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

Code on Nuclear Air and Gas Treatment

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

ASME
SETTING THE STANDARD

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The 2009 edition of this Code is being issued with an automatic addenda subscription service. The use of addenda allows revisions made in response to public review comments or committee actions to be published as necessary. The next edition of this Code is scheduled for publication in 2012.

ASME issues written replies to inquiries concerning interpretation of technical aspects of this Code. Periodically certain acitons of the ASME Committee on Nuclear Air and Gas Treatment may be published as Cases. Cases and interpretations are published on the ASME Web site under the Committee Pages at http://cstools.asme.org as they are issued.

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(A detailed Contents precedes each AG-1 Section.)

FOREWORD (09)

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. Construction, 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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(The following is the roster of the Committee at the time of approval of this Code.)

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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, CONAGT Air-Cleaning Equipment, Nuclear Safety-Related Equiptment
- Section FH: Other Adsorbers
- Section FI: Metal Media Filters
- Section FJ: Low Efficiency Filters
- Section FK: Special Round 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 lower case 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

SECTION AA
COMMON ARTICLES

Division II
Ventilation Air Cleaning and Ventilation Air Conditioning

SECTION BA
FANS AND BLOWERS

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
FIELD TESTING OF AIR TREATMENT SYSTEMS