

# SUMMARY OF U.S. EPA MOTORCYCLE NOISE REGULATIONS

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## 40 CFR Ch. 1, PART 205 SUBPARTS D AND E

### Part 205 Transportation Equipment Noise Emission Controls

- \* Subpart D - Motorcycles
- \* Subpart E - Motorcycle Exhaust Systems
- \* Appendix I to Subparts D and E - Motorcycle Noise Emission Test Procedures

#### SUBPART D - MOTORCYCLES

##### Applicability (§ 205.150)

These regulations apply to 1983 and subsequent model year motorcycles newly manufactured after December 31, 1982. The regulations do not apply to electric or battery-powered motorcycles or to competition motorcycles.

##### Definitions (§ 205.151)

**Motorcycle:** Means any motor vehicle, other than a tractor, that has two or three wheels; a curb mass less than or equal to 680 kg (1499 lb); and is capable, with an 80 kg (176 lb) driver, of achieving a maximum speed of at least 24 km/hr (15 mph) over a level paved surface.

**Street motorcycle:** Means any motorcycle that, with an 80 kg (176 lb) driver, is capable of achieving a maximum speed of at least 40 km/hr (25 mph) over a level paved surface; and is equipped with features customarily associated with practical street or highway use, including but not limited to stoplight, horn, rear view mirror, turn signals. Any motorcycle that has an engine displacement less than 50 cubic centimeters which produces less than two brake horsepower and, with an 80 kg (176 lb) driver, cannot exceed 48 km/hr (30 mph) over a level paved surface, is also considered a street motorcycle.

**Competition motorcycle:** Means any motorcycle designed and marketed for use in closed-course competition events.

**Off-road motorcycle:** Means any motorcycle that is not a street or competition motorcycle.

**Closed-course competition event:** Means any organized competition event covering an enclosed, repeated or confined route intended for easy viewing of the entire route by all spectators.

**Exhaust system:** Means the combination of components that provides for the enclosed flow of exhaust gas from the engine exhaust port to the atmosphere.

**Model specific code:** Means the 10 character designation used for labeling purposes to identify the motorcycle manufacturer, vehicle class and advertised engine displacement.

**Motorcycle noise level:** Means the A-weighted noise level of a motorcycle as measured by the acceleration test procedure.

**Noise control system:** Means any vehicle part, component or system, the purpose of which includes control or reduction of noise, including all exhaust system components.

**Tampering:** Means the removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, any part or component of the noise control system.

##### Noise emission standards (§ 205.152)

Street motorcycles, except those with engine displacement less than 50cc, no more than 2 bhp, and not capable of exceeding 30 mph over level surface:

Model year	dB(A)
1983	83
1986	80

Street motorcycles under 50cc, no more than 2 bhp and not capable of exceeding 30 mph (moped type):

Model year	dB(A)
1983	70

Off-road motorcycles 170cc and less:

Model year	dB(A)
1983	83
1986	80

Off-road motorcycles over 170cc:

Model year	dB(A)
1983	86
1986	82

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## General requirements (§ 205.1571)

Manufacturers must ensure that each motorcycle conforms to the applicable noise emission standard when tested in accordance with the specified measurement methodology and that the motorcycle is labeled as prescribed.

## Labeling requirements (§ 205.158)

The motorcycle manufacturer must permanently attach, in a readily visible position, a "Motorcycle Noise Emission Control Information" label that cannot be removed without destroying or defacing it. The label must be in English block letters and numerals of a color that contrasts with its background containing the following statement:

### Motorcycle Noise Emission Control Information

This \_\_\_ (model year) \_\_\_ (model specific code) motorcycle, \_\_\_ (serial/vin number), meets EPA noise emission requirements of \_\_\_ (noise emission standard) dB(A) at \_\_\_ (closing rpm) rpm by the Federal test procedure. Modifications which cause this motorcycle to exceed Federal noise standards are prohibited by Federal law. See owner's manual.

The label for competition motorcycles shall include the following statement:

"This motorcycle is designed for closed course competition use only. It does not conform to U.S. EPA motorcycle noise standards."

Any motorcycle manufactured in the United States solely for use outside the U. S. must be clearly labeled with the statement: "For Export Only".

## SUBPART E – MOTORCYCLE EXHAUST SYSTEMS

### Applicability (§ 205.164)

These regulations apply to any motorcycle replacement exhaust system or replacement exhaust system component that is a "new product" and designed and marketed for any motorcycle regulated under Subpart D. Except for labeling, these regulations do not apply to exhaust systems that are designed and marketed for use on competition motorcycles. Exhaust header pipes sold as separate products are not subject to these regulations.

### Definitions (§ 205.165)

All terms defined in Subpart D also apply to this Subpart.

**Category:** Means a group of exhaust systems that are identical in all material aspects with respect to parameters listed for muffler/silencer, expansion chamber, spark arrestor and other exhaust system components.

**Exhaust header pipe:** Means any tube of constant diameter which conducts exhaust gas from an engine exhaust port to other exhaust system components that provide noise attenuation. Tubes with cross connections or internal baffling are not considered to be "exhaust header pipes."

**Federally regulated motorcycle:** Means any motorcycle subject to the noise standards of Subpart D.

**Federal standards:** Means the standards specified in Subpart D.

**Stock configuration:** Means that no modifications have been made to the original equipment motorcycle that would affect the noise emissions of the vehicle when measured according to the acceleration test procedure.

### Noise emission standards (§ 205.166)

#### Street Motorcycles

Exhaust systems and exhaust system components that are designed and marketed for use on any Federally regulated street motorcycle of the 1983 and subsequent model years must be designed and built so that when installed on any motorcycle which is in compliance with the requirements of Subpart D, they will not cause that motorcycle to produce noise emissions in excess of the levels indicated.

Street motorcycles, except those with engine displacement less than 50cc, no more than 2 bhp, and not capable of exceeding 30 mph over level surface:

Model year	dB(A)
1983	83
1986	80

Street motorcycles under 50cc, no more than 2 bhp, and not exceeding 30 mph (moped type):

Model year	dB(A)
1983	70

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The Acoustical assurance period for properly maintained exhaust systems and exhaust system components designed and marketed for Federally regulated street motorcycles is one year or 6,000 km (3,729 mi) whichever occurs first.

## Off-Road Motorcycles

Exhaust systems and exhaust system components that are designed and marketed for use on any Federally regulated off-road motorcycle of the 1983 and subsequent model years must be designed and built so that when installed on any motorcycle that is in compliance with the requirements of Subpart D, they will not cause that motorcycle to produce noise emissions in excess of the levels indicated.

Off-road motorcycles 170cc and less:

Model year	dB(A)
1983	83
1986	80

Off-road motorcycles over 170cc:

Model year	dB(A)
1983	86
1986	82

The Acoustical assurance period for properly maintained exhaust systems and exhaust system components designed and marketed for Federally regulated off-road motorcycles is one year or 3,000 km (1,865 mi) whichever occurs first.

## General requirements (§ 205.168)

Manufacturers of exhaust systems for Federally regulated motorcycles shall ensure that the exhaust system conforms to the applicable noise emissions standards when tested in accordance with the specified measurement methodology and that the exhaust system is labeled as prescribed. The manufacturer shall verify all categories of exhaust systems or replacement exhaust systems within the product line for each class of regulated motorcycle for which it is designed and marketed.

## Labeling requirements (§ 205.169)

The manufacturer of exhaust systems or exhaust system components shall affix a permanent label or mark to the product of the type and in the manner described containing information as follows:

The "Motorcycle Exhaust System Noise Emission Control Information" labels or marks shall be affixed so that they cannot be removed without destroying or defacing and must not be applied to any part that is easily detachable from the product.

The label or mark shall be readily visible when the exhaust system or exhaust system component is installed on all motorcycles for which it is designed and sold.

The label or mark shall use English block letters and numerals of a color that contrasts with the background.

For original equipment and replacement exhaust systems the following statement is required:

**Motorcycle Exhaust System Noise Emission Control Information**  
This (manufacturer's name) exhaust system (serial no.) meets EPA noise emissions requirements of (noise emission standard) dB(A) for the following motorcycles: (list of model specific codes). Installation of this exhaust system on motorcycles not specified may violate Federal law.

For exhaust systems components designed and marketed as a constituent of a complete exhaust system of nonoriginal equipment components, the following statement is required:

**Motorcycle Exhaust System Noise Emission Control Information**  
"This (manufacturer's name) (type of component) (serial number), when installed with a legal (type of component), meets EPA noise emissions requirements of (noise emission standard) dBA for the following motorcycles: (list of model specific codes). Installation of this exhaust system component on motorcycle models not specified may violate Federal law."

The label for exhaust systems designed solely for use on competition motorcycles shall contain the following statement:

"This product is designed for use on pre-1982 model year motorcycles only and does not conform to U.S. EPA noise emission standards. Use on motorcycles subject to EPA noise regulations constitutes tampering and is a violation of Federal law unless it can be shown that such use does not cause the motorcycle to exceed applicable Federal standards."

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The label for exhaust systems designed solely for use on motorcycles manufactured before January 1, 1982, shall include the following statement:

"This product is designed for use on closed-course competition motorcycles only and does not conform to U.S. EPA noise emission standards. Used on motorcycles subject to EPA noise regulations constitutes tampering and is a violation of Federal law unless it can be shown that such use does not cause the motorcycle to exceed applicable Federal standards."

The label for replacement exhaust systems manufactured in the United States solely for outside the U.S. and not conforming to Federal noise emissions standards, shall contain the statement "For Export Only."

This exhaust system does not conform to Federal noise emissions standard and is For Export Only.

## APPENDIX 1 TO SUBPARTS D AND E –

### TEST PROCEDURE FOR STREET AND OFF-ROAD MOTORCYCLES

Instrumentation. The following instrumentation must be used, where applicable:

- (1) A sound level measurement system that meets the type S1A requirements of American National Standard Specification for Sound Level Meters, ANSI S 1.41971.
- (2) An acoustic calibrator with an accuracy of within  $\pm$  0.5 dB.
- (3) An engine speed measurement system.
- (4) An anemometer with steadystate accuracy of within  $\pm$  10% at 20 km/h (12.4 mph).
- (5) A microphone wind screen that does not affect microphone response more than  $\pm$  0.5 dB for frequencies of 204,000 Hz or  $\pm$  1.0 dB for frequencies of 400,010,000 Hz.

Test site. The measurement area within the test site, which must be a flat open space free of large sound reflecting surfaces, shall be laid out as depicted in FIGURE 1 - TEST SITE MEASUREMENT AREA.

(1) The following points must be established:

- (a) Microphone target point - a reference point on the vehicle path;
- (b) End point - a point on the vehicle path  $7.5 \pm 0.3$  m ( $24.6 \pm 1.0$  ft) beyond the microphone target point, and
- (c) Microphone location point - a point  $15 \pm 0.3$  m ( $49.2 \pm 1.0$  ft) from the microphone target point on a normal to the vehicle path through the microphone target point.

Measurement Procedure.

- (1) Establish the acceleration point.
- (2) Determine the closing RPM.
- (3) Determine the distance from the acceleration point to the end point.
- (4) Adjust the procedure to accommodate motorcycles equipped with an automatic transmission.
- (5) Control throttle opening to avoid excessive wheel slip or lift off.
- (6) To conduct a sound measurement, the motorcycle must proceed along the vehicle path in second gear (or higher as applicable) at a constant engine speed of 50% of maximum rated RPM or at closing RPM less 10% (of maximum rated RPM), whichever is lower. When the front of the vehicle reaches the acceleration point, the throttle must be smoothly and fully opened. Full acceleration must continue until closing RPM is reached, which must occur within  $\pm$  1.0 m (3.3 ft) of the end point, and at which time the throttle must be smoothly and fully closed.

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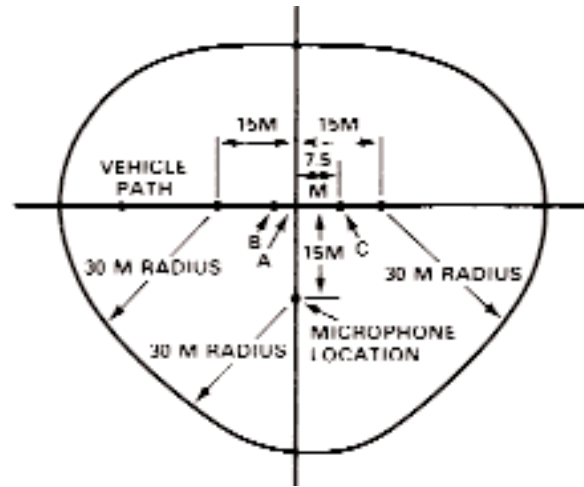
## Measurements.

- (1) The sound level meter must be set for fast response and A-weighting network. A microphone windscreen must be used. The sound level meter must be calibrated with the acoustic calibrator as necessary.
- (2) The sound level meter must be observed throughout the acceleration period and the highest sound level obtained for the run must be recorded.
- (3) Measurements must be made until four readings from each side are within 2 dB of each other. The noise level reported must be for the side having the highest noise level.
- (4) Only one person other than the rider and the meter reader may be within 15 m (49.2 ft) of the vehicle or the microphone.
- (5) The ambient noise level must be at least 10 dB lower than the noise level at the microphone being produced by the motorcycle being tested.
- (6) Wind speed must be less than 20 km/h (12.4 mph).

## Required Data.

- (1) Motorcycle type, serial number, model year, date of manufacture, engine displacement, maximum-rated RPM, closing RPM, transmission type if automatic and gear used.
- (2) Names of persons conducting test and test location.
- (3) Wind speed and ambient noise level.
- (4) Description of the sound level meter and acoustic calibrator including type, serial number and calibration date.
- (5) Description of the tachometer or engine speed measurement system.
- (6) Maximum noise level for each pass and reported noise level.

**Figure 1 - TEST MEASUREMENT AREA**



- A - MICROPHONE TARGET POINT
- B - ACCELERATION POINT (VARIABLE)
- C - END POINT

**FIGURE 2 - CLOSING RPM**

