

OJT Resource: NIST OWM GLPs

Good Laboratory Practices

What are GLPs

NIST Good Laboratory Practices are a set of guidance documents published by the National Institute of Standards and Technology to help calibration laboratories apply sound metrology practices and maintain measurement quality and traceability.

Location

<https://www.nist.gov/pml/owm/laboratory-metrology/documentary-standards-and-resources/glps>

GMPs Quick Summary Guide

GLP 1 – Quality Assurance of Laboratory Measurement Results (May 2019)

Defines the quality assurance framework a metrology lab must use to ensure all measurement results are valid, traceable, and defensible. It requires a documented quality system; properly maintained and traceable standards; controlled environmental conditions; trained and competent staff; authorized procedures; and routine quality checks like check standards, control charts, and interlaboratory comparisons to confirm ongoing accuracy. The lab must document and investigate any nonconformities, maintain complete records, and perform audits and reviews to show the entire system is consistently producing reliable metrology results.

GLP 2 – Minimum Requirements for the Physical Facilities for Weights and Measures Laboratory (Superseded by HB 143)

Because HB 143 replaced this GLP, it no longer exists.

GLP 3 – Care of State Standards (1986)

This describes how to handle state primary standards to keep them protected and safe.

GLP 4 – Periodic Recalibration of State Standards (May 2019)

This gives guidance on developing an internal policy for recalibration of laboratory standards.

GLP 5 – Laboratory Administration (Superseded by HB 143)

Because HB 143 replaced this GLP, it no longer exists.

GLP 6 – Prerequisites for Testing Measurement Standards and Equipment (1986)

The document provides guidance on how artifacts should come to the laboratory for calibration for both mass and volume.

GLP 7 – Military Standard 45662, Calibration System Requirements (Superseded by HB 143)

Because HB 143 replaced this GLP, it no longer exists.

GLP 8 – Sealing of Equipment (1986)

This practice gives guidance on sealing artifacts and gives suggestions on how the seals should be marked.

GLP 9 – Rounding Expanded Uncertainties and Calibration Values (May 2019)

This practice gives a breakdown of how to round to 2 significant digits in accordance with the ISO/IEC Guidance to the Expression of Uncertainty in Measurement (GUM)

GLP 10 – Purity of Water (May 2019)

This gives guidance and specifications on the type of water to be used in calibration in a metrology laboratory. It also covers water density calculations.

GLP 11 – Painting Weights (May 2019)

This is a short guide on how to paint cast iron weights to preserve their mass integrity.

GLP 12 – Laboratory Requirements (Superseded by HB 143)

Because HB 143 replaced this GLP, it no longer exists.

GLP 13 – Drying "To Contain" Volume Standards (May 2019)

Vessels calibrated "To Contain"(TC) must be dried of all measurable water to obtain an "empty" weight. The drying process should not contaminate the container; otherwise, it will need to be re-cleaned before further calibration or volumetric use and this practice is guidance for when drying is required.

GLP 14 – Method Validation (May 2019)

This is a metrology laboratory policy and procedure for developing and validating test or calibration methods when no international or national procedures are available, when deviating from standardized methods, or when no standard procedures are available.

GLP 15 – Software Quality Assurance (May 2019)

This is the metrology laboratory procedure for protecting, validating, and approving the accuracy of computer software and systems.

How To Use GLPs

NIST GLPs are meant to be used as technical guidance documents that help laboratories apply sound metrology practices and support metrological traceability. They are not requirements*, but they provide widely accepted methods and approaches that laboratories can incorporate into their procedures and quality systems.

*While GLP isn't required, Handbook 143 does state that GLP 15 or equivalent is required for Software Quality Assurance