

---

---

**Vacuum technology — Standard  
methods for measuring vacuum-pump  
performance —**

**Part 4:  
Turbomolecular vacuum pumps**

*Technique du vide — Méthodes normalisées pour mesurer les  
performances des pompes à vide —*

*Partie 4: Pompes à vide turbomoléculaires*

**Document Preview**

[ISO 21360-4:2018](https://standards.iteh.ai/catalog/standards/iso/c23eee13-0725-4547-b436-c513d95c578f/iso-21360-4-2018)

<https://standards.iteh.ai/catalog/standards/iso/c23eee13-0725-4547-b436-c513d95c578f/iso-21360-4-2018>



iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 21360-4:2018](https://standards.iteh.ai/catalog/standards/iso/c23eee13-0725-4547-b436-c513d95c578f/iso-21360-4-2018)

<https://standards.iteh.ai/catalog/standards/iso/c23eee13-0725-4547-b436-c513d95c578f/iso-21360-4-2018>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Symbols and abbreviated terms</b> .....	<b>3</b>
<b>5 Test methods</b> .....	<b>4</b>
5.1 Test gas.....	4
5.2 Volume flow rate measurement (pumping speed).....	4
5.2.1 General.....	4
5.2.2 Size of backing pump.....	4
5.2.3 Volume flow rate (pumping speed) measurement by the throughput method.....	4
5.2.4 Volume flow rate (pumping speed) measurement by the orifice method.....	5
5.3 Maximum throughput measurement.....	5
5.3.1 Measurement method.....	5
5.3.2 Test procedure.....	5
5.4 Critical backing pressure measurement.....	5
5.5 Measurement of compression ratio.....	5
5.6 Measurement of base pressure.....	6
5.7 Vibration measurement.....	6
5.7.1 General.....	6
5.7.2 Test apparatus.....	6
5.7.3 Test procedure.....	6
<b>6 Test report</b> .....	<b>6</b>
6.1 Volume flow rate measurement.....	7
6.2 Compression ratio measurement.....	7
6.3 Maximum throughput measurement.....	7
6.4 Critical backing pressure measurement.....	7
6.5 Base pressure measurement.....	8
6.6 Vibrational measurement.....	8
<b>Annex A (informative) Derivation of <a href="#">Formulae (4)</a> and <a href="#">(5)</a></b> .....	<b>9</b>
<b>Bibliography</b> .....	<b>10</b>

## 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](http://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](http://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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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

A list of all parts in the ISO 21360 series can be found on the ISO website.

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](http://www.iso.org/members.html).

## Introduction

This document specifies methods for measuring the performance data of turbomolecular vacuum pumps. This document complements ISO 21360-1, which provides a general description of the measurement of performance data of vacuum pumps.

The methods described here are well known from existing national and international standards. The aim in drafting this document was to collect together suitable methods for the measurement of performance data of turbomolecular vacuum pumps. This document takes precedence in the event of a conflict with ISO 21360-1.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 21360-4:2018](https://standards.iteh.ai/catalog/standards/iso/c23eee13-0725-4547-b436-c513d95c578f/iso-21360-4-2018)

<https://standards.iteh.ai/catalog/standards/iso/c23eee13-0725-4547-b436-c513d95c578f/iso-21360-4-2018>

