

MSC Guidelines Potable Water Systems

Procedure Number: E1-21

Revision Date: 2/18/2016

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References:

- a. 46 CFR 56.60 (Subchapter F)
- b. 46 CFR 31.30-1 & 32.40 (Subchapter D)
- c. 46 CFR 70.20-1, 70.25-15 & 70.20-25 (Subchapter H)
- d. 46 CFR 92.20, 90.20 & 96.03 (Subchapter I)
- e. 46 CFR 107.305 (Subchapter I-A)
- f. 46 CFR 119.700 & 119.320 (Subchapter K)
- g. 46 CFR 128.220 (Subchapter L)
- h. 46 CFR 182.700 & 182.320 (Subchapter T)
- i. 21 CFR 1250.80 Sanitation Facilities and Conditions on Vessels (Subchapter I)
- j. International Maritime Organization (IMO) Resolution A 753(18); *Guidelines for the Application of Plastic Pipes on Ships*
- k. U.S. Public Health Service Center for Disease Control (CDC); *Vessel Sanitation Program*, www.cdc.gov/nceh/vsp.
- l. Underwriters Laboratories Inc. (UL) 499 (Series), Electric Heating Appliances
- m. Marine Safety Center Technical Note 01-10, *Marine Safety Center Review of Systems Containing Plastic Pipe*

Contact Information:

If you have any questions or comments concerning this document, please contact the Marine Safety Center by e-mail or phone, referring to Procedure Number: **E1-21**.

E-mail: MSC@uscg.mil
Phone: 202-795-6729
Website: <http://homeport.uscg.mil/msc>

Responsibilities:

The submitter shall provide sufficient documentation and plans to indicate compliance with the applicable requirements; this includes a complete bill of materials, component technical data sheets, and arrangement plans. If sent to MSC in hardcopy, the submission shall be made in triplicate.

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General Guidance

General

Food and Drug Administration (FDA) Approval

- ❑ Coast Guard plan approval documents compliance with Title 46 of the Federal Regulations. Vessels must comply with the United States Food and Drug Administration (FDA) requirements pertaining to sanitation and health standards. Documentation indicating compliance may be required by the cognizant OCMI. See 21 CFR 1240 and 1250, and 40 CFR 141 and 142.

Applicable to All Vessels

Water Heaters

Water heaters rated at more than 100 psig or 250° F

- ❑ Refer to the requirements of Parts 52 Power Boilers and 63 Automatic Auxiliary Boilers of subchapter F.

Water heaters rated at not more than 100 psig or 250° F

- ❑ Refer to the requirements of Parts 53 Heating boilers and 63 Automatic Auxiliary Boilers of subchapter F, or all of the following must be satisfied:
 - a) Electrically heated with capacity of less than 120 gallons;
 - b) Heat input less than 200,000 BTU's per hour;
 - c) Listed by Underwriters Laboratories (UL) under UL 174, "Household Electric Storage Tank Heaters," UL 1453 "Electric Booster and Commercial Storage Tank Water Heater," or other standard specified by the Commandant; and,
 - d) Be protected by a pressure-temperature relief device (119.320, 182.320 & 53.01-10(c)).

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General Guidance
(continued):

Vessels Subject to 46 CFR Subchapter F (Subchapters D, H, I & I-A)

General Piping System

- ❑ Material and design standards must meet 46 CFR 56.60.
- ❑ Piping containing oil must not run through potable water tanks and potable water piping must not pass through oil tanks (46 CFR 56.50-60 (h)).
- ❑ Vents from fresh water tanks shall not be connected to a common header with vents from oil or ballast tanks (46 CFR 56.50-85(a)(13)).
 - a) See Procedure No. E1-29: Vents, Sounds & Overflows for additional requirements.
- ❑ Copper and brass can be used for water and steam service for pressures up to 250 psi and for design temperatures to 406° F per 46 CFR 56.10-5.
- ❑ Nonferrous materials must meet the requirements of 46 CFR 56.60-20.

Plastic Pipe

- ❑ Plastic piping used for potable water shall bear the seal of approval or NSF mark of the Public Health, University of Michigan, Ann Arbor, MI 48103 (46 CFR 56.60-25(a)(4)).
- ❑ Depending on the location of the plastic pipe, the piping may be subject to flame spread, smoke and/or toxicity requirements outlined in reference (j), as incorporated by 46 CFR 56.60-25(a) See reference (m) for details.
- ❑ Non metallic flexible hose may be used in non-vital fresh water systems if complying with 56.60-25(a)(1) through (a)(4) (46 CFR 56.60-25(b)(3)).

General Guidance
(continued):

Bulkhead/Deck Penetrations

- ❑ Plastic pipe shall not directly penetrate watertight bulkheads or watertight decks. Penetrations shall be designed as such to maintain the structural and watertight integrity of the bulkhead/deck.

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Vessels Subject to 46 CFR Subchapters T & K

Metallic pipe & fittings

- ❑ Materials and design must be suitable for the intended service (182.700 & 119.700) .
- ❑ Nonferrous materials are permitted (182.730 & 119.730).

Nonmetallic pipe & fittings

- ❑ Subchapter T - rigid nonmetallic material may be used only in non-vital systems (46 CFR 182.720) .
- ❑ Subchapter K – see requirements in *Vessels Subject to 46 Subchapter F* (above):

Bulkhead Penetrations

- ❑ Subchapter T - Penetrations of required bulkheads by any rigid plastic pipe or flexible nonmetallic hose are prohibited unless the requirements of 46 CFR 182.720(d)(1) are met.
- ❑ Subchapter K - Bulkhead penetrations for nonmetallic piping must meet 46 CFR 56.60-25 (46 CFR 119.720).

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General Guidance
(continued):

Vessels Subject to 46 CFR Subchapter L

- ❑ See *Vessels Subject to 46 CFR Subchapter F* (above) except as noted in 128.220.
- ❑ Each piping penetration in each required watertight bulkhead must be watertight and meet the requirements for materials and pressure design of subchapter F (46 CFR 128.230).

Disclaimer

This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current thinking on this topic and may assist industry, mariners, the general public, and the Coast Guard, as well as other federal and state regulators, in applying statutory and regulatory requirements. You can use an alternative approach for complying with these requirements if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative, you may contact the Marine Safety Center, the unit responsible for implementing this guidance.
