Transmitted by the expert from the Netherlands

Informal document **GRB-61-01**
(61st GRB, 27-29 January 2015,
agenda item 9)

# A noise label for motor vehicles: towards quieter traffic

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## Introduction

There is at present no noise label for motor vehicles. However, this may change. The EU Regulation on the sound level of motor vehicles[1] calls on the European Commission to assess labelling conditions for air and noise pollution levels, and, if appropriate, to submit a legislative proposal to the European Parliament and the Council (see Appendix I).

A noise label for motor vehicles has various advantages. It would enable consumers to take noise production into account in their purchasing decisions. It would also raise consumer awareness of the noise levels produced by, and experienced within, vehicles. Moreover, the label is likely to encourage manufacturers to develop quieter motor vehicles.
A vehicle produces external noise which is experienced as nuisance. There is also interior noise, experienced by the occupants of the vehicle as a determinant of acoustic comfort and quality. A noise label should integrate both types of noise.
Existing EU Regulations establish maximum noise limits (per category of vehicle) for motor vehicles[1] and road noise from tyres[2,3]. There is also an ISO standard which defines the noise levels within a vehicle[4]. All can provide a basis for a noise labelling system for vehicles.

This paper is a discussion document which explores preconditions for a noise label system for vehicles and offers an initial model for a noise label for vehicles. After establishing a number of basic principles, it will describe a labelling system for (private) cars which relies on the award of points for interior noise, powertrain noise (engine and exhaust system), and tyre noise. An example is given for a fictitious car. The components of a possible labelling system for other vehicle categories are then listed, followed by a consideration of the value and desirability of a noise label for these vehicle categories. The final section presents a number of discussion points.

This paper is intended to inform the European Commission of a possible model for noise labels for vehicles. The paper will also be sent to representatives of the EU and ECE member states and to the European Parliament.

**Basic principles**

For a consumer about to purchase a new car, the acoustic aspect of greatest relevance will be interior noise. Manufacturers are aware of this fact; they include interior noise (or the lack thereof) as a selling point in their promotional material. Exterior noise is seen as a subsidiary factor, although its significance may increase if manufacturers are required to include information about powertrain noise production in the vehicle's technical specifications, and dealers are obliged to display that information at a prominent position at the point of sale (further to Article 7 of the Regulation on the sound level of motor vehicles[1]). It seems likely that consumers will opt for a quiet(er) vehicle when this information is made more readily available. Exterior noise could also be a part of the purchasing decision, if only as a sort of 'feel-good factor': "Yes, I do drive a car but it is a *quiet* car".

In the case of the other vehicle categories, the situation is more obvious for they usually emit more noise. The primary considerations when purchasing a commercial vehicle such as a van or truck are generally price and running costs. Noise is also an important factor, however, especially if the vehicles are to be used in residential areas (e.g. refuse collection vehicles and delivery vans) or to stock shops in city centres. The driver's exposure to noise will also be a consideration, particularly in the case of heavier vehicles such as trucks and buses. Many transport operators already apply interior and exterior noise levels as selection criteria when inviting tenders.

Interior noise is not taken into account in the 'Whole vehicle type approval'. Manufacturers are therefore not obliged to provide this type of information, and neither is there any statutory limit for interior noise. Nevertheless, manufacturers offer comprehensive information about interior noise, since no one wants to buy a noisy car. Reviews in journals and magazines also devote attention to interior noise. However, this type of information is not as readily available at the point of sale as that relating to fuel consumption or $CO_2$ emissions (energy label). Consumers must ask for it, or must make their own assessment by taking a test drive, reading the reviews, and so forth. In short, there is room for greater transparency. A noise label will give noise more prominence as a criterion and will allow the consumer to make a well founded choice for a (more) quiet car.

Assuming that interior noise is indeed an important criterion for the consumer, it will be an essential component of the label. For society, however, external noise is the main consideration. To meet the requirements for both interior noise and exterior noise, it seems appropriate to give the two types of noise equal weight, whereby the label will integrate both.

The external noise produced by a vehicle is a significant source of noise nuisance. The exterior noise level is the product of powertrain noise (from the engine and exhaust system) and tyre noise (caused by the contact between tyre and road surface). In the case of cars, powertrain noise is dominant at speeds below 25-30 km/h, while tyre-road noise becomes dominant at higher speeds. In the other vehicle categories, such as vans, trucks, and buses, the 'transition point' occurs at a somewhat higher speed. Both types of noise are already subject to European legislation which can form a useful point of departure for a labelling system.

The Regulation on the sound level of vehicles[1] and the Regulation on general safety of motor verhicles[2] are concerned with exterior noise. However, powertrain noise and tyre noise also affect the interior noise level. A simple noise label can rely on the limits and measurement values established by the two EU Regulations. To keep things as simple as possible, the label could be based on a points system which attaches equal importance to interior noise, powertrain noise, and tyre noise. This answers the requirement of giving equal weight to both interior noise and exterior noise in the assessment and resultant information. After all, powertrain noise and tyre noise can be heard inside the vehicle, too.

Last but not least, it is essential to ensure that a noise label is readily understood by the general public. In marketing terms, it must be KISS-compliant ('Keep It Stupid Simple'). At the same time, it must offer enough information to support a considered choice, which will entail more than merely a colour or letter coding. The entire development process of noise labels must be kept as simple as possible, which can be achieved by drawing on the existing EU Regulations and the standardized test for interior noise of ISO 5128[4]. The development of new systems would demand much time, effort, and expense. This direct, simple approach will avoid unnecessary bureaucracy, administrative burden, and associated costs. The member states could opt for self-regulation by the market itself, with 'light' enforcement measures.

## A possible noise label for vehicles

The principles outlined above underpin this initial model for a noise label, offered as a 'limbering-up exercise' and to encourage further thought. It describes a simple points-based rating system for private cars. A comparable label could be developed for vans, buses, and trucks, which are considered separately in the section 'Other vehicle categories'.

***Points rating for private cars***

Interior noise, powertrain noise, and tyre noise are to receive equally weight in accordance with the stated principles. In the model for a noise label in this paper, each of the three types of noise is therefore assigned a score on a five-point scale, whereby the car can achieve an overall rating of up to fifteen points. As noted, powertrain noise and tyre noise are significant contributors to interior noise, which is why all three types of noise are scored in parallel, using the same scale. This results in exterior noise and interior noise being given (approximately) equal weight, maintaining simplicity. It would be possible to group private cars into various subcategories[1], as is already the practice with the Energy Label for cars. The model for a noise label here is based on the concept of a single noise label for all private cars, regardless of size, from high performance sports cars to family cars and runabouts.

Interior noise increases with speed and the number of revolutions of the engine at which the vehicle is driven. At present, all manufacturers measure interior noise at a 'steady speed' in accordance with ISO standard 5128[4]. A listing of the recorded noise levels for various vehicles is provided by the Auto Decibel Database[5]. The sensitivity to speed as well as the kind of vehicle, from runabout to sports car, are entirely as expected (with a four-sigma distribution range from quietest to noisiest).

A noise label for cars could be based on a measurement at a steady speed of 100 km/h. This is a constant cruising speed in top gear, at which it should be possible to listen to music or engage in conversation. A baseline can then be set for the points scale, e.g. 71 dB. At present, there is no statutory limit for interior noise. The cumulative frequency distribution shown in Figure 1 indicates that almost all passenger vehicles have an interior level of 71 dB or less, hence the suggestion of adopting this as the starting point of the scale. Table 1 shows a possible scoring system for passenger vehicles according to all three types of noise.

*Table 1. Points scores for the noise rating of passenger vehicles (category M1[1])*

| Type of noise | 0 pts | 1 pt | 2 pts | 3 pts | 4 pts | 5 pts |
|---|---|---|---|---|---|---|
| Interior[a] | ≥72 dB | 70-71 dB | 68-69 dB | 67-66 dB | 65-64 dB | <64 dB |
| Powertrain | 72 dB | 70-71 dB | 68-69 dB | 66-67 dB | 64-65 dB | <64 dB |
| Tyre | 73-74 dB | 71-72 dB | 69-70 dB | 67-68 dB | 65-66 dB | <65 dB |

[a] If the manufacturer fails to supply the necessary information, the lowest score (0 points) is awarded.

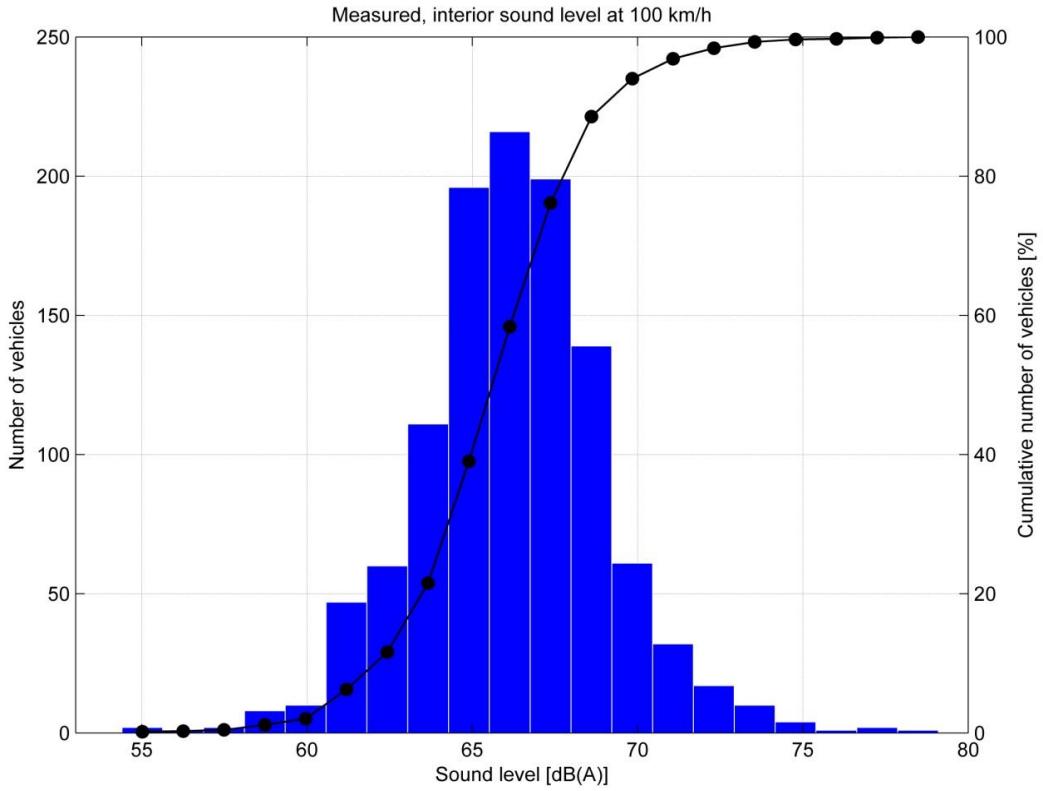


*Figure 1. Distribution of measured interior noise levels for passenger vehicles[5] (category M1) at steady speed of 100 km/u*

For powertrain noise, the noise label can use the limits established by the Regulation on the sound level of motor vehicles[1]. For the noise label for cars (category M1), 'Phase 3' limits of the Regulation have been used, which will apply to all new vehicle types produced after 1 January 2024 and to all vehicles sold from 1 January 2026. The M1 category in the EU Regulation is divided into four sub-categories which have upper limits in a range of between 68 dB and 72 dB. The baseline for scoring powertrain noise is then 72 dB. Figure 2 shows the distribution of noise levels of passenger vehicles in the EU[6], as measured during the monitoring period 2007-2010 using the method which will become

mandatory from 2016 onwards. The vehicles with best performance had a noise level of 64 dB. For vehicles in the category M1, the points system for powertrain noise could therefore begin at 72 dB and run to 64 dB. Table 1 shows the possible rating system for passenger vehicles according to the type of noise.
In this model for a car noise label, all passenger vehicles are to have a standard label which relies on the same measurement methodology and scoring system, regardless of size or class. It is to be expected that a 'performance' sports car will achieve a lower score than a standard family car, and that this will be reflected by the label.

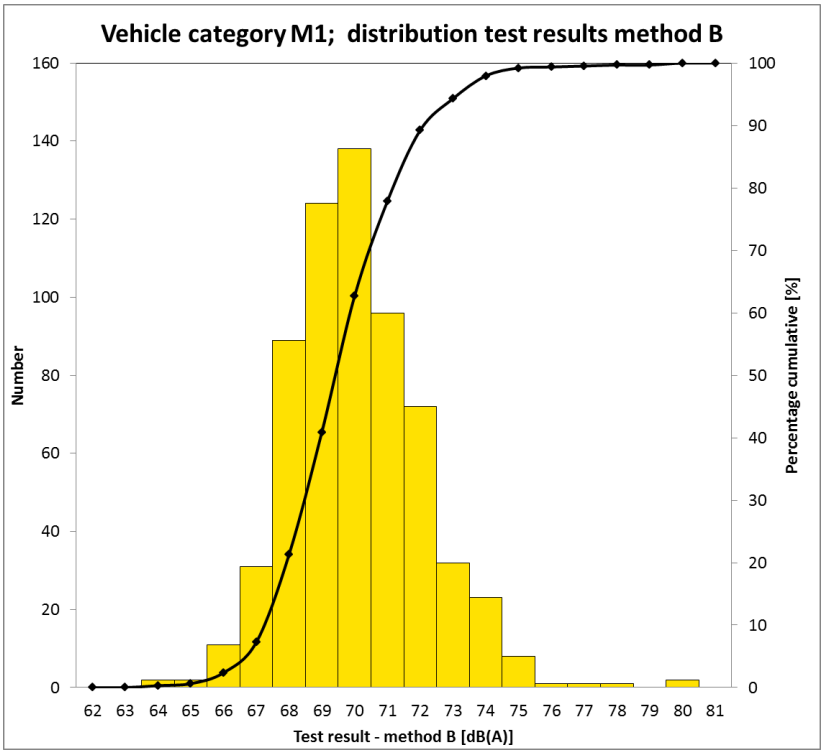


*Figure 2. Distribution of test results for vehicles in category M1, as measured using the new method ('B') established by the Regulation on the sound level of motor vehicles[1] (source: EU database[6])*

A score for tyre noise emissions can be awarded on the basis of the limits established by the Regulation on general safety of motor vehicles[2]. All new tyres must meet the requirements stated in Annex II of the Regulation. Passenger vehicles may be fitted with tyres in category 'C1', in which there are five sub-categories, designated A-E, to which an upper limit of between 70 dB and 74 dB applies. As shown in Figure 3, the majority of C1 tyres currently sold in the Netherlands fall into the 66-72 dB range[7], with very few in the 73 dB or 74 dB range. This, in combination with the fact that new tyres have become quieter in recent years, suggests that the scoring system could have a baseline of 72 dB. Table 1 shows a model for a scoring system for M1 category vehicles according to all three types of noise.

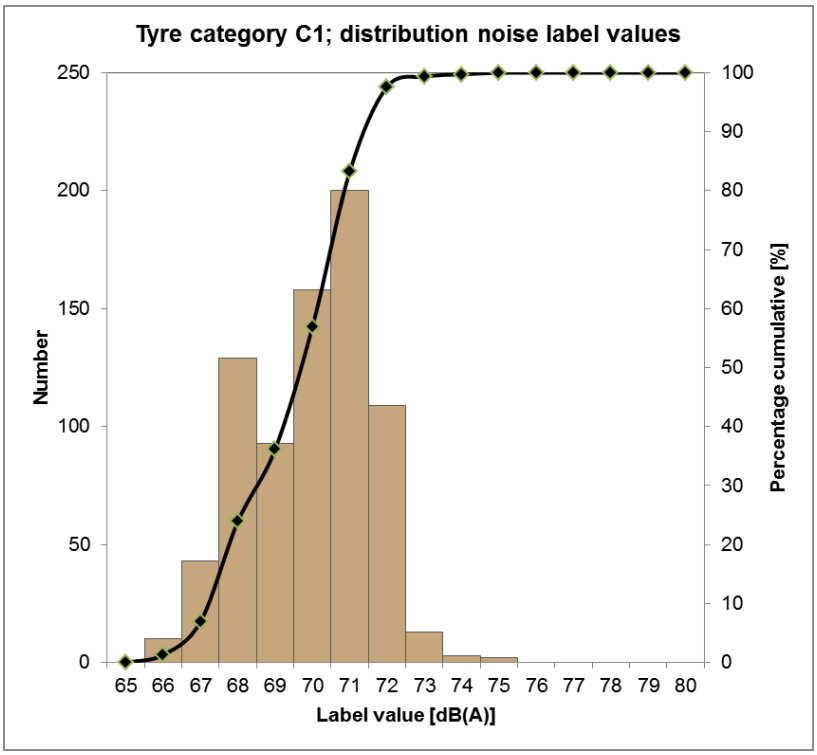


*Figure 3. Distribution of noise label values for category C1 tyres sold in the Netherlands in 2013*[7]

***Noise label for passenger vehicles – example***

The preceding paragraphs explain how the points within a noise label system for passenger vehicles could be awarded for each type of noise: interior, powertrain, and tyre. Figure 4 shows how the three separate scores can be integrated to produce a single noise rating and hence a noise label. Figure 5 offers an example of a noise label for a fictitious car.

To meet the requirements of Article 7 of the Regulation on the sound level of motor vehicles[1], the information in both Figure 4 and Figure 5 must be 'prominently' displayed at the point of sale and included in promotional materials (such as technical specifications). The more detailed information offered by Figure 5 aids a carefully considered decision based on all three kinds of noise.

| Noise label | Points total | Description of quality |
|---|---|---|
| A | 14-15 | Excellent |
| B | 12-13 | Good |
| C | 10-11 | Fair |
| D | 8-9 | Satisfactory |
| E | 6-7 | Moderate |
| F | 4-5 | Noisy |
| G | 0-3 | Extremely noisy |

*Figure 4. Model for a possible noise label for passenger vehicles*

| **Gurka Secco** | | Category M1 (<120 kW / 1,000 kg) | Type: C1B (185-215 mm) Summer tyres |
|---|---|---|---|
| | **Interior noise (69 dB)** | **Powertrain noise (68 dB)** | **Tyre noise (66 dB)** |
| Label D: 8 pts (Satisfactory) | 2 pts (Poor)[a] | 2 pts (Poor)[a] | 4 pts (Good)[a] |
| Remarks: In terms of noise emissions, this model is average for its type and class. | At 100 km/h, the measured noise level is 69 dB, which is 2 dB below the 'baseline' for passenger vehicles[b]. Music would have to be played at a slightly higher volume; conversation will require occupants to raise their voices. | This vehicle produces powertrain noise at the upper limit applying to (most) passenger vehicles from 2024. | These are reasonably quiet tyres, accounting for a noise level 4 dB lower than the baseline applying to passenger vehicles (70 dB)[b]. |
| [a] Possible score in each sub-category: 5 = Excellent; 4 = Good; 3 = Satisfactory; 2 = Poor; 1 = Noisy<br>[b] A difference of -3 dB represents a 50% reduction in the emission of acoustic energy. | | | |

*Figure 5. Model for a possible noise label for a fictitious car*

***Other vehicle categories***

The Regulation on the sound level of vehicles[1] lists six vehicle categories: passenger cars (M1), minibuses (M2), buses (M3), vans (N1), light-duty trucks (N2), and heavy-duty vehicles (N3). Analogous to the noise label for category M1 vehicles, it will be possible to produce a noise label for each of the other five categories based on the same points system. In this paragraph, the availability of the necessary information is explored relating to each type of noise (interior, powertrain, tyre). In addition, the added value of a noise label for other vehicle categories is considered.

There is a robust database of information on the interior noise levels of a large number of passenger vehicles. However, no comparable database for the other vehicle categories can be found on the internet. In order to arrive at points ratings for these vehicles, it will first be necessary to collect and collate the necessary information. Data on interior noise levels does exist for all vehicles and is in the public domain: manufacturers include it in their promotional materials.

When designing the noise label for passenger cars, a 'steady speed' of 100 km/h has been chosen. For the other vehicle categories, a speed of 80 km/h seems more appropriate. The interior noise level of these categories at 80 km/h is comparable with that of a passenger vehicle at 120 km/h and is approximately 65 to 75 dB(A).

The interior noise experienced in a light commercial vehicle such as a delivery van is very much dependent on whether the cab and cargo area are interconnected. If they are not, the noise level is similar to that of a light-duty truck. Where the cargo area forms an

integral part with the cabin, the interior noise level is much higher, probably resulting in a score of zero points for interior noise.

It is possible to award scores for the powertrain noise of other vehicle categories (N2-M3) based on the emissions limits established by Phase 3 of the Regulation on the sound level of motor vehicles[1], for which distribution tables of test values can be derived from the EU database[6]. These distribution tables (which date from the 2007-2010 monitoring period) are shown in Appendix II. It should be noted that the distributions are distorted by the small sample size of some vehicle categories, notably minibuses (M2) and light-duty trucks (N2). The results for the other categories would also gain in value from a larger sample. The points ratings for powertrain noise are shown by vehicle category in Table 2.

*Table 2. Emission limits for motor vehicles (phase 3) of the Regulation on the sound level of motor vehicles[1], and possible points scores for powertrain noise in vehicle categories M2-N3*

| Vehicle category | Regulation limits | 0 pts | 1 pt | 2 pts | 3 pts | 4 pts | 5 pts |
|---|---|---|---|---|---|---|---|
| M2 | 69-72 dB | 72 dB | 71 dB | 70 dB | 69 dB | 68 dB | <68 dB |
| M3 | 73-77 dB | 77 dB | 76 dB | 75 dB | 74 dB | 73 dB | <73 dB |
| N1 | 69-71 dB | 71 dB | 70 dB | 69 dB | 68 dB | 67 dB | <66 dB |
| N2 | 74-75 dB | 75 dB | 74 dB | 73 dB | 72 dB | 71 dB | <71 dB |
| N3 | 76-79 dB | 79 dB | 78 dB | 77 dB | 76 dB | 75 dB | <75 dB |

With regard to tyre noise, there is ample and available information which can be used to design a scoring system. Appendix III shows the distribution for C2 and C3 category tyres sold in the Netherlands in 2013[7]. The data may be considered robust enough to be used for the purposes of producing a noise label for the other five vehicle categories M2-N3. As in the case of passenger vehicles, the emission limits established by the Regulation on general safety of motor vehicles[2] provide a useful starting point. Table 3 shows a possible points rating system for tyre noise based on these limits.

*Table 3. Emission limits for tyre noise of the Regulation on general safety of motor vehicles[2] and possible points scores to support a noise label for vehicles in categories M2-N3*

| Type of tyre | Regulation limits | 0 pts | 1 pt | 2 pts | 3 pts | 4 pts | 5 pts |
|---|---|---|---|---|---|---|---|
| C2 | 72 and 73 dB | 72-73 dB | 71 dB | 70 dB | 69 dB | 68 dB | <68 dB |
| C3 | 73 and 75 dB | 73-75 dB | 72 dB | 71 dB | 70 dB | 69 dB | <69 dB |

It may be concluded that there is indeed enough data to support the creation of a noise label for the other vehicle categories alongside that for passenger cars. The question then becomes relevant whether there is a need for it, and whether noise labels for the other vehicle categories have an added value.
In fact, a noise label already exists for certain specific types of vehicle, such as concrete mixers, concrete pumps, refuse collection vehicles, street cleansing vehicles, suction vehicles, mobile cranes, and low-loaders, for the (external) noise they produce during the work cycle. The limits and rating system which apply are established by European Directive 2000/14/EC. There are also labels for the interior noise of machinery such as excavators. In the Netherlands, trucks, lorries and transport vehicles are covered by the

(voluntary) 'QUIETtruck' certification system, also known as the Piek-Keur certificate[8], the use of which is promoted by means of financial incentives with the objective of reducing environmental noise during the loading and unloading of vehicles during evening and night-time hours. It may therefore be concluded that there is a (public) requirement for information concerning the noise emissions of vehicles.

In the case of buses (category M3) and minibuses (M2), interior noise is clearly an important consideration. At the same time, buses are a significant source of environmental noise, particularly in the built-up area. In the Netherlands, and indeed in many other countries, noise is an important criterion in the tendering and selection process for public transport concessions. A noise label for these two categories will enhance transparency with regard to how noise levels are measured and reported, thus simplifying the selection process.

Information about noise emissions is of equal importance in the case of commercial vehicles in categories N1, N2, and N3 (vans, light-duty trucks, and heavy-duty trucks). As stated above, some countries have already implemented requirements governing noise production during the loading and unloading of vehicles. Generally speaking, vehicles from the 'other categories' produce more noise than private cars. Some cities and regions have designated 'environmental zones' in which (stringent) restrictions apply. Vehicles which exceed a certain noise emission level may be excluded from these zones altogether. A noise label will help to identify such vehicles and avoid disputes. Only those vehicles with a certain label rating will be allowed to enter the zone.

A final consideration is that most vehicles in the 'other categories' are driven by professionals who spend their entire working day at the wheel. A low (or lower) level of interior noise will enhance health, safety, and job satisfaction.
Taking all aspects into consideration, the question of whether noise labels for the other vehicle categories will have any added value must be answered with a firm 'yes'. The societal necessity for it might even be greater than for passenger cars.

**Points for discussion**

'Clean, Quiet, and Economical' – a noise label fits perfectly within society's desire to have cleaner, quieter and more economical vehicles on the roads. Alongside the 'energy label' which indicates a car's fuel consumption and $CO_2$ emissions, the noise label will inform the consumer about the benefits of purchasing a quieter vehicle, enticing him or her to do so. No less important is the effect that the label will have on manufacturers. If the noise emissions of a vehicle and its comfort in terms of acoustic quality are given a prominent place in promotional materials and at the point of sale, this can only encourage producers to develop quieter vehicles. After all, no manufacturer wishes to acquire a reputation for producing noisy cars.

This paper offers an initial model for a noise label for all vehicles, with specific reference to the private car as purchased by the average consumer. A detailed example of a noise label is given for a fictitious private car. A very similar system could be applied to the other vehicle categories: buses, minibuses, vans, light trucks, and heavy-duty trucks. The Regulation on the sound level of motor vehicles[1] establishes six main vehicle categories, three for 'the carriage of passengers' (M1-M3) and three for 'the carriage of

goods' (N1-N3). The model for noise labelling in this paper is based on there being a total of six labels, one for each main category. Of course, it would be possible to create separate labels for each sub-category and for each type of tyre. However, the resultant plethora of individual labels will do little to promote transparency or simplicity. Also, a high-performance sports car may then have a 'quieter' label than a family car, because each is only compared against other vehicles in its own sub-category. This is a significant shortcoming of the existing energy label for cars.

The scoring system of the model for a noise label in this paper has been designed in such a way that very few current vehicles would qualify for the highest (i.e. quietest) rating. This is deliberate: it ensures that there is room for improvement. Should noise emissions show a significant decrease in future, it will be a simple matter to adjust the scoring system accordingly. It is better to make the label itself dynamic than to add various 'super' ratings such as AA, AAA, A+, A++ etc., as has been done in the case of the energy label for domestic appliances.

The perception of interior noise is very much dependent on the nature and acoustic quality of that noise, its spectrum, frequency, pitch etc. Nevertheless, the labelling system presented in this paper is based on the noise level (in the sense of volume or intensity) because this is easier to measure and an ISO standard already exists. It also satisfies the KISS principle: 'Keep It Stupid Simple'.

A noise label for vehicles will support consumers' purchasing decisions, allowing them to opt for a quiet (or quieter) vehicle. It will also create opportunities for governments to implement (fiscal) incentives to promote sustainability in the field of transport, perhaps linking the label rating to the rate of road tax payable or the notional value of a company car for the purposes of income tax. At the local level, it will be possible to restrict or grant certain facilities to vehicles with a minimum label rating: access to an environmental zone, reserved parking places, dedicated lanes, or exemptions to the standard loading and unloading periods, for example.

A notable development in recent years has been the desire for quieter zones in the urban area. To ensure that such zones can be enforced, all vehicles – not only new ones – should have a noise label. The model described in this paper can be readily applied to vehicles which are already on the roads, perhaps as part of the annual inspection. Moreover, the standard inspection should be expanded to include the re-assessment of noise emissions. It is possible that new tyres or a new exhaust have been fitted since the noise label was issued, whereupon the rating may no longer be accurate.

The application of the labelling system to existing vehicles, together with the necessary regulation and enforcement measures, will be a useful supplement to the statutory limits which apply to new vehicles and new tyres. Those limits have been established in the interests of safety and environmental responsibility. A vehicle is subject to normal 'wear and tear' during use. An annual inspection, perhaps leading to the adjustment of the label rating but certainly accompanied by the enforcement of the minimum standards, will do much to reduce environmental noise.

The noise label presented in this paper integrates both interior noise and the exterior, environmental noise produced by the tyres and the powertrain (engine and exhaust system). It is, however, based on the assumption that consumers will attach importance

to interior noise. A label that is concerned solely with environmental aspects will take no account of interior noise whatsoever. The Global New Car Assessment Programme (GNCAP) and the Global Fuel Economy Initiative (GFEI) recently announced the intention of developing a system to assess and quantify the environmental performance of cars: GreenNCAP[9]. It seems appropriate for the GreenNCAP assessment to include both components of exterior noise: powertrain noise and tyre noise. The approach presented in this paper may prove a useful model.

Last but not least, consideration must be given to whether vehicle noise labels should be introduced first or whether it would make more sense to move towards an integrated environmental label straightaway. After all, a noise label for vehicles will be an adjunct to the existing energy label and the label for tyres. Integration does not necessarily mean an improvement. An integrated label may be so general that it provides little or no useful information at all. Or it might be difficult and cumbersome to find out the information behind such a general integrated label. The development of an effective noise label for vehicles could be overshadowed and subsumed by the introduction of an integrated label. For this reason, it seems advisable to gain some experience with a vehicle noise label as such, and only later pursue integration if necessary and appropriate. That said, it may be preferable to present the environmental information of the three labels (energy, noise, and tyres) as a combined 'Environmental Information Package'.

## References


1. Regulation (EU) No 540/2014 of the European Parliament and of the Council of 16 April 2014 on the sound level of motor vehicles and of replacement silencing systems, and amending Directive 2007/46/EC and repealing Directive 70/157/EEC

2. Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor

3. Regulation (EC) No 1222/2009 of the European Parliament and of the Council of 25 November 2009 on the labelling of tyres with respect to fuel efficiency and other essential parameters

4. ISO 5128 Acoustic Measurement of Noise Inside Motor Vehicles (http://www.iso.org/)

5. Auto Decibel Database (http://www.auto-decibel-db.com/)

6. De Roo, F., Dittrich, M., *et al*.; VENOLIVA – Vehicle Noise Limit Values – Comparison of two noise emission test methods – Final report; TNO report MON-RPT-2010-02103, 30 March 2011

7. De Graaff, E.; Evolution of tyre noise emission over time and potential to update the tyre noise limits; paper in preparation for UNECE/GRB, Sept. 2014 (http://www.unece.org/trans/main/wp29/wp29wgs/wp29grb/grbinf60.html)

8. http://www.piek-international.com/ (information in Dutch about the Piek-Keur certificate)

9. http://www.globalfueleconomy.org/Documents/GreenNCAP_expression_of_interest_v6.pdf


## Acknowledgements


Drafts of this paper were reviewed by several experts whose comments have prompted various improvements. This does not necessarily imply that these experts endorse the content, which remains the sole responsibility of the author. I acknowledge and thank the following for their input:

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**Appendix I.**

**REGULATION (EU) No 540/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 on the sound level of motor vehicles, and of replacement silencing systems, and amending Directive 2007/46/EC and repealing Directive 70/157/EEC**

*Article 7*

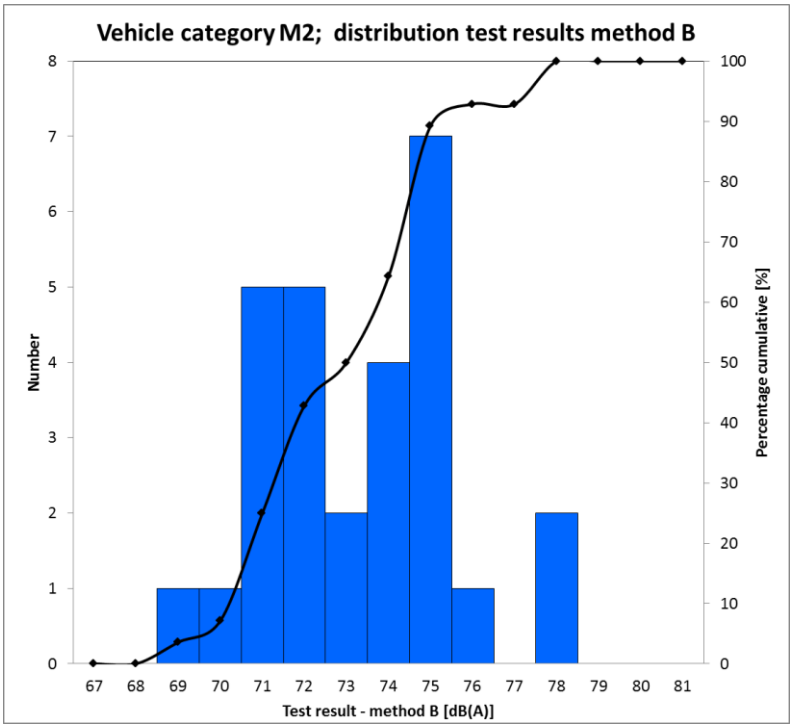
*Consumer information and labelling*

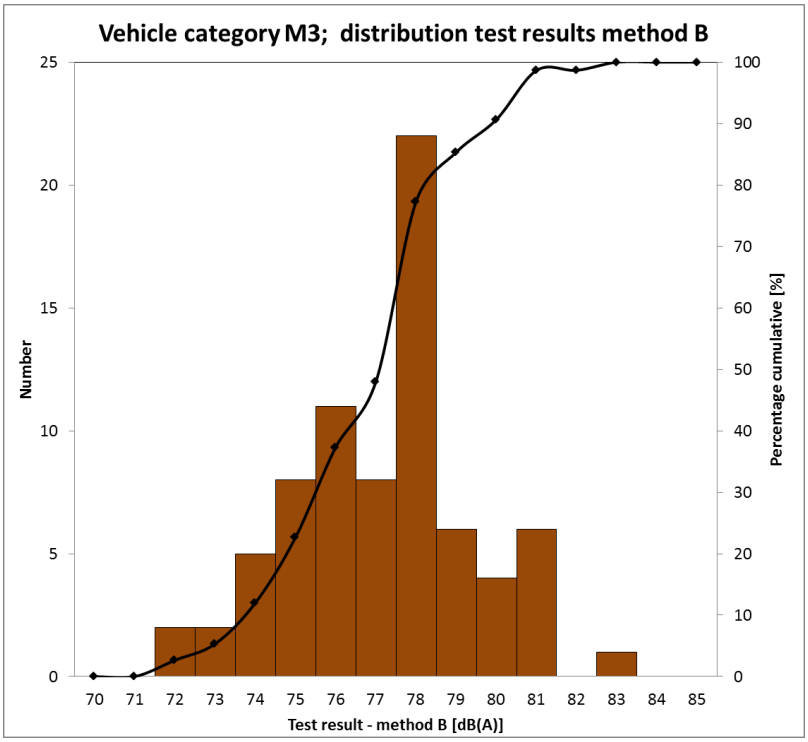
*Vehicle manufacturers and distributors shall endeavour to ensure that the sound level of each vehicle in decibels (dB(a)), measured in accordance with this Regulation, is displayed in a prominent position at the point of sale and in technical promotional material.*

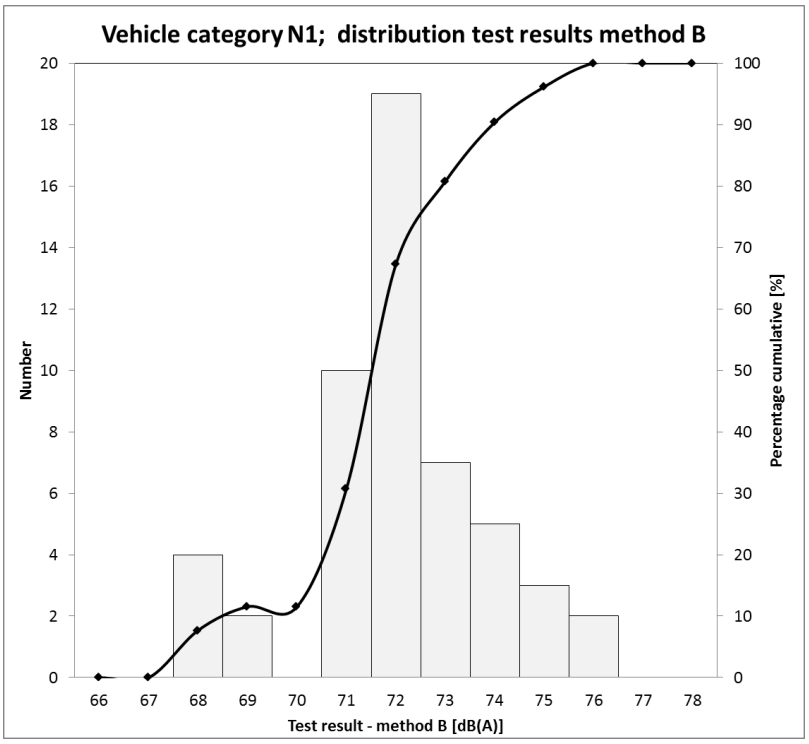
*In the light of the experience gained in the application of this Regulation, the Commission shall, by 2019, carry out a comprehensive impact assessment on labelling conditions applicable to air and noise pollution levels and on consumer information. The Commission shall report on the findings of that assessment to the European Parliament and the Council and, if appropriate, submit a legislative proposal.*

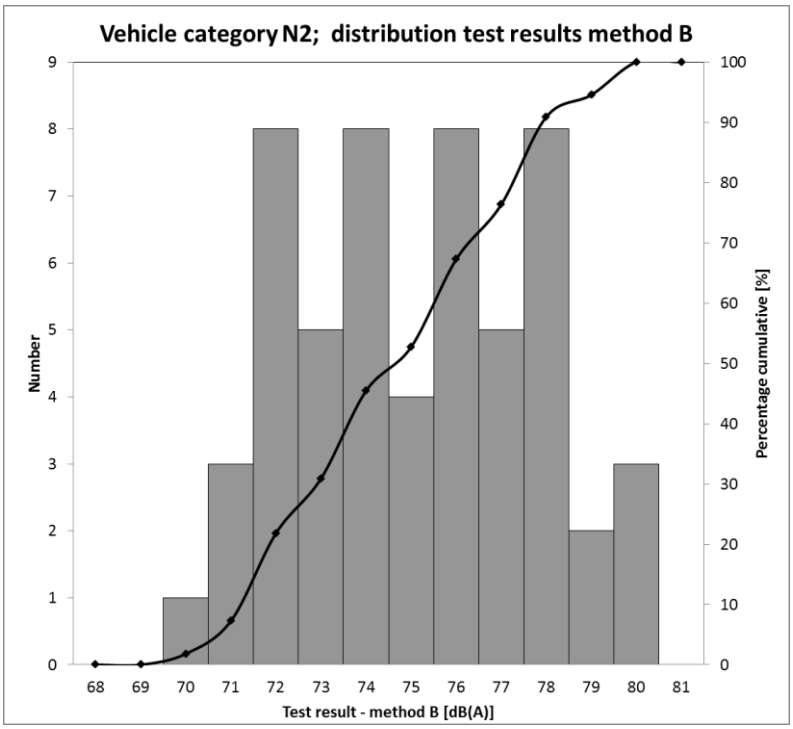
**Appendix II.**

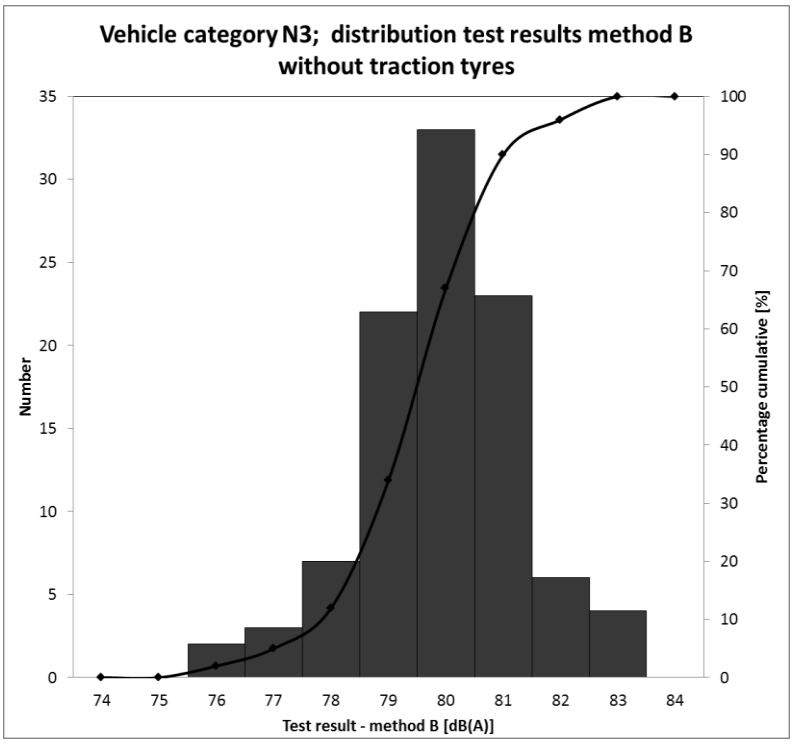
Distribution of test results for vehicles in categories M2-N3, as measured using the new 'B' method of the Regulation on the sound level of motor vehicles[1] during the monitoring period 2007-2010 (source: EU database[6])




Vehicle category N1; distribution test results method B
Number
Percentage cumulative [%]
Test result - method B [dB(A)]
0
2
4
6
8
10
12
14
16
18
20
0
10
20
30
40
50
60
70
80
90
100
66
67
68
69
70
71
72
73
74
75
76
77
78


Vehicle category N2; distribution test results method B
Number
Percentage cumulative [%]
Test result - method B [dB(A)]
0
1
2
3
4
5
6
7
8
9
0
10
20
30
40
50
60
70
80
90
100
68
69
70
71
72
73
74
75
76
77
78
79
80
81


Vehicle category N3; distribution test results method B without traction tyres
Number
Percentage cumulative [%]
Test result - method B [dB(A)]
0
5
10
15
20
25
30
35
0
10
20
30
40
50
60
70
80
90
100
74
75
76
77
78
79
80
81
82
83
84

**Appendix III.**

Distribution of noise label values for category C2 and C3 tyres sold in the Netherlands in 2013[7]