



EUROPEAN ASSESSMENT DOCUMENT

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THERMOSTATIC RADIATOR VALVES

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This European Assessment Document (EAD) has been developed taking into account available up-to-date technical and scientific knowledge at the time of issue and is established in accordance with the relevant provisions of Regulation (EU) 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

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1 SCOPE OF THE EAD

1.1 Description of the construction product

This EAD applies to thermostatic radiator valves.

The product is not covered by a harmonised European standard (hEN).

The product is covered by EN 215¹, which is not harmonised European standard.

The full thermostatic radiator valve includes two basic sub-assemblies – thermostatic head assembly with valve body assembly made of materials listed in EN 215, Annex A.4.

Thermostatic radiator valves are straight or angle pattern with dimensions and connections details given in EN 215, Annexes A.2 and A.3. The valve body assembly is mostly made of brass, and the thermostatic head assembly is made of plastic. Thermostatic heads have setting ranges.

Operation temperature sensor in head assembly is filled with liquid that expands and contracts with changes in room temperatures, operating a piston that acts on the valve pressure pin (spindle). As the room temperature increases, the valve throttles back the flow. A spring returns the piston promptly when contraction occurs. The valve automatically shuts off the flow of heat when the temperature setting is reached.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

Relevant manufacturer's stipulations having influence on the performance of the product covered by this European Assessment Document, shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

Thermostatic radiator valves are intended to be used in heating installations, inside buildings. They are designed for mounting on individual radiators (side-fed, bottom-fed, bathroom and decorative radiators). Thermostatic radiator valves are intended to be used in the wet domestic central heating systems with forced circulation of the heating medium (water) at temperature lower than 120°C, maximum working pressure 1 MPa, and the pressure difference not more than 0,06 MPa.

1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the thermostatic radiator valves for the intended use of 10 years when installed in the works. These provisions are based upon the current state of the art and the available knowledge and experience.

¹ All undated references to standards or to EAD's in this EAD are to be understood as references to the dated versions listed in clause 4

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works².

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

² The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than the assumed working life.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of the thermostatic radiator valves is assessed in relation to the essential characteristics.

Table 2.1.1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	Class
Basic Works Requirement 4: Safety and accessibility in use			
2	Resistance to pressure, leak-tightness of valve body assembly	2.2.2	Description
3	Leak-tightness of stem seal	2.2.3	Description
4	Resistance of valve body to a bending moment	2.2.4	Description
5	Resistance of temperature selector to a torque	2.2.5	Description
6	Resistance of temperature selector to a bending moment	2.2.6	Description
Basic Works Requirement 5: Protection against noise			
7	Noise emission	2.2.7	Level
Basic Works Requirement 6: Energy economy and heat retention			
8	Hysteresis at nominal flow	2.2.8	Level
9	Differential pressure influence	2.2.9	Level
10	Response time	2.2.10	Level
Aspects of durability linked with the Basic Works Requirements			
11	Mechanical endurance	2.2.11	Level
12	Thermal endurance	2.2.12	Level
13	Temperature resistance	2.2.13	Level

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

2.2.1 Reaction to fire

The thermostatic radiator valves shall be tested according to the test method(s) referred to in EN 13501-1 and relevant for the corresponding reaction to fire class. The product shall be classified according to the Commission Delegated Regulation (EU) 2016/364.

The reaction to fire class shall be stated in the ETA.

2.2.2 Resistance to pressure, leak-tightness of valve body assembly

The resistance to pressure and leak-tightness of valve body assembly shall be determined in accordance with EN 215 (clause 6.3.1).

It shall be recorded whether no/any leakage occurred during the test. The result of the test shall be stated in the ETA.

2.2.3 Leak-tightness of stem seal

The leak-tightness of stem seal shall be determined in accordance with EN 215 (clause 6.3.3).

It shall be recorded whether no/any leakage occurred during the test. The result of the test shall be stated in the ETA.

2.2.4 Resistance of valve body assembly to a bending moment

The resistance of valve body to a bending moment shall be determined in accordance with EN 215 (clause 6.3.4).

It shall be recorded whether no/any leakage occurred during the test. The result of the test shall be stated in the ETA.

2.2.5 Resistance of the temperature selector to a torque

The resistance of temperature selector to a torque shall be determined in accordance with EN 215 (clause 6.3.5).

It shall be recorded whether no/any damage occurred after the test. The result of the test shall be stated in the ETA.

2.2.6 Resistance of the temperature selector to a bending moment

The resistance of temperature selector to a bending moment shall be determined in accordance with EN 215 (clause 6.3.6).

It shall be recorded whether no/any damage occurred after the test. The result of the test shall be stated in the ETA.

2.2.7 Noise emission

The noise emission shall be determined in accordance with EN ISO 3822-1.

The result of the test shall be stated in the ETA.

2.2.8 Hysteresis at the nominal flow

The hysteresis at nominal flow shall be determined in accordance with EN 215 (clause 6.4.1.7).

The result of the test shall be stated in the ETA.

2.2.9 Differential pressure influence

The differential pressure influence shall be determined in accordance with EN 215 (clause 6.4.1.8).

The result of the test shall be stated in the ETA.

2.2.10 Response time

The response time shall be determined in accordance with EN 215 (clause 6.4.1.13).

The result of the test shall be stated in the ETA.

2.2.11 Mechanical endurance

The mechanical endurance shall be determined in accordance with EN 215 (clause 6.4.2.1).

The result of the test shall be stated in the ETA.

2.2.12 Thermal endurance

The thermal endurance shall be determined in accordance with EN 215 (clause 6.4.2.2).

The result of the test shall be stated in the ETA.

2.2.13 Temperature resistance

The temperature resistance shall be determined in accordance with EN 215 (clause 6.4.2.3).

The result of the test shall be stated in the ETA.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is: Decision 1999/472/EC amended by the Decision 2001/596/EC.

The system is: 3 for any use except for uses subject to regulations on reaction to fire performance.

For uses subject to regulations on reaction to fire the applicable systems are: 1, 3 or 4 depending on the conditions defined in the said Decision.

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the thermostatic radiator valves in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1.

Table 3.2.1 Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Raw materials	Checking of delivery documentation	Compliance with required materials	-	Each batch
2	Appearance	Visual examination	No cracks, scratches and surface defects	1	Every 100th product
3	Dimensional tolerances	Measurement using universal devices	Compliance with documentation	1	Every 100th product
4	Resistance to pressure, leak-tightness of the valve body	EN 215	2.2.2	1	Each batch
5	Leak-tightness of the stem seal	EN 215	2.2.3	1	Every 100th product
6	Resistance of the valve body assembly to a bending moment	EN 215	2.2.4	1	Each batch

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 3.3.1.

The intervention of the notified body for reaction to fire under AVCP system 1 is only necessary for products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).

In this case the cornerstones of the tasks to be undertaken by the notified body under AVCP system 1 are laid down in Table 3.3.1.

Tab. 3.3.1 Control plan for the notified body in cases of AVCP 1 for reaction to fire; cornerstones

No	Subject/type of control (<i>product, raw/constituent material, component - indicating characteristic concerned</i>)	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire (<i>for system 1 only</i>)					
1	Where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 are fulfilled for reaction to fire, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer	As defined in the control plan	As defined in the control plan	When starting the production or a new line
Continuous surveillance, assessment and evaluation of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire (<i>for system 1 only</i>)					
2	Where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 in the Decisions regarding reaction to fire are fulfilled, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)	Verification of the controls carried out by the manufacturer as described in the control plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in Tables 3.2	As defined in the control plan	As defined in the control plan	1/year

4 REFERENCE DOCUMENTS

EN 215:2019	Thermostatic radiators valves. Requirements and test methods
EN ISO 3822-1:1999	Acoustics. Laboratory tests on noise emission from appliances and equipment used in water supply installations. Method of measurement
EN 13501-1:2018	Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests