

(ii) Be conspicuously located and well illuminated by the emergency lighting even in conditions of occupant crowding at the door;

(6) Each passenger entry door with a locking mechanism that is released by rotary motion of the handle must be marked—

(i) With a red arrow, with a shaft of at least three-fourths of an inch wide and a head twice the width of the shaft, extending along at least 70 degrees of arc at a radius approximately equal to three-fourths of the handle length;

(ii) So that the center line of the exit handle is within  $\pm$  one inch of the projected point of the arrow when the handle has reached full travel and has released the locking mechanism;

(iii) With the word "open" in red letters, one inch high, placed horizontally near the head of the arrow; and

(7) In addition to the requirements of paragraph (a) of this section, the external marking of each emergency exit must—

(i) Include a 2-inch colorband outlining the exit; and

(ii) Have a color contrast that is readily distinguishable from the surrounding fuselage surface. The contrast must be such that if the reflectance of the darker color is 15 percent or less, the reflectance of the lighter color must be at least 45 percent. "Reflectance" is the ratio of the luminous flux reflected by a body to the luminous flux it receives. When the reflectance of the darker color is greater than 15 percent, at least a 30 percent difference between its reflectance and the reflectance of the lighter color must be provided.

[Amdt. 23-36, 53 FR 30814, Aug. 15, 1988; 53 FR 34194, Sept. 2, 1988, as amended by Amdt. 23-46, 59 FR 25773, May 17, 1994]

#### § 23.812 Emergency lighting.

When certification to the emergency exit provisions of § 23.807(d)(4) is requested, the following apply:

(a) An emergency lighting system, independent of the main cabin lighting system, must be installed. However, the source of general cabin illumination may be common to both the emergency and main lighting systems if the power supply to the emergency light-

ing system is independent of the power supply to the main lighting system.

(b) There must be a crew warning light that illuminates in the cockpit when power is on in the airplane and the emergency lighting control device is not armed.

(c) The emergency lights must be operable manually from the flightcrew station and be provided with automatic activation. The cockpit control device must have "on," "off," and "armed" positions so that, when armed in the cockpit, the lights will operate by automatic activation.

(d) There must be a means to safeguard against inadvertent operation of the cockpit control device from the "armed" or "on" positions.

(e) The cockpit control device must have provisions to allow the emergency lighting system to be armed or activated at any time that it may be needed.

(f) When armed, the emergency lighting system must activate and remain lighted when—

(1) The normal electrical power of the airplane is lost; or

(2) The airplane is subjected to an impact that results in a deceleration in excess of 2g and a velocity change in excess of 3.5 feet-per-second, acting along the longitudinal axis of the airplane; or

(3) Any other emergency condition exists where automatic activation of the emergency lighting is necessary to aid with occupant evacuation.

(g) The emergency lighting system must be capable of being turned off and reset by the flightcrew after automatic activation.

(h) The emergency lighting system must provide internal lighting, including—

(1) Illuminated emergency exit marking and locating signs, including those required in § 23.811(b);

(2) Sources of general illumination in the cabin that provide an average illumination of not less than 0.05 foot-candle and an illumination at any point of not less than 0.01 foot-candle when measured along the center line of the main passenger aisle(s) and at the seat armrest height; and

(3) Floor proximity emergency escape path marking that provides emergency

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evacuation guidance for the airplane occupants when all sources of illumination more than 4 feet above the cabin aisle floor are totally obscured.

(i) The energy supply to each emergency lighting unit must provide the required level of illumination for at least 10 minutes at the critical ambient conditions after activation of the emergency lighting system.

(j) If rechargeable batteries are used as the energy supply for the emergency lighting system, they may be recharged from the main electrical power system of the airplane provided the charging circuit is designed to preclude inadvertent battery discharge into the charging circuit faults. If the emergency lighting system does not include a charging circuit, battery condition monitors are required.

(k) Components of the emergency lighting system, including batteries, wiring, relays, lamps, and switches, must be capable of normal operation after being subjected to the inertia forces resulting from the ultimate load factors prescribed in § 23.561(b)(2).

(l) The emergency lighting system must be designed so that after any single transverse vertical separation of the fuselage during a crash landing:

(1) At least 75 percent of all electrically illuminated emergency lights required by this section remain operative; and

(2) Each electrically illuminated exit sign required by § 23.811 (b) and (c) remains operative, except those that are directly damaged by the fuselage separation.

[Doc. No. 26324, 59 FR 25774, May 17, 1994]

**§ 23.813 Emergency exit access.**

(a) For commuter category airplanes, access to window-type emergency exits may not be obstructed by seats or seat backs.

(b) In addition, when certification to the emergency exit provisions of § 23.807(d)(4) is requested, the following emergency exit access must be provided:

(1) The passageway leading from the aisle to the passenger entry door must be unobstructed and at least 20 inches wide.

(2) There must be enough space next to the passenger entry door to allow

assistance in evacuation of passengers without reducing the unobstructed width of the passageway below 20 inches.

(3) If it is necessary to pass through a passageway between passenger compartments to reach a required emergency exit from any seat in the passenger cabin, the passageway must be unobstructed; however, curtains may be used if they allow free entry through the passageway.

(4) No door may be installed in any partition between passenger compartments unless that door has a means to latch it in the open position. The latching means must be able to withstand the loads imposed upon it by the door when the door is subjected to the inertia loads resulting from the ultimate static load factors prescribed in § 23.561(b)(2).

(5) If it is necessary to pass through a doorway separating the passenger cabin from other areas to reach a required emergency exit from any passenger seat, the door must have a means to latch it in the open position. The latching means must be able to withstand the loads imposed upon it by the door when the door is subjected to the inertia loads resulting from the ultimate static load factors prescribed in § 23.561(b)(2).

[Amdt. 23-36, 53 FR 30815, Aug. 15, 1988, as amended by Amdt. 23-46, 59 FR 25774, May 17, 1994]

**§ 23.815 Width of aisle.**

(a) Except as provided in paragraph (b) of this section, for commuter category airplanes, the width of the main passenger aisle at any point between seats must equal or exceed the values in the following table:

Number of passenger seats	Minimum main passenger aisle width	
	Less than 25 inches from floor	25 inches and more from floor
10 through 19 .....	9 inches .....	15 inches.

(b) When certification to the emergency exist provisions of § 23.807(d)(4) is requested, the main passenger aisle width at any point between the seats must equal or exceed the following values: