

EQUIPMENT DATA STANDARD

Standard No.: EX000009.1

January 6, 2006

Approved on January 6, 2006 by the
Exchange Network Leadership Council
for use on the Environmental
Information Exchange Network

Approved on January 6, 2006 by the
Chief Information Officer of the
U. S. Environmental Protection Agency
for use within U.S. EPA

This consensus standard was developed in collaboration by State, Tribal, and U. S. EPA representatives under the guidance of the Exchange Network Leadership Council and its predecessor organization, the Environmental Data Standards Council.

Foreword

The Environmental Data Standards Council identifies, prioritizes and pursues the creation of data standards for those areas where information exchange standards will provide the most value in achieving environmental results. The Council involves Tribes and Tribal Nations, state and federal agencies in the development of the standards and then provides the draft materials for general review. Business groups, non-governmental organizations, and other interested parties may then provide input and comment for Council consideration and standard finalization. Standards are available at <http://www.epa.gov/datastandards>.

1.0 INTRODUCTION

This Equipment Data Standard identifies and describes an apparatus or instrument used for sample collection, processing, analysis, etc. associated with environmental monitoring and laboratory analysis. The equipment data standard includes associated calibration information.

1.1 Scope

This standard provides and describes data groupings that are used to exchange equipment data and information.

1.2 Revision History

Date	Version	Description
January 6, 2006	EX000009.1	Initial Environmental Data Standards Council Adoption

1.3 References to Other Data Standards

This standard relies on other standards to make it complete and provide the necessary support. As such users should consider the references to other data standards noted below as integral to the Equipment Data Standard. These include:

- Measure [EX000010.1] Data Standard
- Contact [EX000019.2] Data Standard
- Method [EX000011.1] Data Standard
- Representation of Date and Time [EX000013.1] Data Standard

1.4 Terms and Definitions

For the purposes of this document, the following terms and definitions apply. **Term**

Definition

Equipment	Apparatus or instrument and associated calibration information used for sample collection, processing, analysis, etc.
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1.5 Implementation

Users are encouraged to use the XML registry housed on the Exchange Network Web site to download schema components for the construction of XML schema flows (<http://www.exchangenetwork.net>).

1.6 Document Structure

The structure of this document is briefly described below:

- a. Section 2.0 Equipment Diagram, illustrates the principal data groupings contained within this standard.
- b. Section 3.0 Equipment Data Standards Table, provides information on the high level, intermediate and elemental Equipment data groupings. Where applicable, for each level of this data standard, a definition, XML tag, note(s), example list of values and format are provided. The format column may include “A” to specify alphanumeric, “N” to designate numeric, “G” to denote a grouping, and “D” for time and date formats referenced in the Representation of Date and Time Data Standard.
- c. Data Element Numbering. For purposes of clarity and to enhance understanding of data standard hierarchy and relationships, each data group is numerically classified from the primary to the elemental level.
- d. Code and Identifier Metadata: Metadata, defined here as data about data or data elements, includes their descriptions and/or any needed context setting information required to identify the origin, conditions of use, interpretation, or understanding the information being exchanged or transferred. (Adapted from ISO/IEC 2382-17:1999 Information Technology Vocabulary—Part 17: Databases 17.06.05 metadata). Based on the business need, additional metadata may be required to sufficiently describe an identifier or a code. A note regarding this additional metadata is included in the notes column for identifier and code elements. Additional metadata for identifiers may include:

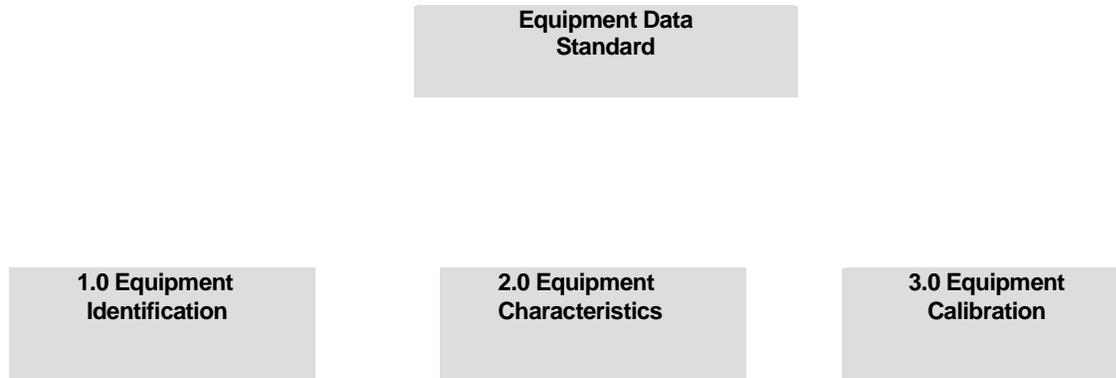
- Code List Identifier, which is a standardized reference to the context or source of the set of codes

Additional metadata for codes may include:

- Code List Identifier, which is a standardized reference to the context or source of the set of codes
 - Code List Version Identifier, which identifies the particular version of the set of codes
 - Code List Version Agency Identifier, which identifies the agency responsible for maintaining the set of codes
 - Code List Name, which describes the corresponding name for which the code represents
- e. Appendix A, Equipment Data Standard Structure Diagram, illustrates the hierarchical classification of the Equipment data standard. This diagram enables business and technical users of this standard to quickly understand its general content and complexity. Appendix B, lists the references for the Equipment Data Standard.

2.0 EQUIPMENT DATA STANDARD DIAGRAM

This diagram specifies the major data groups that may be used to identify the characteristics and/or to catalog equipment.



3.0 EQUIPMENT DATA STANDARD TABLE

Definition: Information needed to uniquely identify the apparatus, instrument used for the activity.
 Relationship: None.
 Notes: XML None.
 Tag: EquipmentIdentification

Equipment Identification

Name	Definition	Notes	Format	XML Tag
1.1 Equipment Identifier	A designator used to uniquely identify the instrument or equipment used for the activity.	<i>Note:</i> Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in the Introduction section, 1.6.d, above. Example List of Values: <ul style="list-style-type: none"> • S/N-#40291 • GC/MS-Lab 1 • VanVeen Grab 	A	EquipmentIdentifier

1.2 Equipment Name	Name of instrument or equipment used for the activity.	Example List of Values: <ul style="list-style-type: none">• Gas chromatograph/mass spectrometer• Sediment Grab• Sediment Core• Temperature logger• Compositor• Grinder/processor	A	EquipmentName
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Name	Definition	Notes	Format	XML Tag
1.3 Equipment Description Text	Description of instrument or equipment or configuration used for the activity.	Example List of Values: <ul style="list-style-type: none"> • Box Core developed by the Department of Ecology 	A	EquipmentDescriptionText
1.4 Equipment Type Text	Type or category of instrument or equipment used for the activity.	Example List of Values: <ul style="list-style-type: none"> • Preservation • Analytical • Laboratory • Field 	A	EquipmentTypeText
Data Element Name	Data Element Definition	Notes	Format	XML Tags

Definition: Quantifiable characteristics of the instrument or equipment. None.

Relationship: This data grouping may repeat.

Note: EquipmentCharacteristics

XML Tag:

2.1 Equipment Characteristic Text	Quantifiable characteristic of the equipment.	Example List of Values: <ul style="list-style-type: none"> • Area sampled by equipment • Aperture size • Maximum surface area for a petite ponar sediment grab (Measure Standard insert: 0.02m²) 	A	EquipmentCharacteristicText
2.2 Equipment Characteristic Measure	Dimensions or other measurements to further characterize the equipment.	Reference the Measure [EX000010.1] Data Standard . The following items are needed: Measure Value, Measure Unit Code, Measure Precision, Result Qualifier Code, Result Qualifier Code Description.	G	EquipmentCharacteristicMeasure

3.0 Equipment Calibration

Data Element Name	Data Element Definition	Notes	Format	XML Tags
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Definition: Elements or attributes that describe a calibration of the instrument or equipment used for the activity. None.
 Relationship: This data grouping may repeat.
 Note: EquipmentCalibration
 XML Tag:

3.1 Calibration Contact	A designator to uniquely identify the person to contact concerning information related to the analysis results.	<i>Note:</i> Reference the Contact [EX000019.2] Data Standard The following data elements may be needed: Individual Identifier Individual Full Name Affiliation Type Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in the Introduction section, 1.6.d, above.	G	CalibrationContact
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3.2 Calibration Batch Identifier	A designator to uniquely identify the batch of samples analyzed or collected under a single calibration.	Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in the Introduction section, 1.6.d, above.	A	CalibrationBatchIdentifier
3.3 Calibration Type	Description of the type of calibration performed.	<p>Example List of Values:</p> <ul style="list-style-type: none"> • Pre-deployment • Multi-point calibration • Single Point calibration • Linear Regression with equal weighting • Linear Regression with inverse of concentration • Linear Regression with inverse square of concentration • Quadratic • Second order curve fit • Forced through zero • Average response factor 	A	CalibrationType

3.4 Calibration Method	Identifying information on the sample analysis method procedure.	Reference the Method [EX000011.1] Data Standard . The following data elements may be needed: Method Identifier, Method Name, Method Description Text, Method Deviation, Method Reference.	G	CalibrationMethod
3.5 Calibration Date	The calendar date of calibration.	Reported as 4-digit year, 2-digit month, and 2-digit day. The Representation of Date and Time [EX000013.1] Data Standard will apply anytime a date is reported.	D	CalibrationDate
3.6 Calibration Time	The local time and time zone of calibration.	Reported as a 24-hour day with 2-digit hour, 2-digit minute, and 2-digit second time: 3-alpha time zone. The Representation of Date and Time [EX000013.1] Data Standard will apply anytime a time is reported.	D	CalibrationTime
3.7 Calibration Limit Exception Indicator	A flag indicating an exception to the acceptable calibration limits.	Permitted List of Values: Y - yes N - no	A	CalibrationLimitExceptionIndicator

3.8 Calibration Limit Exception Text	Explanation of any calibration anomalies.	Example List of Values: <ul style="list-style-type: none"> • Did not meet calibration criteria exceeded correlation coefficient • Did not meet percent RSD Limit criteria. • Did not meet minimum relative response factor. 	A	CalibrationLimitExceptionText
3.9 Equipment Correction Indicator	A flag indicating a correction made to equipment as a result of calibration.	Permitted List of Values: Y - yes N - no	A	EquipmentCorrectionIndicator
3.10 Equipment Correction Text	Explanation of any corrections made to equipment as a result of calibration or the reason that the equipment was not calibrated.	Example List of Values: <ul style="list-style-type: none"> • Add 0.5°C to all temperatures 	A	EquipmentCorrectionText

Appendix A Equipment Data Standard Structure Diagram

Equipment Data Standard

1.0 Equipment Identification

- 1.1 Equipment Identifier
- 1.2 Equipment Name
- 1.3 Equipment Description Text
- 1.4 Equipment Type Text

2.0 Equipment Characteristics

- 2.1 Equipment Characteristic Text
- 2.2 Equipment Characteristic Measure

3.0 Equipment Calibration 3.1

Calibration Contact

3.2 Calibration Batch Identifier 3.3

Calibration Type 3.4 Calibration

Method 3.5 Calibration Date 3.6

Calibration Time

3.7 Calibration Limit Exception

Indicator

3.8 Calibration Limit Exception Text

3.9 Equipment Correction Indicator

3.10 Equipment Correction Text

Appendix B References

- i. ISO/IEC 2382-17:1999 Information Technology Vocabulary—Part 17: Databases 17.06.*