

The American Boat & Yacht Council, Inc.

ABYC

Setting Standards for Safer Boating

ABYC Website: www.abycinc.org

3069 Solomons Island Road
Edgewater, MD 21037
(410) 956-1050 ph. (410) 956-2737 fax

E-mail: info@abycinc.org

ABYC technical board rules provide that all reports, including standards and technical information reports, are advisory only. Their use is entirely voluntary. They are believed to represent, as of the date of publication, the consensus of knowledgeable persons, currently active in the field of small craft, on performance objectives that contribute to small boat safety.

The American Boat & Yacht Council assumes no responsibility whatsoever for the use of, or failure to use, standards or technical information reports promulgated by it, their adaptation to any processes of a user, or any consequences flowing therefrom.

Prospective users of the standards and technical information reports are responsible for protecting themselves against liability for infringement of patents.

The American Boat & Yacht Council standards and technical information reports are guides to achieving a specific level of design or performance, and are not intended to preclude attainment of desired results by other means.

ABYC reviews each standard or technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. ABYC invites your written comments and suggestions via our website.

Copyright ©1968, ©1971, ©1972, ©1974, ©1975, ©1976, ©1977, ©1978, ©1979, ©1980, ©1981, ©1982, ©1983, ©1984, ©1985, ©1986, ©1987, ©1988, ©1989, ©1990, ©1991, ©1992, ©1993, ©1994, ©1995, ©1996, ©1997, ©1998, ©1999, ©2000, ©2001, ©2002, ©2003, ©2004.

American Boat & Yacht Council, Inc.
All Rights Reserved

No part of this publication may be copied or reproduced in any form, including an electronic retrieval system or be made available on the Internet, a public network, by satellite or otherwise without the prior written permission of American Boat & Yacht Council, Inc., 3069 Solomons Island Road, Edgewater, MD 21037-1416.

E-4 LIGHTNING PROTECTION

Table of Contents

4.1	PURPOSE	1
4.2	SCOPE	1
4.3	REFERENCED ORGANIZATIONS.....	1
4.4	DEFINITIONS	1
4.5	REQUIREMENTS - IN GENERAL	2
4.6	REQUIREMENTS - MATERIALS.....	2
4.7	REQUIREMENTS - INSTALLATIONS.....	2
4.8	LIGHTNING PROTECTIVE MAST.....	2
4.9	LIGHTNING GROUND.....	3
4.10	REQUIREMENTS - VESSELS WITH METAL HULLS	3
4.11	REQUIREMENTS - SMALL BOATS	3
	APPENDIX - LIGHTNING PROTECTION.....	6

E-4 LIGHTNING PROTECTION

Based on ABYC's assessment of the existing technology, and the problems associated with achieving the goals of this standard, ABYC recommends compliance with this standard for all systems and associated equipment manufactured and/or installed after July 31, 1998.

4.1 PURPOSE

These standards and recommended practices are guides for the design, construction, and installation of lightning protection systems on boats.

NOTE: *The probability of a lightning strike varies with geographic location and the time of the year, but, when the conditions that create an electrical charge between clouds and the earth exist, there is nothing that can be done to prevent the lightning discharge. A boat can be struck in open water or while tied to the dock.*

4.2 SCOPE

These standards and recommended practices apply to powerboats and sailboats if a lightning protection system is installed.

NOTES: 1. *Complete protection from equipment damage or personal injury is not implied.*

2. *A lightning protection system offers no protection when the boat is out of water, and is not intended to afford protection if any part of the boat comes in contact with power lines while afloat or ashore.*

3. *Protection of persons and small craft from lightning is dependent on a combination of design and maintenance of equipment, and on personnel behavior. The basic guides contained in this standard shall be considered and used in designing and installing a lightning protection system. However, in view of the wide variation in structural design of boats, and the unpredictable nature of lightning, specific recommendations cannot be made to cover all cases.*

4.3 REFERENCED ORGANIZATIONS

ABYC - American Boat and Yacht Council, 3069 Solomon's Island Road, Edgewater, MD 21037-1416. 410-956-1050

NFPA - National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101. 617-770-3000.

4.4 DEFINITIONS

Air terminal - A device at the upper most point of the lightning protection system to dissipate the charge or start the lightning ground process.

Equalization bus - A metallic strap, which may be installed on the interior of a boat, substantially parallel to the exterior lightning ground plate, and connected to the lightning ground plate at both ends. Secondary lightning conductors can be connected to the equalization bus. The equalization bus provides a low resistance path to the lightning ground plate.

Lightning bonding conductor - A conductor intended to be used for potential equalization between metal bodies, and the lightning protection system to eliminate the potential for side flashes.

Lightning ground plate (or strip) - A metallic plate, or strip on the hull exterior below the waterline, that serves to efficiently transfer the lightning current from the system of down conductors to the water.

Lightning protective gap (air gap) - A form of lightning arrester wherein a small air space is provided between two metallic plates, with one connected directly to the vessel grounding plate or strip, and the other to an operating electrical system, such as a radio transmitter or receiver.

Lightning protective mast - A conductive structure, or if non-conductive, equipped with a conductive means, and an air terminal.

Parallel path - A path to ground that may be followed by a lightning strike. This path is separate from the path formed by the primary lightning conductor.

Primary lightning conductor - The main vertical electrical path in a lightning protection system formed by a metallic mast, metallic structure, electrical conductors, or other conducting means, to a ground plate, ground strip, or a metallic hull.

Secondary lightning conductor - A conductor used to connect potential parallel paths, such as the rigging on a sailboat, to the primary lightning conductor, or to the lightning ground plate, strip or equalization bus.

Side flash - An arc-over discharge that occurs from the lightning system to any metallic object.

Zone of protection - An essentially cone shaped space below a grounded air terminal, mast, or overhead ground wire, wherein the risk of a direct lightning strike is substantially reduced. See [E-4 APPENDIX](#).