

Gauge Block Calibration by Interferometry

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Absolute length calibration of gauge blocks traceable to the definition of meter is an important task of the national metrology institutes responsible for providing reliable length artifacts for industrial use. The length of a gauge block (henceforth, represented as GB) is defined in ISO 3650 as the distance between its one measuring face and the surface of an auxiliary platen on which the other measuring face has been wrung. Accordingly, in central length calibration of K-grade GBs using interferometry, it is required that they be wrung onto an auxiliary platen whose characteristics are the same as the measuring face of the GBs. According to this definition, the length of a GB consists of its mechanical length between two faces and the wringing film thickness. This definition is practical and reasonable in many cases because GBs are used as length standards with wringing. Also this calibration method has the advantage that the thickness of the wringing film is propagated appropriately when lower grade GBs are calibrated by comparison to higher grade GBs via a mechanical comparator. In terms of this paper is briefly described interferometry method of gauge blocks calibration. The paper was written in conjunction with Czech Metrology Institute.

Keywords: Gauge Blocks, Measurement by Interferometry, Measurement Uncertainty.

Acknowledgement

This paper is related to the investigation on the Research Project TA03010663: Advanced systems for length calibration gauge blocks and surface inspection of end standards, which are supported by the Technological Agency of the Czech Republic.

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Paper number: M201612

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