ASME PDS-1.1–2023
(Revision of ASME PDS-1.1–2013)

Default Standards for Understanding Engineering Documentation With Incomplete Reference to Applicable Dimensioning, Tolerancing, Surface Texture, and Metrology Standards

Product Definition Specifications (PDS)

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AN AMERICAN NATIONAL STANDARD

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FOREWORD

Engineering product definition data often function as contract documents. This Standard addresses the situation where no standards are listed on an engineering document, which may cause contractual or legal issues.

When engineering product definition data are produced, regardless of the country they were produced in, they must be based on a set of standards or they are not interpretable. ASME recommends that product definition data should have applicable standards stated in the product definition data, in a document referenced in the product definition data, or in contractually imposed documents. The standards may be company, regional, national, or international standards.

Where the applicable engineering product definition standards, surface texture standards, or measurement standards are not indicated by one of these methods, the interpretation of the engineering product definition data and the measurement methods are unspecified. Unfortunately, there are many drawing graphic sheets or models in industry that do not have any indication as to which standards are to be used for interpretation.

The purpose of this ASME standard is to identify the set of dimensioning, tolerancing, surface texture, and measurement standards as de facto standards to apply to engineering documentation where no standards are indicated in the product definition data, in a document referenced in the product definition data, or in contractually imposed documents.

There are three ASME Committees that produce standards affecting product specification, interpretation, and measurement practices.

(a) B46 Committee on Classification and Designation of Surface Qualities

(b) B89 Committee on Dimensional Metrology

(c) Y14 Committee on Engineering Product Definition and Related Documentation Practices

These three ASME Standards Committees have jointly prepared and individually approved this revision to define the applicable dimensioning and tolerancing standards, surface texture standards, and associated measurement standards when no reference is made to a company, regional, national, or international standard in product definition data. The H213 Special Committee on Harmonization of Dimensional and Geometrical Product Specifications and Verification was instrumental in initiating this Standard.

ASME PDS-1.1-2023 was approved by the American National Standards Institute as an American National Standard on March 27, 2023.

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Revisions and Errata. The committee processes revisions to this Standard on a periodic basis to incorporate changes that appear necessary or desirable as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published in the next edition of the Standard.

In addition, the committee may post errata on the committee web page. Errata become effective on the date posted. Users can register on the committee web page to receive e-mail notifications of posted errata.

This Standard is always open for comment, and the committee welcomes proposals for revisions. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent background information and supporting documentation.

Cases

(a) The most common applications for cases are

(1) to permit early implementation of a revision based on an urgent need

(2) to provide alternative requirements

(3) to allow users to gain experience with alternative or potential additional requirements prior to incorporation directly into the Standard

(4) to permit the use of a new material or process

(b) Users are cautioned that not all jurisdictions or owners automatically accept cases. Cases are not to be considered as approving, recommending, certifying, or endorsing any proprietary or specific design, or as limiting in any way the freedom of manufacturers, constructors, or owners to choose any method of design or any form of construction that conforms to the Standard.

(c) A proposed case shall be written as a question and reply in the same format as existing cases. The proposal shall also include the following information:

(1) a statement of need and background information

(2) the urgency of the case (e.g., the case concerns a project that is underway or imminent)

(3) the Standard and the paragraph, figure, or table number(s)

(4) the edition(s) of the Standard to which the proposed case applies

(d) A case is effective for use when the public review process has been completed and it is approved by the cognizant supervisory board. Approved cases are posted on the committee web page.

Interpretations. The committee does not issue interpretations for this Standard.

Committee Meetings. The H213 Standards Committee regularly holds meetings that are open to the public. Persons wishing to attend any meeting should contact the secretary of the committee. Information on future committee meetings can be found on the committee web page at https://go.asme.org/H213committee.

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DEFAULT STANDARDS FOR UNDERSTANDING ENGINEERING DOCUMENTATION WITH INCOMPLETE REFERENCE TO APPLICABLE DIMENSIONING, TOLERANCING, SURFACE TEXTURE, AND METROLOGY STANDARDS

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1 SCOPE[1]

This Standard defines the applicable dimensioning and tolerancing standards, surface texture standards, and associated measurement standards when no reference is made to a company, regional, national, or international standard on dimensioning and tolerancing product definition data. This Standard applies to product definition data created in any country.

2 PRODUCT DEFINITION SPECIFICATIONS

ASME Product Definition Specifications (PDS) are a harmonized set of standards used to document and interpret engineering and verification by inspection (e.g., using surface or dimensional metrology) requirements. ASME PDS standards are jointly developed and approved by the ASME B46, ASME B89, and and ASME Y14 committees. ASME PDS standards may invoke partial or entire ASME B46, ASME B89, and ASME Y14 standards.

3 MANDATORY, RECOMMENDED, GUIDANCE, AND OPTIONAL WORDS

(a) The word “shall” establishes a requirement.

(b) The word “will” establishes a declaration of purpose on the part of the design activity.

(c) The word “should” establishes a recommended practice.

(d) The word “may” establishes an allowed practice.

(e) The words “typical,” “example,” “for reference,” and the Latin abbreviation “e.g.” indicate suggestions given for guidance only.

(f) The word “or” used in conjunction with a requirement or a recommended practice indicates that there are two or more options for complying with the stated requirement or practice.

(g) The phrase “unless otherwise specified” (UOS) shall be used to indicate a default requirement. The phrase is used when the default is a generally applied requirement, and an exception may be provided by another document or requirement.

[1] See the Foreword for background information on this Standard.

4 REFERENCE TO THE Y14.5 STANDARD

USASI Y14.5-1966, para. 1.4; ANSI Y14.5-1973, para. 5.1.4; ANSI Y14.5M-1982, para. 1.1.2; ASME Y14.5M-1994 and ASME Y14.5-2009, para. 1.1.3; and ASME Y14.5-2018, para. 1.3 state that the relevant standard shall be referenced in the product definition data, in a document referenced in the product definition data, or in contractually imposed documents to avoid misinterpretation.

5 PRODUCT DEFINITION DATA WITHOUT REFERENCE TO A STANDARD

When product definition data are produced without a reference to a standard (company, regional, national, or international), or contractually imposed documents and contain symbology from an USASI, ANSI, or ASME standard on dimensioning and tolerancing, they shall be interpreted according to the approved USASI, ANSI, or ASME standard that existed at the approval date in the product definition data. See Nonmandatory Appendix A, Table A-1 for a list of applicable Y14, B46, and B89 standards. If product definition data were established the same year as a standard, the standard in existence the year prior to the approval date in the product definition data may be applicable. An exception to this requirement is when engineering documentation contains symbology unique to a specific edition of a standard shown in Table A-1. In this case, it shall be interpreted according to the specific edition when different than the edition in existence at the approval date in the product definition data.

6 ASA/ANSI/ASME B46 AND B89 STANDARDS

The reference to an USASI/ANSI/ASME Y14.5 Dimensioning and Tolerancing standard also invokes any applicable ASA/ANSI/ASME B46 standards on surface texture and applicable ANSI/ASME B89 standards. Unless otherwise specified in the product definition data, in a document referenced in the product definition data, or in a company measurement plan, the standard that existed at the date when the product definition data was first

approved shall be applicable. Nonmandatory Appendix A, Table A-1 provides information to determine when a standard was approved.

7 REFERENCES

The following is a list of publications referenced in this Standard.

ASME B46.1. Surface Texture (Surface Roughness, Waviness, and Lay). The American Society of Mechanical Engineers.

ASME B89.3.1. Measurement of Out-of-Roundness. The American Society of Mechanical Engineers.

ASME B89.7.3.1. Guidelines for Decision Rules: Considering Measurement Uncertainty in Determining Conformance to Specifications. The American Society of Mechanical Engineers.

ASME B89.7.5. Metrological Traceability of Dimensional Measurements to the SI Unit of Length. The American Society of Mechanical Engineers.

ASME Y14.5. Dimensioning and Tolerancing. The American Society of Mechanical Engineers.

ASME Y14.36. Surface Texture Symbols. The American Society of Mechanical Engineers.

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NONMANDATORY APPENDIX A
DETERMINATION OF RELEVANT STANDARD

The relevant standard shall be referenced in the product definition data, in a document referenced in the product definition data, or in contractually imposed documents to avoid misinterpretation. If the relevant standard is not referenced, the relevant standard shall be the standard that existed at the approval date in the product definition data. Table A-1 provides additional information in the determination of the relevant standard. The standard date of issuance should be confirmed before determining the relevant standard.

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