OSRAM SYLVANIA

Guide to the New Federal Fluorescent Ballast Rule

This rule was published in the Federal Register on September 19, 2000 and is attached.

The rule was finalized as the result of an agreement between the Lighting manufacturers represented by NEMA, the energy policy advocates (American Council for an Energy Efficient Economy, Alliance to Save Energy and Natural Resources Defense Council), the State energy offices (represented by Oregon) and the US Department of Energy. The rule has different requirements for ballasts in new luminaires and for the ballast replacement market. This basic structure was originally proposed by OSRAM SYLVANIA to break a stalemate in this rulemaking. It was supported by the (then) Motorola Lighting Inc., and by several luminaire manufacturers.

The rule is unusual. It raises the minimum Ballast Efficacy Factors (BEF) [1] for T12 fluorescent ballasts to a level which can only be achieved by electronic ballasts. But who wants a T12 electronic ballast? They are more costly than T8 electronic ballasts, they will not operate reliably with 34-watt T12 lamps, and the T12/electronic system efficacy is lower than the T8/electronic system. In effect, by raising the efficiency and cost criteria on T12 systems, the rule is promoting T8/electronic systems without creating efficiency standards for T8 ballasts. Users are therefore free to use T8 instant start, rapid start or programmed start ballasts, and to choose the best BEF that the marketplace can offer for the ballast factor and type of ballast they need. For those few applications that may be sensitive to IR, or have Electromagnetic Compatibility (EMC or EMI) issues, users can even continue to specify T8 magnetic ballasts. However, since these will now represent a very small fraction of a shrinking fluorescent magnetic ballast market, they are likely to carry a significant cost premium, and of course they are less efficient and are only available in one or two lamp, rapid start models.

The following are the key effects of the rule:

- The rule covers only the following fluorescent lamp types: [2]
  - 2ft. U-tubes
  - 4ft. Rapid start
  - 8ft. Instant start
  - 8ft. High output

- No other linear lamps, CFLs or HID lamps are covered by the rule. Magnetic ballasts will continue to be available for these lamp types.

- **Luminaires sold on or after April 1, 2006 that utilize the covered lamps [2] must incorporate electronic ballasts.** There will be very few exceptions to this requirement.

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[1] Ballast Efficacy Factor (BEF) = Ballast Factor ÷ Input power

[2] Although the published rule regulates only the efficacy of T12 systems, the effect is to promote the equivalent T8 systems

OSRAM SYLVANIA Telephone: (978) 777-1900 100 Endicott Street Danvers, MA 01923

- Magnetic ballasts may not be manufactured for the covered T12 lamps after March 31, 2005, or sold after June 30, 2005. Magnetic ballasts for T8 lamps can continue to be manufactured for applications sensitive to IR or EMI.

- There is an exception for T12 magnetic ballasts for replacement purposes in existing installations. These ballasts can be manufactured until June 30, 2010, but must be marked "For Replacement Use Only", have leads shorter than the length of lamps intended to be operated, be contained in packages not exceeding 10 ballasts, and must meet existing T12 magnetic BEF criteria. (This is intended to make replacement ballasts inconvenient and costly to use for purposes other than "spot replacement").

- There is an exemption for T12 dimming ballasts that dim to 50% or less

- There is an exemption for 2 lamp F96T12HO ballasts designed for –20°F operation and used in an outdoor sign.

- There is an exemption for magnetic ballasts with power factors less than 0.90, designed and labeled for residential building applications

- There is an implied warning to all fluorescent lamp users that if they have not converted to T8 by June 30, 2010, they will have to use T8 ballasts and lamps for spot replacement in their T12/magnetic installations. This will result in compatibility problems involving lamps, ballasts, lumen output, life, lumen maintenance, brightness and CRI. In other words, a big maintenance headache!

- Although magnetic ballasts will not be available for T12 lamps after 2010, it is expected that T12 replacement lamps will be available for many years after that date.

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THE RULE

Part 430--ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

1. The authority citation for Part 430 continues to read as follows:

Authority: 42 U.S.C. 6291-6309; 28 U.S.C. 2461 note.

2. Section 430.32 of subpart C is amended by revising paragraph (m) to read as follows:

Sec. 430.32 Energy and water conservation standards and effective dates.

* * * * *

(m) Fluorescent lamp ballasts.

(1) Except as provided in paragraphs (m)(2), (m)(3), and (m)(4) of this section, each fluorescent lamp ballast--

(i) (A) Manufactured on or after January 1, 1990;

(B) Sold by the manufacturer on or after April 1, 1990; or

(C) Incorporated into a luminaire by a luminaire manufacturer on or after April 1, 1991; and

(ii) Designed--

(A) To operate at nominal input voltages of 120 or 277 volts;

(B) To operate with an input current frequency of 60 Hertz; and

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(C) For use in connection with an F40T12, F96T12, or F96T12HO lamps shall have a power factor of 0.90 or greater and shall have a ballast efficacy factor not less than the following:

Application for operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F40 T12 lamp	120	40	1.805
	277	40	1.805
Two F40 T12 lamps	120	80	1.060
	277	80	1.050
Two F96T12 lamps	120	150	0.570
	277	150	0.570
Two F96T12HO lamps	120	220	0.390
	277	220	0.390

(2) The standards described in paragraph (m)(1) of this section do not apply to--

(i) A ballast that is designed for dimming or for use in ambient temperatures of 0 deg.F or less, or

(ii) A ballast that has a power factor of less than 0.90 and is designed for use only in residential building applications.

(3) Except as provided in paragraph (m)(4) of this section, each fluorescent lamp ballast--

(i) (A) Manufactured on or after April 1, 2005;

(B) Sold by the manufacturer on or after July 1, 2005; or

(C) Incorporated into a luminaire by a luminaire manufacturer on or after April 1, 2006; and

(ii) Designed--

(A) To operate at nominal input voltages of 120 or 277 volts;

(B) To operate with an input current frequency of 60 Hertz; and

(C) For use in connection with an F40T12, F96T12, or F96T12HO lamps; shall have a power factor of 0.90 or greater and shall have a ballast efficacy factor not less than the following:

Application of operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F40 T12 lamp	120	40	2.29
	277	40	2.29
Two F40 T12 lamps	120	80	1.17
	277	80	1.17
Two F96T12 lamps	120	150	0.63
	277	150	0.63
Two F96T12HO lamps	120	220	0.39
	277	220	0.39

(4) (i) The standards described in paragraph (m)(3) do not apply to:

(A) A ballast that is designed for dimming to 50 percent or less of its maximum output;

(B) A ballast that is designed for use with two F96T12HO lamps at ambient temperatures of -20 deg.F or less and for use in an outdoor sign;

(C) A ballast that has a power factor of less than 0.90 and is designed and labeled for use only in residential building applications; or

(D) A replacement ballast as defined in paragraph (m)(4)(ii) of this section.

(ii) For purposes of this paragraph (m), a replacement ballast is defined as a ballast that:

(A) Is manufactured on or before June 30, 2010;

(B) Is designed for use to replace an existing ballast in a

previously installed luminaire;

(C) Is marked ``FOR REPLACEMENT USE ONLY'';

(D) Is shipped by the manufacturer in packages containing not more than 10 ballasts;

(E) Has output leads that when fully extended are a total length that is less than the length of the lamp with which it is intended to be operated; and

(F) Meets or exceeds the ballast efficacy factor in the following table:

Application for operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F40 T12 lamp	120	40	1.805
	277	40	1.805
Two F40 T12 lamps	120	80	1.060
	277	80	1.050
Two F96T12 lamps	120	150	0.570
	277	150	0.570
Two F96T12HO lamps	120	220	0.390
	277	220	0.390

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