

DIN EN 13164:2015-04 (E)

Thermal insulation products for buildings - Factory made extruded polystyrene foam (XPS) products - Specification (includes Amendment A1:2015)

Contents	Page
Foreword.....	5
1 Scope	7
2 Normative references	7
3 Terms, definitions, symbols, units, abbreviated terms	8
3.1 Terms and definitions	8
3.2 Symbols, units and abbreviated terms.....	9
4 Requirements	11
4.1 General.....	11
4.2 For all applications	12
4.2.1 Thermal resistance and thermal conductivity	12
4.2.2 Length, width, squareness, flatness.....	12
4.2.3 Thickness	13
4.2.4 Reaction to fire of the product as placed on the market	13
4.2.5 Durability characteristics	13
4.3 For specific applications.....	14
4.3.1 General.....	14
4.3.2 Dimensional stability under specified conditions.....	14
4.3.3 Deformation under specified compressive load and temperature conditions.....	14
4.3.4 Compressive stress or compressive strength	15
4.3.5 Tensile strength perpendicular to faces	15
4.3.6 Compressive creep.....	16
4.3.7 Water absorption	16
4.3.8 Freeze-thaw resistance	17
4.3.9 Water vapour transmission	17
4.3.10 Release of dangerous substances.....	18
4.3.11 Reaction to fire of the product in standardized assemblies simulating end-use applications	18
4.3.12 Continuous glowing combustion.....	18
4.3.13 Shear strength.....	18
5 Test methods.....	18
5.1 Sampling.....	18
5.2 Conditioning.....	18
5.3 Testing	19
5.3.1 General.....	19
5.3.2 Thermal resistance and thermal conductivity	19
6 Designation code	21
7 Assessment and Verification of the Constancy of Performance (AVCP)	22
7.1 General.....	22
7.2 Product Type Determination (PTD).....	22
7.3 Factory Production Control (FPC)	22
8 Marking and labelling	22

Annex A (normative) Determination of the declared values of thermal resistance and thermal conductivity	24
A.1 General	24
A.2 Input data	24
A.3 Declared values	24
A.3.1 General	24
A.3.2 Case where thermal resistance and thermal conductivity are declared	24
A.3.3 Case where only thermal resistance is declared	25
Annex B (normative) \square_{A1} Product type determination \square_{A1} (\square_{A1} PTD \square_{A1}) and Factory production control (FPC)	26
Annex C (normative) Determination of the aged values of thermal resistance and thermal conductivity	30
C.1 General	30
C.2 Procedure for XPS foam without diffusion tight facings	30
C.2.1 Principle	30
C.2.2 Sample preparation	30
C.2.3 Procedure	30
C.3 Procedure for XPS foam for use with diffusion tight facing on both sides	31
C.3.1 Principle	31
C.3.2 Ageing procedure	31
C.4 Determination of value after ageing: “aged value”	31
C.4.1 Determination of aged value for XPS products without diffusion tight facings on both sides	31
C.4.2 Determination of aged value for XPS products for use with diffusion tight facing on both sides	32
C.5 Blowing agent	33
C.6 Product grouping	33
Annex D (normative) XPS multi-layered insulation products	34
D.1 General	34
D.2 Requirements	34
D.2.1 For all applications	34
D.2.2 For specific applications	35
D.3 Test methods	35
D.4 Evaluation of conformity	35
Annex E (informative) Additional properties	36
E.1 General	36
E.2 Behaviour under cyclic loading	36
E.3 Compressive modulus of elasticity	36
E.4 Bending strength	36
E.5 Determination of volume percentage of closed cells	36

Annex F (informative) Plan for cutting test specimen.....	38
Annex ZA (informative) \square_{A1} Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation \square_{A1}	40
ZA.1 Scope and relevant characteristics	40
ZA.2 Procedures for AVCP of factory made extruded polystyrene products	41
ZA.2.1 Systems of AVCP.....	41
ZA.2.2 Declaration of Performance (DoP)	45
ZA.3 CE Marking and labelling	48
Bibliography	50

Tables

Table 1 — Tolerances of length, width, squareness and flatness	13
Table 2 — Classes for thickness tolerances.....	13
Table 3 — Dimensional stability under specified conditions.....	14
Table 4 — Levels for deformation under specified compressive load and temperature conditions	15
Table 5 — Levels for compressive stress or compressive strength.....	15
Table 6 — Levels for tensile strength, perpendicular to faces	16
Table 7 — Levels for long term water absorption by total immersion	16
Table 8 — Levels for long term water absorption by diffusion.....	17
Table 9 — Test methods, test specimens and conditions.....	19
Table A.1 — Values for k for one sided 90 % tolerance interval with a confidence level of 90 %.....	25
Table B.1 — Minimum number of tests for !PTD" and minimum product testing frequencies	26
Table B.2 – Minimum product testing frequencies for the reaction to fire characteristics	28
Table E.1 — Test methods, test specimens, conditions and minimum testing frequencies.....	37
Table ZA.1 — Relevant clauses for factory made extruded polystyrene foam and intended use	40
Table ZA.2 — Systems of AVCP.....	42
Table ZA.3.1 — Assignment of AVCP tasks for factory made extruded polystyrene foam products under system 1 for reaction to fire and system 3 (see Table ZA.2).....	42
Table ZA.3.2 — Assignment of AVCP tasks for factory made extruded polystyrene foam products under system 3 (see Table ZA.2).....	44
Table ZA.3.3 — Assignment of AVCP tasks for factory made extruded polystyrene foam products under combined system 4 for reaction to fire and system 3 (see Table ZA.2).....	44

Figures

Figure ZA.1 — Example CE marking information of products under AVCP system 3"	49
--	-----------