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Standard Practice for Registering and Maintaining Materials and Chemical Property Data Code Lists¹

This standard is issued under the fixed designation E 1722; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers a unified coding system (UCS) for materials and chemical property data suitable for use in the computerization of such data. This practice describes a procedure by which organizations can register their code lists and be publicized as the maintaining authorities. Section 6 describes the formats of the alphanumeric codes used. Section 7 describes the procedure for requesting code assignments for new terms. Appendix X1 lists the approved lists of codes and the organizations responsible for maintaining them. It also describes a procedure for assigning authority to organizations for codes.

1.2 The UCS provides a means for correlating and coordinating many existing codes, thereby preventing confusion caused by uncoordinated and inconsistent code lists. It covers codes found in common use, codes defined in ASTM and other standards, and code lists that are administered formally by technical societies, trade associations, and other organizations. In addition, it provides a means of adding new codes to existing code lists and of creating new code lists. It provides the uniformity necessary for efficient indexing, transfer, record keeping, storage, retrieval, and cross-referencing of materials property data. By creating an integrated and uniform method for coding materials property data, the UCS is meant to subsume and supersede many existing code lists and integrate others into a common system.

1.3 This practice establishes the organizational structure of the UCS. Builders and users of materials properties databases should contact the organizations listed in Appendix X1 for copies of the codes and instructions on their use.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

B 601 Practice for Temper Designations for Copper and Copper Alloys—Wrought and Cast²

E 1443 Terminology Relating to Building and Accessing Material and Chemical Databases³

2.2 ANSI Standard:⁴

ANSI H35.1 Alloy and Temper Designation System for Aluminum

2.3 ISO Standard:⁴

ISO 3166 Country Codes

3. Terminology

3.1 Definitions:

3.1.1 *code*—a specific alphanumeric string that has been assigned a certain meaning, used in situations in which brevity is required.

3.1.2 *code list*—a collection of codes and the terms they represent.

3.1.3 *code-assigning authority*—an organization or individual that is responsible for maintaining a given code list.

3.1.4 *term*—a word, name, or phrase for which a code may be assigned.

4. Summary of Practice

4.1 This practice provides a format for codes used in materials properties databases and assigns specific organizations the responsibility for creating and maintaining the code lists used in given areas.

5. Significance and Use

5.1 The code lists covered by this practice are for use in systems for computerized handling of data on materials or chemicals. Computerized data handling systems in which these sets may be useful include, but are not limited to, the following:

5.1.1 Systems for collecting data from material or chemical tests,

5.1.2 Systems for reducing or analyzing test data,

5.1.3 Systems for producing evaluated data for material or chemical properties, and

5.1.4 Databases for material or chemical test results or properties.

5.2 It is expected that this practice will be used by specialists in developing standards or systems for the computerized handling of data on materials or chemicals. These specialists may have training and experience in materials science, chemistry, computer science, and software engi-

¹ This practice is under the jurisdiction of ASTM Committee E-49 on Computerization of Material Property Data and is the direct responsibility of Subcommittee E49.06 on Database Codes.

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² Annual Book of ASTM Standards, Vol 02.01.

³ Annual Book of ASTM Standards, Vol 14.01.

⁴ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

neering. It is not expected that this practice will be used by nonspecialists.

5.3 Uniform code lists provide a number of potential advantages to users of materials property databases. When independent databases are created using the same codes, the data contained in them will be easy to combine and compare. Codes created by experts in a given field are likely to represent the practices and terminology in the field accurately.

5.4 A number of successful code lists are already in use in the materials community, including the Unified Numbering System (UNS) (ANSI H35.1 and Practice B 601). The purpose of the UCS is to bring these systems together by providing a way of registering the existing lists and of defining a mechanism for the creation of new code lists to fill the gaps left by the existing lists.

5.5 No code list can anticipate every term for which a code may be required, so a mechanism is provided to allow users to define nonstandard extensions to existing lists and to create their own code lists.

5.6 The codes described here are intended to be used internally in databases and data exchange. Codes are used to identify materials, tempers, test methods, etc.

6. Description of the Format for Coding Materials Property Data

6.1 Each code list is indicated by an identifier. Identifiers can be numeric or text. Code lists that have not been approved by one of the organizations in Appendix X1 have identifiers beginning with ZZ_. Codes can be numeric or text. Text codes are typically meaningful to users, while numeric codes are assigned randomly.

6.2 Within a code list, each code uses only letters, numbers, or the underscore symbol (“_”). Spaces are not allowed. Codes beginning with the underscore symbol are user-defined extensions to the code list.

6.3 Each code shall correspond to a specific term, and a definition of the term shall be provided where necessary to allow the code to be used in a well-defined and unambiguous way.

6.4 ASTM standards already contain codes, terms, and definitions that are useful in coding materials property data. When the need arises for new codes, the code issuing

Code List:
Term Description:
Definition:
Suggested Code:
Broader Term:
Assigned Code:
Requesting Person and Organization (full address):

Date of Request:
Assigning Organization:
Date of Assignment:

FIG. 1 Application for UCS Code Assignment

organization should first examine relevant ASTM standards. If applicable codes, terms, or definitions are available, they should be used wherever applicable.

7. Procedure for Requesting Code Assignment for Terms Not Already Covered by UCS Codes

7.1 The need for a new code should always be verified by determining whether a usable code is or is not available from the latest complete listing of assigned UCS codes.

7.2 For a new UCS code to be assigned for a term, the term must be significantly different from any term already in the code list.

7.3 Requests for new codes shall be submitted on “Application for UCS Code Assignment” forms (see Fig. 1). Copies of these are available from any UCS code-assigning organization, or copies may be made of the one shown herein. Requests may also be submitted by electronic mail providing the information required by Fig. 1.

7.4 To assist further in assigning UCS codes, requesters are encouraged to suggest possible UCS codes in each request, giving appropriate consideration to existing codes used presently by trade associations, standards societies, producers, or users.

7.5 Each completed application form shall be sent to the UCS code-assigning office having responsibility for the series of codes that appears to be related most closely to the term described on the form. If you are not sure which UCS code-assigning authority has jurisdiction, send the application to ASTM Committee E-49.

8. Keywords

8.1 codes; materials property databases