

**METHOD OF MEASUREMENT OF DIESEL SMOKE EMISSION FOR I/M PROGRAMS**

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The main objective of the work presented here was to develop a method of diesel smoke measurement, for use in the framework of I/M procedures and to allow better enforcement of regulations for various vehicle generations. Analysis of smoke emission measurements in official type approval tests of diesel vehicles of various generations was carried out and demonstrated, as anticipated, the sharp reduction in smoke emissions of modern vehicle types. This leads to the conclusion that use of the common limit, as it is applied today, results in rather improper enforcement of the regulations regarding diesel smoke emissions. The modern diesel engines are designed for lower smoke emission levels. Thus using the common limit may provoke an improper maintenance of vehicles. The proposed test method is based on the smoke emission measurement under full load conditions at constant intermediate engine speed, using a simple chassis dynamometer without inertia masses. Results of the smoke measurement at full load conditions in the official type approval tests according to the 72/306/EEC Directive are used as a basis for definition of the limit value for the I/M test, which will be different for various vehicle types and generations. Thus, automatic updating of emission limits for new vehicle generations will be guaranteed. The feasibility of the proposed method was checked experimentally on a number of vehicles. Currently the Israeli Ministry of Transport is working on the preparation of a large-scale pilot, where the new method will be tested in the framework of real annual vehicle tests.