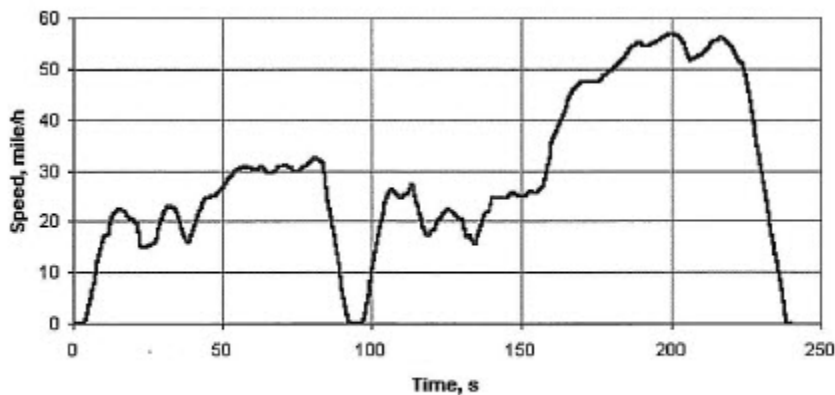


## Grams per Mile/Kilometer

*Infrared Industries* automotive gas analyzers FGA4000 and HM5000 support measuring grams per mile (GPM) or grams per kilometer (GPK) in addition to gas concentrations measured in parts per million (PPM) or percentages. Any test can be performed using GPM as the basis, including IM240.

About 30 states presently require smog checks of vehicles, and of these about 7 require the IM240 tests. The IM240 measures HC, CO, and NO<sub>x</sub> using a dynamometer in a varying driving pattern and gives the results in GPM. Other tests that are required instead of or in addition to the IM240 include a simple idle test, the BAR90 test, constant load and constant speed driving pattern, and give results in percent or PPM. Only the IM240 tests give results in GPM.

The IM240 driving pattern lasts for 240 seconds and involves the speed changes as shown in the graph below.



*Inspection & Maintenance Driving Cycle IM240*

The first 94 seconds of this pattern are sometimes referred to as a fast-pass test. If all of the limits for GPM for the three gases being tested are met during this phase, then the vehicle passes the test and the more extensive 240 second drive test is not conducted.

This driving test can be approximated without a dynamometer by conducting a road test using *Infrared Industries* automotive gas analyzers.