

DIN EN 13165:2015-04 (E)

Thermal insulation products for buildings - Factory made rigid polyurethane foam (PU) products - Specification (includes Amendment A 1:2015)

Contents		Page
Foreword.....		4
1	Scope	6
2	Normative references	6
3	Terms, definitions, symbols, units and abbreviated terms	7
4	Requirements	10
5	Test methods	17
6	Designation code.....	20
7	Assessment and Verification of the Constancy of Performance (AVCP)	20
8	Marking and labelling	21
Annex A (normative)	Determination of the declared values of thermal resistance and thermal conductivity.....	23
A.1	General.....	23
A.2	Input data.....	23
A.3	Declared values	23
Annex B (normative)	$\langle A_1 \rangle$ Product type determination $\langle A_1 \rangle$ ($\langle A_1 \rangle$ PTD $\langle A_1 \rangle$) and factory production control (FPC)	25
Annex C (normative)	Determination of the aged values of thermal resistance and thermal conductivity.....	29
C.1	General.....	29
C.2	Sampling and test specimen preparation	29
C.3	Determination of the initial value of thermal conductivity	30
C.4	Determination of the accelerated aged value of thermal conductivity	31
C.5	Fixed increment procedure.....	33
C.6	Declaration of the aged values of thermal resistance and thermal conductivity	35
Annex D (normative)	PU multi-layered insulation products	36
D.1	General.....	36
D.2	Requirements	36
D.3	Test methods	37
D.4	Evaluation of conformity.....	37
Annex E (informative)	Additional properties	38
E.1	General.....	38
E.2	Bending strength	38
E.3	Shear behaviour.....	38
E.4	Compressive stress at 2% deformation	38
E.5	Long term water absorption by diffusion.....	38
E.6	Freeze-thaw resistance	38

E.7	Apparent density	39
Annex ZA	(informative) \square_{A1} Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation	40
ZA.1	Scope and relevant characteristics	40
ZA.2	Procedures for AVCP of factory made rigid polyurethane foam products	42
ZA.3	CE Marking and labelling	48
	Bibliography	50

Tables

Table 1	— Tolerances on length and width	11
Table 2	— Classes for thickness tolerances	12
Table 3	— Deviation from flatness	12
Table 4	— Test conditions for dimensional stability under specified temperature and humidity conditions	13
Table 5	— Levels for dimensional stability for test conditions 1, 2, 3	13
Table 6	— Levels for dimensional stability for test condition 4	14
Table 7	— Levels for deformation under specified compressive load and temperature conditions	14
Table 8	— Levels for compressive stress or compressive strength	15
Table 9	— Levels for tensile strength perpendicular to faces	15
Table 10	— Levels for one sided wetting behaviour	16
Table 11	— 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 %	24
Table B.1	— Minimum number of tests for \square_{A1} PTD \square_{A1} and minimum product testing frequencies	25
Table B.2	— Minimum product testing frequencies for the reaction to fire characteristics	27
Table C.1	— Safety increments to be added to the measured accelerated aged value of thermal conductivity	32
Table C.2	— Increments for calculating the aged value of thermal conductivity	34
Table E.1	— Test methods, test specimens, conditions and minimum testing frequencies	39
Table ZA.1	— Relevant clauses for factory made rigid polyurethane foam and intended use	41
Table ZA.2	— Systems of AVCP	42
Table ZA.3.1	— Assignment of AVCP tasks for factory made rigid polyurethane foam products under system 1 for reaction to fire and system 3 (see Table ZA.2)	43
Table ZA.3.2	— Assignment of AVCP tasks for factory made rigid polyurethane foam products under system 3 (see Table ZA.2)	44
Table ZA.3.3	— Assignment of AVCP tasks for factory made rigid polyurethane foam products under combined system 4 for reaction to fire and system 3 (see Table ZA.2)	44

Figures

Figure C.1	— Flow chart of the alternative ageing procedures	30
Figure ZA.1	— Example CE marking information of products under AVCP system 1 and system 3	49