

Second edition
2007-09-15

AMENDMENT 1
2015-02-01

**Fire tests — Smoke-control door and
shutter assemblies —**

**Part 1:
Ambient- and medium-temperature
leakage tests**

AMENDMENT 1

Essais au feu — Assemblages porte et volet pare-fumée —

Partie 1: Essais de fuite à température ambiante et moyenne

AMENDEMENT 1



Reference number
ISO 5925-1:2007/Amd.1:2015(E)

© ISO 2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015

All rights reserved. Unless otherwise specified, 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
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire containment*.

STANDARDSISO.COM : Click to view the full PDF of ISO 5925-1:2007/Amd 1:2015

Fire tests — Smoke-control door and shutter assemblies —

Part 1:

Ambient- and medium-temperature leakage tests

AMENDMENT 1

Page 10, Annex B

Add a new clause, B.3, as follows:

B.3 Methods for measuring leakage rates

Using the equipment described in B.2, one of the two following methods shall be used for measuring leakage rates.

B.3.1 Method A

An inlet and an outlet pipe are connected to the chamber in Figure 1 on opposite ends of the chamber (in the left wall and right wall of the chamber at mid-height). The outlet pipe shall be fitted with a valve to control chamber pressure. The air flow rate shall be measured in each pipe using apparatus suitable for this purpose. For example, use a hot wire anemometer traversed across the pipe inside diameter to determine the average air speed (V_{avg}) in the pipe and a thermometer to measure air temperature for calculations to standard conditions). The airflow rate Q is expressed as

$$V_{avg} \text{ (m/hr)} \times \text{area of pipe (m}^2\text{)} = Q \text{ (m}^3\text{/hr)}$$

in each pipe. The air-speed measurement shall be made at least nine pipe diameters from the air flow source and a minimum of five pipe diameters from the chamber wall. The pipe diameter shall be sized to allow for accurate traverse averaging of the air speed instrument (at least 75 mm). The total leakage rate is $Q_t = Q_{in} \text{ (sealed)} - Q_{out} \text{ (sealed)}$. Before or after the test, the chamber leakage rate shall be determined by hermetically sealing the chamber opening (EPDM rubber sheet roofing mounted in a frame, then installed and sealed with silicone caulk is a suitable hermetic seal) where the door and framing is normally installed, and measuring $Q_a = Q_{in} - Q_{out}$.

The specimen leakage rate is then calculated as $Q_d = Q_t - Q_a$.

Method A will require more robust heating since the inlet air is escaping from the outlet pipe. Additionally, the air from the outlet is significantly hotter than the inlet air and care must be taken to account for calculating the flow rates corrected for temperature to standard conditions. Method B avoids these issues.

B.3.2 Method B

A single inlet pipe is installed on one wall of the chamber. Air flow rate shall be measured in the pipe using a suitable apparatus. For example, use a hot wire anemometer traversed across the pipe inside diameter to determine the average air speed (V_{avg}) in the pipe and a thermometer to measure air temperature for calculations to standard conditions. The airflow rate Q is expressed as

$$V_{avg} \text{ (m/hr)} \times \text{area of pipe (m}^2\text{)} = Q \text{ (m}^3\text{/hr)}$$

in the pipe. The air speed measurement shall be made at least nine pipe diameters from the air flow source and a minimum of five pipe diameters from the chamber wall. The pipe diameter shall be sized to allow accurate traverse averaging of the air speed instrument (at least 75 mm). The air flow source shall have either a control valve or a bleed T to control air pressure to the chamber. The total leakage rate $Q_t = Q_{in}$. Before or after the test, the chamber leakage rate shall be determined by hermetically sealing the chamber opening (EPDM rubber sheet roofing mounted in a frame, then installed and sealed

with silicone caulk is a suitable hermetic seal) where the door and framing is normally installed, and measuring $Q_a = Q_{in}$ (sealed).

The specimen leakage rate is then calculated as $Q_d = Q_t - Q_a$.

The inlet control valve method of controlling pressure has one problematic issue. If the air source is of higher pressure than the test pressure, one shall eventually close the valve to avoid over-pressurizing the chamber then open slightly while the specimen leaks and continue this process throughout the test. This does not happen with specimens that exhibit a high leakage rate or a leaky chamber. The preferred method is to leak excess pressure at the inlet where the air source connects to the inlet pipe using a T connection. The turbulence produced at the T does not affect the flow rate measurement nine pipe diameters downstream. Additionally, an air source consisting of a variac connected to an air conditioning blower allows one to control flow rate very precisely instead of using a simple valve on the T bleed leg. One shall experiment with T bleed leg pipe diameters to obtain optimal precise control of test pressures.

STANDARDSISO.COM : Click to view the full PDF of ISO 5925-1:2007/Amd.1:2015