



NACE Standard RP0197-2004
Item No. 21080

Standard Recommended Practice

Standard Format for Computerized Electrochemical Polarization Curve Data Files

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Foreword

This NACE International standard recommended practice defines data categories and specific data elements (fields) that are considered necessary for meaningful transfer of electrochemical polarization curve data from one laboratory to another. It is thus intended to facilitate the use of data by different laboratories and does not imply or endorse any particular database design or schema.

This standard was originally prepared in 1997 by Task Group T-3U-4, a component of Unit Committee T-3U on Computers in Corrosion Control. It was reaffirmed in 2004 by Specific Technology Group (STG) 07 on Computer Applications. It is issued under the auspices of STG 07.

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Section 1: General

1.1 This standard identifies the requirements for the complete specification of parameters necessary for the meaningful interchange of electrochemical polarization curve data files among different computer systems and laboratories.

1.2 Reliable comparisons of corrosion data from multiple sources are expedited when data are provided for as many of the listed fields as possible. When data are limited, some degree of uncertainty is present.

1.3 This standard provides a useful reference to be consulted before initiating a corrosion test to ensure plans are made to record relevant data.

1.4 Reference should also be made to NACE Standard RP0690 (latest revision), "Standard Format for Collection and Compilation of Data for Computerized Material Corrosion Resistance Database Input."¹

Section 2: Standard Format Data Fields

2.1 The following general categories for data collection shall be considered:

2.1.1 Test and tester identification: Unique code to identify experiment, together with information of date and testing laboratory.

2.1.2 Type of polarization scan—e.g., potentiodynamic (anodic or cathodic), pitting (cyclic polarization), Tafel, linear polarization, potentiostaircase, or any other experiment in which a range of potentials is applied to a test specimen and DC current measurements are made. This standard is not intended for tests under galvanostatic conditions.

2.1.3 Material identification: Material class, sub-class, and family, common name, standard designation, condition, manufacturing process, product form.

2.1.4 Test specimen identification: Test specimen geometry, surface area, surface condition, composition and properties.

2.1.5 Test environment: Generic description, concentration and state of components and contaminants, dissolved gases.

2.1.6 Exposure conditions: Events prior to and during scan, temperature, pH, hydrodynamic conditions.

2.1.7 Test parameters: Additional experimental details.

2.1.8 Test documentation: Data source or literature reference for the test. When a literature reference exists for a particular kind of test, a reference shall be quoted.

2.1.9 Supplementary notes: Shall be used to document additional information considered important in the interpretation of data.

2.2 Fields for standard data entry format for the header for computerized electrochemical polarization curve data files are given in Table 1.

2.3 A sample data file is given in Appendix A.

Section 3: Data File Structure

3.1 The data file shall be in ASCII format.

3.2 The data file shall consist of two parts. The first part shall be a header consisting of a list of fields, one field on each line. Each field shall be characterized by an identifier string, listed in the middle column of Table 1, and followed by the relevant data of the type specified. A comma shall be used as a delimiter between all data, whether in the form of strings or numerics, except at the end of each line, which shall be delimited by a carriage return.

3.3 In the header, when the data type is numeric, a string identifier for the unit of measurement shall follow the data. Data shall be reported in the units in which the original measurements were made. Subsequent conversions are at the discretion of users. When data are not available, a field may be omitted, subject to the qualification expressed in Paragraph 1.2.