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Working paper No. **EFV-08-06**
(GRPE Informal Group on EFV,
8th Meeting, 14th January 2011)

Parameter: Noise

Reference Document:
EFV 07-05: Noise

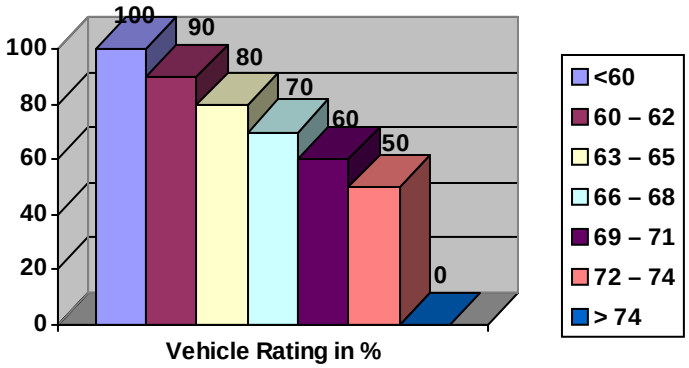
Noise regulations put stringent requirements on road vehicle noise emission. Environmental noise, caused by traffic, is considered to be a significant local environmental problem around the world. It is estimated that millions of people suffer from noise levels that scientists and health experts consider unacceptable. The vehicle fleet noise has not changed very much over the last three decades; however, if the trend in hybrid vehicle use continues, substantial noise reduction will occur.

Today there is general consensus that Hybrid and Electric Vehicles are environmentally friendly vehicles. For Hybrid Vehicle, when engine driven to have lower noise it is required to address NVH requirement at the design of vehicle, its subsystems, and components – the power train, intake and exhaust, interior and tyres. In electric motor mode it is required to have minimum noise level to ensure the pedestrian's safety.

From the reviews of 7th Informal Group Meeting of Environmentally Friendly Vehicle, held in Geneva in conjunction with 60th GRPE session, the 60 dB value specified for the quietest vehicle was the matter of debate. It is agreeable with the experts that the 64 ~ 65 dBA value can be the best value for the noise rating. But the thing is about achieving more and more stringent and future norms, by reducing the noise levels. On the other hand the 64 ~ 65 dBA value has not been outlined, but has given the weightage of 80 %. So it will be the goal set for the manufacturers to achieve lower and lower noise values.

This scope of EFV is limited to passenger cars M1. Presently noise level as per the ECE R 51 is 74dB (A), which is same in India also.

Noise level in dB	Vehicle Rating in %
<60	100
60 – 62	90
63 – 65	80
66 – 68	70
69 – 71	60
72 – 74	50
> 74	00



Another point of discussion was over the 'special road surface' i.e. the quiet road surface achieved by a special top layer of 40 ~ 50 cm. This road reduces the noise by almost 8 ~ 10 dB. If these types of roads would come in the applicability, these noise reductions from 74 to 64 dB can be easily achieved. So by some improvement in the vehicular dynamics, technology, the 60 dB level is not difficult to achieve.

Further to this, Japan has submitted a document in the 52nd session of GRB, "*Guideline on measures against the quietness of hybrid vehicles, etc.*"

The document emphasizes on the promotion of wider use of hybrid, electric and other similar vehicles. However, concern has been raised by users, groups of visually disabled citizens, and some automotive experts about the risk associated with the structural quietness of Hybrid Vehicles. To overcome this issue, the vehicles should be fitted with "Approaching Vehicle Audible System". It is a sound-generating device designed to inform the pedestrians, etc. about vehicle approach and to be installed in a vehicle. The sound to be generated by the Approaching Vehicle Audible Systems should be easily indicative of vehicle behavior, for example, through the automatic variation of sound volume or tune in synchronization with vehicle speed.

So, from this, it can be concluded that the vehicle will be generating the noise about 60 dB, which is the lowest limit of the criteria suggested for Noise. Anyhow, the noise from the passenger car tends to fall between 60dB to 74 dB. This justifies the design criteria.