

(ii) Such engine families are subject to all provisions specified in subparts A, B, D, E, F, G, H, I, J, and K of this part, except that the applicable PM FEL replaces the PM emission standard for the family participating in the banking and trading program.

(b) *Requirements for Tier 2 and later engines rated at or above 37 kW and Tier 1 and later engines rated under 37 kW.* (1) A manufacturer of a nonroad engine family with an NMHC + NO<sub>x</sub> FEL or a PM FEL below the applicable standard for a given model year may bank credits in that model year for use in averaging and trading in any following model year.

(2) For engine rated under 37 kW, a manufacturer of a nonroad engine family may bank credits prior to the effective date of mandatory certification. Such engines must meet the requirements of subparts A, B, D, E, F, G, H, I, J, and K of this part.

(c) A manufacturer may bank actual credits only after the end of the model year and after EPA has reviewed the manufacturer's end-of-year reports. During the model year and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging in the end-of-year report and final report.

(d) Credits declared for banking from the previous model year that have not been reviewed by EPA may be used in averaging or trading transactions. However, such credits may be revoked at a later time following EPA review of the end-of-year report or any subsequent audit actions.

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#### § 89.206 Trading.

(a) *Requirements for Tier 1 engines rated at or above 37 kW.* (1) A nonroad engine manufacturer may exchange emission credits with other nonroad engine manufacturers within the same averaging set in trading.

(2) Credits for trading can be obtained from credits banked in a previous model year or credits generated during the model year of the trading transaction.

(3) Traded credits can be used for averaging, banking, or further trading

transactions within the restrictions described in § 89.204(c).

(b) *Requirements for Tier 2 and later engines rated at or above 37 kW and Tier 1 and later engines rated under 37 kW.* (1) A nonroad engine manufacturer may exchange emission credits with other nonroad engine manufacturers within the same averaging set in trading.

(2) Credits for trading can be obtained from credits banked in previous model years that have not expired or credits generated during the model year of the trading transaction.

(3) Traded credits can be used for averaging, banking, or further trading transactions within the restrictions described in § 89.204(c) and paragraph (b)(4) of this section.

(4) Emission credits generated from engines rated at or above 19 kW utilizing indirect fuel injection may not be traded to other manufacturers.

(c) In the event of a negative credit balance resulting from a transaction, both the buyer and the seller are liable, except in cases deemed involving fraud. Certificates of all engine families participating in a negative trade may be voided ab initio under § 89.126(c).

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#### § 89.207 Credit calculation.

(a) *Requirements for calculating NO<sub>x</sub> credits from Tier 1 engines rated at or above 37 kW.* (1) For each participating engine family, emission credits (positive or negative) are to be calculated according to one of the following equations and rounded, in accordance with ASTM E29-93a, to the nearest one-hundredth of a megagram (Mg). This ASTM procedure has been incorporated by reference (see § 89.6). Consistent units are to be used throughout the equation.

(i) For determining credit availability from all engine families generating credits: Emission credits = (Std-FEL) × (Volume) × (AvgPR) × (UL) × (Adjustment) × (10<sup>-6</sup>)

(ii) For determining credit usage for all engine families requiring credits to offset emissions in excess of the standard:

$$\text{Emission credits} = (\text{Std-FEL}) \times (\text{Volume}) \times (\text{AvgPR}) \times (\text{UL}) \times (10^{-6})$$

Where:

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Std = the applicable Tier 1 NO<sub>x</sub> nonroad engine emission standard, in grams per kilowatt-hour.

FEL = the NO<sub>x</sub> family emission limit for the engine family in grams per kilowatt-hour.

Volume = the number of nonroad engines eligible to participate in the averaging, banking, and trading program within the given engine family during the model year. Engines sold to equipment or vehicle manufacturers under the provisions of § 89.102(g) shall not be included in this number. Quarterly production projections are used for initial certification. Actual applicable production/sales volume is used for end-of-year compliance determination.

AvgPR = the average power rating of all of the configurations within an engine family, calculated on a sales-weighted basis, in kilowatts.

UL = the useful life for the engine family, in hours.

Adjustment = a one-time adjustment, as specified in paragraph (a)(2) of this section, to be applied to Tier 1 NO<sub>x</sub> credits to be banked or traded for determining compliance with the Tier 1 NO<sub>x</sub> standards or Tier 2 NO<sub>x</sub>+NMHC standards specified in subpart B of this part. Banked credits traded in a subsequent model year will not be subject to an additional adjustment. Banked credits used in a subsequent model year's averaging program will not have the adjustment restored.

(2) If an engine family is certified to a NO<sub>x</sub> FEL of 8.0 g/kW-hr or less, an Adjustment value of 1.0 shall be used in the credit generation calculation described in paragraph (a)(1)(i) of this section. If an engine family is certified to a NO<sub>x</sub> FEL above 8.0 g/kW-hr, an Adjustment value of 0.65 shall be used in the credit generation calculation described in paragraph (a)(1)(i) of this section. If the credits are to be used by the credit-generating manufacturer for averaging purposes in the same model year in which they are generated, an Adjustment value of 1.0 shall be used for all engines regardless of the level of the NO<sub>x</sub> FEL. If the credits are to be banked by the credit-generating manufacturer and used in a subsequent model year for another Tier 1 engine family, an Adjustment value of 1.0 shall be used for all engines regardless of the level of the NO<sub>x</sub> FEL.

(b) *Requirements for calculating NMHC + NO<sub>x</sub> Credits from Tier 2 and later engines rated at or above 37 kW and Tier 1 and later engines rated under 37 kW and PM credits from all engines.* (1) For each participating engine family, NO<sub>x</sub> +

NMHC emission credits and PM emission credits (positive or negative) are to be calculated according to one of the following equations and rounded, in accordance with ASTM E29-93a, to the nearest one-hundredth of a megagram (Mg). This procedure has been incorporated by reference (see § 89.6). Consistent units are to be used throughout the equation.

(i) For determining credit availability from all engine families generating credits:

$$\text{Emission credits} = (\text{Std}-\text{FEL}) \times (\text{Volume}) \times (\text{AvgPR}) \times (\text{UL}) \times (10^{-6})$$

(ii) For determining credit usage for all engine families requiring credits to offset emissions in excess of the standard:

$$\text{Emission credits} = (\text{Std}-\text{FEL}) \times (\text{Volume}) \times (\text{AvgPR}) \times (\text{UL}) \times (10^{-6})$$

Where:

Std = the current and applicable nonroad engine emission standard, in grams per kilowatt-hour, except for PM calculations where it is the applicable nonroad engine Tier 2 PM emission standard, and except for engines rated under 19 kW where it is the applicable nonroad engine Tier 2 emission standard, in grams per kilowatt-hour. (Engines rated under 19 kW participating in the averaging and banking program provisions of § 89.203(c)(3)(ii) shall use the Tier 1 standard for credit calculations.)

FEL = the family emission limit for the engine family in grams per kilowatt-hour.

Volume = the number of nonroad engines eligible to participate in the averaging, banking, and trading program within the given engine family during the model year. Engines sold to equipment or vehicle manufacturers under the provisions of § 89.102(g) shall not be included in this number. Quarterly production projections are used for initial certification. Actual applicable production/sales volume is used for end-of-year compliance determination.

AvgPR = the average power rating of all of the configurations within an engine family, calculated on a sales-weighted basis, in kilowatts.

UL = the useful life for the given engine family, in hours.

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§ 89.208 Labeling.

For all nonroad engines included in the averaging, banking, and trading programs, the family emission limits to which the engine is certified must be