



# EcoTest

## **Test Report June 2008**

Based on "EcoTest Protocol Release 2.0"

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## Key Story June 2008

“Cars are only getting larger and heavier, and need ever more fuel.” This is what you hear at many a regulars’ table. Five years of EcoTest have prompted ADAC to get to the bottom of this statement.

The results: **Much light, and a little shadow as well.**

With about 700 tested vehicles, comparing vehicles from the current range and the predecessor models will allow us to draw some conclusions. Now no less than a quarter of the vehicles tested score four EcoTest stars. Years back this was the case for only 16%. At the same time, the worst “polluters” with only one or two stars are phasing out.

The greatest improvements were found in Opel Zafira 1.7 CDTi and Peugeot 307 Break HDi FAP 90 which landed another two stars each. While lower pollutant emissions of diesel vehicles have helped to make some headway, petrol cars have obtained good values for a while. **CO<sub>2</sub>** emissions were reduced in many cars and better EcoTest results are the reward.

But we noted some regress as well: Renault has made its new Clio heavier, raising fuel consumption: six points less in the EcoTest. Honda Accord 2.2 i-CTDi was hit even harder, losing three EcoTest points and sliding from four to three stars.

### **Bottom line:**

We need to further reduce CO<sub>2</sub> emissions, and this in all vehicle classes. Small vehicles offer the same potential as large vehicles, manufacturers should not lie back. More efficiency should not be compensated by more power and weight of new models.

**Table 1: The best models**

Series	Change	Model	Class	Emission Levels	KW	CCM	l per 100 km	EcoTest Rating
Opel Zafira	+33	2.2 DTI Edition	4	Euro3	92	2172	6,8	29 ★☆☆☆☆
		1.7 CDTI Edition (DPF)	4	Euro4	92	1686	6,4	62 ★★★★★
Peugeot 307	+26	Break HDi 90 Esplanade	4	Euro3	66	1997	5,8	49 ★★★★★
		Break HDi FAP 90 Tendance	4	Euro4	66	1560	5,2	75 ★★★★★
Citroen C3	+20	HDi 90 Exclusive	3	Euro3, 5L	66	1398	5,0	48 ★★★★★
		HDi 110 FAP Exclusive	3	Euro4, 5L	80	1560	5,1	68 ★★★★★
Honda FR-V	+18	2.2i-CTDi Comfort	4	Euro4	103	2204	7,2	47 ★★★★★
		2.2 i-CTDi Executive (DPF)	4	Euro4	103	2204	6,4	65 ★★★★★
Alfa Romeo GT	+17	1.9 JTD 16V Multijet	5	Euro3	110	1910	6,5	57 ★★★★★
		1.9 JTDM 16V Q2 (DPF)	5	Euro4	110	1910	6,2	74 ★★★★★
Skoda Superb	+17	1.9 TDI Elegance	6	Euro3	96	1896	6,0	63 ★★★★★
		2.0 TDI L&K (DPF)	6	Euro4	103	1968	6,5	80 ★★★★★
Toyota Yaris	+17	1.4 D-4D linea sol	3	Euro3, 5L	55	1364	5,2	50 ★★★★★
		1.4 D-4D Executive	3	Euro4	66	1364	4,7	67 ★★★★★

**Table 2: No improvements after model change. To the contrary: increasing CO<sub>2</sub> emissions run counter to the trend.**

Series	Change	Model	Class	Emission Levels	KW	CCM	l per 100 km	EcoTest Rating
Renault Clio	-6	1.2 16V Confort Authentique	3	Euro3, D4	55	1149	6,3	69 ★★★★★
		1.2 16V Authentique	3	Euro4	55	1149	6,9	63 ★★★★★
Renault Scénic	-5	1.6 16V Luxe Privilège	4	Euro4	83	1598	7,6	66 ★★★★★
		1.6 16V Dynamique	4	Euro4	82	1598	8,2	61 ★★★★★
Daihatsu Cuore	-4	1.0 Top	2	Euro4, 5L	43	989	5,8	61 ★★★★★
		1.0 Top	2	Euro4, 5L	51	998	5,8	57 ★★★★★
Honda Accord Tourer	-3	2.2 i-CTDi Sport	5	Euro4	103	2204	6,3	71 ★★★★★
		2.2 i-CTDi Sport	5	Euro4	103	2204	6,6	68 ★★★★★
Mercedes C-Klasse	-1	C 200 Kompressor Classic	5	Euro4	120	1796	8,1	73 ★★★★★
		C 180 Kompressor Elegance	5	Euro4	115	1796	8,3	72 ★★★★★
Mazda 5	0	2.0 CD DPF Top	4	Euro4	105	1998	6,5	64 ★★★★★
		2.0 CD DPF Top	4	Euro4	105	1998	6,4	64 ★★★★★

We need to implement ecology in all cars. It is not enough to develop a few expensive special eco models serving as a fig leaf. Competition is on: Who is going to launch the first five EcoTest stars vehicle?

## 1 Review of 5 years Eco Test

EcoTest was first presented in 2003. It was developed to provide an integrated assessment of the eco performance of passenger cars. What are the developments over the past five years? Have vehicles improved at all? What are the trends and exceptions? Our five-year review will answer these questions and identify the challenges for the coming years.

EcoTest is an assessment system providing a real-life evaluation of a car's eco performance in a comprehensible manner. Consumers can rely on CO<sub>2</sub> emissions being evaluated not just within the cycles defined by law but all controlled pollutant emissions and the impact of air conditioning even under full load conditions are covered in real-life test measurements. Results are expressed in an easy-to-understand rating with up to five stars for each passenger car. The latest EcoTest results are available online at [www.adac.de/tests](http://www.adac.de/tests) where current models can be comfortably selected and compared. At international level, some 40m consumers look up the results at [www.ecotest.eu](http://www.ecotest.eu).

Since 2003, EcoTest has scrutinised the eco performance of passenger cars in thorough tests. Now the database comprises almost 700 old and current vehicle models. Have vehicles really become better? This is the question ADAC faces again and again. We use ADAC EcoTest data to give an all-embracing answer. Comparing current models to their predecessor models, we were able to strike a balance – with a view to CO<sub>2</sub> and to pollutant emissions.

## 2 Vehicle selection

When **comparing** current vehicles and their **predecessor models**, we focus on popular vehicles with **comparable equipment and performance** such as e.g. the old and new Mercedes C Class, see **Figure 1**. We evaluated EcoTest results for about 700 vehicles.

Comparing the vehicle pairs we discovered many positive developments, and a standstill for some models in terms of eco performance. The tables below show the old models against a blue background for better visibility.



**Figure 1:** Mercedes C-class: old contra new (Reference: Mercedes)

### 3 Opportunity wasted: the taillights

**Table 3** shows the six vehicle models which had no better ratings in the upgraded version. This is not limited to a specific vehicle class, nor is the lack of ecological development related to a specific vehicle make. The six listed models include four petrol cars.

The frontrunner in the negative development is the Renault Clio losing 5 CO<sub>2</sub> points. Fuel consumption is up by 0.6l/100km which is 13g/km more in CO<sub>2</sub>. The current model is about 100kg heavier and a bit larger, which has a negative impact on fuel consumption and CO<sub>2</sub> emissions.

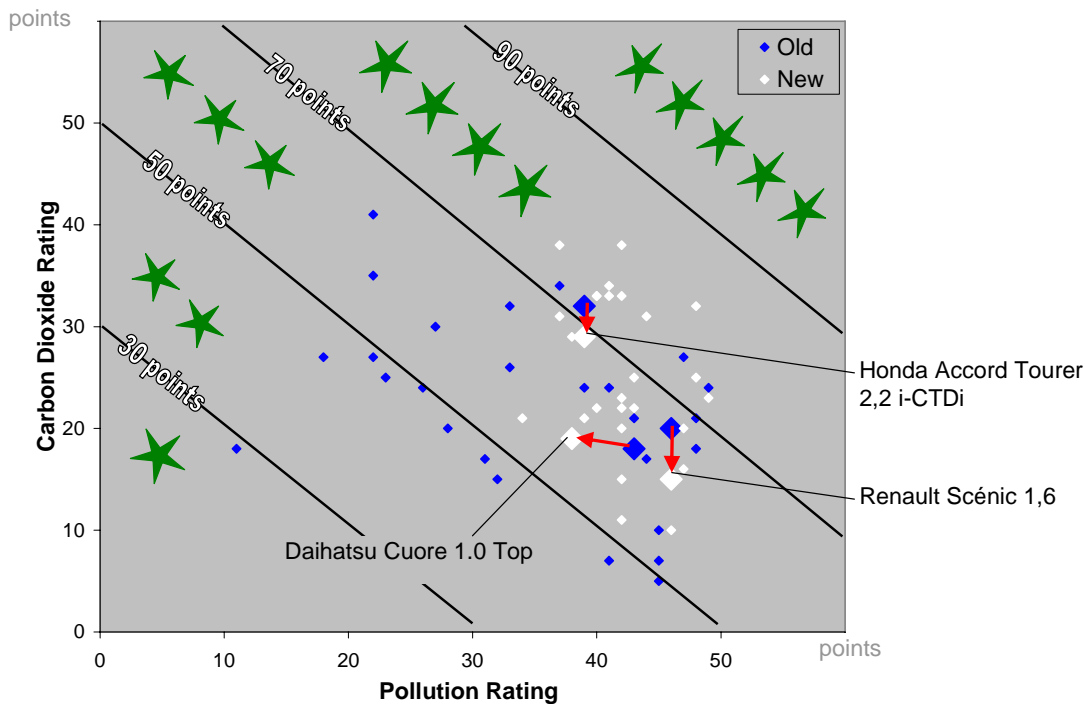
Two other models (Mazda 5 2.0 DPF and Mercedes C Class) scored almost identical EcoTest ratings having made no use of the time for further development. Only, performance of the Mercedes C 200 is up 5kW. Mercedes was unable to top the high four star rating scored with the predecessor model with emissions at 49 points closely missing the maximum of 50 points.

Table 3: For the models below, the upgrade did not improve the rating. To the contrary: rising CO<sub>2</sub> emissions run counter to the trend.,

Series	Change	Model	Class	Emission Levels	KW	CCM	l per 100 km	EcoTest Rating
Renault Clio	-6	1.2 16V Confort Authentique	3	Euro3, D4	55	1149	6,3	69 ★★★★★☆☆
		1.2 16V Authentique	3	Euro4	55	1149	6,9	63 ★★★★★☆☆
Renault Scénic	-5	1.6 16V Luxe Privilage	4	Euro4	83	1598	7,6	66 ★★★★★☆☆
		1.6 16V Dynamique	4	Euro4	82	1598	8,2	61 ★★★★★☆☆
Daihatsu Cuore	-4	1.0 Top	2	Euro4, 5L	43	989	5,8	61 ★★★★★☆☆
		1.0 Top	2	Euro4, 5L	51	998	5,8	57 ★★★★★☆☆
Honda Accord Tourer	-3	2.2 i-CTDi Sport	5	Euro4	103	2204	6,3	71 ★★★★★☆☆
		2.2 i-CTDi Sport	5	Euro4	103	2204	6,6	68 ★★★★★☆☆
Mercedes C-Klasse	-1	C 200 Kompressor Classic	5	Euro4	120	1796	8,1	73 ★★★★★☆☆
		C 180 Kompressor Elegance	5	Euro4	115	1796	8,3	72 ★★★★★☆☆
Mazda 5	0	2.0 CD DPF Top	4	Euro4	105	1998	6,5	64 ★★★★★☆☆
		2.0 CD DPF Top	4	Euro4	105	1998	6,4	64 ★★★★★☆☆

While the Daihatsu Cuore 1.0 now delivers 8kW more power, fuel consumption continues to be high. Developments are apparent only in pollutant emissions which are worse compared to the predecessor model (CO emissions).

A six-speed transmission is no miracle cure to boost fuel economy. Honda treated the new Accord Tourer 2.2 i-CTDi to one additional gear, as did Renault for the Scénic 1.6 16V – however without success. Fuel consumption in the Honda increased by 0.3l/100km and by 0.6l/100km in the Renault (CO<sub>2</sub> emissions are up by 9-15g/km). This is why the Honda even lost its fourth EcoTest star.



**Figure 2: Opportunity wasted: three new models (white dots) scored clearly worse than their predecessors (blue dots).**

**Figure 2** shows the vehicle pairs and their rating, with a white dot indicating the new model and a blue dot the old model. Some pairs were enlarged with a red arrow showing the development. It is quite clear that e.g. the Honda Accord Tourer 2.2 i-CTDi loses CO<sub>2</sub> points sliding down the scale, and even loses one star. The Renault Scenic 1.6 also loses CO<sub>2</sub> points moving further away from the four stars threshold. The Daihatsu Cuore 1.0 in turn has a poorer rating mainly for pollutant emissions and shifts to the left.

#### 4 Some have been busy: the achievers

Many manufacturers made good use of their time and clearly reduced emissions of their vehicles. This positive development is reflected in the EcoTest: 24% of the current models reached four stars in 2008, compared to only 16% in 2004. At the same time, there are far fewer “polluters” reaching only one or two stars. A 5 star vehicle, however, has yet to be made. It will be interesting to see who is going to earn the crown.

**Table 4:** The best vehicles

Series	Change	Model	Class	Emission Levels	KW	CCM	l per 100 km	EcoTest Rating
Opel Zafira	+33	2.2 DTI Edition	4	Euro3	92	2172	6,8	29 ★☆☆☆☆
		1.7 CDTI Edition (DPF)	4	Euro4	92	1686	6,4	62 ★★★★★
Peugeot 307	+26	Break HDi 90 Esplanade	4	Euro3	66	1997	5,8	49 ★★★★★
		Break HDi FAP 90 Tendance	4	Euro4	66	1560	5,2	75 ★★★★★
Citroen C3	+20	HDi 90 Exclusive	3	Euro3, 5L	66	1398	5,0	48 ★★★★★
		HDi 110 FAP Exclusive	3	Euro4, 5L	80	1560	5,1	68 ★★★★★
Honda FR-V	+18	2.2i-CTDi Comfort	4	Euro4	103	2204	7,2	47 ★★★★★
		2.2 i-CTDi Executive (DPF)	4	Euro4	103	2204	6,4	65 ★★★★★
Alfa Romeo GT	+17	1.9 JTD 16V Multijet	5	Euro3	110	1910	6,5	57 ★★★★★
		1.9 JTDM 16V Q2 (DPF)	5	Euro4	110	1910	6,2	74 ★★★★★
Skoda Superb	+17	1.9 TDI Elegance	6	Euro3	96	1896	6,0	63 ★★★★★
		2.0 TDI L&K (DPF)	6	Euro4	103	1968	6,5	80 ★★★★★
Toyota Yaris	+17	1.4 D-4D linea sol	3	Euro3, 5L	55	1364	5,2	50 ★★★★★
		1.4 D-4D Executive	3	Euro4	66	1364	4,7	67 ★★★★★

Diesel cars registered the greatest improvements. In addition to lower CO<sub>2</sub> emissions, especially pollutant emissions were reduced – also by using particle filters. Progress is measurable in the EcoTest: one or for some models even two additional stars were awarded. The seven vehicle pairs with the largest improvements are shown in **Table 4**. This does not mean that the models in question can rest on their “laurels”. A three star rating still has a lot of potential. As for the negative examples, improvements are not reserved for a specific vehicle class or manufacturer. However, all listed vehicles are diesels.

With **two extra stars**, Opel Zafira 1.7 CDTi (its predecessor being the 2.2 CDTi with identical power output) and the Peugeot 307 Break HDi took the largest leap. Some details were changed though, with the result that both vehicles have a better emissions class (Euro3 instead of Euro4). In addition, particle filters were included. These measures yield considerable improvements in pollutant emissions (20 and 29 points up on the pollutant emissions evaluation), at nearly identical power and lower consumption /CO<sub>2</sub> emissions.

**More power, less fuel:** This is the slogan for the vehicles listed in **Table 5** which have clearly higher engine performance (between 13kW and 15kW) and reduced CO<sub>2</sub> emissions in the EcoTest (between 21g/km and 31g/km). All make it to the four stars league.

**Table 6** shows four petrol engine vehicle pairs. All were able to reduce their CO<sub>2</sub> emissions by between 8g/km and 17g/km – in the base version. An **expensive eco variant** such as VW’s Blue Motion was **not necessary**. In spite of the progress, the Citroen C2 and Chevrolet Matiz still consume 6.5l/100km and 6.6l/100km respectively (CO<sub>2</sub> emissions 149g/km and 152g/km) which is way too much for a supermini. Pollutant emissions were better in the Daihatsu Sirion 1.3 with 47 points compared to 44 points. The Mazda 6 1.8 earned a very good rating with four stars and a total of 80 points.

**Table 5:** CO2 improved even with higher performance levels

Series	Change	Model	Class	Emission Levels	KW	CCM	l per 100 km	EcoTest Rating
BMW 5er	+10	530d touring Steptronic (DPF)	6	Euro4	160	2993	8,5	63 ★★★★★☆☆
		530d touring Steptronic (DPF)	6	Euro4	173	2993	7,3	73 ★★★★★☆☆
Mercedes C-Klasse T-Modell	+10	C 220 CDI Avantgarde (DPF)	5	Euro4	110	2148	7,0	65 ★★★★★☆☆
		C 220 CDI Elegance (DPF)	5	Euro4	125	2148	6,3	75 ★★★★★☆☆
BMW 1er	+7	120i	4	Euro4	110	1995	7,6	66 ★★★★★☆☆
		120i	4	Euro4	125	1995	6,8	73 ★★★★★☆☆

**Table 6:** Improvements in petrol cars

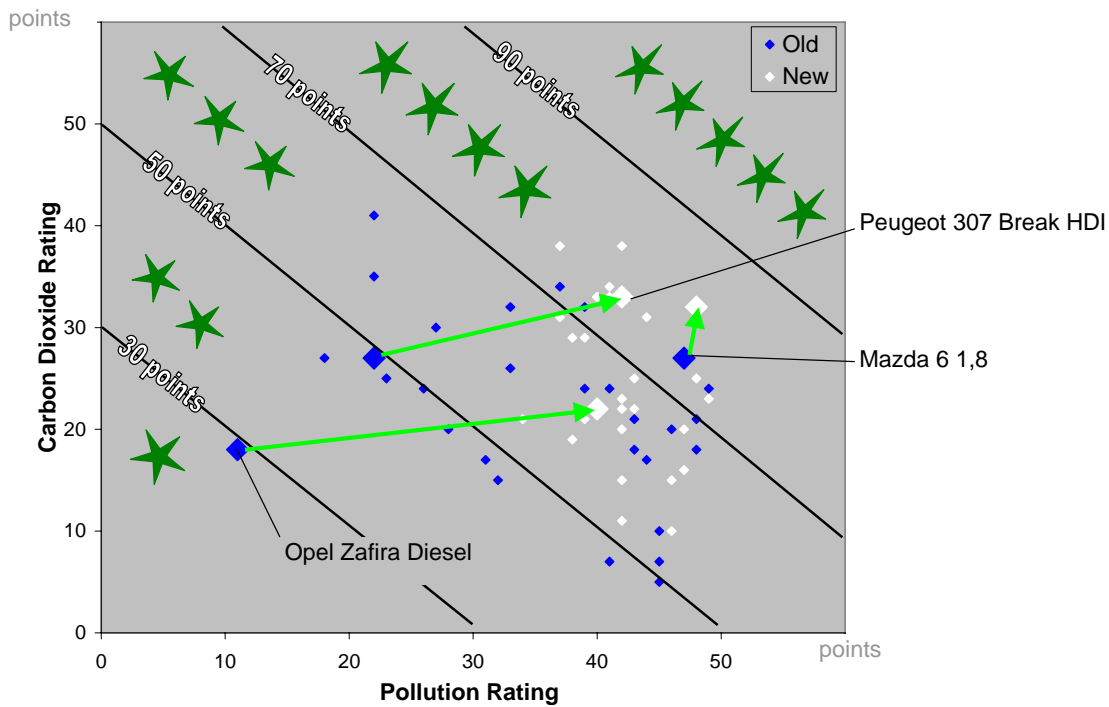
Citroen C2	+6	1.4 VTR SensoDrive	2	Euro3, D4	54	1360	7,1	50 ★★★★★☆☆
		1.4 16V Stop&Start SensoDrive	2	Euro4	65	1360	6,5	56 ★★★★★☆☆
Daihatsu Sirion	+6	01. Mrz	3	Euro4	64	1298	6,8	61 ★★★★★☆☆
		01. Mrz	3	Euro4	67	1298	6,3	67 ★★★★★☆☆
Mazda 6	+6	1.8 Comfort	5	Euro4	88	1798	7,8	74 ★★★★★☆☆
		1.8 Exclusive	5	Euro4	88	1798	7,0	80 ★★★★★☆☆
Chevrolet (Daewoo) Matiz	+5	1.0 SE	2	Euro3	47	995	7,0	48 ★★★★★☆☆
		Matiz 1.0 SX	2	Euro4	49	995	6,6	53 ★★★★★☆☆

There are far too many positive examples to name them all. A clear indication that we are moving in the right direction. And we do not need expensive eco models to make headway. **Figure 3** shows the cluster of new vehicles (white dots) shifting to the upper right nearing the five star rating.

## 5 Bottom line

Many vehicles improved, which is due to the use of particle filters and the introduction of Euro4. Further improvements are required with a view to NO<sub>x</sub> emissions of diesel vehicles. With a view to pollutant emissions, petrol cars achieve better results. Scoring maximum points (50 points) in the emissions category should become the standard however.

An ongoing reduction of CO<sub>2</sub> emissions will be required for all vehicle classes. Small vehicles should have their share as well. Even where absolute emissions are seemingly low – consumption is mostly too high for a vehicle of this size.



**Figure 3:** Positive examples

Even if manufacturers demonstrate that more power is feasible with fewer emissions – they should focus on reducing pollutant and CO<sub>2</sub> emissions. Development moneys are a better long-term investment for consumers if spent on fuel efficiency rather than more engine power.

Fuel economy and environmental protection must not be reserved to special expensive eco models but should be the target for large scale production. The aim must be to build a 5 star vehicle.

## 6 Appendix

### 6.1 Vehicle models without improvements

**Table 7:** Vehicle models without improvements

Series	Change	Model	Class	Emission Levels	KW	CCM	I per 100 km	Points Pollution	Points CO <sub>2</sub>	EcoTest Rating
Renault Clio	-6	1.2 16V Confort Authentique	3	Euro3, D4	55	1149	6,3	48	21	69
		1.2 16V Authentique	3	Euro4	55	1149	6,9	47	16	63
Renault Scénic	-5	1.6 16V Luxe Privilège	4	Euro4	83	1598	7,6	46	20	66
		1.6 16V Dynamique	4	Euro4	82	1598	8,2	46	15	61
Daihatsu Cuore	-4	1.0 Top	2	Euro4, 5L	43	989	5,8	43	18	61
		1.0 Top	2	Euro4, 5L	51	998	5,8	38	19	57
Honda Accord Tourer	-3	2.2 i-CTDi Sport	5	Euro4	103	2204	6,3	39	32	71
		2.2 i-CTDi Sport	5	Euro4	103	2204	6,6	39	29	68
Mercedes C-Klasse	-1	C 200 Kompressor Classic	5	Euro4	120	1796	8,1	49	24	73
		C 180 Kompressor Elegance	5	Euro4	115	1796	8,3	49	23	72
Mazda 5	0	2.0 CD DPF Top	4	Euro4	105	1998	6,5	43	21	64
		2.0 CD DPF Top	4	Euro4	105	1998	6,4	42	22	64

## 6.2 Vehicle models with improvements

Table 8: Vehicle models with improvements

Series	Change	Model	Class	Emission Levels	KW	CCM	l per 100 km	Points Pollution	Points CO <sub>2</sub>	EcoTest Rating
Opel Zafira	+33	2.2 DTI Edition	4	Euro3	92	2172	6,8	11	18	29
		1.7 CDTI Edition (DPF)	4	Euro4	92	1686	6,4	40	22	62
Peugeot 307	+26	Break HDi 90 Esplanade	4	Euro3	66	1997	5,8	22	27	49
		Break HDi FAP 90 Tendance	4	Euro4	66	1560	5,2	42	33	75
Citroen C3	+20	HDi 90 Exclusive	3	Euro3, 5L	66	1398	5,0	23	25	48
		HDi 110 FAP Exclusive	3	Euro4, 5L	80	1560	5,1	43	25	68
Honda FR-V	+18	2.2i-CTDi Comfort	4	Euro4	103	2204	7,2	32	15	47
		2.2 i-CTDi Executive (DPF)	4	Euro4	103	2204	6,4	43	22	65
Alfa Romeo GT	+17	1.9 JTD 16V Multijet	5	Euro3	110	1910	6,5	27	30	57
		1.9 JTDM 16V Q2 (DPF)	5	Euro4	110	1910	6,2	41	33	74
Skoda Superb	+17	1.9 TDI Elegance	6	Euro3	96	1896	6,0	22	41	63
		2.0 TDI L&K (DPF)	6	Euro4	103	1968	6,5	42	38	80
Toyota Yaris	+17	1.4 D-4D linea sol	3	Euro3, 5L	55	1364	5,2	26	24	50
		1.4 D-4D Executive	3	Euro4	66	1364	4,7	38	29	67
Peugeot 307/308	+16	HDi FAP 110 Platinum	4	Euro3	79	1997	5,9	33	26	59
		HDi FAP 110 Sport	4	Euro4	80	1560	5,1	41	34	75
VW Touran	+14	1.9 TDI Trendline	4	Euro4	74	1896	6,7	28	20	48
		1.9 TDI Trendline DSG (DPF)	4	Euro4	77	1896	6,7	42	20	62
Peugeot 807	+12	HDi FAP 130 Tendance	5	Euro3 III	94	2179	7,9	31	17	48
		HDi FAP 135 Platinum	5	Euro4 III	100	1997	7,6	39	21	60
Renault Mégane	+11	1.5 dCi Luxe Privilège	4	Euro3, 5L	60	1461	4,9	22	35	57
		dCi FAP Dynamique	4	Euro4	76	1461	5,3	37	31	68
Renault Clio	+10	1.5 dCi Confort	3	Euro3, 5L	74	1461	5,0	18	27	45
		1.5 dCi ESP Edition	3	Euro4, 5L	78	1461	5,5	34	21	55
BMW 5er	+10	530d touring Steptronic (DPF)	6	Euro4	160	2993	8,5	39	24	63
		530d touring Steptronic (DPF)	6	Euro4	173	2993	7,3	40	33	73
Mercedes C-Klasse T-Modell	+10	C 220 CDI Avantgarde (DPF)	5	Euro4	110	2148	7,0	41	24	65
		C 220 CDI Elegance (DPF)	5	Euro4	125	2148	6,3	44	31	75
Mazda 2	+10	1.4 Exclusive	3	Euro4	59	1388	7,6	45	10	55
		1.3 Impression	3	Euro4	63	1348	6,2	42	23	65
Audi A4	+8	2.0 TDI	5	Euro4	103	1968	6,2	33	32	65
		2.0 TDI Ambition (DPF)	5	Euro4	105	1968	6,1	40	33	73
BMW 1er	+7	120i	4	Euro4	110	1995	7,6	48	18	66
		120i	4	Euro4	125	1995	6,8	48	25	73
Citroen C2	+6	1.4 VTR SensoDrive	2	Euro3, D4	54	1360	7,1	45	5	50
		1.4 16V Stop&Start SensoDrive	2	Euro4	65	1360	6,5	46	10	56
Daihatsu Sirion	+6	01. Mrz	3	Euro4	64	1298	6,8	44	17	61
		01. Mrz	3	Euro4	67	1298	6,3	47	20	67
Mazda 6	+6	1.8 Comfort	5	Euro4	88	1798	7,8	47	27	74
		1.8 Exclusive	5	Euro4	88	1798	7,0	48	32	80
Chevrolet (Daewoo) Matiz	+5	1.0 SE	2	Euro3	47	995	7,0	41	7	48
		Matiz 1.0 SX	2	Euro4	49	995	6,6	42	11	53
Mazda 2	+5	1.6 Top	3	Euro4	74	1596	8,0	45	7	52
		1.5 Impression	3	Euro4	76	1498	7,1	42	15	57
BMW 3er	+4	320d (DPF)	5	Euro4	120	1995	6,0	37	34	71
		320d (DPF)	5	Euro4	130	1995	5,5	37	38	75