



**American National Standard
ANSI/HPS N43.4-2021**

Classification of Radioactive Self-luminous Light Sources

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American National Standards Institute, Inc.**



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Foreword (This foreword is not a part of American National Standard Classification of Radioactive Self-Luminous Light Sources, N43.4)

The radiation from radioactive material is used as a source of energy for activating phosphors to produce light in self-luminous watches and clocks, instrument dials, aircraft exit markers, luminous switches, etc. Safety in the design and use of radioactive materials in self-luminous products continues to be of concern to the industry, regulatory bodies, and the general public.

In 1967 Committee N43 was organized under the sponsorship of the National Bureau of Standards (now the National Institute of Standards and Technology) to replace Sectional Committee Z54. The scope of the new committee is "standards pertaining to products and equipment, for non-medical scientific, industrial, and educational uses, involving ionizing radiation sources including radioactive materials, accelerators, and x-ray equipment but excluding nuclear reactors."

The responsibility to develop standards for self-luminous sources was assigned to Subcommittee N43-4. In 1975 a standard for classification of radioactive self-luminous light sources was approved by the USA Standards Committee N43-4 Subcommittee and published as American National Standard N-540 (NBS Handbook 116), issued January 1976. This standard was reaffirmed as ANSI 43.2 (R1989). In 1985 Committee N43 was organized under the sponsorship of the Health Physics Society. This standard is an elaboration and refinement of ANSI/HPS N43.4 for self-luminous sources. The N43.4 Working group is responsible for preparing this standard.

In 2007 a standard for Classification of Sealed Radioactive Sources was issued by the Health Physics Society Committee N43.6, was approved November 2007 and reaffirmed in 2013, in which some performance requirements for self-luminous devices are provided in Annex D of ANSI/HPS N43.6 – 2007 (R2013).

This standard establishes the classification of certain radioactive self-luminous light sources according to radionuclide, type of source, activity, and performance requirements. The objectives are to establish minimum prototype testing requirements for radioactive self-luminous light sources, to promote uniformity of marking such sources, and to establish minimum physical performance for such sources. This standard is primarily directed toward assuring adequate containment of the radioactive material. Testing procedures and classification designations are specified for discoloration, temperature, thermal shock, reduced pressure, impact, vibration, and immersion. A range of test requirements is presented according to intended usage and source activity.

Key words: Classification; designation; containment; light sources; national standard; radiation source; radioactive; radioluminous products; self-luminous sources; test procedures.

Members of Subcommittee N43-4 which had responsibility for the development of ANSI N-540-1975 (NBS Handbook 116) are listed below:

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This standard was consensus balloted and approved by the ANSI-Accredited HPS N43 Committee on December 21, 2020. At the time of balloting, the HPS N43 Committee had the following membership:

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