

INTERNATIONAL  
STANDARD

ISO  
**13370**

Third edition  
2017-06

---

---

---

**Thermal performance of buildings —  
Heat transfer via the ground —  
Calculation methods**

*Performance thermique des bâtiments — Transfert de chaleur par le sol — Méthodes de calcul*



Reference number  
ISO 13370:2017(E)

© ISO 2017



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2017, Published in Switzerland

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  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
[copyright@iso.org](mailto:copyright@iso.org)  
[www.iso.org](http://www.iso.org)

# Contents

	Page
<b>Foreword</b>	<b>v</b>
<b>Introduction</b>	<b>vi</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>2</b>
<b>4 Symbols and subscripts</b>	<b>3</b>
4.1 Symbols	3
4.2 Subscripts	3
<b>5 Description of the method</b>	<b>4</b>
5.1 Output	4
5.2 General description	4
5.3 Periodic coefficients	5
<b>6 Calculation of heat transfer via the ground</b>	<b>5</b>
6.1 Output data	5
6.2 Calculation time intervals	6
6.3 Input data	7
6.4 Thermal properties	7
6.4.1 Thermal properties of the ground	7
6.4.2 Thermal properties of building materials	8
6.4.3 Surface resistances	8
6.5 Internal temperature and climatic data	8
6.5.1 Internal temperature	8
6.5.2 Climatic data	8
6.6 Thermal transmittance and heat flow rate	9
6.6.1 Thermal transmittance	9
6.6.2 Thermal bridges at edge of floor	9
6.6.3 Calculation of heat flow rate	9
6.6.4 Effect of ground water	9
6.6.5 Special cases	10
6.7 Parameters used in the calculations	10
6.7.1 Characteristic dimension of floor	10
6.7.2 Equivalent thickness	11
<b>7 Calculation of thermal transmittances</b>	<b>11</b>
7.1 Slab-on-ground floor	11
7.2 Suspended floor	13
7.3 Heated basement	15
7.3.1 General	15
7.3.2 Basement floor	17
7.3.3 Basement walls	17
7.3.4 Heat transfer from whole basement	18
7.4 Unheated basement	18
7.5 Partly heated basement	19
7.6 Effective thermal resistance of floor construction	19
<b>Annex A (normative) Input and method selection data sheet — Template</b>	<b>20</b>
<b>Annex B (informative) Input and method selection data sheet — Default choices</b>	<b>23</b>
<b>Annex C (normative) Calculation of ground heat flow rate</b>	<b>26</b>
<b>Annex D (normative) Slab-on-ground with edge insulation</b>	<b>32</b>
<b>Annex E (informative) Heat flow rates for edge and central regions of a building</b>	<b>37</b>
<b>Annex F (normative) Application to dynamic calculation programmes</b>	<b>38</b>