

**ASME AG-1–2009**  
(Revision of ASME AG-1–2003)

# Code on Nuclear Air and Gas Treatment

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**AN AMERICAN NATIONAL STANDARD**



**The American Society of  
Mechanical Engineers**



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## FOREWORD

In 1971, the ANSI N45.8 Committee was organized to develop standards for high reliability air cleaning equipment for nuclear facilities and corresponding tests to confirm performance of the equipment. Two standards, ASME N509 and ASME N510, were published in 1975 and 1976.

In 1976, under the accredited organization rules, the Committee was reorganized as the ASME Committee on Nuclear Air and Gas Treatment. The scope of responsibility increased to include the development of codes and standards for design, fabrication, inspection, and testing of air cleaning and conditioning components and appurtenances used in safety-related systems in nuclear facilities. ASME AG-1 is the new Code resulting from the increased scope.

This Code contains mandatory requirements, specific prohibitions, and nonmandatory guidance for construction activities, as used in this Foreword, is an all-inclusive term relating to material, design, fabrication, inspection, testing, and certification. The Code does not address all aspects of these activities, and those not specifically addressed may be considered. The Code is neither a handbook nor a replacement for education, experience, and the use of engineering judgment. The phrase “engineering judgment” refers to technical judgments made by knowledgeable designers

experienced in the application of the Code. Engineering judgments must be consistent with Code philosophy and such judgments shall never be used to overrule mandatory requirements or specific prohibitions of the Code. The user is cautioned to carefully review these Code requirements for suitability to specific applications other than nuclear power and nuclear fuel cycle facilities.

The Code requirements established by the Committee shall not be interpreted as approving, recommending, or endorsing any proprietary design.

The Committee on Nuclear Air and Gas Treatment meets regularly to consider revisions of the Code requirements, new Code requirements as dictated by technological development, Code Cases, and requests for interpretations. Only the Committee on Nuclear Air and Gas Treatment has the authority to provide official interpretations of this Code. Requests for revisions, new Code requirements, Code Cases, or interpretations shall be addressed to the Secretary in writing and shall give full particulars in order to receive consideration and action. (See Mandatory Appendix covering preparation of technical inquiries.)

The first edition of this Code was approved by the American National Standards Institute (ANSI) on April 30, 1985, and issued on February 28, 1986. This seventh edition was approved by ANSI on June 15, 2009.



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# ORGANIZATION OF ASME AG-1

## 1. GENERAL

The ASME Code on Nuclear Air and Gas Treatment consists of Divisions I through IV. All Divisions are broken down into Sections designated by two capital letters. Each Division is made up as follows:

### Division I: General Requirements

Section AA: Common Articles

### Division II: Ventilation Air Cleaning and Ventilation Air Conditioning

Section BA: Fans and Blowers

Section DA: Dampers and Louvers

Section SA: Ductwork

Section HA: Housings

Section RA: Refrigeration Equipment

Section CA: Conditioning Equipment

Section FA: Moisture Separators

Section FB: Medium Efficiency Filters

Section FC: HEPA Filters

Section FD: Type II Adsorber Cells

Section FE: Type III Adsorbers

Section FF: Adsorbent Media

Section FG: Mounting Frames, Containers, Air-Cleaning Equipment, Nuclear Safety-Related Equipment

Section FH: Other Adsorbers

Section FI: Metal Media Filters

Section FJ: Low Efficiency Filters

Section FK: Special Mounting and Duct-Connected HEPA Filters

Section FL: Sand Filters

Section FM: High-Strength HEPA Filters

Section IA: Instrumentation and Controls

### Division III: Process Gas Treatment

Section GA: Pressure Vessels, Piping, Heat Exchangers, and Valves

Section GB: Noble Gas Hold-Up Equipment

Section GC: Compressors

Section GD: Other Radionuclide Equipment

Section GE: Hydrogen Recombiners

Section GF: Gas Sampling

### Division IV: Testing Procedures

Section TA: Field Testing of Air Treatment Systems

Section TB: Field Testing of Gas-Processing Systems

## 2. SECTIONS

Sections are divided into articles, subarticles, paragraphs, and, where necessary, subparagraphs and sub-subparagraphs.

## 3. ARTICLES

Articles are designated by the application letters indicated above for the sections, followed by Arabic numbers in units of 1000, such as BA-1000 or RA-2000. Where possible, articles dealing with the same topics are given the same number in each section in accordance with the following:

Article Number	Title
1000	Introduction
2000	Referenced Documents
3000	Materials
4000	Structural Design
5000	Inspection and Testing
6000	Fabrication, Joining, Welding, Brazing, Protective Coating, and Installation
7000	Packaging, Shipping, Receiving, Storage, and Handling
8000	Quality Assurance
9000	Nameplates and Stamping

The numbering of articles and the material contained in the articles may not, however, be consecutive. Because the complete outline may cover phases not applicable to a particular section or article, the rules have been prepared with some gaps in the numbering.



#### 4. SUBARTICLES

Subarticles are numbered in units of 100, such as BA-1100 or RA-1200.

#### 5. SUBSUBARTICLES

Subsubarticles are numbered in units of 10, such as BA-2130, and generally have no text. When a number such as BA-1110 is followed by text, it is considered a paragraph.

#### 6. PARAGRAPHS

Paragraphs are numbered in units of 1, such as BA-2131 or RA-2132.

#### 7. SUBPARAGRAPHS

Subparagraphs, when they are major subdivisions of a paragraph, are designated by adding a decimal followed by one or more digits to the paragraph number, such as BA-1111.1 or RA-1111.2. When they are minor subdivisions of a paragraph, subparagraphs may be designated

by lowercase letters in parentheses, such as BA-1111(a) or RA-1111(b).

#### 8. SUBSUBPARAGRAPHS

Subsubparagraphs are designated by adding lowercase letters in parentheses to major subparagraph numbers, such as BA-1111.1(a) or RA-1111(b). When further subdivisions of minor subparagraphs are necessary, subsubparagraphs are designated by adding Arabic numerals in parentheses to the subparagraph designation, such as BA-1111(a)(1) or RA-1111(a)(2).

#### 9. APPENDICES

Appendices pertaining to each section appear at the end of each section and are designated with the section prefix. Nonmandatory appendices are designated by letters of the alphabet, and mandatory appendices are designated by Roman numerals. Metric appendices carry the same designators as customary appendices, with the prefix “M.”



# Division I General Requirements



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**Division III**  
**Process Gas Treatment**  
(In the Course of Preparation)



**SECTION GA  
PRESSURE VESSELS, PIPING,  
HEAT EXCHANGERS, AND VALVES**

**(In the Course of Preparation)**

**SECTION GB  
NOBLE GAS HOLD-UP EQUIPMENT**

**(In the Course of Preparation)**

**SECTION GC  
COMPRESSORS**

**(In the Course of Preparation)**

**SECTION GD  
OTHER RADIONUCLIDE EQUIPMENT**

**(In the Course of Preparation)**

**SECTION GE  
HYDROGEN RECOMBINERS**

**(In the Course of Preparation)**

**SECTION GF  
GAS SAMPLING**

**(In the Course of Preparation)**



# Division IV

## Testing Procedures



# SECTION TA

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