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American National Standard for Machine Tools —

Grinding Machines — Safety Requirements for Construction, Care, and Use

Secretariat and Accredited Standards Developer

AMT - The Association For Manufacturing Technology
7901 Westpark Drive
McLean, VA 22102

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Foreword

(This Foreword is not a part of American National Standard Safety Requirements for the Construction, Care, and Use of Grinding Machines, B11.9-1975.)

The objective of this standard is to prevent injuries to personnel associated with grinding machines.

To accomplish this objective, responsibilities have been assigned to the manufacturer, the reconstructor, the modifier, the employer, and the employee as follows:

- (1) The manufacturer, reconstructor, and modifier are responsible for the construction of the machine and instruction as to its use.
- (2) The employer is responsible for the safe application of the machine, including training of personnel and machine maintenance.
- (3) The employee is responsible for following training and safe practices in his association with the grinding machine.

This standard identifies potentially hazardous areas and conditions associated with grinding machines and establishes requirements for elimination of these potential hazards.

This standard incorporates that part of American National Standard Safety Code for the Use, Care, and Protection of Abrasive Wheels, B7.1-1970, including Supplement B7.1a-1973 and B7.1b-1975, which deals with grinding machine construction. American National Standard B7.1-1970, including Supplements B7.1a-1973 and B7.1b-1975 should be complied with in regard to the use, care, and protection of abrasive wheels.

To assist all persons concerned in complying with the requirements of the standard, all explanatory information (formerly found in the Appendix) has been placed in the right column, adjacent to the requirements to which it applies.

Recognizing the difficulty of updating equipment immediately after the approval of this standard, various lengths of time for implementation have been provided.

Suggestions for improvement of this standard will be welcome. They should be sent to the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

This standard was processed and approved for submittal to ANSI by American National Standards Committee on Safety Standards for Machine Tools, B11. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the B11 Committee had the following members:

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Explanation of Standard Format

American National Standard B11.9-1975 uses a two-column format to provide both specific requirements and supporting information.

The left column, designated “Standard Requirements,” is confined solely to these requirements and is printed in bold type. Where supporting photographs or sketches are required, they are designated as “figures.”

The right column, designated “Explanatory Information,” contains only information which the subcommittee believes would clarify the standard. This column is *not* a part of the standard. Where supplementary photographs or sketches are required, they are designated as “illustrations.”

Operating rules (safe practices) are not included in either column unless they are of such a nature as to be vital safety requirements, equal in weight to other requirements, or guides to assist in compliance with the standard.

American National Standard Safety Requirements for the Construction, Care, and Use of Grinding Machines

STANDARD REQUIREMENTS

1. Scope, Purpose, and Application

1.1 Scope

1.1.1 General. This standard applies only to grinding machines, designed primarily for metal removal, that present grinding tools against workpieces, producing change in shape, size, and surface finish by grinding. This standard also applies to these machines when they are grinding materials other than metals such as glass, ceramics, plastics, and rubber.

This standard does not apply to portable hand-held grinders, machines using loose abrasives, or machines used for concrete cutting on road construction jobs.

1.1.2 Grinding Machine Types Included. Grinding machine types included in the scope of this standard are the following:

- (1) Abrasive belt machines
- (2) Abrasive cutoff machines
- (3) Center hole grinders
- (4) Center-type or cylindrical grinders
- (5) Centerless grinders
- (6) Disc grinders
- (7) Electrolytic grinding machines
- (8) Gear grinders
- (9) Honing machines
- (10) Internal grinders
- (11) Jig grinders
- (12) Lapping machines (bonded abrasive)
- (13) Offhand grinders
- (14) Profile and cam grinders
- (15) Snagging grinders
- (16) Surface grinders
- (17) Swing frame grinders
- (18) Thread grinders
- (19) Tool and cutter grinders
- (20) Vertical grinders
- (21) Others to which this standard is applicable

1.1.3 Grinding Machine Types Excluded. Grinding

EXPLANATORY INFORMATION

(Not part of American National Standard Safety Requirements for the Construction, Care, and Use of Grinding Machines, B11.9-1975.)

E1.1.1 General. Separate standards will be developed on portable hand-held grinders, machines using loose abrasives, and machines used for concrete cutting on road construction jobs.

machine types excluded from the scope of this standard are the following:

- (1) Lens polishing machines
- (2) Masonry cutting and grinding machines
- (3) Tumbling machines
- (4) Others not primarily designed for metal removal

1.2 Purpose. The purpose of this standard is to establish safety requirements with respect to the construction, care, and use of grinding machines.

1.3 Application. Recognizing the difficulty of updating equipment immediately, guidelines for compliance are given in E1.3.1 through E1.3.3.

1.3.1 New Installations. Compliance guidelines for new installations are given in E1.3.1.

1.3.2 Existing Installations. Compliance guidelines for existing installations are given in E1.3.2.

1.3.3 All Installations. Compliance guidelines for all installations are given in E1.3.3.

E1.3.1 New Installations. The requirements of this standard pertaining to construction (see Section 3) apply to all grinding machines manufactured for installation in the United States within 24 months after the approval date of this standard.

E1.3.2 Existing Installations. Within 5 years (60 months) after the approval date of this standard, all grinding machines installed must be modified by the employer or other owner to the extent required to bring them into conformance with Section 3 of this standard.

E1.3.3 All Installations. The requirements of this standard pertaining to care and use (see Section 4) apply to all grinding machines within 5 years (60 months) after the approval date of this standard.

2. Definitions

2.1 Abrasive Wheel/Grinding Wheel. An abrasive wheel is a grinding tool consisting of abrasive grains held together by organic or inorganic bonds. Diamond and reinforced wheels are included under this definition.

2.1.1 Inorganic Bonded Wheels. Inorganic wheels are wheels that are bonded by means of inorganic material such as clay, glass, porcelain, sodium silicate, magnesium oxychloride, or metal. Wheels bonded with clay, glass, porcelain, or related ceramic materials are characterized as "vitrified bonded wheels."

2.1.2 Organic Bonded Wheels. Organic wheels are wheels that are bonded by means of organic material such as resin, rubber, shellac, or other similar bonding agent.

2.1.3 Segments. Segments are abrasive bodies in various standard shapes that, when individually chucked in suitable holding mechanisms, form a grinding unit.

2.2 Coated Abrasive Tool. A coated abrasive tool consists of a layer of abrasive particles firmly attached to a paper, cloth, fiber backing, or other flexible bonding material by means of a bonding agent.

2.3 Dressing. Dressing is the process by which the abra-