

40 C.F.R. § 1033.530

Duty cycles and calculations.

This section describes how to apply the duty cycle to measured emission rates to calculate cycle-weighted average emission rates.

(a) *Standard duty cycles and calculations.* Tables 1 and 2 of this section show the duty cycle to use to calculate cycle-weighted average emission rates for locomotives equipped with two idle settings, eight propulsion notches, and at least one dynamic brake notch and tested using the Locomotive Test Cycle. Use the appropriate weighting factors for your locomotive application and calculate cycle-weighted average emissions as specified in 40 CFR part 1065, subpart G.

Table 1 to § 1033.530—Standard Duty Cycle Weighting Factors for Calculating Emission Rates for Locomotives With Multiple Idle Settings

| Notch setting | Test mode | Line-haul weighting factors | Line-haul weighting factors (no dynamic brake) | Switch weighting factors |
|---------------|-----------|-----------------------------|---|--------------------------|
| Low Idle | A | 0.190 | 0.190 | 0.299 |
| Normal Idle | B | 0.190 | 0.315 | 0.299 |
| Dynamic Brake | C | 0.125 | (1) | 0.000 |
| Notch 1 | 1 | 0.065 | 0.065 | 0.124 |
| Notch 2 | 2 | 0.065 | 0.065 | 0.123 |
| Notch 3 | 3 | 0.052 | 0.052 | 0.058 |
| Notch 4 | 4 | 0.044 | 0.044 | 0.036 |
| Notch 5 | 5 | 0.038 | 0.038 | 0.036 |
| Notch 6 | 6 | 0.039 | 0.039 | 0.015 |
| Notch 7 | 7 | 0.030 | 0.030 | 0.002 |
| Notch 8 | 8 | 0.162 | 0.162 | 0.008 |

¹ Not applicable.

Table 2 to § 1033.530—Standard Duty Cycle Weighting Factors for Calculating Emission Rates for Locomotives With a Single Idle Setting

| Notch setting | Test mode | Line-haul | Line-haul (no dynamic brake) | Switch |
|---------------|-----------|-----------|---------------------------------|--------|
| Normal Idle | A | 0.380 | 0.505 | 0.598 |
| Dynamic Brake | C | 0.125 | (1) | 0.000 |
| Notch 1 | 1 | 0.065 | 0.065 | 0.124 |
| Notch 2 | 2 | 0.065 | 0.065 | 0.123 |
| Notch 3 | 3 | 0.052 | 0.052 | 0.058 |
| Notch 4 | 4 | 0.044 | 0.044 | 0.036 |
| Notch 5 | 5 | 0.038 | 0.038 | 0.036 |
| Notch 6 | 6 | 0.039 | 0.039 | 0.015 |
| Notch 7 | 7 | 0.030 | 0.030 | 0.002 |
| Notch 8 | 8 | 0.162 | 0.162 | 0.008 |

¹ Not applicable.

(b) *Idle and dynamic brake notches.* The test procedures generally require you to measure emissions at two idle settings and one dynamic brake, as follows:

(1) If your locomotive is equipped with two idle settings and one or more dynamic brake settings, measure emissions at both idle settings and the worst case dynamic brake setting, and weight the emissions as specified in the applicable table of this section. Where it is not obvious which dynamic brake setting represents worst case, do one of the following:

- (i) You may measure emissions and power at each dynamic brake point and average them together.
- (ii) You may measure emissions and power at the dynamic brake point with the lowest power.

(2) If your locomotive is equipped with two idle settings and is not equipped with dynamic brake, use a normal idle weighting factor of 0.315 for the line-haul cycle. If your locomotive is equipped with only one idle setting and no dynamic brake, use an idle weighting factor of 0.505 for the line-haul cycle.

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