

must comply with §72.05 in subchapter H of this chapter.

§ 116.405 General arrangement and outfitting.

(a) *Fire hazards to be minimized.* The general construction of the vessel must be such as to minimize fire hazards insofar as it is reasonable and practicable.

(b) *Combustible materials to be limited.* Limited amounts of combustible materials such as wiring insulation, pipe hanger linings, nonmetallic (plastic) pipe, and cable ties are permitted in concealed spaces except as otherwise prohibited by this subpart.

(c) *Combustibles insulated from heated surfaces.* Internal combustion engine exhausts, boiler and galley uptakes, and similar sources of ignition must be kept clear of and suitably insulated from combustible material.

(d) *Separation of machinery and fuel tank spaces from accommodation spaces.* Machinery and fuel tank spaces must be separated from accommodation spaces by boundaries that prevent the passage of vapors.

(e) *Paint and flammable liquid lockers.* Paint and flammable liquid lockers must be constructed of steel or equivalent material, or wholly lined with steel or equivalent material.

(f) *Nonmetallic piping in concealed spaces.* The use of nonmetallic (plastic) pipe within a concealed space in a control space, accommodation space, or service space is permitted in nonvital service only if the piping material has a flame spread rating of not more than 20 and a smoke developed rating of not more than 10 when tested in accordance with ASTM E 84 (incorporated by reference, see §114.600) or UL 723 by an independent laboratory.

(g) *Vapor barriers.* Vapor barriers must be provided where insulation of any type is used in spaces where flammable and combustible liquids or vapors are present, such as machinery spaces and paint lockers.

(h) *Interior finishes.* Combustible interior finishes allowed by §116.422(d) of this part must not extend into hidden spaces, such as behind linings, above ceilings, or between bulkheads.

(i) *Waste Receptacles.* Unless other means are provided to ensure that a po-

tential waste receptacle fire would be limited to the receptacle, waste receptacles must be constructed of non-combustible materials with no openings in the sides or bottom.

(j) *Mattresses.* All mattresses must comply with either:

(1) The U.S. Department of Commerce Standard for Mattress Flammability (FF 4-72.16), 16 CFR Part 1632, Subpart A and not contain polyurethane foam; or,

(2) International Maritime Organization Resolution A.688(17) "Fire Test Procedures For Ignitability of Bedding Components." Mattresses that are tested to this standard may contain polyurethane foam.

[CGD 85-080, 61 FR 900, Jan. 10, 1996, as amended at 62 FR 51348, Sept. 30, 1997; USCG-2000-7790, 65 FR 58462, Sept. 29, 2000]

§ 116.415 Fire control boundaries.

(a) *Type and construction of fire control bulkheads and decks—(1) Major hull structure.* The hull, structural bulkheads, columns and stanchions, superstructures, and deckhouses must be composed of steel or equivalent material.

(2) Bulkheads and decks—Bulkheads and decks must be classed as A-60, A-30, A-15, A-0, B-15, B-0, C, or C' based on the following:

(i) A-Class bulkheads or decks must be composed of steel or equivalent material, suitably stiffened and made intact with the main structure of the vessel, such as the shell, structural bulkheads, and decks. They must be so constructed that, if subjected to the standard fire test, they are capable of preventing the passage of smoke and flame for 1 hour. In addition, they must be so insulated with approved structural insulation, bulkhead panels, or deck covering so that, if subjected to the standard fire test for the applicable time period listed below, the average temperature on the unexposed side does not rise more than 139° C (250° F) above the original temperature, nor does the temperature at any one point, including any joint, rise more than 181° C (325° F) above the original temperature:

A-60 Class	60 minutes
A-30 Class	30 minutes
A-15 Class	15 minutes

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A-0 Class 0 minutes

(ii) Penetrations in A-Class fire control boundaries for electrical cables, pipes, trunks, ducts, etc. must be constructed to prevent the passage of flame and smoke for one hour. In addition, the penetration must be designed or insulated so that it will withstand the same temperature rise limits as the boundary penetrated.

(iii) B-Class bulkheads and decks must be constructed of noncombustible materials and made intact with the main structure of the vessel, such as shell, structural bulkheads, and decks, except that a B-Class bulkhead need not extend above an approved continuous B-Class ceiling. They must be so constructed that, if subjected to the standard fire test, they are capable of preventing the passage of flame for 30 minutes. In addition, their insulation value must be such that, if subjected to the standard fire test for the applicable time period listed below, the average temperature of the unexposed side does not rise more than 139° C (250° F) above the original temperature, nor does the temperature at any one point, including any joint, rise more than 225° C (405° F) above the original temperature:

B-15 Class 15 minutes
 B-0 Class 0 minutes

(iv) Penetrations in B-Class fire control boundaries for electrical cables, pipes, trunks, ducts, etc. must be constructed to prevent the passage of flame for 30 minutes. In addition, the penetration must be designed or insulated so that it will withstand the same temperature rise limits as the boundary penetrated.

(v) C-Class bulkheads and decks must be composed of noncombustible materials.

(vi) C'-Class bulkheads and decks must be constructed of noncombustible materials and made intact with the main structure of the vessel, such as shell, structural bulkheads, and decks, except that a C'-Class bulkhead need not extend above a continuous B-Class or C'-Class ceiling. C'-Class bulkheads must be constructed to prevent the passage of smoke between adjacent areas. Penetrations in C'-Class boundaries for electrical cables, pipes, trunks, ducts, etc. must be constructed so as to preserve the smoke-tight integrity of the boundary.

(vii) Any sheathing, furring, or holding pieces incidental to the securing of structural insulation must be approved noncombustible material.

(b) *Bulkhead requirements.* Bulkheads between various spaces must meet the requirements of Table 116.415(b).

TABLE 116.415 (b)—BULKHEADS

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Control Space (1)	B-0	A-0	A-0	A-0	A-15	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0
Stairway (2)		A-0 ⁴	A-0	A-0	A-0	A-60	A-60	A-0	A-15	A-15	A-15	A-0	A-0
Corridor (3)			C	A-0	B-0	B-0	B-0	A-0	A-0	A-0	A-0	A-0	A-0
Embarkation Station (4)				C	A-0	A-0	A-0	A-0	A-0	A-0	A-0	C ¹	C
Low Risk Accommodation (5).					B-0	B-15	B-15	B-0 ²	A-15	A-15	A-15	A-0	A-0
High Risk Accommodation (6) (≤50 sq. m.).						B-15	A-30	B-0 ²	A-60	A-60	A-60	A-0	A-0
High Risk Accommodation (7) (>50 sq. m.).							A-60	B-0 ²	A-60	A-60	A-60	A-0	A-0
Low Risk Service Spaces (8).								C	A-0	A-0	A-0	A-0	A-0
High Risk Service Spaces (9).									C ³	A-0	A-0	A-0	A-0
Machinery Spaces (10)										C	A-0	A-0	A-0
Cargo Spaces (11)											A-0	A-0	A-0
Auxiliary Machinery spaces, voids, fuel and water tanks (12).											A-0	A-0	A-0
Open decks (not safety areas) (13).													C

¹ Boundaries of fuel tanks, auxiliary machinery spaces, and voids that contain a fire load in excess of 2.5kg/m² (0.5 pounds per square foot) must be minimum A-0 Class construction.

² Toilet space boundaries may be reduced to C'-Class.

³ C-Class bulkheads may be used between two similar spaces, such as between two storerooms; however, an A-0 Class bulkhead shall be used between two dissimilar spaces, such as a storeroom and a workshop.

⁴ Separation is not required within a single stairtower. A-0 construction is required between two distinct stairtowers.

(c) *Deck requirements.* Decks between various spaces must meet the requirements of Table 116.415(c), except that where linings or bulkhead panels are framed away from the shell or structural bulkheads, the deck within the void space so formed need only meet A-0 Class requirements.

TABLE 116.415(c)—DECKS

Space Above	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Space Below:													
Control Space (1)	A-0	A-0	A-15	A-0	A-0	A-15	A-30	A-0	A-0	A-0	A-0	A-0	A-0
Stairway (2)	A-0	C	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Corridor (3)	A-0	A-0	A-0	A-0	A-0	A-0	A-15	A-0	A-0	A-0	A-0	A-0	A-0
Embarkation Station (4).	A-0	A-0	A-0	C	A-0	A-0	A-0	A-0	A-0	A-0	A-0	C ¹	C
Low Risk Accommodation (5).	A-15	A-15	A-0	A-0	A-0	A-0	A-15	A-0	A-0	A-0	A-0	A-0	A-0
High Risk Accommodation(6) (≤50 sq. m.).	A-60	A-60	A-30	A-15	A-0	A-30	A-60	A-0	A-0	A-0	A-0	A-0	A-0
High Risk Accommodation (7) (>50 sq. m.).	A-60	A-60	A-60	A-30	A-15	A-60	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Low Risk Service Spaces (8).	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
High Risk Service Spaces (9).	A-60	A-30	A-30	A-30	A-15	A-60	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Machinery Spaces (10).	A-60	A-60	A-60	A-30	A-15	A-60	A-60	A-0	A-0	C	A-0	A-0	A-0
Cargo Spaces (11)	A-60	A-30	A-30	A-30	A-15	A-60	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Auxiliary Machinery Spaces, voids, fuel and water tanks (12).	A-0	A-0	A-0	C ¹	A-0	A-0	A-0	A-0	A-0	A-0	A-0	C ¹	A-0 ¹
Open decks (not safety areas) (13).	A-0	A-0	A-0	C	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0 ¹	C

¹ Boundaries of fuel tanks, auxiliary machinery spaces, and voids that contain a fire load in excess of 2.5 kg/m² (0.5 pounds per square foot) must be minimum A-0 Class construction.

(d) *Main vertical zones.* (1) The hull, superstructure, and deck houses of a vessel, except for a vehicle space on a vehicle ferry, must be subdivided by bulkheads into main vertical zones which:

(i) Are generally not more than 40 meters (131 feet) in mean length on any one deck;

(ii) Must be constructed to:

(A) The greater of A-30 Class or the requirements of paragraph (b) of this section, or;

(B) Minimum A-0 Class where there is a Type 8, 12 or 13 space on either side of the division; and

(iii) May have small horizontal steps, if the steps:

(A) Do not exceed 20% of the mean length of the main vertical zone or 8 meters (26 feet), whichever is smaller; and

(B) Must be constructed to A-60 Class, or minimum A-0 Class where

there is a Type 8, 12 or 13 space on either side of the division.

(iv) May be extended to a maximum mean length of 44 meters (144 feet) on each deck by the Commanding Officer, Marine Safety Center provided the maximum distance between the furthestmost points of the bulkheads bounding the main vertical zone also does not exceed 44 meters (144 feet).

(2) Vehicle decks on a vehicle ferry must be subdivided. Where main vertical zones are impractical due to the vehicle carrying configuration, main horizontal zones may be provided. The decks bounding such a zone must be of at least A-30 construction or meet the requirements of paragraph (c) of this section, whichever is greater.

(e) *Draft stops.* In concealed spaces above ceilings and between linings and the shell of a vessel, draft stops must be fitted not more than 13.7 meters (45 feet) apart in the horizontal direction and at each deck level in the vertical

direction unless otherwise permitted in paragraph (f). Draft stops must be of at least B-Class construction and be fitted in a vertical position.

(f) On vessels with no overnight passenger accommodations, draft stops are not required above/around large public spaces provided all of the following conditions are met:

(1) The space in question is surrounded by A-Class divisions or extends to the outer shell of the vessel.

(2) The space in question is open and unobstructed such that a fire in any part of the space will quickly be discovered.

(3) The area above the ceiling is easily accessible from below for fire fighting purposes.

[CGD 85-080, 61 FR 900, Jan. 10, 1996; 61 FR 20556, May 7, 1996; 61 FR 24464, May 15, 1996, as amended at 62 FR 51348, Sept. 30, 1997; USCG 1998-4442, 63 FR 52191, Sept. 30, 1998]

§ 116.422 Ceilings, linings, trim, interior finish and decorations.

(a) Ceilings, linings, and any furring incidental to their installation in control spaces, passageways, stairways, accommodation spaces and service spaces must be of noncombustible material in accordance with §164.009 in subchapter Q of this chapter, or other standard specified by the Commandant.

(b) Bulkheads, linings and ceilings may be covered by a combustible interior finish provided that such a finish is:

(1) Approved under §164.012 in subchapter Q of this chapter, or other standard specified by the Commandant; or

(2) Listed by Underwriters Laboratories, does not exceed 2 millimeters (.075 inches) in thickness, and has a flame spread rating of not more than 20 and a smoke developed rating of not more than 10 when tested in accordance with ASTM E 84 (incorporated by reference, see §114.600) or UL 723 by an independent laboratory.

(c) Bulkheads, linings, and ceilings in high risk accommodation spaces may have a combustible veneer trim and decorations that do not meet the requirements of paragraph (b) of this section, provided:

(1) The overall thickness of the combustible veneer does not exceed 2 millimeters (.075 inches); and

(2) The total volume of the combustible face trim, moldings, and decorations, including veneers, in any space does not exceed a volume equivalent to a 2.5 millimeter (0.1 inch) veneer on the combined area of the bulkheads and ceiling of the space.

(d) Combustible veneers may not be used in passageways, stairway enclosures or in low risk accommodation spaces. Combustible veneers, trim and decorations may not be used in or extend into hidden spaces such as behind linings or ceilings.

(e) Partial bulkheads or decks used to subdivide a space for artistic treatment and privacy must meet the requirements of Class C bulkheads.

(f) Nothing in this subpart may be construed as prohibiting the covering of any surface, including the surfaces of corridors, stairway enclosures, and hidden spaces, with a reasonable number of coats of paint or with a marine finish meeting the requirements of §164.012 in subchapter Q of this chapter or other standard specified by the Commandant.

[CGD 85-080, 61 FR 900, Jan. 10, 1996, as amended at 62 FR 51349, Sept. 30, 1997; USCG-2000-7790, 65 FR 58462, Sept. 29, 2000]

§ 116.423 Furniture and furnishings.

(a) For the purpose of this subpart, rooms containing "fire resistant furnishings" are considered to be those in which:

(1) Furniture such as chairs, sofas, and similar items are tested and meet the requirements in UL 1056 "Fire Test of Upholstered Furniture," or meet the requirements in §72.05-55 in subchapter H of this chapter.

(2) Case furniture such as bookshelves, desks, cabinets, counters, beds, or other freestanding furniture are constructed in accordance with the requirements in §72.05-55 (a)(1) in subchapter H of this chapter.

(3) Draperies, curtains and other similar furnishings and decorations are flame resistant. These materials must be tested in accordance with National Fire Protection Association (NFPA) 701 "Fire Tests for Flame Resistant Textiles and Films," and must comply