

SSPC: The Society for Protective Coatings

TECHNOLOGY GUIDE NO. 13

Guide for the Identification and Use of Industrial Coating Materials in Computerized Product Databases

1. Scope

1.1 INTRODUCTION: Databases are essential in organizing and reporting technical information such as product data and test results. The first step in developing a database for industrial coating material is to identify the parameters that are essential for characterizing coating material identifiers and properties. The Society for Protective Coatings/Computer-Integrated Knowledge System Network (SSPC/CIKS) Joint Coating Working Group has prepared this guide for formatting data on coating material for use in preparing product data sheets in hardcopy format and computerized databases. Significant benefits will be realized due to the increased emphasis on the electronic representation and exchange of information. The guide will provide a consistent format that will simplify data transfer among coating industry manufacturers, coating suppliers, and coating users. The benefits will include an increased awareness of the properties of coating material through consistent terminology and the identification of data elements, and the ability to exchange product data represented in computerized systems such as databases. The development of this guide is consistent with the principles laid down by ASTM Committee E-49 on "Computerization of Material and Chemical Property Data." The organization of the guide was strongly influenced by ASTM E 1309 (Guide for Identification of Composite Materials in Computerized Material Property Databases) and ASTM E 1338 (Guide for Identification of Metals and Alloys in Computerized Material Property Databases).

1.2 OBJECTIVE: The objective of this document is to provide a general structure for coating product data. Product data includes manufacturer identifiers, physical properties, performance parameters, and recommendations on use. This guide is intended to simplify the exchange of similarly complete sets of data between different computerized databases and to promote a consistent representation for the exchange of coating product data in paper form. It suggests the subject matter to be included in a coating material product database. It is not intended to be an all-inclusive list of data to be stored and it is not a database. Implementation of this guide does not have to include all the data elements listed within, and there are no constraints on how data should be displayed in specific databases.

The guide presents parameters needed to characterize industrial coating product data. It includes data elements (fields) needed to uniquely identify a coating material, to describe its properties, and to report manufacturer's recommendations on its use.

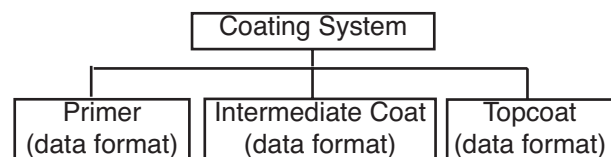
2. Terminology

2.1 TERMS SPECIFIC TO INDUSTRIAL COATING

MATERIAL: Terms specific to industrial coating material. Industrial coating material is defined in Steel Structures Painting Manual, Volume 1, Appendix B. Other industrial coating material related terms used in this guide are defined in documents listed in Section 5.

2.2 TERMS USED IN THIS GUIDE: Terms used to describe the components of an industrial coating system include primer, intermediate, and topcoat. A diagram showing the components is presented in Figure 1. In practice, when describing a coating system, it is assumed that multiple representations (e.g. product data sheets, data files, data records) of this guide will be necessary. For example, a database record could contain product data on a primer, intermediate, or topcoat. The database records could reside in a single database file or in separate files, designated as "primer data file," "intermediate coat data file," or "topcoat data file." A database consists of data files that are composed of data segments and data elements.

FIGURE 1: COMPONENTS OF A COATING SYSTEM



2.2.1 Coating product database: a data file consisting of data segments and data elements in which product data representing individual or multiple manufacturer identifiers and properties are stored.

2.2.2 Data record: a complete coating product database entry that contains coating material product data representing a single manufacturer and coating system component, comprised of data segments.

2.2.3 Data segment: a category of information that is used to subdivide and designate sets of related data elements.

2.2.4 Data element: an individual piece of information used in describing a material or recording test results; for example, a variable name or test parameter.

Note: Certain data segments may be used repeatedly to report information and properties of a particular coating. Each data element in this guide is represented by a data element.

number, data element name, data element type, and data element format.

2.2.5 Data element number: a three or five-digit number used to denote an individual data element.

Note: These numbers represent the entire set of information in a particular data element. Data element numbers are considered a functional part of the guide and may be used for data element reference. The first three digits of the data element number identify the data segment. The two digits following the decimal point identify the specific data element within a data segment. A data element number that contains "XX" following the decimal point is used to denote multiple occurrences (e.g. properties, tests) for an individual data element.

2.2.6 Data element name: a descriptive term or title that designates the type of information or data to be reported in the data element.

2.2.7 Data element type: a designation of "essential", "essential if applicable", or "desirable" that reflects the significance of the data element entry.

Note: Data elements are designated "essential" if they are necessary to make a meaningful comparison of product data from different sources. A comparison of data from different sources may still be possible if essential information is omitted, but the value of the comparison may be greatly reduced.

2.2.8 Data element format: the presentation style used to report information or data.

Note: Alphanumeric, floating point, and special entry formats may be specified in this guide for use in reporting information, unit designations, numerical values, and test results.

3. Data Segments

3.1 Introduction: Seven data segments represent categories of information that are necessary for the identification of an industrial coating and for recording its product data. They are:

- Product description
- Intended use
- Physical properties
- Mixing and application
- Key performance parameters
- Safety data
- Supplemental information

Each data segment is identified and defined in Section 3.2. Table 1 lists the data segments and their data element number range designation. Table 2 identifies the data elements associated with each data segment. See pages 6-8.

3.2 DATA SEGMENT DEFINITIONS

3.2.1 Product description: Fifteen data elements used to represent the manufacturer information, identify the coating system component, and certification.

3.2.2 Intended use: Ten data elements used to describe manufacturer's recommendations on use of the coating material.

3.2.3 Physical properties (as applied material): Thirteen data elements that describe the physical properties, including test results for the wet material.

3.2.4 Mixing and application: Thirty data elements that provide guidance on the mixing and application of the coating material.

3.2.5 Key performance parameters: Twenty-nine data elements that identify test methods and results for the coating material.

3.2.6 Safety: Six data elements that describe safety data and considerations for the coating material.

3.2.7 Supplementary information: One data element that describes manufacturer supplementary comments regarding identification, properties, and use of the coating material.

4. Data Elements

4.1 Introduction: Each data segment is subdivided into sets of data elements that are used to report either essential, essential if applicable, or desirable information. Data elements for data segments are defined in the following sections. The use of SI units is preferred and the reporting of all properties in SI units is always required. It is also desirable to include English units (in parenthesis), following the SI unit specification.

4.2 PRODUCT DESCRIPTION

4.2.1 Product name (essential): the name established by the manufacturer to uniquely identify the coating material.

4.2.2 Product identification (essential): a unique identification number established by the manufacturer to uniquely identify the coating material.

4.2.3 Manufacturer name (essential): the name of the coating manufacturer.

4.2.4 Manufacturer address (desirable): the manufacturer street or post office box address for use in communicating written documents.

4.2.5 Manufacturer city designation (desirable): the manufacturer city for use in communicating written documents.

4.2.6 Manufacturer state designation (desirable): the manufacturer state for use in communicating written documents.

4.2.7 Manufacturer zip code designation (desirable): the manufacturer zip code for use in communicating written documents.

4.2.8 Manufacturer country designation (desirable): the manufacturer country name for use in communicating written documents.

4.2.9 Manufacturer telephone number (essential): telephone number for the manufacturer.

4.2.10 Manufacturer facsimile number (desirable): facsimile number of the manufacturer.

4.2.11 Manufacturer electronic mail address (desirable): electronic mail address of the manufacturer.

4.2.12 Manufacturer World Wide Web Universal Resource Locator (URL) address (desirable): Internet World Wide Web address for the manufacturer.

4.2.13 Generic type (essential): identifies the generic coating material type based on the primary resin system.

4.2.14 System component (essential): identifies the coating system component.

4.2.15 Certification/qualification (desirable): identifies a certification or qualification assigned to the coating material.

4.3 INTENDED USE

4.3.1 Common use (essential): identifies the suitable application areas. Piping and highway bridges are examples of use areas.

4.3.2 Substrate type (essential): identifies the recommended compatible substrate(s).

4.3.3 Exposure environment (essential): recommended exposure environment(s). Examples of standard exposure environments are defined in SSPC Painting Manual, Volume 2.

4.3.4 Surface preparation specification (essential): recommended surface preparation specification for application of the coating material.

4.3.5 Compatible undercoat (essential if applicable): identifies a compatible undercoat.

4.3.6 Compatible topcoat (essential if applicable): identifies a compatible topcoat.

4.3.7 Continuous dry temperature limitation (essential if applicable): specifies the acceptable continuous temperature limitation reported in degrees Celsius and Fahrenheit.

4.3.8 Intermittent dry temperature limitation (essential if applicable): specifies the acceptable intermittent temperature limitation reported in degrees Celsius and Fahrenheit.

4.3.9 Chemical temperature limitation (essential if applicable): specifies the acceptable elevated temperature for chemical environment reported in degrees Celsius and Fahrenheit.

4.3.10 Wet temperature limitation (essential if applicable): specifies the acceptable wet temperature limitation reported in degrees Celsius and Fahrenheit.

4.4 PHYSICAL PROPERTIES (AS APPLIED MATERIAL)

4.4.1 Volume solids (essential): specifies the percent volume solids test result.

4.4.2 Volume solids test method (essential): identifies the test method used to determine the volume solids percent.

4.4.3 Solids by weight (essential): specifies the percent solids by weight test result.

4.4.4 Solids by weight test method (essential): identifies the test method used to determine the weight solids percent.

4.4.5 Volatile organic compounds (VOC) (essential): identifies the volatile organic compound content in grams/liter and lbs/gallon test result.

4.4.6 Volatile organic compounds (VOC) test method (essential): identifies the test method used to determine the volatile organic compound content.

4.4.7 Component density (desirable): identifies the mixing component density in grams/liter and lbs/gallon.

4.4.8 Mixed density (desirable): identifies the density test result in grams/liter and lbs/gallon.

4.4.9 Density test method (desirable): identifies the test method used to determine the density.

4.4.10 Storage and transport temperature (desirable): specifies the acceptable temperature range for storing and transporting the coating material in degrees Celsius and Fahrenheit.

4.4.11 Shelf life (essential): identifies the recommended shelf life in months.

4.4.12 Finish (desirable): identifies the type of coating component finish.

4.4.13 Color (desirable): identifies the color or range of colors available for the coating.

4.5 MIXING AND APPLICATION

4.5.1 Dry-to-handle (essential): identifies the dry-to-handle time in hours at a specified temperature reported in degrees Celsius and Fahrenheit.

4.5.2 Dry-to-handle test method (essential): identifies the test method used to determine the dry-to-handle test results.

4.5.3 Dry-to-touch (essential): identifies the dry-to-touch time in hours.

4.5.4 Dry-to-touch test method (essential): identifies the test method used to determine the dry-to-touch test results.

4.5.5 Maximum recoat time (essential): identifies the recommended maximum overcoat time in hours.

4.5.6 Temperature for maximum recoat time (essential): the temperature used to determine the maximum recoat value reported in degrees Celsius and Fahrenheit.

4.5.7 Minimum recoat time (essential): identifies the recommended minimum overcoat time in hours.

4.5.8 Temperature for minimum recoat time (essential): the recommended minimum recoat time temperature reported in degrees Celsius and Fahrenheit.

4.5.9 Maximum recommended dry film application thickness (essential): identifies the recommended maximum dry film application thickness, reported in micrometers and mils.

4.5.10 Minimum recommended dry film application thickness (essential): identifies the recommended minimum dry film application thickness, reported in micrometers and mils.

4.5.11 Theoretical coverage per volume (essential): identifies the surface area coverage for volume of coating at a specified dry film thickness, reported in square meters (and square feet) per volume.

4.5.12 Maximum ambient temperature (essential): identifies the recommended maximum ambient temperature for application reported in degrees Celsius and Fahrenheit.

4.5.13 Minimum ambient temperature (essential): identifies the recommended minimum ambient temperature for application in degrees Celsius and Fahrenheit.

4.5.14 Maximum surface temperature (essential): identifies the recommended application surface temperature range in degrees Celsius and Fahrenheit.

4.5.15 Minimum surface temperature (essential): identifies the recommended application surface temperature range in degrees Celsius and Fahrenheit.

4.5.16 Maximum humidity (essential): identifies the recommended maximum relative humidity for application, reported in percent.

4.5.17 Minimum humidity (essential): identifies the recommended minimum relative humidity for application, reported in percent.

4.5.18 Dew point range (essential): identifies the recommended application dew point/surface temperature range in degrees Celsius and Fahrenheit.

4.5.19 Thinner (essential): identifies the recommended thinner.

4.5.20 Clean-up solvent (essential): identifies the recommended clean-up solvent.

4.5.21 Parts (essential if applicable): identifies the required number of parts for mixing.

4.5.22 Mixing method (essential if applicable): identifies the recommended method for mixing.

4.5.23 Mixing ratio (essential if applicable): identifies the required ratio for mixing parts.

4.5.24 Induction time (essential if applicable): identifies the induction time in hours.

4.5.25 Temperature for induction time (essential if applicable): identifies the induction time temperature in degrees Celsius and Fahrenheit.

4.5.26 Pot life (essential if applicable): identifies the pot life in hours.

4.5.27 Pot life temperature (essential if applicable): identifies the pot life temperature in degrees Celsius and Fahrenheit.

4.5.28 Application method (desirable): identifies the recommended application method(s).

4.5.29 Agitation requirements (desirable): identifies the recommended agitation requirements during application.

4.5.30 Curing mechanism (desirable): identifies the curing mechanism.

4.6 KEY PERFORMANCE PARAMETERS

4.6.1 Corrosion resistance (desirable): corrosion resistance test results.

4.6.2 Corrosion resistance test parameters (desirable): corrosion resistance test parameters.

4.6.3 Corrosion resistance test method (desirable): identifies the method used to determine the corrosion resistance.

4.6.4 Weathering (desirable): weathering test results for gloss, color retention, chalking, and checking.

4.6.5 Weathering test parameters (desirable): identifies the test parameters used to conduct the weathering test.

4.6.6 Weathering test method (desirable): identifies the test method used to determine weathering.

4.6.7 Abrasion resistance (desirable): abrasion resistance test results.