BS EN ISO 6781-3:2015

BSI Standards Publication

Performance of buildings — Detection of heat, air and moisture irregularities in buildings by infrared methods

Part 3: Qualifications of equipment operators, data analysts and report writers

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National foreword

This British Standard is the UK implementation of EN ISO 6781-3:2015.

The UK participation in its preparation was entrusted to Technical Committee B/540, Energy performance of materials components and buildings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015.
Published by BSI Standards Limited 2015

ISBN 978 0 580 78098 1

ICS 91.120.10

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2015.

Amendments/corrigenda issued since publication

Date	Text affected

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 6781-3

December 2015

ICS 91.120.10

English Version

Performance of buildings - Detection of heat, air and moisture irregularities in buildings by infrared methods - Part 3: Qualifications of equipment operators, data analysts and report writers (ISO 6781-3:2015)

Performance des bâtiments - Détection d'irrégularités de chaleur, air et humidité dans les bâtiments par des méthodes infrarouges - Partie 3: Qualification des opérateurs de l'équipement, des analystes de données et des rédacteurs de rapports (ISO 6781-3:2015)

Verhalten von Gebäuden - Feststellung von wärme-, luft- und feuchtebezogenen Unregelmäßigkeiten in Gebäuden durch Infrarotverfahren - Teil 3: Qualifikation der Ausrüstungsbetreiber, Datenanalytiker und Berichtsautoren (ISO 6781-3:2015)

This European Standard was approved by CEN on 10 October 2015.

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Ref. No. EN ISO 6781-3:2015 E

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European foreword

This document (EN ISO 6781-3:2015) has been prepared by Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment" in collaboration with Technical Committee CEN/TC 89 “Thermal performance of buildings and building components” the secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2016, and conflicting national standards shall be withdrawn at the latest by June 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 6781-3:2015 has been approved by CEN as EN ISO 6781-3:2015 without any modification.

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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 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 163 *Thermal performance and energy use in the built environment*, Subcommittee SC 1, *Test and measurement methods*.

ISO 6781 consists of the following parts under the general title *Performance of buildings — Detection of heat, air and moisture irregularities in buildings by infrared methods*

— *Part 3: Qualifications of equipment operators, data analysts and report writers*

The following parts are under development:

— *Part 1: General procedures*

— *Part 2: Equipment requirements*

— *Part 4: Conducting thermographic inspections and reporting of results for residential and small buildings*

— *Part 5: Conducting thermographic inspections and reporting of results for commercial buildings*

— *Part 6: Conducting thermographic inspections and reporting of results for institutional and special use buildings*

A.1, A.2 and Annex B form *normative* parts of this part of ISO 6781.

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Introduction

Reducing energy use in buildings is paramount to improving our environment. Infrared building thermography provides a tool to quantitatively and qualitatively identify the presence of energy-wasting defects and anomalies within building structures. These defects and anomalies can include, for example, thermal insulation defects, moisture content, and / or unwanted air movement or leakage within the building envelope.

Building thermography is carried out by means of an infrared radiation sensing system, which produces an image based on the apparent radiance temperature of the target surface area. The thermal radiation (infrared radiation density) from the target area is converted by the infrared radiation sensing system to produce a thermal image (thermogram). This image (thermogram) represents the relative intensity of thermal radiation from different parts of the surface. The radiation intensity indicated by the image is directly related to (i) the surface temperature and distribution, (ii) the characteristics of the surface, (iii) the ambient conditions, and (iv) the sensor itself. Also included in the thermographic process is valid interpretation of the thermal images.

As a result, surface temperature distribution can be a key parameter for monitoring the performance of building components, building envelopes and the diagnostics of problems. In use, via analysis of surface temperature distributions, irregularities in the heat and moisture properties of building envelopes and components, and air movement within the building envelope, can be indicated. These irregularities can be due to, for example, thermal insulation defects, moisture content, air leakage within components, or incorrect installation of components which comprise the construction of the building.

To realize its full utility as an initial qualitative screening technique, or in-depth diagnostic technique, thermography is often supported and / or validated by other methods. Such methods include, but are not limited to, infrared photosensitive tracer gas methods, fan pressurization of the building envelope, heat-flow meters, smoke diffusion, anemometry, etc.

The effectiveness of the investigations depends on the competence of individuals who perform the measurements and analyse the data. A person or entity wishing to use or implement infrared thermographic services for buildings can refer to this part of ISO 6781 to understand and specify (i) the competence required of operators of the thermographic equipment, and (ii) the qualifications required of interpreters of data gathered from the thermographic surveys.

This part of ISO 6781 sets out the requirements and levels of competence that equipment operators, data analysts and report writers shall possess in order to undertake thermographic investigations and the analysis and reporting of thermographic results stemming from investigations.

For validity of requirements to this part of ISO 6781, assessment of competence will be undertaken by bodies qualified to train and assess the competence of personnel whose duties require the appropriate theoretical and practical knowledge applicable to thermography of buildings.

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INTERNATIONAL STANDARD ISO 6781-3:2015(E)

Performance of buildings — Detection of heat, air and moisture irregularities in buildings by infrared methods —

Part 3: Qualifications of equipment operators, data analysts and report writers

1 Scope

This part of ISO 6781 specifies the qualifications and competence requirements for personnel who (i) perform thermographic investigations on buildings, (ii) interpret the data emanating from thermographic investigations, and (iii) report the results of thermographic investigations.

This part of ISO 6781 provides the basis for a statement of conformity, in three classes, of the knowledge, skills and abilities of individuals to perform thermographic measurements, analysis and reporting of results for small buildings, residential buildings, and commercial and institutional buildings.

This part of ISO 6781 is not applicable to specialized equipment or other specific situations.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9288:1989, *Thermal insulation* — Heat transfer by radiation — Physical quantities and definitions

ISO/IEC 17024:2012, *Conformity assessment — General requirements for bodies operating certification of persons*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9288:1989 and the following apply.

3.1
trainee
person who is being trained to become qualified

3.2
significant interruption
absence or change of activity which prevents the assessed individual from practising the duties corresponding to the defined scope of their classification for (a) a continuous period in excess of 365 days or (b) two or more periods for a total time exceeding two-fifths of the total period of validity of the certificate or declaration of conformity

3.3
test instrument
any means used (whether oral, written or demonstrative) to test that required knowledge, skills and abilities have been effectively assimilated, and can be effectively deployed in practice, by an individual

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