TECHNICAL
SPECIFICATION

ISO/TS
20177

First edition
2018-06

Vacuum technology — Vacuum gauges — Procedures to measure and report outgassing rates

Technique du vide — Manomètres à vide — Méthodes de mesurage et de rapport du taux de dégagement de gaz

Reference number
ISO/TS 20177:2018(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee TC 112, *Vacuum technology*.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Outgassing from the inner wall of a vacuum chamber and from components in a vacuum chamber limit the achievable lowest pressure in a vacuum system and its cleanliness. The lowest achievable pressure is usually important in research facilities as accelerators, in facilities that need to ensure a clean surface, e.g. molecular beam epitaxy, or in devices that need to ensure high vacuum without pump for long times, such as transmitters or X-ray tubes, medical instruments, surface analytical instrumentation or insulation panels. Cleanliness of a vacuum, i.e. the absence or sufficiently low partial pressure of specific gas species or vapours, is important in many different industrial applications such as coating, EUV lithography, catalysis, drying processes in the pharmaceutical or food industry but also in accelerators, fusion reactors, etc. The measurement of outgassing rates is therefore an important tool of quality assurance in vacuum technology. This document recommends well-defined procedures with the possibility of getting traceability of the results of an outgassing rate measurement.

Annex A lists schemes of principles of measurement systems.