

Understanding Sound and Emission Labels



**BY: Larry Will
Leaf Blower Information Specialist
Retired Vice President Engineering
ECHO INC.**

The Quiet Leaf Blower

ECHO Inc. has been the leader in the effort to provide environmentally friendly leaf blowers. Today, Echo's "Quiet Blower" is the benchmark to which all other manufacturers compare their new low noise leaf blowers. It was the very first leaf blower to be 65 dB(A) per the [ANSI Standard B175.2](#), which has been on the market since 1995. The design contains sound absorbing materials that have eliminated the whine typical of older blowers. A new concept muffler was introduced to lessen exhaust sounds and a patented sound attenuator was added to the air intake system. Even special plastics were employed to deaden any rattle that might be caused by engine vibration. Being air cooled, the cooling fins on the cylinder were changed to reduce the propagation of combustion related engine noises. The air impeller (fan), cowling and discharge tube were redesigned to reduce airflow sound while maintaining top efficiency and performance.

Click the following links to learn about Measuring Sound.
https://www.leafblownoise.com/Measuring_Sound.pdf
<https://www.leafblownoise.com/Annex%20A.pdf>

Sound Label



https://www.leafblownoise.com/typical_sound_label.htm

Quiet leaf blowers are marked with their sound level, eliminating the need for enforcement officers to do any sound testing in the field. This testing is done instead by an independent testing agency such as Underwriters Laboratory (UL), in order to ensure accuracy and consistency in results.

The required terminology on the sound label has changed in recent years. Category I, means that the unit is 65 dB(A) or lower. In other words, it is a quiet leaf blower. Category II meant mid-level sound magnitude, or greater than 65 dB(A) but less than 71. Category III was 71 and greater. This terminology has lost its value when manufacturers agreed with ANSI that it was redundant and confusing information. It didn't matter what the sound category was, only the actual sound value was important. The term "Category" no longer is required on the label; however, some labels still show this term. Typical labels are as shown on the link above.

Exhaust Emission Requirements

Leaf blower ban advocates like to say that 30% of the fuel passes straight through the engine unburned. If this were still true, the industry would have a big problem, but this is no longer the case. Hydrocarbon exhaust emission from these small engines has been reduced by 85 to 90%, depending on engine size and overall design. The California Air Resources Board (CARB) and the federal Environmental Protection Agency (EPA) mandated this requirement as of January 1, 2005, that's 14 years ago. Furthermore, the amount of lubricating oil added to the fuel has been reduced from a 16 to 1 (gasoline to oil ratio), to 50 to 1. Add to that the fact that the lubricating oil has been upgraded to a synthetic blend, exhaust pollution is now well within the limits of what is considered acceptable for the environment by both CARB and EPA.

Note that it is illegal for any community to regulate exhaust emission, per [Section 209 of the Federal Clean Air Act, 1990](#), including through the means of banning equipment for that reason. The control of hydrocarbon exhaust emission from Small Non-Road Spark Ignited Engines, which includes the leaf blower, is a subset of this Act and is bound by its limitations.

The responsibility for meeting the emission Standard has been placed on the manufacturer, requiring that all engines must meet these limitations prior to shipping the unit and must be verified through individual production line testing.

The requirements are quite complicated and difficult for the average person to understand. Determining compliance in the field by government inspectors can be ascertained via the Emission Label. The information and terminology provided on the label must meet the guidelines of the governing Standard and are meant only to have meaning to the regulators. However, with some limited information, it can easily be determined by the lay person as to what date the product was manufactured.

The reason the label is complicated is that exhaust emission limitations are different depending on engine type and size. Before explaining the label, there are a few things you should know about the emission Standard before understanding why the production date is key to knowing if a blower meets a certain exhaust emission limit. To start with, there are three phases to the implementation of hydrocarbon emission limits. We are concerned about only one, which is hydrocarbon exhaust emission. Then there are different fuels to consider; natural gas, diesel, gasoline and so on. Finally, there are on-road and off-road categories.

Leaf blowers are within the gasoline powered small equipment and tools category of the off-road family of engines. Within this category, there are five engine displacement classes. The handheld leaf blower in general falls within two basic engine size classifications, that being IV and V.

Table 1 to §1054.103—Phase 3 Emission Standards for Handheld Engines (g/kW-hr)

Engine displacement class	HC + NO _x	CO
Class III	50	805
Class IV	50	805
Class V	72	603

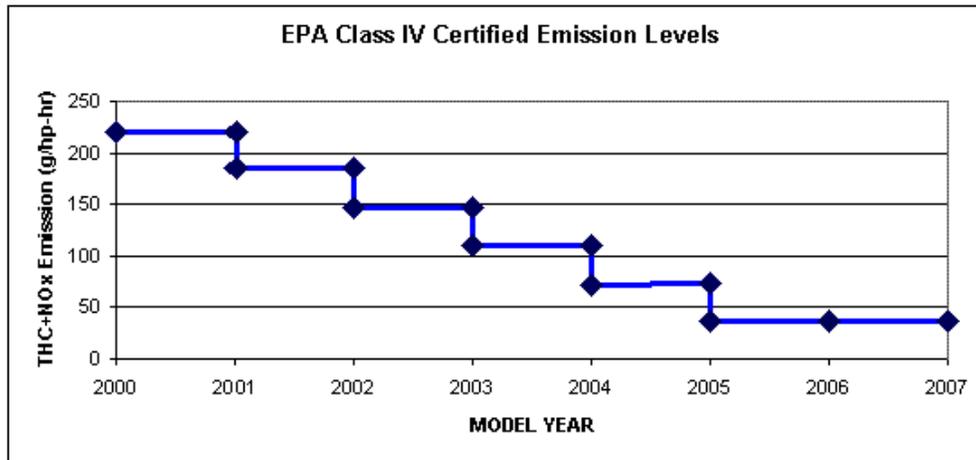
Exhaust Requirements

Class IV comprises handheld engines with total displacement at or above 20 cc but below 50 cc.

Class V comprises handheld engines with total displacement at or above 50 cc.

Then there are required compliance periods, in the case of class IV, the choices are 300 hours and 500 hours

With these different categories, fuels, engine families, compliance periods, and classifications; adding to the complication is that the Standard was implemented on a sliding scale, with step-down requirements over a period of years.



<https://www.leafblowernoise.com/emission%20graph.htm>

From the above graph, one can see that 2005 is the year when Class IV was reduced to its lowest level of allowable exhaust emission.

