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Vacuum technology — Vocabulary —

Part 1:
General terms

Technique du vide — Vocabulaire —

Partie 1: Termes généraux

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Introduction

If difficulties arise in the use of the definitions in connection with measurement of some quantities, it is recommended that reference be made to the International Standards related to the measurement of those quantities for the practical interpretation of the terms.

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).

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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.

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

This second edition cancels and replaces the first edition (ISO 3529-1:1981), which has been technically revised. The main changes compared to the previous edition are as follows:

— standard conditions which are defined elsewhere were removed;

— ranges of vacuum were newly defined and reasons given;

— new term ultra clean vacuum was defined;

— knudsen number and rarefaction parameter were included;

— slip flow was defined;

— specific desorption, outgassing, and evaporation rate were newly defined;

— accommodation factor distinguished in energy and momentum accommodation factor.

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.

Vacuum technology — Vocabulary —

Part 1:
General terms

1 Scope

This document defines general terms used in vacuum technology. It gives theoretical definitions as precise as possible, bearing in mind the need for use of the concept in practice.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 General terms

3.1.1
vacuum
commonly used term to describe the state of a rarefied gas or the environment corresponding to such a state, associated with a pressure or a molecular density below the prevailing atmospheric level

3.1.2
ranges of vacuum
various ranges of vacuum according to certain pressure intervals

Note 1 to entry: While there has been some variation in the selection of the limits of these intervals, the following list gives typical ranges for which the limits are to be considered as approximations.

Note 2 to entry: The prevailing atmospheric pressure on ground depends on weather conditions and altitude and ranges from 31 kPa (altitude of the Mount Everest, weather condition "low") up to 110 kPa (altitude Dead Sea, weather condition "high").

Pressure range	Definition	The reasoning for the definition of the ranges is as follows (typical circumstances):
Prevailing atmospheric pressure (31 kPa to 110 kPa) to 100 Pa	low (rough) vacuum	Pressure can be achieved by simple materials (e.g. regular steel) and positive displacement vacuum pumps; viscous flow regime for gases
<100 Pa to 0,1 Pa	medium (fine) vacuum	Pressure can be achieved by elaborate materials (e.g. stainless steel) and positive displacement vacuum pumps; transitional flow regime for gases

