

Fundamentals of Mass Determination

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Preface

This booklet is based on the MT brochure "Fundamentals of Mass Determination" published in 1991. It has now been updated and completely revised on the basis of the PTB report "Guide to mass determination with high accuracy" published in 2006.

In this work, the definition and dissemination of the unit of mass is explained, starting with an introduction to metrology and mass determination. Establishing a mass scale requires corresponding mass standards and mass comparators. The metrological requirements for weighing instruments, weights, and measuring conditions are explained and discussed, based on international directives and the applicable legal metrology regulations. International directives and institutions are striving towards the worldwide uniform implementation of these requirements. Processes used to determine density and volume are described to the extent that they apply to mass determination. Calculating measurement uncertainty requires the consideration of the effect of influencing quantities on mass determination. An overview of this topic is provided to make it easier to determine and specify measurement uncertainty in practice. Additional information in the form of tables, illustrations, and literature references allows the reader to extend the study of mass metrology.

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