

# MSC Guidelines for Review of Hazardous Locations

Procedure Number: E2-12

Revision Date: 01/28/00

---

## References

- a. Title 46 CFR 111.105, Hazardous Locations
  - b. National Electric Code (NFPA 70) - Articles 500-505
  - c. IEC 79 Parts 0, 1, 2, 5, 6, 7, 11, 15, 18 - Electrical Apparatus for Explosive Gas Atmospheres
  - d. NFPA No. 496: Standard for Purged and Pressurized Enclosures for Electrical Equipment
  - e. Navigation and Inspection Circular (NVIC) 2-89, "Guide for Electrical Installations on Merchant Vessels and Mobile Offshore Drilling Units." See <http://www.uscg.mil/hq/g-m/nvic/index.html>
  - f. Safety Of Life at Sea (SOLAS), Consolidated Editions, 1997, Chapter II-2, Regulations 13 and 14
- 

## Disclaimer

These guidelines were developed by the Marine Safety Center staff as an aid in the preparation and review of vessel plans and submissions. They were developed to supplement existing guidance. They are not intended to substitute or replace laws, regulations, or other official Coast Guard policy documents. The responsibility to demonstrate compliance with all applicable laws and regulations still rests with the plan submitter. The Coast Guard and the U. S. Department of Transportation expressly disclaim liability resulting from the use of this document.

---

## Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center by e-mail or phone. Please refer to the Procedure Number: E2-12.

E-mail: [customerservicemsc@msc.uscg.mil](mailto:customerservicemsc@msc.uscg.mil)

Phone: 202-366-6480.

---

## Definitions

**Independent Laboratory:** an organization that meets the standards for acceptance in 46 CFR 159.010-3 of this part, and which is accepted by the Coast Guard for performing certain tests and inspections. See <http://www.uscg.mil/hq/g-m/mse/lablist.html> for a listing of accepted laboratories.

**Flashpoint:** the minimum temperature at which the liquid gives off a vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. *Grade* refers to the flashpoint.

**Class:** the classification of a material or location based on the experimentally determined properties of flammable vapors, gases, liquids, or combustible dusts or fibers that may be present and the likelihood that a flammable or combustible concentration or quantity is present. Class I materials include flammable gases and vapors, while Class II materials include combustible dusts.

**Group:** the classification of gases, vapors and dusts based upon the experimentally determined explosion pressure and/or ignition temperature, and the maximum safe clearance between parts of an enclosure containing the hazardous material.

**Division:** the classification of the probability that material may be present in flammable or combustible quantities. In Division 1 areas the hazardous material can exist under normal conditions (1 fault) whereas in Division 2 areas, the hazardous material can exist under abnormal conditions (2 fault).

## General

- Verify sufficient information has been provided on:
  - Hazardous cargoes;
  - An arrangement plan identifying hazardous cargoes and non-hazardous areas, cargo system or hazards, electrical equipment type and locations;
  - A complete and detailed Bill of Materials;
  - Elementary and one-line wiring diagrams, showing all wiring;
  - Electrical installation details;
  - Independent laboratory label or listing for explosion-proof (EP) and intrinsically safe (IS) equipment and systems; and
  - Maximum temperature ratings of electrical equipment in hazardous locations.
  
- Confirm boundaries of hazardous locations and suitability of equipment installed. Check against the requirements in 46 CFR 111.105-29 through 46 CFR 111.105-45 for specific hazardous locations (arranged by cargoes, spaces and vessel types), as applicable. See NVIC 2-89, Appendix 8 for sample drawings.

- Identify hazardous characteristics:
    - Class and group ratings;
    - Flashpoint and grade ratings;
    - Minimum ignition temperatures; and
    - Special requirements, including material compatibility.
  
  - Determine if installation involves splicing or a junction box if within hazardous location.
  
  - Confirm the installation meets:
    - Subchapter J;
    - Intended application determined by an independent laboratory;
    - Wiring methods requirements of 46 CFR 111.105-17;
    - NFPA No. 496 or IEC 79-2 for purged and pressurized equipment;
    - Intrinsically safe system requirements in 46 CFR 111.105-11;
    - Specific requirements for the cargo/material; and
    - General considerations of NVIC 2-89.
- 

Attachments

None