INTRODUCTION

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 Carbon Dioxide (CO_2). CO_2, although not directly harmful to human health, is the most significant of the greenhouse gases contributing to Climate Change. Cars make a significant contribution to overall emissions of CO_2 in the UK. Additionally, road transport is also one of the major sources of airborne pollutants which are harmful to human health, especially in urban areas.

The purpose of this guide is to aid consumers in making an informed choice when buying a new car. It lists the fuel consumption, 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 giving guidance on ways of reducing the impact of cars on the environment. The figures shown are obtained during official tests, which are required before a model of car can 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 (Liquid Petroleum Gas/Compressed Natural Gas) and some hybrid vehicles, which use both electric motors and internal combustion engines.

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 expected to operate. Furthermore, since several different specifications (variants/versions) of a given model may be grouped together in the list, the figures used in this guide should be treated as indicative only.

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

A searchable version of the data is available through the website http://carfueldata.direct.gov.uk/, as is some historic information. It should be noted 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 carbon dioxide, methane and nitrous oxide) 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) has set a long term legally binding framework for greenhouse gas reduction in the UK. The Act requires 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 (first published March 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, moving people and goods around the country, but it is also a major source of greenhouse gas emissions. In 2009, domestic transport accounted for 22% of all UK greenhouse gas emissions with the vast majority of this 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.

The CO_2 emissions of a car are directly proportional to the quantity of fuel consumed in an engine. While there has been progress in reducing the emissions of toxic airborne pollutants from vehicles (as described below) there has been less progress in reducing CO_2 from cars despite improvements to engine efficiency. This is partly because cars have tended to become heavier in recent years as manufacturers have made improvements to vehicle safety or included additional features such as power assisted steering and air conditioning. 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/km, and as a result to see a 25% improvement in average fuel consumption.

However, by 2006 it had become apparent that the voluntary targets were unlikely to be met and the Commission therefore decided to legislate. In 2009 a Regulation setting binding targets on reducing the g/km CO_2 emissions of new cars (EC Regulation No. 443/2009) was brought into force. The main features of the Regulation are as follows:

The target is for an overall average of 130g/km CO_2 from 2012 onwards.

This will be allocated by giving each manufacturer an individual target to meet, based on the types of vehicles it sells—rather than exactly 130g/km for each or leaving the industry to decide how to meet it.

The 'type' of vehicle is determined by its mass: heavier cars have a higher g/km 'allowance'.

The target will be phased in, so that full compliance must be reached by 2015.

There are different arrangements for manufacturers that are not mass producers.

There is a further target for improvement for 2020, provisionally set at 95g/km.

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

The regulation is purely a matter for manufacturers: it won't require drivers or car buyers to do anything different.

It works on an *average* basis: it won't require individual cars to meet a particular g/km threshold (unlike air quality legislation) or ban cars on the basis of their CO_2 emissions

It's only for new cars: it doesn't mean older, higher-emitting cars have to be taken off the road

It applies to all cars registered in the EU: it won't just apply to European manufacturers, and European-made cars first registered outside the EU will be unaffected

It's not about setting different targets for different countries: while manufacturers may of course choose to vary what they offer between states, the targets are for the EU as a whole

It doesn't tell governments how to set vehicle-related taxes: this will continue to be a matter for each state

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.

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.

In the March 2006 Budget, the Chancellor introduced a zero rate for cars with the lowest carbon emissions and a new top band for the most polluting cars.

CO_2 Targets for Vans

The new EU regulation on CO_2 emissions applies only to vehicles type-approved as passenger cars (i.e. M1 vehicles). The European Commission last year published draft legislation to regulate g/km CO2 emissions of vans (N1 vehicles) in a similar way – this is currently in negotiation with EU Member States and the European Parliament.

CARS AND AIR POLLUTION

The other pollutants from petrol, diesel and alternative fuel engines are mainly Carbon Monoxide, Oxides of Nitrogen, un-burnt Hydrocarbons and fine particles. The first three are gases and are invisible. Fine particles are usually invisible although in certain operating conditions diesels 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. Unlike CO_2, emissions of these pollutants are not directly linked to fuel consumption. Pollutant 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 emission of pollutants. However, as a starting point new passenger cars must meet minimum EU emissions standards.

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

CO - Carbon Monoxide reduces the blood's Oxygen carrying capacity which can reduce 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 (NO2) 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').

Particles - Fine particles can have an adverse effect on human health, particularly among those with existing respiratory disorders. Particles have been 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 HCs are carcinogenic and they are also indirect greenhouse gases.

The Government is convinced that action to reduce harmful emissions must continue. The European Union Ambient Air Quality Directive sets maximum permissible levels for 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 the above pollutants 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 emissions per kilometre as a vehicle made in 1970. For the last twenty years increasingly stringent emission limits have been set at a European level, starting with the "Euro1" limits in 1993. Most 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 1-3). Information on the level of pollutants 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.

It should be noted that, for any given model of vehicle, the air pollutant emissions of production vehicles will fall within a range. Depending on whether the sample vehicle tested when the vehicle was approved was at the top or bottom end of this range, air pollutant emissions test results for production vehicles could (on average) be better or worse than the above figures. For this reason the air pollutant emissions performance of specific models of car should only be compared based on the emissions limits to which they are approved.

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 type. 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

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, combine trips, perhaps car sharing. 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 their class, rather than the one with the average emissions, can typically be reduced by up to 24%.

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

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.

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 - can also reduce revs. If you drive a diesel car try changing up a gear when the rev counter reaches 2000rpm. For a petrol car try changing up at 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 3 minutes, simply switch off the engine.

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.

For more information about how to use your car more efficiently, visit:

http://www.direct.gov.uk/en/Environmentandgreenerliving/Greenertravel/Greenercarsanddriving/index.htm

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 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 and Particles than new petrol vehicles. As mentioned earlier, emissions of such pollutants 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 vehicles 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 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, or slightly better.

Hybrid vehicles 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 a combination of the two with the battery power, 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 with potentially some reduction in emissions of local pollutants, especially in stop-start motoring.

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% with fossil petrol and diesel. These blends are suitable for use in all vehicles. Fuel standards may be extended in the future to allow more than 5% if it is concluded that this is compatible with existing 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. There are currently a limited number of fuel retailing sites that offer this fuel, but the number is set to grow in the future. 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 EU quality standard - EN 14214 is used. Information on retail sites selling biofuels is available from http://www.est.org.uk/fleet/technology/refuelling stations.

Electric vehicles (EV), is the term for any vehicle that is powered, either in part or in full, by a battery that can be directly plugged into mains electricity. This includes those that run purely on electricity (pure-electric), plug-in hybrids and extended-range electric vehicles.

This guide includes those cars that use a combination of a conventional petrol engine and battery propulsion. These are known as ‘petrol-electric’ or ‘electric-hybrid’.

Cars that run purely on electricity however, are not included in this guide.

To find out more about electric vehicles, the Society of Motor Manufacturers and Traders have provided a useful guide on the subject which can be downloaded free of charge at www.smmt.co.uk.

HOW TO USE THE DATA TABLE

Vehicles that meet Euro 4, 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 later 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) (Euro 4, Euro 5 and Euro 6). The other results of the exhaust emissions test are shown in grammes per kilometre (g/km) for Euro 4 cars, and milligrammes per kilometre (mg/km) for cars tested to Euro 5 and Euro 6.

The fuel cost of driving 12000 miles is calculated using the combined fuel consumption figure and an average fuel price which is assessed each year. Currently it is 133p/litre for petrol, and 139p/litre for diesel and 77p/litre for LPG (no fuel figures are available at this time for CNG).

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 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 (on the far right of the tables) 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/versions) of a given model. As such the figures are indicative only. A definitive figure for a given specification (variant/version) will be available at the point of sale.

OTHER RELEVANT ISSUES

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 2011:

		2011–12 first year rate	2011–12 standard rate
Bands	CO_2 emissions figure (g/km)	12 Month Rate (£)	12 Month Rate (£)
Band A	Up to 100	£0	£0
Band B	101 – 110	£0	£20
Band C	111 – 120	£0	£30
Band D	121 – 130	£0	£95
Band E	131 – 140	£115	£115
Band F	141 – 150	£130	£130
Band G	151 – 165	£165	£165
Band H	166 – 175	£265	£190
Band I	176 – 185	£315	£210
Band J	186 – 200	£445	£245
Band K*	201 – 225	£580	£260
Band L	226 – 255	£790	£445
Band M	Over 255	£1000	£460

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

Notes:

- The standard rate applies to all car fuel types
- Alternative fuel car discount 2011-12: £10 on Bands E to M for first year rate; £10 on Bands B to M for standard rate

Further information about taxing your vehicle can be found on the DirectGov website: http://www.direct.gov.uk/en/Motoring/OwningAVehicle/HowToTaxYourVehicle/. 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 of the tax that may be payable on a given NEW car.

Company Car Tax – From 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).

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. Consequently where there are several specifications of a vehicle model with similar fuel consumption figures, only a single entry is given.

Petrol vehicles with 100g/km or less

Make	Model	Engine Capacity cc	Trans-mission	CO_2 g/km	Fuel Consumption (mpg)	Fuel cost of driving 12000 miles
TOYOTA	Auris Hybrid, Model Year 2010	1798	E-CVT	89	74.3	977
TOYOTA	Prius, Model Year 2009	1798	E-CVT	89	72.4	1002
TOYOTA	Prius, Model Year 2009	1798	E-CVT	89	72.4	1002
FIAT	500 and 500C	875	SAT5	92	70.6	1028
TOYOTA	Prius, Model Year 2009	1798	E-CVT	92	70.6	1028
TOYOTA	Prius, Model Year 2009	1798	E-CVT	92	70.6	1028
TOYOTA	Prius 10	1798	E-CVT	92	70.6	1028
TOYOTA	Auris Hybrid, Model Year 2010	1798	E-CVT	93	70.6	1028
TOYOTA	Auris Hybrid, Model Year 2010	1798	E-CVT	93	70.6	1028
LEXUS	CT MY2011	1798	E-CVT	94	68.9	1053
FIAT	500 and 500C	875	M5	95	68.9	1053
SMART	fortwo coupé	999	5 AMT	97	67.3	1078
SMART	fortwo coupé	999	5 AMT	98	65.7	1104
SMART	fortwo cabrio	999	5 AMT	99	65.7	1104

TOYOTA	iQ, Model Year 2010	998	M5	99	65.7	1104
HYUNDAI	i10	998	M5	99	67.3	1078
KIA	Picanto	998	M5	99	67.3	1078
TOYOTA	iQ, Model Year 2011	998	M5	99	64.2	1130
KIA	Picanto	1248	M5	100	65.7	1104
SMART	fortwo cabrio	999	5 AMT	100	64.2	1130

Diesel vehicles with 100g/km or less

Make	Model	Engine Capacity cc	Trans-mission	CO_2 g/km	Fuel Consumption (mpg)	Fuel cost of driving 12000 miles
KIA	Rio	1120	M6	85	88.3	859
SMART	fortwo cabrio	799	5 AMT	86	85.6	886
SMART	fortwo coupé	799	5 AMT	86	85.6	886
SMART	fortwo cabrio	799	5 AMT	87	85.6	886
SMART	fortwo coupé	799	5 AMT	87	85.6	886
SKODA	Fabia Hatchback	1199	M5	89	83.1	912
SKODA	Fabia Estate	1199	M5	89	83.1	912
VOLKSWAGEN	Polo	1199	M5	91	80.7	940
SEAT	Ibiza 5 door	1198	M5	92	80.7	940
SEAT	Ibiza Coupé	1198	M5	92	80.7	940
SEAT	Ibiza ST	1198	M5	92	80.7	940
KIA	Rio	1120	M6	94	78.5	966

RENAULT	Clio	1461	M5	94	78.4	967
VAUXHALL	Corsa 3 Door Hatchback, Model Year 2011	1248	M5	94	80.7	940
ALFA ROMEO	MiTo	1248	M5	95	78.5	966
FIAT	Punto Evo	1248	M5	95	78.5	966
VAUXHALL	Corsa 5 Door Hatchback, Model Year 2011	1248	M5	95	78.5	966
FORD	Fiesta, Model Year Pre 2011¾	1560	M5	98	76.3	994
FORD	Fiesta, Model Year Pre 2010¼	1560	M5	98	76.3	994
FORD	Fiesta, Model Year Post 2010¼	1560	M5	98	76.3	994
RENAULT	Clio	1461	M5	98	76.3	994
VAUXHALL	Corsa 3 Door Hatchback, Model Year 2011	1248	M5	98	76.3	993
PEUGEOT	207, From August 2009 onwards	1560	M5	98	74.3	1021
VAUXHALL	Corsa 5 Door Hatchback, Model Year 2011	1248	M5	99	76.3	993
AUDI	A1	1598	M5	99	74.3	1021
AUDI	A3	1598	M5	99	74.3	1021
CITROEN	New C3	1560	M5	99	74.3	1021
CITROEN	DS3	1560	M5	99	74.3	1021
KIA	Rio	1120	M6	99	74.3	1021
MINI	MINI Hatchback R56	1598	M6	99	74.3	1021
MINI	MINI Hatchback R56	1598	M6	99	74.3	1021

SEAT	Leon	1598	M5	99	74.3	1021
SKODA	Octavia Hatchback	1598	M5	99	74.3	1021
VOLKSWAGEN	Golf	1598	M5	99	74.3	1021
VOLVO	C30, Model Year 2011	1560	M6	99	74.3	1021
VOLVO	S40, Model Year 2011	1560	M6	99	74.3	1021
VOLVO	V50, Model Year 2011	1560	M6	99	74.3	1021
VOLVO	C30, Model Year 2012	1560	M6	99	74.3	1021
VOLVO	S40, Model Year 2012	1560	M6	99	74.3	1021
VOLVO	V50, Model Year 2012	1560	M6	99	74.3	1021
FORD	Focus, Model Year Post 2010¼	1560	M5	99	74.3	1021
PEUGEOT	207, From August 2009 onwards	1560	M5	99	74.3	1021
AUDI	A1	1598	M5	99	74.3	1021
AUDI	A3	1598	M5	99	74.3	1021

Vehicles approved to Euro 6 limits

See CD-ROM or live database

Vehicles approved to Euro 5 limits

See CD-ROM or live database

Vehicles approved to Euro 4 limits

See CD-ROM or live database

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 2011.

WHAT ARE THE STANDARD TESTS?

Official fuel consumption test procedures have been in use since the 1970's. EU Directive 80/1268/EEC describes the tests which all new cars on sale after 1 January 2001 have been required to take.

FUEL CONSUMPTION TEST (DIRECTIVE 80/1268/EEC as amended)

The current test has been agreed internationally and provides results that are more representative of actual average on-road fuel consumption than previous tests. There are two parts: an urban and an extra-urban cycle. The test cycle is the same as that used to determine the official exhaust emission classification for the model of vehicle in question.

The cars tested have to be run-in and 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. Maximum speed is 31 mph (50 km/h), 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

This cycle is conducted immediately following the urban cycle and consists of roughly half steady-speed driving and the remainder accelerations, decelerations, and some idling. Maximum speed is 75 mph (120 km/h), 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.

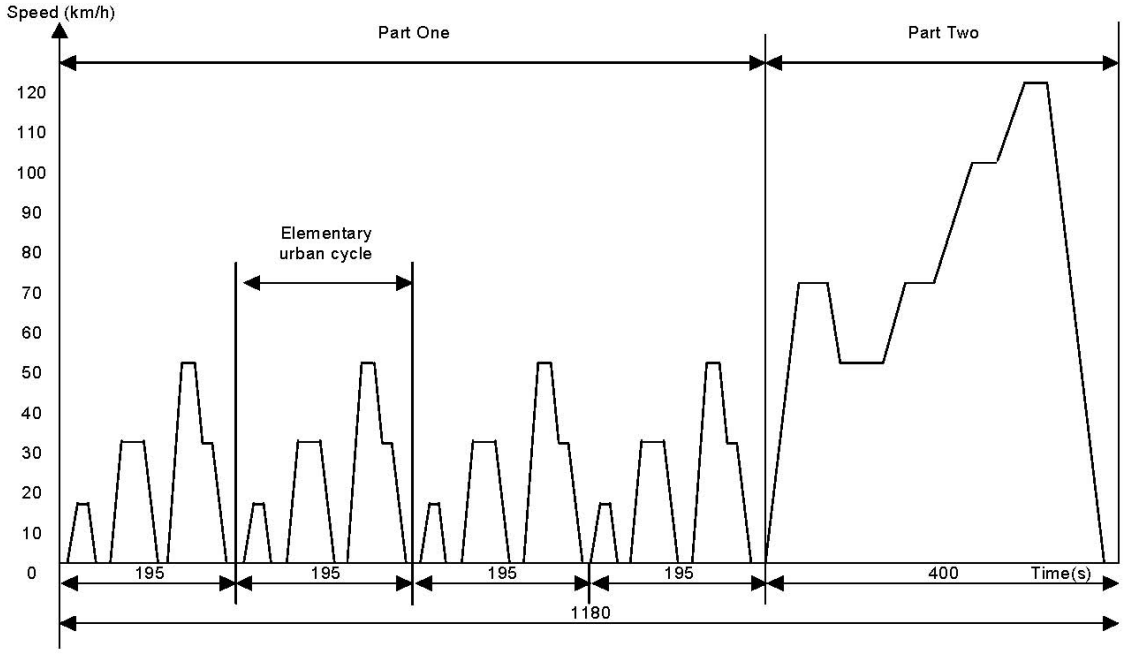
Combined Fuel Consumption Figure

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 expected to operate. Furthermore, since several different specifications (variants/versions) of a given model may be grouped together in the list, the figures used in this guide should be treated as indicative only.

Nevertheless, 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 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 therefore, is tested as being representative of the model and may produce a 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 comparative data on the relative fuel consumption of different cars rather than to provide an estimate of average, on-the-road, fuel economy.

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?

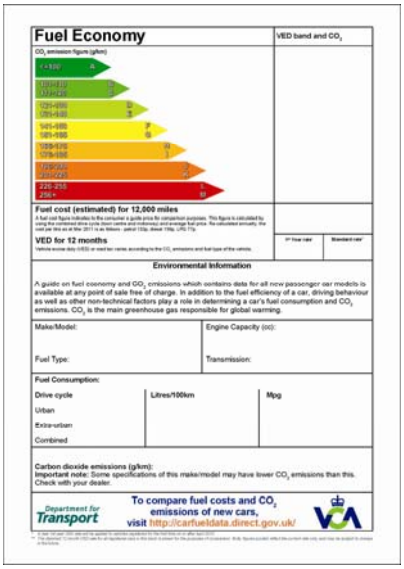
Almost all types of new passenger cars have to be tested. However, several models which do not differ significantly in certain technical characteristics important in determining fuel consumption may be grouped together into a 'class'. Only one representative car of each class needs to be tested.

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 the showrooms. New cars whose engines run on liquid petroleum gas or compressed natural gas have been required to undergo fuel consumption tests since 1st January 2001.

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 car displayed. 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 have the option to produce a "comparative" label - 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 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) and 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 01179 524169.

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 EMISSIONS TESTING

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

Because of the nature of testing procedures the type approval emission figures listed in the tables should be treated with caution and specifically should not be used to rank a number of vehicles for which similar figures are quoted.

Tables of Emission Limits relating to vehicles listed in this guide

Euro 4

Cars not exceeding 2.5 tonnes laden – Euro 4 – Directive 98/69/EC

Number of seats	Fuel	Limit values (g/km)					Implementation Dates	
		CO	HC	NOx	HC+NOx	PM	Type Approval of new models	All models
up to 9	P	1.00	0.10	0.08	-	-	01/01/05	01/01/06
up to 9	D	0.50	-	0.25	0.30	0.025	01/01/05	01/01/06

Cars more than 2.5 tonnes laden (unladen weight between 1305 and 1760 kg) – Euro 4 – Directive 98/69/EC

Number of seats	Fuel	Directive	Limit values (g/km)					Implementation Dates	
			CO	HC	NOx	HC+ NOx	PM	Type Approval of new models	All models
up to 9	P	98/69/EC	1.81	0.13	0.10	-	-	01/01/06	01/01/07
up to 9	D	98/69/EC	0.63	-	0.33	0.39	0.04	01/01/06	01/01/07

Cars more than 2.5 tonnes fully laden (unladen weight over 1760kg) – Euro 4 – Directive 98/69/EC

Number of seats	Fuel	Directive	Limit values (g/km)					Implementation Dates	
			CO	HC	NOx	HC+ NOx	PM	Type Approval of new models	All models
up to 9	P	98/69/EC	2.27	0.16	0.11	-	-	01/01/06	01/01/07
up to 9	D	98/69/EC	0.74	-	0.39	0.46	0.06	01/01/06	01/01/07

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	P	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 mass.

Euro 6

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

Number	Fuel	Limit values (mg/km)							Implementation Dates	
of seats		CO	THC	NMHC	NOx	THC + NOx	PM	P	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 mass.

NOISE

The UK has introduced strict noise limits which, by 1996, 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/road surface. On dry roads and at a constant speed engine noise generally predominates for speeds up to 50km/hr. Above this speed tyre noise becomes the dominant source of noise.

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

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.

FURTHER COPIES

Further copies of this guide are available from:-

VCA
1 The Eastgate Office Centre,
Eastgate Road,
Bristol
BS5 6XX.

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 in this guide is accurate, the Vehicle Certification Agency cannot accept liability for its accuracy. Readers who rely entirely on the information do so at their own risk.

The Fuel Consumption and Emissions data is also available for viewing and downloading from: http://carfueldata.direct.gov.uk/

Paper versions of this publication are printed on recycled paper comprising 75% post consumer waste and 25% ECF pulp.

Did you find this guide useful? The Department for Transport would welcome any comments on how the guide could be made more user-friendly. Please send your comments to VCA at the above address or email them to fuel@vca.gov.uk.

Produced for the Department for Transport

KEY

A	automatic
A4	A4 automatic 4-speed
AV	AV automatic variable
4Atx2	4Atx2 automatic 4-speed, high and low range gearing
A7	automatic 7-speed
A/SAT5	automatic / semi automatic transmission 5 speed
ASM	automatic shift manual
AWD	all wheel drive
bhp	brake horsepower
CVT	continuously variable transmission
D	diesel engined vehicle
D6	direct shift 6-speed
DCT7	Double-Clutch Transmission 7 speed
Di	direct injection diesel engine
DOHC	dual overhead camshaft
DPF(S)	diesel particulate filter (system)
FAP	particulate filter
FDR	final drive ratio
Hybrid	combined internal combustion engine and electric motor and battery
i	fuel injection
km/h	kilometres per hour
kW	kilowatt
LWB	long wheelbase
l/100km	litres per 100 kilometres
mpg	miles per gallon
mph	miles per hour
M	manual
M5	manual 5-speed
5MTx2	ditto, high and low range gearing
MTA	Manual Transmission with Automatic Changing
M6/S6	manual 6 speed / sequential 6 speed
MULTI5	multimode 5 speed
PAS	power assisted steering
QA5	4-wheel drive, Auto 5-speed
QD6	4-wheel drive, direct shift 6 speed
QM5	4-wheel drive, Manual 5-speed
SAT5	semi automatic transmission 5-speed
SMG7	sequential manual gearshift 7 speed
SOHC	single overhead camshaft
SWB	short wheelbase
TD	turbo diesel
TDdi	turbo diesel direct injection
TDi	turbo charged direct injection diesel
TDI	turbo diesel with intercooler
TOD	Torque on Demand
4WD	4-wheel drive
4x4	4 wheeled vehicle with 4-wheel drive

CONVERSION TABLE