

ISO/TR 16738:2009-08 (E)

Fire-safety engineering - Technical information on methods for evaluating behaviour and movement of people

Contents	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	3
5 Integration of behaviour and movement into performance-based design	4
5.1 General	4
5.2 Basis of performance-based design for life safety	4
5.3 ASET calculations	4
5.4 RSET calculations	5
5.5 Evacuation strategies	6
5.6 Margin of safety	6
5.7 Elements used in the quantification of RSET	6
6 Design behavioural scenarios for quantification of RSET	8
7 Estimation of pre-travel activity times	9
8 Estimation of travel times	9
9 Interactions between pre-travel activity time, walking time and exit flow time	10
10 Calculation of escape and evacuation times for single enclosures and for multi-storey or multi-enclosure buildings	11
11 Effects of fire effluent and heat on ASET and RSET	12
11.1 General	12
11.2 Simple criteria based upon zero exposure	13
11.3 Willingness to enter smoke	14
11.4 Ability to move through smoke	14
11.5 Effects of smoke on walking speed	14
11.6 Effects of visibility or exposure to fire and heat	14
11.7 Effects of exposure to toxic gases	15
Annex A (informative) Guidance on the evaluation of detection and warning times	16
Annex B (informative) Pre-travel activity behaviours and determinants	18
Annex C (informative) Detailed information needed for RSET calculations	20
Annex D (informative) Design behavioural scenarios for derivation of default RSET variables	23
Annex E (informative) Pre-travel activity time distribution data and derivations	30

Annex F (informative) Evacuation start time of the verification methods for safe evacuation in Japan	38
Annex G (informative) Guidance on travel speeds and flow rates	40
Annex H (informative) Examples of interactions between pre-travel activity and travel times	52
Annex I (informative) Effects of smoke on walking speed	55
Bibliography	57