

Mercedes Benz: Request for Clarification to proposed OBD II amendments

To members of the Board,

California Air Resources Board (CARB)

On behalf of Mercedes Benz, we would like to submit a proposal for clarification to the proposed amendments to the proposed Title 13 1968.2, title 13, California Code of Regulations. The following Pages contain 4 topics which Mercedes believes require some clarification. These topics are:

1. Misfire Monitoring requirements for diesel vehicles
2. Diesel NMHC Catalyst Monitoring requirements for feedgas generation
3. Diesel PM Filter Monitoring Requirements for NHMC conversion capability
4. Denominator Specifications- pertaining to PM filter frequent regeneration.

Thank you for your consideration,

Sincerely

Markus Richter
RD/FZE, Daimler A.G, Germany

Ashim Manchanda,
Mercedes Benz Research and Development North America, Long Beach CA

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Topic 1: Section (f)(3) Misfire monitoring for Diesel Vehicles,

Mercedes' interpretation of the proposed regulation changes is that continuous monitoring of misfire is currently required for all vehicles (PC, LDT, MDPV certified to a chassis dynamometer and MDVs certified to an engine dynamometer), if, equipped with a combustion sensor. Additionally starting with MY2016 all MDVs certified to an engine dynamometer independent of whether equipped with a combustion sensor will be required to monitor for misfire continuously. For further clarification of this point, we propose the following change (high lighted in blue) to section (f) (3.2.2):

"(3.2.2) Additionally, for 2010 and subsequent model year vehicles passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard and 2010 through 2015 model year medium-duty vehicle [certified to a engine dynamometer tailpipe emission standard](#), equipped with sensors that can detect combustion or combustion quality (e.g., for use in homogeneous charge compression ignition (HCCI) control systems), and for 20 percent of 2016 model year, 50 percent of 2017 model year, and 100 percent of 2018 model year medium-duty vehicles [certified to a engine dynamometer tailpipe emission standard](#) (percentage based on the manufacturer's projected California sales volume for all medium-duty diesel vehicles [certified to a engine dynamometer tailpipe emission standard](#)): "

Topic 2: Section (f)(1.2.3) NMHC Converting Catalyst Monitoring requirements for feedgas generation-

Mercedes proposes the following changes to (f)(1.2.3)(B) below to clarify that the below test out option for NMHC Catalyst feedgas considers NOx emissions only (and not other emissions constituents)

"(B) For 2015 and subsequent model year passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard and 2015 and subsequent model year medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard, for catalysts used to generate a feedgas constituency to assist SCR systems (e.g., to increase NO2 concentration upstream of an SCR system), the OBD II system shall detect a malfunction when the catalyst is unable to generate the necessary feedgas constituents for proper SCR system operation. Catalysts are exempt from feedgas generation monitoring if no malfunction of the catalyst's feedgas generation ability can cause [NOx](#) emissions to (1) increase by 15 percent or more of the applicable [NOx](#) full useful life standard as measured from an applicable emission test cycle; or (2) exceed the applicable [NOx](#) full useful life standard as measured from an applicable emission test cycle. "

Topic 3: Section (f)(9.2.4): PM Filter Monitoring for NHMC conversion capability

Mercedes proposes the following changes to (f)(9.2.4) to clarify that the below test out option for PM Filter Monitoring considers NHMC emissions only (and not other emissions constituents)

"(9.2.4) NMHC conversion: For 20105 and subsequent model year passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard and 20135 and subsequent model year medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard with catalyzed PM filters that convert NMHC emissions, the OBD II system shall monitor the catalyst function of the PM filter and detect a malfunction when the NMHC conversion capability decreases to the point that NMHC emissions exceed the applicable emission levels specified in section (f)(9.2.2)(A). If no failure or deterioration of the NMHC conversion capability could result in a vehicle's NMHC emissions exceeding these emission levels, the OBD II system shall detect a malfunction when the system has no detectable amount of NMHC conversion capability. PM filters are exempt from NMHC conversion capability monitoring if no malfunction of the PM filter's NMHC conversion capability can cause [NMHC](#) emissions to (1) increase by 15 percent or more of the applicable [NMHC](#) full useful life standard

as measured from an applicable emission test cycle; or (2) exceed the applicable NMHC full useful life standard as measured from an applicable emission test cycle. "

Topic 4: Section(d)(4): Denominator Specifications

Mercedes is requesting that the denominator specifications for PM filter frequent regeneration (section (f)(9.2.2)) should be moved from (d)(4.3.2)(H) and PM filter incomplete regeneration (section (f)(9.2.3)) from (d)(4.3.2)(I) to section (d)(4.3.2)(G), along with other PM filter monitor denominator specifications and therefore be subject to the same required specifications.

(G) For the following monitors, the denominator(s) shall be incremented by one during a driving cycle in which the following two criteria are met: (1) the requirements of section (d)(4.3.2)(B) have been met on at least one driving cycle since the denominator was last incremented, and (2) the number of cumulative miles of vehicle operation since the denominator was last incremented is greater than or equal to 500 miles:

- (i) Diesel NMHC converting catalyst (section (f)(1.2.2))
- (ii) Diesel NMHC converting catalyst other aftertreatment assistance functions (sections (f)(1.2.3)(B) and (f)(1.2.3)(D))
- (iii) Diesel PM filter NMHC conversion (sections (f)(9.2.1), (f)(9.2.4), and (f)(9.2.5))
- (iv) Diesel PM filter filtering performance and missing substrate (sections (f)(9.2.1) and (f)(9.2.5)) for passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard
- (v) Diesel PM filter filtering performance, *PM filter frequent regeneration, PM filter incomplete regeneration* and missing substrate and (sections (f)(9.2.1), *(f)(9.2.2)*, *(f)(9.2.3)* and (f)(9.2.5)) for 2004 through 2015 model year medium duty vehicles certified to an engine dynamometer tailpipe emission standard

(H) For monitors of the following components, the manufacturer may request Executive Officer approval to use alternate or additional criteria to that set forth in section (d)(4.3.2)(B) above for incrementing the denominator. Executive Officer approval of the proposed criteria shall be based on the equivalence of the proposed criteria in measuring the frequency of monitor operation relative to the amount of vehicle operation in accordance with the criteria in section (d)(4.3.2)(B) above:

- (i) Engine cooling system input components (sections (e)(10) and (f)(11))
- (ii) Air conditioning system input components (section (e)(12))
- (iii) Direct ozone reduction systems (section (e)(14))
- (iv) "Other emission control or source devices" (sections (e)(16) and (f)(16))
- (v) Comprehensive component input components that require extended monitoring evaluation (sections (e)(15) and (f)(15)) (e.g., stuck fuel level sensor rationality)
- (vi) Comprehensive component input component temperature sensor rationality monitors (sections (e)(15) and (f)(15)) (e.g., intake air temperature sensor, ambient temperature sensor, fuel temperature sensor)
- ~~(vii) PM filter frequent regeneration (section (f)(9.2.2))~~

(I) For 2013 and subsequent model year vehicles, in addition to the requirements of section (d)(4.3.2)(B) above, the denominator(s) for the following monitors shall be incremented if and only if a regeneration event is commanded for a time greater than or equal to ten seconds:

- (i) Diesel NMHC converting catalyst other aftertreatment assistance functions (sections (f)(1.2.3)(A) and (f)(1.2.3)(C))
- ~~(ii) PM filter incomplete regeneration (section (f)(9.2.3))~~
- ~~(iii) PM filter active/intrusive injection (section (f)(9.2.6))~~