does not mean that older, higher-emitting, cars have to be taken off the road;
- It applies to all new cars registered in the EU. It does not just apply to European manufacturers;
- It is not about setting different targets for different countries. Whilst manufacturers may, of course, choose to vary what they offer between countries, the targets are for the EU as a whole;
- It does not tell governments how to set vehicle-related taxes. This will continue to be a matter for each country.

In the UK, a number of other steps have been taken to promote the purchase and use of more fuel-efficient vehicles:

- In the March 2001 Budget the Chancellor announced the extension of the lower rate of Vehicle Excise Duty (VED) to cover cars in the Private and Light Goods (PLG) taxation class with an engine size of 1549cc or less;
- Since March 2001, a system of Graduated VED has been in operation for new cars based primarily on their level of $CO_2$ emissions. The system is currently comprised of 13 $CO_2$ bands. Since April 2010, a different rate of tax applies to a vehicle at first registration (first year rate). The standard year rate applies in subsequent years;
- Since April 2002, company car tax has been based on the $CO_2$ emissions of the vehicle provided to an employee for their private use.

**$CO_2$ Targets for Vans**

In June 2011, Regulation EC/510/2011 entered into force. It follows a similar format to the cars regulation, but applies to light-duty vans (that is N1 vehicles under the definitions used in European legislation). It sets a near term European fleet average target of 175g $CO_2$/km to be achieved by 2017 (phase-in from 2014). A longer term target of 147g $CO_2$/km has been set for 2020.

# Cars and Air Pollution

The principal air-quality pollutant emissions from petrol, diesel and alternative fuel engines are carbon monoxide, oxides of nitrogen, un-burnt hydrocarbons and particulate matter. It is emissions of these pollutants that are regulated by the Euro emissions standards. Modern cars, if kept in good condition, produce only quite small quantities of the air quality pollutants, but the emissions from large numbers of cars add to a significant air quality problem. Carbon monoxide, oxides of nitrogen, and un-burnt hydrocarbons are gases, and are generally invisible. Particulate matter is usually invisible although under certain operating conditions diesel engines will produce visible particles, appearing as smoke. Petrol engines will also produce visible particles if they are burning engine oil or running "rich", for example, following a cold start. Fine particles can also be produced by tyre and brake wear. Unlike emissions of $CO_2$, emissions of the air quality pollutants are not directly linked to fuel consumption. Pollutant emission levels depend more on vehicle technology and the state of maintenance of the vehicle. Other factors, such as driving style, driving conditions and ambient temperature also affect them. However, as a starting point, all new passenger cars must meet minimum EU emissions standards.

The effects of these exhaust gases are described in more detail below:

**CO** - Carbon monoxide reduces the blood's oxygen carrying capacity which can reduce the availability of oxygen to key organs. Extreme levels of exposure, such as might occur due to blocked flues in domestic boilers, can be fatal. At lower concentrations CO may pose a health risk, particularly to those suffering from heart disease.

**NOx** - Oxides of nitrogen react in the atmosphere to form nitrogen dioxide ($NO_2$) which can have adverse effects on health, particularly among people with respiratory illness. High levels of exposure have been linked with increased hospital admissions due to respiratory problems, while long term exposure may affect lung function and increase the response to allergens in sensitive people. NOx also contributes to smog formation, acid rain, can damage vegetation, contributes to ground level ozone formation and can react in the atmosphere to form fine particles ('secondary particles').

**Particulate matter (PM)** - Fine particles have an adverse effect on human health, particularly among those with existing respiratory disorders. Particulate matter is associated with increased hospital admissions due to respiratory and cardiovascular problems, bringing forward the deaths of those suffering from respiratory illnesses and a reduction in life expectancy.

**HC** - Hydrocarbons, contribute to ground level ozone formation leading to risk of damage to the human respiratory system. In addition, some kinds of hydrocarbons are carcinogenic and they are also indirect greenhouse gases.

The European Union Ambient Air Quality Directive sets maximum permissible levels for atmospheric concentrations of pollutants thought to be harmful to human health and the Government is committed to working towards full compliance with these standards. Achieving the air quality standards for nitrogen dioxide and fine particles presents the greatest challenge, especially in urban areas and close to busy roads.

Emissions of these air quality pollutants from road vehicles are being reduced by improving the quality of fuels and by setting increasingly stringent emission limits for new vehicles. As an example, it would take 50 new cars to produce the same quantity of air quality pollutant emissions per kilometre as a vehicle made in 1970. Over the last twenty years increasingly stringent emission limits have been set at a European level, starting with the "Euro1" limits in 1993. All new cars currently have to meet the Euro 5 standard and all models sold have had to meet that standard from 1st January 2011- further details at Tables 1 and 2.

Information on the level of air quality pollutant emissions recorded for new models of cars at their type approval test is listed in the data table, alongside the $CO_2$ and fuel consumption figures. **Unlike the $CO_2$ and fuel consumption figures the figures for air quality pollutant emissions should not be used to directly compare different models of vehicle.** The figures for these emissions are indicative rather than absolute, and emissions of them will vary within an acceptable range between individual production vehicles for each model.

## Cars and Noise

The external noise emitted by passenger cars has been controlled since 1929 when the Motor Cars (Excessive Noise) regulations were introduced. New cars are now required to meet Europe-wide noise limits. These have been progressively reduced from 82 decibels (dB (A)) in 1978 to the current limit of 74 dB (A) established in 1996. This means it would take 7 new vehicles to make the same amount of noise as one vehicle that just meets the pre-1978 limits. Information on the level of noise recorded for new models of cars at their type approval test is also listed in the data table.

When looking at this information please note that off-road vehicles are allowed to be 1dB (A) louder, as are direct-injection diesels. These allowances are cumulative, so the limit for an off-road vehicle with a direct injection diesel engine is 76 dB (A).

The noise levels quoted above are the maximum levels that are permitted for new vehicle types. Many vehicles produce lower levels of noise, and it is illegal to modify the exhaust system of a vehicle to make it noisier than the level recorded for that model at type approval.

## Smarter Driving Tips

When you are considering purchasing a new vehicle and you have selected the most appropriate class of vehicle for your needs, choose the most fuel-efficient vehicle within that group. The fuel consumption of similar sized cars can vary by as much as 45% and by choosing the most fuel efficient car in its class, rather than the one with the average emissions, overall fuel consumption can typically be reduced by up to 24%.

There is no easy technical way to reduce $CO_2$ and other emissions. The best way is to use the car only when it is necessary. For example, instead of using it for short journeys, consider walking or taking public transport where possible. Try planning journey routes to avoid congestion, combining trips, or perhaps car sharing.

There are also a number of simple ways that you can reduce the emissions when you drive:

**Drive at an appropriate speed**
Sticking to speed limits helps conserve fuel. Driving at slower speeds also gives you time to anticipate traffic ahead, helping you drive more smoothly. Where it is appropriate, driving at a steady speed of 50 miles per hour (mph) instead of 70 mph can improve fuel economy by 25 per cent.

**Less stopping and starting means less $CO_2$**
Every time you stop then start again in a traffic queue, the engine uses more fuel and therefore produces more $CO_2$. Keeping an eye on the traffic ahead and slowing down early by gently lifting your foot off the accelerator while keeping the car in gear can help the vehicle operate more efficiently. In this way, the traffic may have started moving again by the time you approach the vehicle in front, so you can then change gear and be on your way.

**Over-revving accelerates emissions**
Modern car engines are designed to be efficient from the moment they are switched on, so revving up the engine unnecessarily will only waste fuel and increase engine wear. By using your gears wisely - by changing up a gear a little earlier – you can also reduce engine speed. If you drive a diesel car try changing up a gear before the rev-counter reaches 2000rpm. For a petrol car try changing up before 2500rpm.

**Idling is wasting fuel**
When the engine is idling you're wasting fuel and adding to $CO_2$ emissions. If you're likely to be at a standstill for more than a minute or so, simply switch off the engine. Many new cars are now fitted with a feature that does this for you automatically.

More generally, avoid cold starts - drive off as soon as possible after starting the engine; try to drive more smoothly, avoiding harsh acceleration and heavy braking, both of which have a very significant negative effect on fuel consumption.

**Pump up to cut down**
Under-inflated tyres create more resistance when your car is moving, which means your engine has to work harder, so more fuel is used and more $CO_2$ emissions are produced. Simply checking and adjusting your tyre pressures regularly and also before long journeys can help towards reducing fuel consumption, as well as helping to increase the life of your tyres.

**Less clutter in your car means less $CO_2$**
Clutter in your boot is extra weight your engine has to lug around. By removing any items you won't need for your journey, you could reduce your engine's workload and so burn less fuel and cut your $CO_2$ emissions. This also includes things like roof racks when not needed, as they add weight, increase drag and as a result increase fuel consumption.

## Cars and Fuel Options

This guide contains data on vehicles running on petrol and diesel, as well as ‘alternative’ fuels, such as Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG), and hybrid vehicles.

The different fuels have different merits from an environmental perspective. Compared to petrol, diesel vehicles have significantly lower $CO_2$ emissions per kilometre travelled

because of the higher efficiency of diesel engines, and hence have a lower, but still significant, impact on climate change. Diesel vehicles also emit lower levels of CO and HC than equivalent petrol vehicles. However, diesel engines emit greater levels of NOx than new petrol vehicles. As mentioned earlier, emissions of NOx are an air quality issue, particularly in urban areas.

LPG and CNG cars are generally converted from petrol-fuelled cars, either by the original manufacturer or an aftermarket converter. For practicality, CNG and LPG cars tend to be bi-fuel, meaning that they can run on either petrol or the gaseous fuel. LPG vehicles tend to fall between petrol and diesel in $CO_2$ performance. This is due to the lower carbon and higher energy content by mass of the fuel. CNG offers even lower $CO_2$ emissions than LPG, typically comparable with that of diesels. Local pollutant (CO, HC, NOx and particles) emissions performance of well-engineered LPG and CNG vehicles is similar to that of a petrol vehicle.

Sustainable biofuels also offer a way to reduce the impact of vehicles on climate change. The fuels are not entirely $CO_2$ neutral because of the energy used to grow and process crops, but they can offer substantial $CO_2$ savings over fossil petrol and diesel. Today most biofuels are sold in blends of up to 5% in fossil petrol and 7% in fossil diesel. These blends are suitable for use in nearly all vehicles. Some manufacturers offer 'flexi-fuel' vehicles that can run on bioethanol blends up to E85 - a blend of 85% bioethanol with 15% petrol - as well as fossil petrol. Some manufacturers also allow the use of higher blends of biodiesel in their vehicles (check with your vehicle manufacturer). It is important that only high quality biodiesel meeting the European quality standard - EN 14214 - is used. Blended fuels produced to the EN228 or EN590 standards will contain high quality biofuel as a matter of course. Further Information on biofuels, and a guide to alternative fuels can be found on the Energy Saving Trust (EST) website http://www.energysavingtrust.org.uk/Transport/Consumer/Cleaner-fuels.

Hybrid vehicles usually combine an internal combustion engine with an electric motor and battery. There are various ways in which hybrid vehicles can operate. For example, the vehicle may be able to operate solely on its engine, solely on battery power, or on a combination of the two with the battery providing additional power during acceleration and high load conditions. The battery can then be recharged by the internal combustion engine or from energy absorbed during braking or, in some cases, from an external electrical supply. Hybrid vehicles can offer reduced fuel consumption and $CO_2$ emissions, and potentially some reduction in emissions of local pollutants, especially in stop-start motoring.

Plug In Vehicle (PIV) is the term for any vehicle that is powered, either in part or in full, by a battery that can be recharged by plugging into an external electricity supply. This includes those that run purely on electricity (pure-electric) and plug-in hybrid electric vehicles.

This guide includes those cars that use a combination of a conventional petrol or diesel engine and battery propulsion. These are known as ‘petrol-electric hybrid’, ‘diesel-electric hybrid’ or ‘electric-hybrid’. Cars that run purely on electricity are also listed in the guide but, since they do not use liquid fuel or emit $CO_2$ while being driven, there is no data given for the fuel consumption or $CO_2$ emissions of pure electric models.

To find out more about electric vehicles, visit the Office for Low Emission Vehicle's website at: www.gov.uk/olev. The Society of Motor Manufacturers and Traders have also provided a useful guide on the subject which can be downloaded free of charge at: http://www.smmt.co.uk/2011/08/electric-car-guide/.

## How to Use the Data

Vehicles that meet the Euro 5 and Euro 6 Emission Limits (Current Standards)

In using the table of information, it may be helpful to note the following:

- Models are listed under the name of the manufacturer or importer.
- The figures are obtained by running an example of the listed vehicle over a fixed route in a laboratory on a rolling road under closely controlled conditions. The test cycle is described elsewhere in this guide.
- The results of the fuel consumption tests are shown both in litres per 100 kilometres (l/100km) and in miles per gallon (mpg). A conversion chart and conversion factors are given at the end of this guide.
- $CO_2$ emissions are shown in grammes per kilometre (g/km). The other results of the exhaust emissions test are shown in milligrammes per kilometre (mg/km).
- The cost of driving 12000 miles is calculated using the official combined fuel consumption figure and fuel prices which are assessed each year. Currently they are 138p/litre for petrol, and 145p/litre for diesel and 74p/litre for LPG (no fuel figures are available at this time for CNG). The electricity cost of driving 12000 miles is calculated using the electric energy consumption and an electrical cost per unit price, also assessed each year, currently this is 14.5p/kWh. A description of the calculation can be found in the Glossary of Terms. Note that, as indicated above, the official fuel consumption figures, and hence these cost figures, are for comparative purposes and actual fuel consumption and cost on the road may vary from this.
- The external noise emitted by a car is shown in decibels as measured on the A scale of a noise meter (dB (A)). The A scale was devised to 'weight' the reading of a noise meter so it more closely represented what is heard by the human ear. The noise test is described in more detail later in this guide.
- **Important Note**. Some cars may appear in more than one part of the data table. The reason for this is that different specifications of the vehicle model in question have been approved to different exhaust emissions limits (e.g. Euro 5 or Euro 6). Changes in exhaust emission levels do not necessarily result in a change in model description. In view of this, all of the parts should be examined when searching for a vehicle. The presence of a Vehicle Identification Number (VIN) in the model description or the year of manufacture indicates the point from which a given vehicle met the Euro standard in question. If you select a car in a given part make sure that the dealer understands that you require a car approved to the limits applicable to that part.
- It is also important to note that test figures shown in the guide are for comparison of different models and will not necessarily be the same as the fuel consumption, emissions levels, or noise levels actually achieved on the road. For this reason it is not advisable to rank a number of vehicles for which very similar figures are quoted.

- The test to test variability in type approval local pollutant emission figures means they are of only limited value in comparing vehicles and caution should be exercised when considering these figures. More detail is given later in this guide.

$CO_2$ Information - The $CO_2$ figures shown are representative of the vehicle tested and may vary between specifications (variants or versions) of a given model. As such the figures are indicative only. A definitive test figure for a given specification (variant or version) will be available at the point of sale.

## Other Relevant Issues

### Vehicle Excise Duty (VED)

Vehicle Excise Duty (VED) - For vehicles registered since 1st March 2001, the $CO_2$ shown on the V5 (Registration Document) is used as the basis for applying VED, or "Road Tax" rates for new passenger cars.

Road Tax as at April 2013:

| | | 2013-2014 first year rate | 2013-2014 standard rate |
|---|---|---|---|
| Bands | $CO_2$ emissions figure (g/km) | 12 month rate (£) | 12 month rate (£) |
| Band A | Up to 100 | £0.00 | £0.00 |
| Band B | 101 - 110 | £0.00 | £20.00 |
| Band C | 111 - 120 | £0.00 | £30.00 |
| Band D | 121 - 130 | £0.00 | £105.00 |
| Band E | 131 - 140 | £125.00 | £125.00 |
| Band F | 141 - 150 | £140.00 | £140.00 |
| Band G | 151 - 165 | £175.00 | £175.00 |
| Band H | 166 - 175 | £285.00 | £200.00 |
| Band I | 176 - 185 | £335.00 | £220.00 |
| Band J | 186 - 200 | £475.00 | £260.00 |
| Band K* | 201 - 225 | £620.00 | £280.00 |
| Band L | 226 - 255 | £840.00 | £475.00 |
| Band M | Over 255 | £1065.00 | £490.00 |

Notes:

- The standard rate applies to all car fuel types
- Alternative fuel car discount 2013-14: £10 on all Bands for both the ‘first year’ and ‘standard’ 12 month rates.
- Six-month rates are available for some bands. Visit http://carfueldata.direct.gov.uk/ for more information.

* Band K includes cars that have a $CO_2$ figure over 225g/km but were registered before 23 March 2006.

Further information about taxing your vehicle can be found on the Gov.uk website: https://www.gov.uk/tax-disc A vehicle tax calculator is available on the VCA website http://carfueldata.direct.gov.uk/ The purpose of this calculator is to provide an indicative view only of the tax that may be payable on a given new or used car.

Company Car Tax – Since April 2002 the benefit-in-kind tax charged for company cars has been based on the $CO_2$ emissions of a vehicle. This applies to all company cars registered from January 1998 onwards. Further details can be found on the HM Revenue & Customs website http://www.hmrc.gov.uk/cars/. For cars registered from March 2001, the $CO_2$ figure used to calculate company car tax will be that shown on the car's V5 (Registration Document).

### Cars with $CO_2$ emissions of up to 100 g/km (tax band A)

To give a comparison and to show what is achievable, the following tables show petrol and diesel cars which have $CO_2$ emissions of 100g/km or less and therefore fall into Vehicle Excise Duty band A. All the models shown are selected from the full list. The fuel cost is given for comparison purposes. For any given vehicle it will depend on the actual fuel consumption achieved and the price you pay for fuel. The purpose of the tables is to provide a representative sample. Where there are several specifications of a vehicle model with similar fuel consumption figures, only a single entry is given.

### Petrol vehicles with 100 g/km $CO_2$ or less

| Make | Model | Engine Capacity cc | Transmission | CO2 g/km | Fuel Consumption (mpg) | Fuel Cost of driving 12000 Miles (£s) | Electricity cost of driving 12000 Miles (£s) | Total costs 12000 miles (£s) |
|---|---|---|---|---|---|---|---|---|
| CHEVROLET | Volt | 1398 | N/A | 27 | 235.4 | 320 | 364 | 684 |
| VAUXHALL | Ampera | 1398 | E-CVT | 27 | 235.4 | 320 | 378 | 698 |
| TOYOTA | Prius | 1798 | N/A | 49 | 134.5 | 560 | 145 | 705 |
| TOYOTA | Yaris Hybrid | 1497 | E-CVT | 79 | 80.7 | 933 | | 933 |
| TOYOTA | Yaris Hybrid | 1497 | E-CVT | 85 | 76.3 | 987 | | 987 |
| LEXUS | CT200h | 1798 | CVT | 87 | 74.3 | 1013 | | 1013 |
| TOYOTA | Auris | 1798 | E-CVT | 87 | 74.3 | 1013 | | 1013 |
| TOYOTA | Prius | 1798 | E-CVT | 89 | 72.4 | 1040 | | 1040 |
| FIAT | 500 and 500C | 875 | SAT5 | 90 | 72.4 | 1040 | | 1040 |
| TOYOTA | Auris | 1798 | E-CVT | 91 | 72.4 | 1040 | | 1040 |
| FIAT | 500 and 500C | 875 | M5 | 92 | 70.6 | 1066 | | 1066 |
| TOYOTA | Prius | 1798 | E-CVT | 92 | 70.6 | 1066 | | 1066 |
| LEXUS | CT200h | 1798 | CVT | 94 | 68.9 | 1093 | | 1093 |
| LEXUS | CT200h | 1798 | CVT | 94 | 68.9 | 1093 | | 1093 |
| FIAT | New Panda | 875 | SAT5 | 95 | 68.9 | 1093 | | 1093 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MITSUBISHI | Mirage | 1193 | 5AT | 95 | 68.9 | 1093 | | 1093 |
| NISSAN | Micra | 1198 | M5 | 95 | 68.9 | 1093 | | 1093 |
| VOLKSWAGEN | VW UP | 999 | M5 | 95 | 62.8 | 1199 | | 1199 |
| HONDA | Insight | 1339 | CVT | 96 | 68.9 | 1093 | | 1093 |
| MITSUBISHI | Mirage | 1193 | 5MT | 96 | 68.9 | 1093 | | 1093 |
| SEAT | Mii | 999 | M5 | 96 | 68.9 | 1093 | | 1093 |
| SKODA | Citigo | 999 | M5 | 96 | 68.9 | 1093 | | 1093 |
| TOYOTA | Prius Plus | 1798 | E-CVT | 96 | 68.9 | 1093 | | 1093 |
| CHRYSLER JEEP | Chrysler Ypsilon | 875 | A5 | 97 | 68.9 | 1093 | | 1093 |
| SMART | fortwo coupé | 999 | 5 AMT | 97 | 67.3 | 1119 | | 1119 |
| ALFA ROMEO | MiTo | 875 | M6 | 98 | 67.3 | 1119 | | 1119 |
| FIAT | Punto | 875 | M6 | 98 | 67.3 | 1119 | | 1119 |
| SKODA | Citigo | 999 | M5 | 98 | 67.3 | 1119 | | 1119 |
| SMART | fortwo coupé | 999 | 5 AMT | 98 | 65.7 | 1146 | | 1146 |
| VOLKSWAGEN | VW UP | 999 | M5 | 98 | 67.3 | 1119 | | 1119 |
| ALFA ROMEO | MiTo | 875 | M6 | 99 | 67.3 | 1119 | | 1119 |
| CHRYSLER JEEP | Chrysler Ypsilon | 875 | M5 | 99 | 67.3 | 1119 | | 1119 |
| CITROEN | C1 | 998 | M5 | 99 | 65.7 | 1146 | | 1146 |
| FIAT | Panda | 875 | M5 | 99 | 67.3 | 1119 | | 1119 |
| FORD | Fiesta | 998 | M5 | 99 | 65.7 | 1146 | | 1146 |
| FORD | Fiesta | 998 | M5 | 99 | 65.7 | 1146 | | 1146 |
| HONDA | Insight | 1339 | CVT | 99 | 61.4 | 1226 | | 1226 |
| HYUNDAI | i10 | 998 | M5 | 99 | 67.3 | 1119 | | 1119 |
| KIA | Picanto 3-door | 998 | M5 | 99 | 67.3 | 1119 | | 1119 |
| KIA | Picanto 5-door | 998 | M5 | 99 | 67.3 | 1119 | | 1119 |
| LEXUS | IS300h | 2494 | E-CVT | 99 | 65.7 | 1146 | | 1146 |
| NISSAN | Micra | 1198 | M5 | 99 | 65.7 | 1146 | | 1146 |
| NISSAN | Pixo | 996 | M5 | 99 | 65.7 | 1146 | | 1146 |
| PEUGEOT | 208 Hatchback | 999 | M5 | 99 | 65.7 | 1146 | | 1146 |
| PEUGEOT | 107 | 998 | M5 | 99 | 65.7 | 1146 | | 1146 |
| RENAULT | Clio 4 | 898 | M5 | 99 | 65.7 | 1146 | | 1146 |
| SMART | fortwo cabrio | 999 | 5 AMT | 99 | 65.7 | 1146 | | 1146 |
| SUZUKI | Alto | 996 | 5MT | 99 | 64.2 | 1173 | | 1173 |
| TOYOTA | Aygo | 998 | M5 | 99 | 65.7 | 1146 | | 1146 |
| TOYOTA | iQ | 998 | M5 | 99 | 64.2 | 1173 | | 1173 |
| KIA | Picanto 3-door | 1248 | M5 | 100 | 65.7 | 1146 | | 1146 |
| KIA | Picanto 5-door | 1248 | M5 | 100 | 65.7 | 1146 | | 1146 |
| MITSUBISHI | Mirage | 1193 | 5MT | 100 | 65.7 | 1146 | | 1146 |
| SMART | fortwo cabrio | 999 | 5 AMT | 100 | 64.2 | 1173 | | 1173 |

## Diesel vehicles with 100 g/km $CO_2$ or less

| Make | Model | Engine Capacity cc | Transmission | CO2 g/km | Fuel Consumption (mpg) | Fuel Cost of driving 12000 Miles (£s) | Electricity cost of driving 12000 Miles (£s) | Total costs 12000 miles (£s) |
|---|---|---|---|---|---|---|---|---|
| VOLVO | V60 | 2400 | N/A | 48 | 157 | 504 | 372 | 876 |
| RENAULT | Clio 4 | 1461 | M5 | 83 | 88.3 | 896 | | 896 |
| HYUNDAI | i20 | 1120 | M6 | 84 | 88.3 | 896 | | 896 |
| KIA | Rio 3-door | 1120 | M6 | 85 | 88.3 | 896 | | 896 |
| KIA | Rio 5-door | 1120 | M6 | 85 | 88.3 | 896 | | 896 |
| SMART | fortwo cabrio | 799 | 5 AMT | 86 | 85.6 | 924 | | 924 |
| SMART | fortwo coupé | 799 | 5 AMT | 86 | 85.6 | 924 | | 924 |
| CITROEN | C3 | 1398 | A4 | 87 | 83.1 | 952 | | 952 |
| FORD | Fiesta | 1560 | M5 | 87 | 85.6 | 924 | | 924 |
| PEUGEOT | 208 Hatchback | 1398 | AMT5 | 87 | 83.1 | 952 | | 952 |
| SMART | fortwo cabrio | 799 | 5 AMT | 87 | 85.6 | 924 | | 924 |
| SMART | fortwo coupé | 799 | 5 AMT | 87 | 85.6 | 924 | | 924 |
| FORD | Focus | 1560 | M6 | 88 | 83.1 | 952 | | 952 |
| VOLVO | V40 | 1560 | 6MT | 88 | 83.1 | 952 | | 952 |
| SKODA | Fabia Estate | 1199 | M5 | 89 | 83.1 | 952 | | 952 |
| SKODA | Fabia Hatchback | 1199 | M5 | 89 | 83.1 | 952 | | 952 |
| ALFA ROMEO | MiTo | 1248 | M5 | 90 | 80.7 | 980 | | 980 |
| FIAT | Punto | 1248 | M5 | 90 | 80.7 | 980 | | 980 |
| RENAULT | Clio 4 | 1461 | M5 | 90 | 81.3 | 973 | | 973 |
| RENAULT | Mégane Coupé | 1461 | M6 | 90 | 80.7 | 980 | | 980 |
| RENAULT | Mégane Hatchback | 1461 | M6 | 90 | 80.7 | 980 | | 980 |
| RENAULT | Megane Sport Tourer | 1461 | M6 | 90 | 80.7 | 980 | | 980 |
| CITROEN | DS3 | 1560 | M5 | 91 | 80.7 | 980 | | 980 |
| CITROEN | DS5 | 1997 | AMT6 | 91 | 80.7 | 980 | | 980 |
| PEUGEOT | 3008 | 1997 | AMT6 | 91 | 80.7 | 980 | | 980 |
| VOLKSWAGEN | Polo | 1199 | M5 | 91 | 80.7 | 980 | | 980 |
| SEAT | Ibiza 5 door | 1199 | M5 | 92 | 80.7 | 980 | | 980 |
| SEAT | Ibiza Coupé | 1199 | M5 | 92 | 80.7 | 980 | | 980 |
| SEAT | Ibiza ST | 1199 | M5 | 92 | 80.7 | 980 | | 980 |
| RENAULT | Clio 4 | 1461 | M5 | 93 | 78.5 | 1008 | | 1008 |
| HONDA | Civic | 1597 | M6 | 94 | 78.5 | 1008 | | 1008 |
| KIA | Rio 3-door | 1120 | M6 | 94 | 78.5 | 1008 | | 1008 |
| KIA | Rio 5-door | 1120 | M6 | 94 | 78.5 | 1008 | | 1008 |
| RENAULT | Clio | 1461 | M5 | 94 | 78.4 | 1009 | | 1009 |
| VAUXHALL | Corsa 3 Door Hatchback | 1248 | M6 | 94 | 80.7 | 980 | | 980 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VOLVO | C30 | 1560 | 6MT | 94 | 78.5 | 1008 | | 1008 |
| VOLVO | V40 | 1560 | 6MT | 94 | 78.5 | 1008 | | 1008 |
| CHEVROLET | Aveo | 1248 | 5MT | 95 | 78.4 | 1009 | | 1009 |
| CITROEN | DS3 | 1560 | M5 | 95 | 78.5 | 1008 | | 1008 |
| FORD | Fiesta | 1560 | M5 | 95 | 78.5 | 1008 | | 1008 |
| PEUGEOT | 2008 | 1560 | AMT6 | 95 | 76.3 | 1037 | | 1037 |
| PEUGEOT | 208 Hatch | 1560 | M5 | 95 | 78.5 | 1008 | | 1008 |
| PEUGEOT | 508 Saloon | 1997 | AMT6 | 95 | 78.5 | 1008 | | 1008 |
| RENAULT | Captur | 1461 | M5 | 95 | 78.5 | 1008 | | 1008 |
| VAUXHALL | Corsa 5 Door Hatchback | 1248 | M6 | 95 | 78.5 | 1008 | | 1008 |
| HYUNDAI | i20 | 1396 | M6 | 96 | 76.3 | 1037 | | 1037 |
| VOLVO | V40 | 1560 | 6MT | 96 | 76.4 | 1035 | | 1035 |
| FIAT | 500 and 500C | 1248 | M5 | 97 | 76.3 | 1037 | | 1037 |
| HYUNDAI | i30 | 1582 | M6 | 97 | 76.3 | 1037 | | 1037 |
| KIA | New cee'd | 1582 | M6 | 97 | 76.3 | 1037 | | 1037 |
| CITROEN | C3 | 1560 | M5 | 98 | 76.3 | 1037 | | 1037 |
| CITROEN | C4 | 1560 | AMT6 | 98 | 74.3 | 1065 | | 1065 |
| CITROEN | DS3 | 1560 | M5 | 98 | 76.3 | 1037 | | 1037 |
| FORD | Fiesta | 1499 | M5 | 98 | 76.3 | 1037 | | 1037 |
| MERCEDES-BENZ | A-Class | 1461 | M6 | 98 | 74.3 | 1065 | | 1065 |
| PEUGEOT | 2008 | 1560 | AMT6 | 98 | 74.3 | 1065 | | 1065 |
| PEUGEOT | 208 Hatchback | 1398 | M5 | 98 | 74.3 | 1065 | | 1065 |
| PEUGEOT | 208 Hatchback | 1560 | AMT6 | 98 | 74.3 | 1065 | | 1065 |
| PEUGEOT | 308 Hatchback | 1560 | AMT6 | 98 | 74.3 | 1065 | | 1065 |
| VOLKSWAGEN | New Golf | 1598 | M5 | 98 | 74.3 | 1065 | | 1065 |
| AUDI | A1 | 1598 | M5 | 99 | 74.3 | 1065 | | 1065 |
| AUDI | A1 Sportback | 1598 | M5 | 99 | 74.3 | 1065 | | 1065 |
| AUDI | New A3 | 1598 | M6 | 99 | 74.3 | 1065 | | 1065 |
| AUDI | New A3 Sportback | 1598 | M6 | 99 | 74.3 | 1065 | | 1065 |
| BMW | 1 Series 3-door F21 | 1598 | M6 | 99 | 74.3 | 1065 | | 1065 |
| BMW | 1 Series 5-door F20 | 1598 | M6 | 99 | 74.3 | 1065 | | 1065 |
| CHEVROLET | Aveo | 1248 | 5MT | 99 | 74.3 | 1065 | | 1065 |
| CHRYSLER JEEP | Chrysler Ypsilon | 1248 | M5 | 99 | 74.3 | 1065 | | 1065 |
| CITROEN | C3 | 1398 | M5 | 99 | 74.3 | 1065 | | 1065 |
| CITROEN | DS3 | 1560 | M6 | 99 | 74.3 | 1065 | | 1065 |
| DACIA | Sandero | 1461 | M5 | 99 | 74.3 | 1065 | | 1065 |
| FORD | Focus | 1560 | M6 | 99 | 76.3 | 1037 | | 1037 |
| HYUNDAI | i20 | 1120 | M6 | 99 | 74.3 | 1065 | | 1065 |
| KIA | Rio 3-door | 1120 | M6 | 99 | 74.3 | 1065 | | 1065 |
| KIA | Rio 5-door | 1120 | M6 | 99 | 74.3 | 1065 | | 1065 |
| MINI | MINI Hatchback R56 | 1598 | M6 | 99 | 74.3 | 1065 | | 1065 |
| PEUGEOT | 3008 | 1997 | AMT6 | 99 | 74.3 | 1065 | | 1065 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PEUGEOT | 208 Hatch | 1560 | M6 | 99 | 74.3 | 1065 | | 1065 |
| SEAT | Leon | 1598 | M5 | 99 | 74.3 | 1065 | | 1065 |
| SKODA | New Octavia | 1598 | M6 | 99 | 74.3 | 1065 | | 1065 |
| SKODA | New Octavia Estate | 1598 | M6 | 99 | 74.3 | 1065 | | 1065 |
| TOYOTA | Auris | 1398 | 6MT | 99 | 74.3 | 1065 | | 1065 |
| VAUXHALL | Astra 5 Door Hatchback | 1686 | M6 | 99 | 76.3 | 1037 | | 1037 |
| VOLKSWAGEN | Golf | 1598 | M5 | 99 | 74.3 | 1065 | | 1065 |
| VOLKSWAGEN | New Golf | 1598 | M5 | 99 | 74.3 | 1065 | | 1065 |
| VOLVO | C30 | 1560 | M6 | 99 | 74.3 | 1065 | | 1065 |
| VOLVO | S40 | 1560 | M6 | 99 | 74.3 | 1065 | | 1065 |
| VOLVO | V40 | 1560 | 6MT | 99 | 74.3 | 1065 | | 1065 |
| VOLVO | V50 | 1560 | M6 | 99 | 74.3 | 1065 | | 1065 |
| HYUNDAI | i30 | 1582 | M6 | 100 | 74.3 | 1065 | | 1065 |
| KIA | New cee'd | 1582 | M6 | 100 | 74.3 | 1065 | | 1065 |
| KIA | New pro_cee'd | 1582 | M6 | 100 | 74.3 | 1065 | | 1065 |

## The Fuel Consumption Testing Scheme

The fuel consumption testing scheme is intended to give potential car buyers comparative information about the relative fuel consumption of different models in standard tests.

Nearly all new car models which are type approved for sale in the European Union have to undergo the standard tests to determine their fuel consumption. This guide contains the results of those tests supplied to the Department for Transport for new cars expected to be on sale after August 2013.

## What are the Standard Tests?

Official fuel consumption test procedures have been in use since the 1970s. EU Directive 80/1268/EEC as amended or, for Euro 5 vehicles onwards, Regulation 692/2008 describe the tests which all new cars on sale after 1 January 2001 are required to take.

## Fuel Consumption Test

The current test for conventional internal combustion engine vehicles has two parts. These are an urban and an extra-urban cycle. The test cycle is the same as that used to determine the official exhaust air quality pollutant emission classification for the model of vehicle in question.

The cars tested have to be ‘run-in’ so they must have been driven for at least 1,800 miles (3,000 kilometres) before testing.

### Urban cycle

The urban test cycle is carried out in a laboratory at an ambient temperature of 20°C to 30°C on a rolling road from a cold start where the engine has not run for several hours. The cycle consists of a series of accelerations, steady speeds, decelerations and idling. The maximum

speed is 31 mph (50 km/h). The average speed 12 mph (19 km/h) and the distance covered is 2.5 miles (4 km). The cycle is shown as Part One in the diagram below.

**Extra-urban cycle**

The extra-urban cycle is a cycle that is intended to represent the use of the vehicle on roads that are external to the urban environment. The cycle is conducted immediately following the urban cycle and consists of roughly half steady-speed driving with the remainder being accelerations, decelerations, and some idling. The maximum speed is 75 mph (120 km/h). The average speed is 39 mph (63 km/h) and the distance covered is 4.3 miles (7 km). The cycle is shown as Part Two in the diagram below.

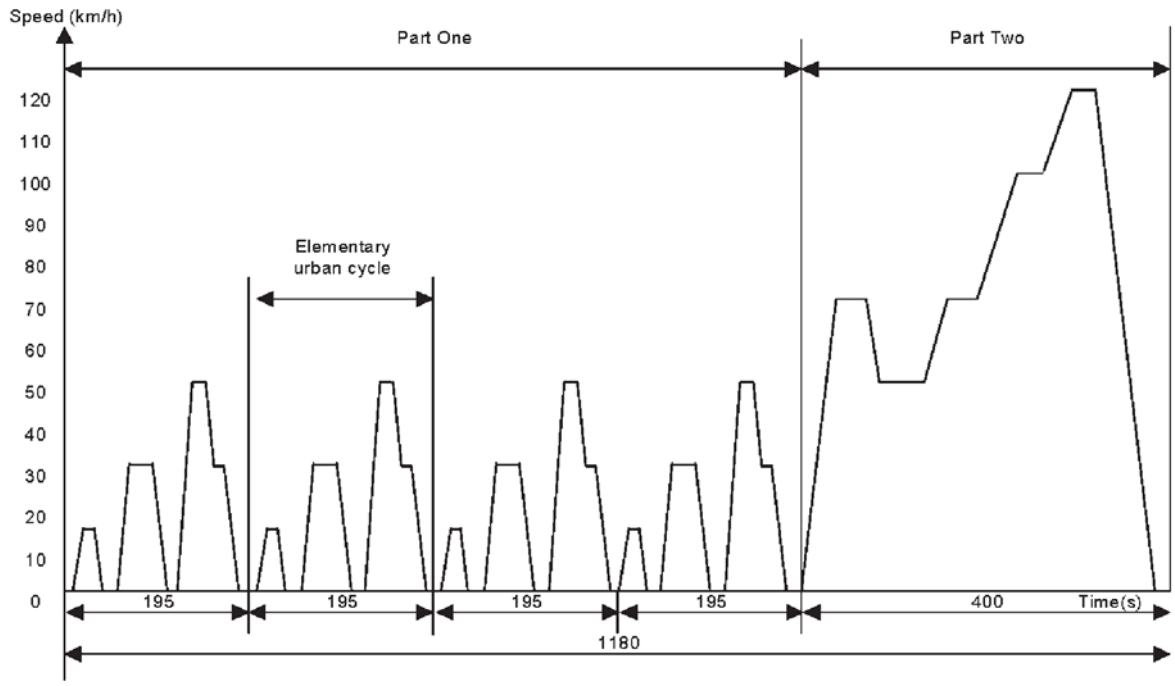
**Combined Fuel Consumption Figure**

The combined figure presented is for the urban and the extra-urban cycle together. It is therefore an average of the two parts of the test, weighted by the distances covered in each part.

**IMPORTANT NOTE**

**The fuel consumption figures quoted in this guide are obtained under specific test conditions, and therefore may not necessarily be achieved under 'real life' driving conditions. A range of factors may influence actual fuel consumption - for example, driving style and behaviour, as well as the environment and conditions under which the vehicle is operated. Furthermore, since several different specifications (variants or versions) of a given model may be grouped together in the list, the figures used in this guide should be treated as indicative only.**

**A definitive figure for a given specification of vehicle will be available at the point of sale.**



## Bi-fuelled Vehicles

Vehicles which are designed to run on LPG or CNG and Petrol are required to be tested on both fuels. In view of this, two sets of figures will be shown for a given bi-fuel vehicle. One set for the vehicle running on petrol, and another for the vehicle running on gas.

## How Representative of Real Life Driving are the Standard Tests?

Because of the need to maintain strict comparability of the results achieved by the standard tests, they cannot be fully representative of real-life driving conditions. Firstly, it is not practicable, nor is it viable to test each individual new car. Only one production car is tested as being representative of the model and this may produce a slightly better or worse result than another similar vehicle. Secondly, there are infinite variations in driving styles, as well as road, car and weather conditions, all of which can have a bearing on the results achieved. For these reasons the fuel consumption achieved on the road is unlikely to be the same as the official test results. The purpose of the official fuel consumption test is to provide data that will permit a comparison of the fuel consumption of different cars, rather than to provide an estimate of average, on-the-road, fuel economy.

It is recognised that, for a variety of reasons, the fuel consumption achieved by the majority of motorists is poorer than that suggested by the standard tests, and work is going on with the intention of introducing a new test cycle which will better represent the way in which most people actually use their cars.

## Who Does the Testing?

The testing is carried out either by independent test organisations, or by the vehicle manufacturers or importers themselves, usually at their own test facilities.

In the UK, and before the results are officially recognised, the DfT will:

- inspect the test laboratories and witness some tests being carried out, or;
- check that the figures have been certified by a European member state national authority under the agreed arrangements for mutual recognition of test results.

## Are All Models Included in the List?

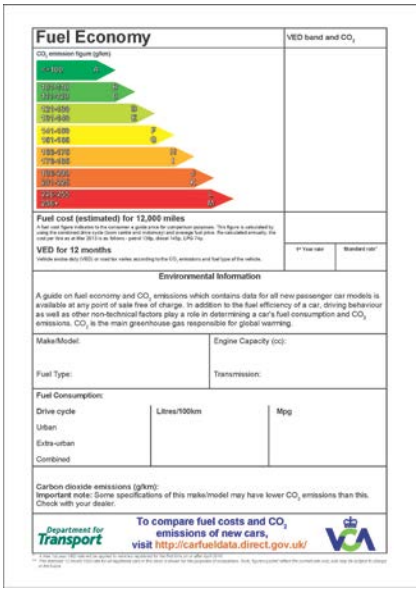
Almost all types of new passenger cars have to be tested. However, several models which do not differ significantly in certain technical characteristics important in determining fuel consumption may be grouped together into a ‘class’. Only one representative car of each class needs to be tested.

Certain types of vehicles are excluded from the fuel consumption testing scheme. These are cars manufactured in low volume, cars adapted to carry more than eight passengers (excluding the driver), three-wheelers, invalid carriages, van-derived passenger cars and cars built specially for export. These vehicles will not, therefore, be labelled in showrooms.

## Responsibilities of Vehicle Manufacturers, Importers and Dealers

EU Directive 1999/94/EC requires new car fuel consumption and $CO_2$ emissions data to be made freely available to consumers. Car dealers are required to display a label on (or near to) every new car displayed for sale. The label will show the fuel consumption and $CO_2$ emissions. Fuel consumption figures will be expressed both in litres per 100 kilometres (l/100 km) and in miles per gallon (mpg). The label will list the figures achieved in urban, extra-urban and combined conditions separately (see section headed ‘Fuel Consumption Test’ for more details on test conditions).

Car dealers often voluntarily display a colour coded “comparative” label. That is, a label that shows both the mandatory fuel consumption and $CO_2$ figures mentioned previously, as well as information about the appropriate tax band for the vehicle. The label is similar in design to the energy efficiency labels that appear on many 'white goods', such as fridge freezers. An example of this label can be seen below. Although this label format (with the colour-coded banding) is not currently mandatory, the DfT, VCA and vehicle manufacturers have worked hard to ensure that the label is harmonised throughout the market sector in order to support, simplify and inform consumer choice.




A sample of the label is available at http://carfueldata.direct.gov.uk/downloads/default.aspx. Other labels may be used but they must conform to the requirements set out in the Directive, and adopted under national UK legislation.

Dealers are also required to display a poster in paper or as an electronic display, in a prominent position, showing the fuel consumption and $CO_2$ emissions for all new passenger car models displayed, or offered for sale through that particular showroom. Furthermore, the Directive also requires manufacturers to include fuel consumption and $CO_2$ emissions data in all promotional literature (such as brochures and printed advertisements), provided that the literature relates to a specific model of car.

Trading Standards, which is a local authority service, enforce point of sale information (labelling and posters). Should you have concerns in this area of activity, you can find your local Trading Standards office at http://www.tradingstandards.gov.uk/ or by contacting your own local authority direct.

The Vehicle Certification Agency is responsible for enforcing the provision of information in advertising and promotional literature. If you have concerns in this area please e-mail them at adverts@vca.gov.uk, or telephone 0117 952 4169.

If you have more general concerns about your consumer rights in relation to car purchasing (either new or used), contact Consumer Direct at:

http://www.direct.gov.uk/en/Governmentcitizensandrights/Consumerrights/index.htm

## Exhaust Air Quality Pollutant Emissions Testing

Before passenger cars can be type approved for sale in the European Union they must meet certain standards for exhaust emissions of air quality pollutants. In 2007, European Regulation EC/715/2007 introduced Euro 5 and Euro 6 limits. Since the 1st January 2011, all new cars have been required to be approved to the Euro 5 standard (although increasingly, many will be tested to the more stringent Euro 6 standard). As with the fuel consumption tests, a single vehicle representative of a particular version is tested.

**Because the testing procedures are intended to confirm whether a car meets a Euro standard or not, the type approval emission figures listed in the tables should not be used for other purposes, such as to rank a number of vehicles.**

**Tables of Emission Limits relating to vehicles listed in this guide**

**Table 1 - Euro 5**

Cars not exceeding 2.5 tonnes laden – Euro 5 – EC Regulation EC/715/2007

| Number of seats | Fuel | Limit values (mg/km) | | | | | | | Implementation Dates | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | CO | THC | NMHC | NOx | THC+NOX | PM | Particles (number/km) | Type Approval of new models | All Models |
| up to 9 | P | 1000 | 100 | 68 | 60 | - | 5.0/4.5 | - | 1/09/09 | 1/01/11 |
| up to 9 | D | 500 | - | - | 180 | 230 | 5.0/4.5 | $6{,}0 \times 10^{11}$ | 1/09/09 | 1/01/11 |

Key: P- petrol, D – diesel, CO – carbon monoxide, HC – hydrocarbons,

NOx – oxides of nitrogen, PM – particulate matter.

**Table 2 - Euro 6**

Cars not exceeding 2.5 tonnes laden – Euro 6 – EC Regulation EC/715/2007

| Number of seats | Fuel | Limit values (mg/km) | | | | | | | Implementation Dates | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | CO | THC | NMHC | NOx | THC+NOX | PM | Particles (number/km) | Type Approval of new models | All Models |
| up to 9 | P | 1000 | 100 | 68 | 60 | - | 5.0/4.5 | - | 1/09/14 | 1/09/15 |
| up to 9 | D | 500 | - | - | 80 | 170 | 5.0/4.5 | $6{,}0 \times 10^{11}$ | 1/09/14 | 1/09/15 |

Key: P- petrol, D – diesel, CO – carbon monoxide, HC – hydrocarbons,

NOx – oxides of nitrogen, PM – particulate matter.

## Electric Vehicles

**Electric vehicles produce no air quality pollutant exhaust emissions (although the production of the electricity elsewhere has some environmental impact, in the same way that the production of petrol and diesel fuels has some environmental impact).** To find out more about electric vehicles, please visit the Office for Low Emission Vehicles website at: www.gov.uk/olev. The Society of Motor Manufacturers and Traders have also provided a useful guide on the subject which can be downloaded free of charge at http://www.smmt.co.uk/2011/08/electric-car-guide/.

**Living with an electric car**

The Energy Saving Trust has produced a short film covering a range of issues around electric vehicles including hybrids, pure electric vehicles, grants, running costs, maximising range and recharging: http://www.energysavingtrust.org.uk/Travel/Driving/Electric-vehicles.

The Energy Saving Trust (EST) also have a series of three videos under the title "Living with an electric car" available here: http://www.energysavingtrust.org.uk/Travel/Driving/Electric-vehicles#Living. This series of three short clips is presented by Robert Llewellyn of Red Dwarf and Scrapheap Challenge. They cover most of the questions potential buyers may have including charging, range and the cost of fuel (electricity) for the vehicles. They offer a realistic and in-depth review of the viability of electric cars and vans

Part 1 Choosing an electric vehicle;

Part 2 Driving the car;

Part 3 Living with the car

## NOISE

The UK has introduced strict noise limits which, by 1996, when the limits were last reduced, had halved perceived noise levels of individual vehicles over the previous 15 years.

At low speeds, similar to the speed used for vehicle noise testing, the noise from the engine, gearbox and exhaust will generally predominate over the noise associated with the tyre and road surface. On dry roads and at a constant speed engine noise generally predominates for speeds up to 50km/hr (30 mph). Above this speed tyres become the dominant source of noise.

The current noise test for passenger cars, as set out in EU Directive 92/97 as amended, consists of driving the vehicle into the test area at a speed of 50 km/hr and then accelerating at full throttle through it past a microphone. The microphone is placed at a set distance from the line of travel and it measures the maximum level of noise reached which is then compared to the limit value to determine whether the vehicle passes or fails.

The test area is surrounded by an open area to avoid sound reflections and the road surface is carefully constructed to a set standard to ensure consistency of results.

**Disclaimer**

The data in this publication was compiled by the Vehicle Certification Agency, an Executive Agency of the Department for Transport. Whilst every effort is made to ensure that the information contained on this site is accurate, the Vehicle Certification Agency cannot accept liability for its accuracy. Visitors who rely entirely on the information do so at their own risk.

Vehicle Excise Duty (or Vehicle Tax) rates are correct as at 1 August 2013.

Similarly, fuel costs - that are used to calculate a car's fuel cost over 12,000 miles, were determined in March 2013 and will not necessarily reflect current forecourt prices.



Produced for the Department for Transport

**Key**

| | |
|---|---|
| A | automatic |
| A4 | automatic 4-speed |
| A5 | automatic 5-speed |
| A7 | automatic 7-speed |
| A/SAT5 | automatic / semi automatic transmission 5 speed |
| ASM | automatic shift manual |
| CVT | continuously variable transmission |
| D6 | direct shift 6-speed |
| M | manual |
| M5 | manual 5-speed |
| 5MTx2 | ditto, high and low range gearing |
| M6 | manual 6-speed |
| M6/S6 | manual 6 speed / sequential 6 speed |
| MULTI5 | multimode 5 speed |
| QA5 | 4-wheel drive, Auto 5-speed |
| QA6 | 4-wheel drive, Auto 6-speed |
| QD6 | quattro direct shift 6 speed |
| QM5 | 4-wheel drive, Manual 5-speed |
| QM6 | 4-wheel drive, Manual 6-speed |
| S/A6 | semi automatic transmission 6-speed |
| SAT5 | semi automatic transmission 5-speed |
| SAT6 | semi automatic transmission 6-speed |
| SMG7 | sequential manual gearshift 7 speed |

**Fuel cost**

The fuel cost of driving 12,000 miles is calculated using the combined fuel consumption figure and the respective average fuel figures. The fuel figures used are those published by the Department of Energy and Climate Change for March, and appear on the 'efficiency labels' that can be seen in car showrooms. There are of course many changes to fuel prices during the course of a year, not to mention many regional variations. It is because of this that we have decided to use the average figure, taken at a given point in the year, as this ensures a level playing field for comparison purposes.

The fuel costs are calculated as follows:

$$\frac{12000 \times A \times 4.546}{B}$$

A = The current cost per litre of Petrol, Diesel or LPG (as applies to the car), e.g. £1.38p, £1.45p or £0.74p

B = The Imperial combined Fuel Consumption figure (MPG)

4.546 = The figure for conversion of litres to imperial gallons.

The Electric costs are calculated as follows:

$$\frac{12{,}000}{\text{"Electrical energy consumption"}} \times \textit{current electrical cost per unit (£)}$$

The electrical energy consumption is calculated as follows:

$$\frac{1}{\text{"wh/km"}} \times 0.621 \times 1000 = \text{"miles/kW"}$$

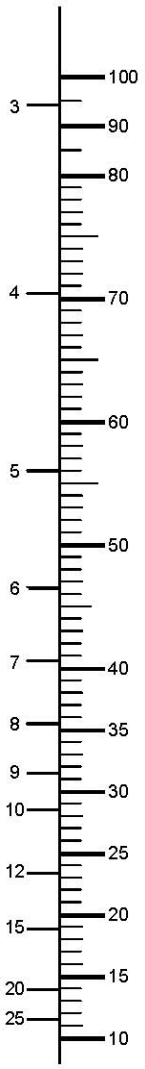
wh/km is taken from the vehicles Certificate of Conformity (CoC)

Total cost 12000 miles

This is a combination of the fuel cost + the electricity cost

**CONVERSION TABLE**

l/100km miles/gallon




Approximate conversion factors:

1 litre = 0.22 gallons (imperial)

1 km = 0.62 miles

1 gallon (imperial) = 4.55 litres

1 mile = 1.609 km