

SANITARY TAPWARE
Technical document
077-05

EChAU rating for automatic shut-off valves

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MODIFICATION HISTORY

Revision no.	Application date	Modifications
00	01/06/2017	Update to the document layout and reference. Content modifications: – Some technical changes
01	02/04/2019	<p>Cancel and replaces technical document 077-05_Rev 18</p> <p>Update of technical document</p> <ul style="list-style-type: none"> – according to the new frame: “<i>Trame_doc_technique_VF_PC_DT_R3.</i>” – according to the revision of Standard NF EN 816, version dated August 2017: <p>Content modifications:</p> <ul style="list-style-type: none"> – establishment of ECAU for NF EN 12541
02	01/10/2020	<p>Reference to the regulation for use of marks (DT077-00)</p> <ul style="list-style-type: none"> - Addition of the method for determining the scores in chapter 2.10 "E.Ch.A.U. rating"

TABLE OF CONTENTS

1	NORMATIVE SUPPORT FOR ECHAU RATING	6
1.1	Purpose	6
1.2	List of the tests involved	6
2	ECHAU RATING	8
2.1	Foreword	8
2.2	Purpose	8
2.3	Field of application.....	8
2.4	References to standards and additional specifications.....	9
2.5	EChAU rating principle	9
2.5.1	Meaning of E.....	9
2.5.2	Meaning of Ch	9
2.5.3	Meaning of A.....	10
2.5.4	Meaning of U	10
2.6	Performance level for the EChAU rating for products subject to NF EN 81610	
2.6.1	Marking – Identification.....	10
2.6.2	Materials	10
2.6.3	Protection against backflow	10
2.6.4	Dimensional characteristics.....	10
2.6.5	Leaktightness characteristics	12
2.6.6	Pressure resistance characteristics.....	12
2.6.7	Hydraulic characteristics.....	12
2.6.8	Mechanical properties – Operating force.....	13
2.6.9	Endurance characteristics	13
2.6.10	Acoustic characteristics	13
2.6.11	Verification of the installation system for sanitary tapware.....	13
2.7	Performance level for the EChAU rating for products subject to Standard NF EN 12541	15
2.7.1	Purpose	15
2.7.2	Marking and identification.....	15
2.7.3	Materials	15
2.7.4	Dimensional characteristics.....	15
2.7.5	Leaktightness characteristics	15
2.7.6	Pressure resistance characteristics.....	15
2.7.7	Hydraulic and flow characteristics for flush valves.....	15
2.7.8	Principle and verification of the atmospheric interrupter for flush valves	15
2.7.9	Hydraulic and flow characteristics for urinal valves.....	15
2.7.10	Operating force	15
2.7.11	Mechanical endurance characteristics	16
2.7.12	Acoustic characteristics	16

2.8	Performance level for the EChAU rating for products subject to Standards NF EN 816 and NF EN 12541	16
2.8.1	Resistance to alternating pressure stress	16
2.9	Test sequence	18
2.9.1	Sequence of tests for products subject to standard NF EN 816	18
2.9.2	Sequence of tests for products subject to Standard NF EN 12541	19
2.10	EChAU rating	21
2.10.1	Hydraulic or flow characteristic.....	21
2.10.2	Comfort characteristics.....	22
2.10.3	Acoustic characteristic.....	23
2.10.4	Mechanical endurance or wear resistance characteristic	23
2.11	Example of EChAU rating	23
2.12	Rating presentation	24
2.12.1	Specific information for the catalogue or other commercial media	24
2.12.2	Product information	24
3	EChAU RATING APPLICATION	25
3.1	For an initial rating application.....	25
3.2	For a complementary rating application	25
3.3	For a new rating application following a penalty of withdrawal of the EChAU rating	25
3.4	For an application for the suspension of the EChAU rating.....	25
3.5	For an application for renunciation of the EChAU rating	25
4	PRICES	35
4.1	Paying for the services	36
4.1.1	Initial application/complementary application.....	36
4.1.2	Monitoring.....	36
4.1.3	Non-payment of amounts due	36
4.2	Prices	36

1 Normative support for EChAU rating

1.1 Purpose

The purpose of this chapter is to list the articles of Standards NF EN 816 and NF EN 12541 that will be taken into account for the EChAU rating in accordance with the regulation for use DT077-00.

1.2 List of the tests involved

The table below lists the articles of the Standard NF EN 816.

Articles	Title of articles
5	Marking – Identification
5.1	Marking
5.2	Identification
6	Materials
6.1	Chemical and hygiene properties
6.2A	State of visible surfaces and coating quality (<i>neutral salt spray test</i>)
6.2B	State of visible surfaces and coating quality (<i>“air” thermal shock resistance test</i>)
7	Protection against backflow
8	Dimensional characteristics
8.2	Surface-mounted tap for installation on horizontal surfaces
8.3	Surface-mounted tap for installation on vertical surfaces
8.4	Inline tapware with threaded inlet and outlet
8.5	Built-in tapware for installation on vertical surfaces
8.6	Mixer for installation on horizontal surfaces
8.7	Mixer for installation on vertical surfaces
9	Leaktightness characteristics
9.2.3	Leaktightness of tapware upstream of the obturator
9.2.4	Leaktightness of the tapware downstream of the obturator with the obturator open
10	Pressure resistance characteristics
10.2.3	Test of mechanical behaviour upstream of the obturator with the obturator in the closed position
10.2.4	Test of mechanical behaviour downstream of the obturator with the obturator in the open position
11	Hydraulic characteristics
11.4.1	Flow rate (<i>Tap and mixer</i>)
11.4.3	Flow duration (<i>Tap and mixer</i>)
11.4.4.1	Sensitivity (<i>Mixer</i>)
11.4.4.2	Cold and hot water cross-feed (<i>Mixer</i>)
12	Mechanical properties – Operating force
13	Mechanical endurance or wear resistance characteristics
13.3	Cycle for single tap
13.4	Cycle for mixer
14	Acoustic characteristics

The table below lists the articles of the Standard NF EN 12541.

Articles	Title of articles
5	Marking
6	Materials
6.1	Chemical and hygienic behaviour
6.2	State of visible surfaces and coating quality
7	Dimensional characteristics
7.1	Flush valves
7.2	Urinal valves
8	Leaktightness characteristics
8.2.2	Tightness of the obturator and mixer upstream of the obturator with the obturator in the closed position
8.2.3	Tightness of the mixer downstream of the obturator with the obturator in the open position
9	Pressure resistance characteristics
9.2.2	Mechanical behaviour upstream of the seat, stop valve in the closed position
9.2.3	Mechanical behaviour downstream of the seat, stop valve in the open position
10	Hydraulic and flow characteristics for flush valves
10.3	Flow rate – time – volume – force test
10.5	Water hammer measurement
11	Principle and verification of the atmospheric interrupter for flush valves
11.2	Atmospheric interrupter
11.4	Inspection to verify lack of splashing
11.5	Inspection to verify operation under negative pressure
12	Hydraulic and flow characteristics for urinal valves
13	Operating force
14	Mechanical endurance characteristics
14.2	WC flush valves
14.3	Urinal valves
15	Acoustic characteristics

2 EChAU rating

2.1 Foreword

The EChAU rating was created to meet the expectations of market players who require performances that are superior or complementary to that indicated in Standards NF EN 816 and NF EN 12541.

For automatic shut-off valves, the requirements are:

- Ergonomics with special dimensions for using the tap;
- A suitable design to facilitate the cleaning of the tap;
- Resistance to alternating pressure stress against water hammer problems;
- Verification of installation system for fixed-spout single-hole taps;
- Hydraulic performance levels according to user needs;
- Creation of the 3 acoustic classes to clarify this performance;
- Increased endurance performance by multiplying by 2.5 the requirements of the European standard to optimise maintenance frequencies;

It should be noted, however, that the use of the EChAU rating is voluntary and supplementary to the evaluation of a product that is already certified under Standards NF EN 816 and NF EN 12541.

2.2 Purpose

The purpose of this chapter is to establish the dimensional, leaktightness, hydraulic, mechanical, mechanical endurance and acoustic performance levels to be met by mechanical mixer taps to qualify for the EChAU rating.

2.3 Field of application

This chapter applies to:

- automatic shut-off valves subject to Standard NF EN 816 and
- hydraulic shut-off valves for flushing systems and urinals subject to Standard NF EN 12541.

2.4 References to standards and additional specifications

NF EN 816: 2017	Sanitary tapware. Automatic shut-off valves PN 10
NF EN 12541: 2003	Sanitary tapware. Automatic hydraulic shut-off valves for flushing systems and urinals PN 10
NF EN 246: 2003	Sanitary tapware - General specifications for flow rate regulators.
NF EN ISO 3822-1: 1999	Acoustics - Laboratory tests on noise emission from appliances and equipment used in water supply installations - Part 1: Method of measurement
NF EN ISO 3822-2: 1995	Acoustics - Laboratory tests on noise emission from tapware and hydraulic equipment used in water supply installations - Part 2: Guidelines for the installation and operation of draw-off taps and tapware.
T 54 094: 2006	Plastics - Piping components made of unplasticised polyvinyl chloride and unplasticised chlorinated polyvinyl chloride - Fittings for pressure pipelines - Determination of resistance to alternate pressure stress.
DT077-00	Regulations for use of marks

2.5 EChAU rating principle

The rating can only be assigned to taps:

- pursuant to standards NF EN 816 and NF EN 12541. The test procedures are defined in Article 1 of this document.
- having passed the performance tests for the EChAU rating. The test procedures are provided in the Article:
 - o 2.6 for products subject to NF EN 816 and
 - o 2.7 for products subject to NF EN 12541.

2.5.1 Meaning of E

The flow characteristic taken into account is the use flow 'q' of the tap as it is equipped (standard accessories: regulators, fittings, etc.).

There are 8 classes for this characteristic. See Article 2.10.1.1.

2.5.2 Meaning of Ch

The comfort characteristics taken into account are the dimensions, hydraulic performance and resistance to alternating pressure stress.

There are 2 classes for this characteristic. See Article 2.10.2.1.

		Ch	
Field of application	Household with waiver (house, apartment, student residence) Public (Hospitality, ERP (institution receiving the public), office, EHPA (nursing home), non-medical retirement home, spa treatment centre)		
	For products that comply with NF EN 816	For products that comply with NF EN 12541	
Class 1 (Note 1)	<ul style="list-style-type: none"> – Dimensional – Resistance to alternating pressure stress – Verification of installation system for fixed-spout single-hole taps 	– Resistance to alternating pressure stress	
Class 2	<ul style="list-style-type: none"> – Must be Ch1; – Must be E00 for washbasin; – Must be E00 for washbasin – Must be E02 for shower outlet; – Controlled flow rate for water saving. 		
Note 1:	In cases in which the requirements of C and Ch are identical, only the letter C is used (e.g. for class 1, only C1 is used and there is no Ch1 rating)		

2.5.3 Meaning of A

The acoustic characteristic taken into account is the sound pressure level, L_{ap} .

There are 3 classes for this characteristic. See Article 2.10.3.1.

2.5.4 Meaning of U

The wear characteristic taken into account is the mechanical endurance and, more precisely, the number of operating cycles to which the obturators are subjected;

There is 1 class for this characteristic. See Article 2.10.4.1.

An application for an EChAU rating implies a class 3 application for endurance tests (U3).

2.6 Performance level for the EChAU rating for products subject to NF EN 816

2.6.1 Marking – Identification

No requirements in addition to those under the NF EN 816 Standard.

2.6.2 Materials

No requirements in addition to those under the NF EN 816 Standard.

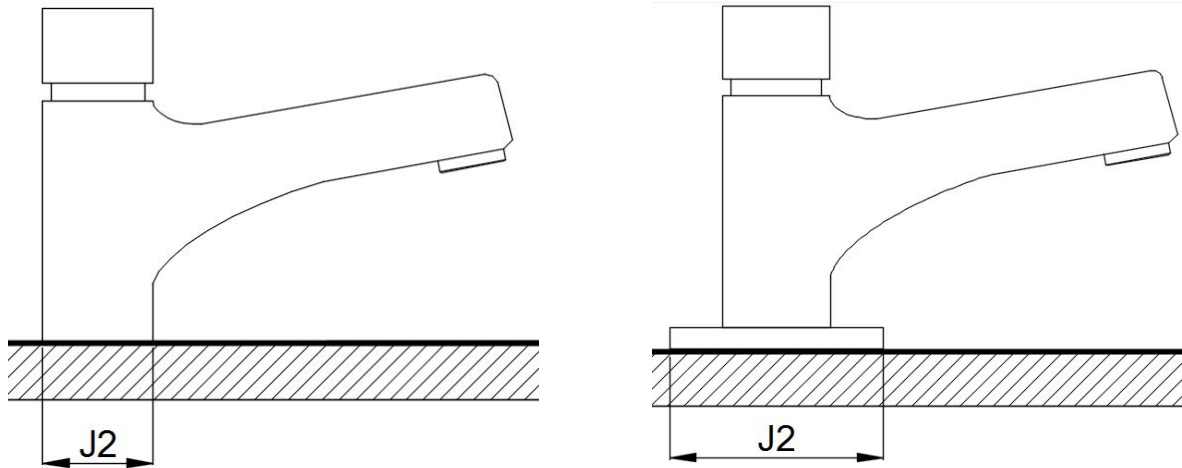
2.6.3 Protection against backflow

No requirements in addition to those under the NF EN 816 Standard.

2.6.4 Dimensional characteristics

In addition to the NF EN 816 Standard, the following additional dimensions must be verified: J2, D4, P2.

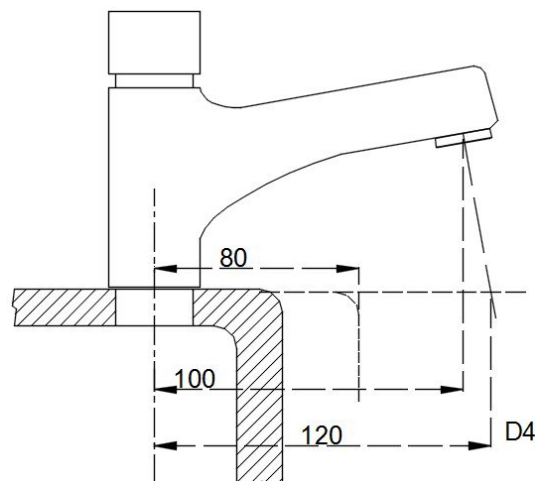
- The diameter of the tapware body base (J2, established at a minimum of 45 mm) must not be obtained by introducing an insert between the base of the body and the support.



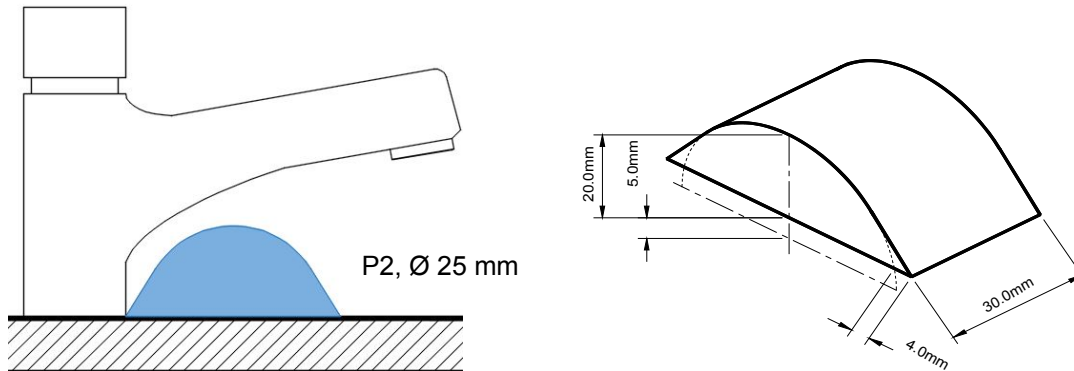
- for washbasin taps, the jet axis must intersect the washbasin surface (at the tap base) at least 120 mm from the tap base axis (D4).

NOTE As the current trend is to make taps increasingly smaller, if the minimum dimensions of projections and height are combined, the suitability for use requirement is not met.

The figure below shows in dotted lines the maximum range for standard washbasins (80 mm) and for standard taps the minimum projection (100 mm, D1) with the minimum height (25 mm). It is clearly impossible to wash one's hands under the tap.



- the spout must be separated in such a way that a rod consisting of a cylindrical segment with a 25 mm radius that is 20 mm in height and 30 mm in length of the generator can be slid onto the plane of the base. The rod must at least touch the base in the common base plane.



2.6.5 Leaktightness characteristics

No requirements in addition to those under the NF EN 816 Standard.

2.6.6 Pressure resistance characteristics

No requirements in addition to those under the NF EN 816 Standard.

2.6.7 Hydraulic characteristics

2.6.7.1 Flow rate in “fully open” position

In addition to Standard NF EN 816 (Article 11.4.1 Flow rate), it is hereby specified that the test is carried out:

- with a dynamic pressure of 0.3 (+ 0.02/0) MPa or 3 (+ 0.2/0) bar;
- with cold water < 30 °C for single taps;

Flow rate according to the product

Type of product	Device	Single tap	Mixer in the temperature setting range of minimum temperature, medium temperature and maximum temperature
No water saving	Washbasin	≥ 6 L/min	≥ 6 L/min
	Shower	≥ 9 L/min	≥ 9 L/min

Verification of the flow rate value obtained with class E, see Article 2.10.1.1.

2.6.7.2 “Water saving” controlled flow rate

In addition to Standard NF EN 816 (Article 11.4.1 Flow rate), it is hereby specified that the test is carried out:

- with a dynamic pressure of 0.3 (+ 0.02/0) MPa or 3 (+ 0.2/0) bar;
- with cold water < 30 °C for single taps;

Flow rate according to the product

Type of product	Device	Single tap	Mixer in the temperature setting range of minimum temperature, medium temperature and maximum temperature
With water saving	Washbasin (Category 1)	1.5 L/min ≤ q < 4 L/min	1.5 L/min ≤ q < 4 L/min
	Washbasin (Category 2)	4 L/min ≤ q < 6 L/min	4 L/min ≤ q < 6 L/min
	Shower	6.6 L/min ≤ q < 9 L/min	5 L/min ≤ q < 9 L/min

2.6.8 Mechanical properties – Operating force

No requirements in addition to those under the NF EN 816 standard.

2.6.9 Endurance characteristics

In addition to Standard NF EN 816,

Endurance performance is modified by multiplying by 2.5 the requirements for all mobile equipment under the Standard NF EN 816.

Given:

- 500,000 cycles for timed single taps (*Article 13.3*)
- 167,000 cycles for timed mixers (*Article 13.4*)

For renewal tests, in order to reduce the endurance test time, tap timing can be reduced by the flow time of at least 5 s or < 25% of the time specified under Standard NF EN 816.

2.6.10 Acoustic characteristics

In addition to Standard NF EN 816 (*Article 11.4.2.2.2*):

For devices equipped with flow control, the test shall be conducted at the setting upon delivery if it is equal to or greater than the required flow rate. Otherwise a change in the setting shall be needed to obtain the required minimum flow.

An information test shall be performed at the maximum flow rate setting.

Tapware with Lap > 30 cannot be admitted for the EChAU rating.

Verification of the acoustic value obtained with class A; see article 2.10.3.1

2.6.11 Verification of the installation system for sanitary tapware

In view of the lack of a tightening system verification test under Standard NF EN 816 for single-hole taps with a fixed spout (washbasin, bidet and bathtub) which are installed on horizontal planes, it is necessary to verify tightening performance according to the following steps:

2.6.11.1 Test principle

The test consists of verifying the tightening behaviour by applying a specific force to the end of the tapware spout

2.6.11.2 Test method

The test is performed by conducting the following operations:

- Install the tapware on the test plate;

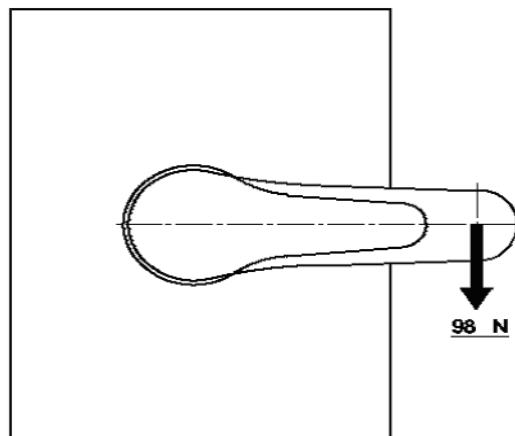
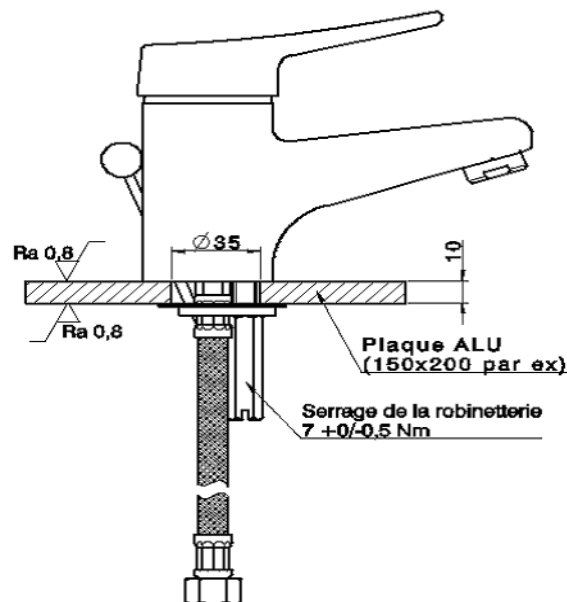
- Tighten the nut of the tap installation system to a torque of 7 (-0.5/0) N.m (if the installation system does not have a nut, tighten the installation system by hand);
- Apply a force of 98 (+2/0) N at the end of the spout (the point at which the force is to be applied is located on the axis of the aerator);
- Maintain the force during (60 ± 5) s;
- Verify any rotation of the tapware;

2.6.11.3 Requirements

There should be no rotation of the tapware during the test.

2.6.11.4 Frequency

The tightening test is carried out when new products are admitted and/or when one of the components of the tapware installation system and/or the tapware component in contact with the table is modified.



2.7 Performance level for the EChAU rating for products subject to Standard NF EN 12541

2.7.1 Purpose

The purpose of this article is to supplement Standard NF EN 12541 and it applies to all automatic hydraulic shut-off valves for flushing systems and urinals covered by this standard.

2.7.2 Marking and identification

No requirements in addition to those under the NF EN 12541 Standard.

2.7.3 Materials

No requirements in addition to those under the NF EN 12541 Standard.

2.7.4 Dimensional characteristics

No requirements in addition to those under the NF EN 12541 Standard.

2.7.5 Leaktightness characteristics

No requirements in addition to those under the NF EN 12541 Standard.

2.7.6 Pressure resistance characteristics

No requirements in addition to those under the NF EN 12541 Standard.

2.7.7 Hydraulic and flow characteristics for flush valves

No requirements in addition to those under the NF EN 12541 Standard.

2.7.8 Principle and verification of the atmospheric interrupter for flush valves

No requirements in addition to those under the NF EN 12541 Standard.

2.7.9 Hydraulic and flow characteristics for urinal valves

The amendments made to Article 12.3 of Standard NF EN 12541 are as follows:

- the test is conducted at a dynamic pressure of 0.3 (+ 0.02/0) MPa or 3 (+ 0.2/0) bar;
- the flow rate requirements are indicated in the table below.

Type of product Dynamic pressure	DN	Class	Device	Flow rate requirements
3 (+0.2/0) bar	15	1.5	Single flush with siphon - Low flow rate	≥ 9 L/min
	15	4	Single flush with siphon - High flow rate	≥ 18 L/min
	15	4	Siphonic action	≥ 18 L/min
	20	6	Siphonic action	≥ 30 L/min

2.7.10 Operating force

No requirements in addition to those under the NF EN 12541 Standard.

2.7.11 Mechanical endurance characteristics

Endurance performance is modified by multiplying by 2.5 the requirements for all mobile equipment under the Standard NF EN 12541.

Given:

- 175,000 cycles for WC flush valve (*Article 14.2*)
- 175,000 cycles for urinal valves (*Article 14.3*)

2.7.12 Acoustic characteristics

No requirements in addition to those under the NF EN 12541 Standard.

2.8 Performance level for the EChAU rating for products subject to Standards NF EN 816 and NF EN 12541

2.8.1 Resistance to alternating pressure stress

To be examined for the EChAU rating, automatic shut-off valves must meet the following requirements:

- Automatic shut-off valves used in a sanitary installation are subject to considerable pressure variations due to the closing of installed devices - solenoid valves of washing machines, mixers, valves, etc.
- To ensure their resistance to such stress, it seemed advisable to use a test described in the T 54-094 standard for the rating of supply hoses and piping components.

2.8.1.1 Test principle

Application during 200 cycles of a variable and defined internal hydraulic pressure at the mechanical mixer inlets, with the mechanical mixer in the closed position.

2.8.1.2 Equipment

The equipment essentially includes:

A pressure generator capable of generating variable pressure that can vary at constant frequency between a low limit and a high limit, establishing constant amplitude. The diagram of that variation takes the form of a generally rectangular signal (see Figure 1).

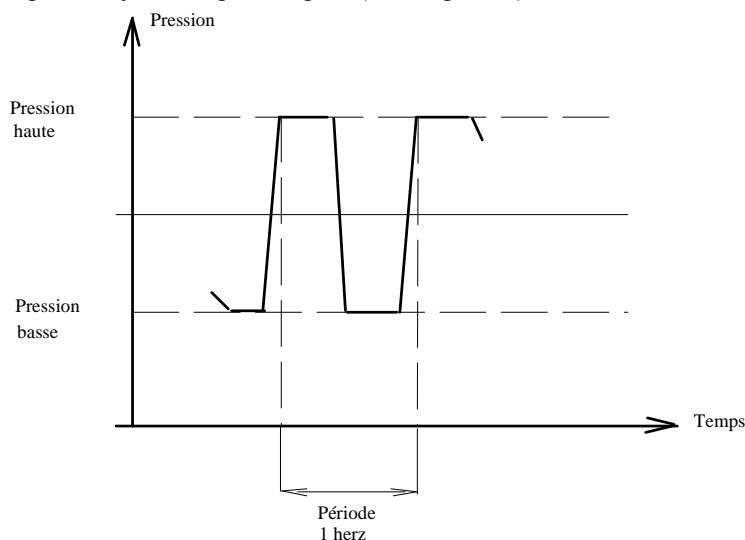


Figure 1 – Signal waveform – alternating pressures

- the time needed to shift from low pressure to high pressure and vice versa must be as short as possible and never longer than one-tenth of the period;

- the low and high pressure values must be obtained and checked to within $\pm 2\%$ of the desired values;
- to check the waveform of the signal representing the pressure variation, the generator must be combined with a device that can verify the pressure changes in the test specimen (low-inertia pressure sensor and graphic data recorder or oscilloscope).

2.8.1.3 *Operating procedure*

Apply 200 cycles to the closed tap (filled with water and cleared of air):

- low pressure of (8 ± 1) bar;
- high pressure of (50 ± 1) bar;
- frequency of (1 ± 0.5) Hertz.

- 1) on one of the inlets, (the other being in the open air);
- 2) on the other inlet;

Note: A “slight” leak is allowed during the test if it does not have an influence on the low and high pressures of the test.

After the alternating pressure test, perform the leak test in accordance with:

- Article 9.2.3 of Standard NF EN 816 or
- Article 8.2.2 of Standard NF EN 12541

2.8.1.4 *Required characteristics*

During the leak test, no visible deterioration or leakage should be observed.

2.9 Test sequence

2.9.1 Sequence of tests for products subject to standard NF EN 816

Sample Sequence	Order	Tests
Sample 0 Installation	1.	§2.6.11 Verification of the installation system for sanitary tapware Please note that this test is only conducted for admission
Sample 1 Materials	1.	§6.2A Materials (salt spray)
Sample 2 Materials	1.	§6.2B Materials (air thermal shock)
Sample 3 Endurance		Sample 3A – Single tap
		Sample 3B – Mixer
	2.	§5.1 Marking
	3.	§5.2 Identification
	4.	§7 Protection against backflow
	5.	§8 Dimensional
	6.	§9.2.3 Upstream leaktightness
	7.	§9.2.4 Downstream leaktightness
	8.	§10.2.3 Test of upstream mechanical behaviour
	9.	§10.2.4 Test of downstream mechanical behaviour
	10.	§11.4.1 Tap and mixer - Flow rate
	11.	§2.6.7.1 Hydraulic characteristics
	12.	§2.6.7.2 Hydraulic characteristics
	13.	§11.4.3 Tap and mixer – Flow duration
	14.	
	15.	
	16.	§11.4.5 Tap and mixer – minimum pressure test
	17.	§12 Operating force
	18.	§13.3 Endurance
	19.	§9.2.3 Upstream leaktightness
	20.	§9.2.4 Downstream leaktightness
	21.	§11.4.1 Tap and mixer - Flow rate
	22.	§11.4.3 Tap and mixer – Flow duration
	23.	§12 Operating force
	24.	§2.6.9 Endurance
	25.	§9.2.3 Upstream leaktightness
	26.	§9.2.4 Downstream leaktightness
	27.	§11.4.1 Tap and mixer - Flow rate
	28.	§11.4.3 Tap and mixer – Flow duration
	29.	
30.	§12 Operating force	
Sample 4-5-6 Acoustic	1.	§5.1 Marking
	2.	§5.2 Identification
	3.	§7 Protection against backflow
	4.	§14 Acoustic
	5.	§2.10.3 Acoustic characteristic
Sample 7 Alternating pressures	1.	§5.1 Marking
	2.	§5.2 Identification
	3.	§7 Protection against backflow
	4.	§2.8 Resistance to alternating pressure
	5.	§9.2.3 Upstream leaktightness

2.9.2 Sequence of tests for products subject to Standard NF EN 12541

2.9.2.1 Flush valves

Sample Sequence	Order	Flush valve tests
Sample 1 Materials	1.	§6.2A Materials (salt spray)
Sample 2 Materials	2.	§6.2B Materials (air thermal shock)
Sample 3 Endurance	1.	§5.1 Marking
	2.	§5.2 Identification
	3.	§7.1 Dimensional
	4.	§8.2.2 Upstream leaktightness
	5.	§8.2.3 Downstream leaktightness
	6.	§9.2.2 Test of upstream leaktightness
	7.	§9.2.3 Test of downstream leaktightness
	8.	§10.3 Flush valve – Flow rate - time – Volume - force
	9.	§11.2 Atmospheric interrupter
	10.	§11.4 Inspection to verify lack of splashing
	11.	§11.5 Inspection to verify operation under negative pressure
	12.	§13 Operating force
	13.	§14.2 Endurance
	14.	§8.2.2 Upstream leaktightness
	15.	§10.3 Flush valve – Flow rate - time – Volume - force
	16.	§13 Operating force
	17.	§2.8 11 Mechanical endurance characteristics
	18.	§8.2.2 Upstream leaktightness
	19.	§10.3 Flush valve – Flow rate - time – Volume - force
	20.	§13 Operating force
Sample 4-5-6 Acoustic	1.	§4.1 Marking
	2.	§4.2 Identification
	3.	§15 Acoustics
Sample 7 Alternating pressures	1.	§5.1 Marking
	2.	§5.2 Identification
	3.	§2.8 Resistance to alternating pressure
	4.	§8.2.2 Upstream leaktightness

2.9.2.2 Urinal valves

Sample Sequence	Order	Urinal valve tests
Sample 1 Materials	1.	§6.2A Materials (salt spray)
Sample 2 Materials	1.	§6.2B Materials (air thermal shock)
Sample 3 Endurance	1.	§5.1 Marking
	2.	§5.2 Identification
	3.	§7.1 Dimensional
	4.	§8.2.2 Upstream leaktightness
	5.	§8.2.3 Downstream leaktightness
	6.	§9.2.2 Test of upstream leaktightness
	7.	§9.2.3 Test of downstream leaktightness
	8.	§12 Urinal valve – Flow rate - time – Volume - force
	9.	§2.7.9 Hydraulic and flow characteristics for urinal valves
	10.	§13 Operating force
	11.	§14.3 Endurance
	12.	§8.2.2 Upstream leaktightness
	13.	§12 Urinal valve – Flow rate - time – Volume - force
	14.	§2.7.9 Hydraulic and flow characteristics for urinal valves
	15.	§13 Operating force
	16.	§2.8 11 Mechanical endurance characteristics
	17.	§8.2.2 Upstream leaktightness
	18.	§12 Urinal valve – Flow rate - time – Volume - force
	19.	§2.7.9 Hydraulic and flow characteristics for urinal valves
	20.	§13 Operating force
Sample 4-5-6 Acoustic	1.	§4.1 Marking
	2.	§4.2 Identification
	3.	§15 Acoustics
Sample 7 Alternating pressures	1.	§5.1 Marking
	2.	§5.2 Identification
	3.	§2.8 Resistance to alternating pressure
	4.	§8.2.2 Upstream leaktightness

2.10 EChAU rating

The essential principle of the EChAU rating is that the different characteristics are independent of each other. The level of each characteristic is to be selected as needed. The highest level may apply for one characteristic, while the lowest level may apply for another.

2.10.1 Hydraulic or flow characteristic

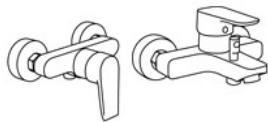
2.10.1.1 Classification

Depending on their performance level, tapware can be classified as follows:

Class	Flow rate value
E000	1.5 L/min ≤ q < 6 L/min
E00	4 L/min ≤ q ≤ 6 L/min
E02	5 L/min ≤ q < 9 L/min
E0	9 L/min ≤ q < 12 L/min
E1	12 L/min ≤ q < 16 L/min
E2	16 L/min ≤ q < 20 L/min
E3	20 L/min ≤ q < 25.2 L/min
E4	25.2 L/min ≤ q

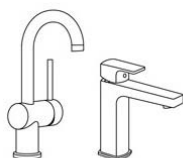
NOTE For bathtub tapware, the minimum class is E₃

Depending on their level of performance, the valves have a score of type A, B, C, D.



Bath-shower / shower faucets

Flow rate at 3 bar (L/min.)	6	8	10	12	14	16	18	20	22	24 and +
Rating	A			B		C		D		
Technical score if Comfort score = C0, C1, Ch2 or Ch3	E02		E0		E1		E2		E3	
Technical score if Comfort score = C2 or C3	E0		E1		E2		E3		E4	



Washbasin / bidet / sink faucets

Flow rate at 3 bar (L/min.)	4	6	8	10	12	14	16	18	20 and +
Rating	A		B			C		D	
Technical score if Comfort score = C0, C1, Ch2 or Ch3	E00		E0		E1		E2		
Technical score if Comfort score = C2 or C3	E0		E1		E2		E3		

2.10.1.2 Selection criteria

Flow rate class selection will be based on:

- the supplied device;
- the building comfort level;
- the type of room to be equipped.

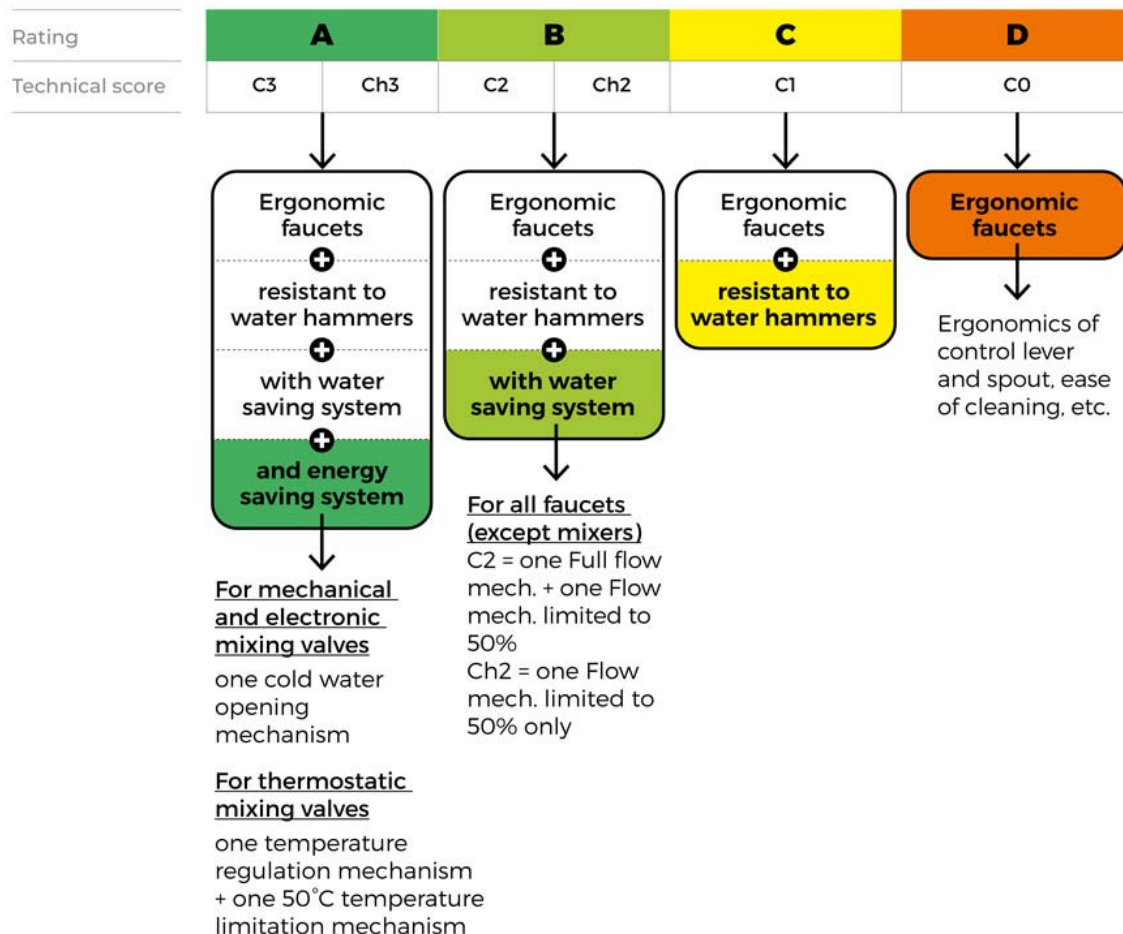
2.10.2 Comfort characteristics

2.10.2.1 Classification

Depending on their performance level, tapware can be classified as follows:

Class	The tap must comply with the requirements of the following articles:	
	Product under Standard NF EN 816	Product under Standard NF EN 12541
Ch1	2.6.4 Dimensional 2.8.1 Resistance to alternating pressure stress 02/06/2011 Verification of installation system for fixed-spout single-hole taps	2.8.1 Resistance to alternating pressure stress
Ch2	meets the requirements of class Ch1 2.6.7.2 "Water saving" controlled flow rate	

Performance criterion C depends on the tapware design:



2.10.2.2 Selection criteria

The comfort class selection will mainly depend on the characteristics and use of the building.

2.10.3 Acoustic characteristic

2.10.3.1 Classification

Depending on their performance level, tapware can be classified as follows:

Acoustic group	Class	Lap
II	A1	20 dB (A) < Lap ≤ 30 dB (A)
I	A2	15 dB (A) < Lap ≤ 20 dB (A)
I	A3	Lap ≤ 15 dB (A)

Performance criterion U corresponds to the service life of moving parts of the faucet:

Noise level at 3 bar (dB(A))	5	10	15	20	25	30	35	40 and +
Rating	A		B	C		D		
Technical score	A3		A2	A1		A0		

2.10.3.2 Selection criteria

The acoustic class selection will mainly depend on the characteristics and use of the building.

2.10.4 Mechanical endurance or wear resistance characteristic

2.10.4.1 Classification

Depending on the actual level of wear resistance of its various components, tapware can be classified as follows:

Class	Number of cycles	
U3	Obturator	175,000 cycles

Depending on their level of performance, the valves have a score of type A, B, C, D.

2.10.4.2 Selection criteria

U₀: this score is not possible for this rating because it is lower than the product standard.

U₁: use.

U₂: intensive use.

U₃: intensive use and use in harsh conditions.

For automatic shut off valves, only U3 class is possible for this rating.

2.11 Example of EChAU rating

Washbasin tapware with a flow rate during use of 5 L/min that passes comfort level 3 tests, with an L_{ap} of 16 dB (A), and that passes the endurance tests (175,000 cycles (obturator)) will be classified as:

E00 Ch3 A2 U3

2.12 Rating presentation

2.12.1 Specific information for the catalogue or other commercial media

See Chapter 6.1 of the regulations for use of DT077-00.

The specific information on the methods for rating taps are as follows:

Flow	E	Q L/min measured under 3 bar	E000	1.5 L/min ≤ q < 6 L/min	
			E00	4 L/min ≤ q ≤ 6 L/min	
			E02	5 L/min ≤ q < 9 L/min	
			E0	9 L/min ≤ q < 12 L/min	
			E1	12 L/min ≤ q < 16 L/min	
			E2	16 L/min ≤ q < 20 L/min	
			E3	20 L/min ≤ q < 25.2 L/min	
			E4	25.2 L/min ≤ q	
Comfort	Ch	Type	Ch1	Dimensions, alternating pressures Verification of installation system for fixed-spout single-hole taps	
			Ch2	Water saving characteristics	
Acoustics	A	Lap dB (A)	A1	20 dB (A) < Lap ≤ 30 dB (A)	
			A2	15 dB (A) < Lap ≤ 20 dB (A)	
			A3	Lap ≤ 15 dB (A)	
Wear	U	Number of cycles	U3	Obturator	175,000 cycles

2.12.2 Product information

See Chapter 6.2 of the regulations for use of DT077-00.

3 EChAU rating application

The rating application must be issued by the applicant/holder in one copy (**1 original on the applicant's letterhead paper in French or English**) according to the cases and models indicated below. All the documents are to be remitted to CSTB.

In the event that the product comes from a manufacturing unit located outside the European Economic Area, the applicant shall designate a representative within the European Economic Area who co-signs the application.

Note: Electronic versions of template letters and sheets may be obtained from CSTB.

The applicant produces a file that contains the elements described in the following table depending on the type of application.

Summary Applications Table

Type of application Elements	Initial application	Complementary application	Admission following a penalty of withdrawal	Suspension application	Renunciation application
Application and commitment letter	Standard letter 1A or 1B (for a representative)	Standard letter 2A or 2B (for a representative)	Standard sheet 7 specific items	Standard letter 5A or 5B (for a representative)	Standard letter 4A or 4B (for a representative)
Sales literature	YES	If applicable	YES	Instructions or extract from the catalogue	

3.1 For an initial rating application

The applicant shall prepare a dossier which includes:

- an application and commitment letter in accordance with standard letter 1 A;
- **if representative**, application and commitment letter as per standard letter 1 B;

3.2 For a complementary rating application

The holder shall prepare a file containing the following:

- an application and commitment letter in accordance with standard letter 2 A;
- **if representative**, application and commitment letter as per standard letter 2 B;

3.3 For a new rating application following a penalty of withdrawal of the EChAU rating

The holder shall prepare a file containing the following:

- specific items that all applicants must submit as part of a new admission application where the right of use has been withdrawn as a result of a sanction, using standard sheet 7.

3.4 For an application for the suspension of the EChAU rating

The holder shall prepare a file containing the following:

- a suspension letter as per standard letter 5 A;
- **if a representative**, a suspension letter as per standard letter 5 B.

3.5 For an application for renunciation of the EChAU rating

The holder shall prepare a file containing the following:

- a renunciation letter as per standard letter 6A;
- **if a representative**, a renunciation letter as per standard letter 6B.

STANDARD LETTER 1A
ECAU AND/OR EChAU RATINGS

ECAU OR EChAU RATING APPLICATION FORM
FOR APPLICANTS LOCATED IN THE EUROPEAN ECONOMIC AREA

(to be drawn up on the applicant's/holder's letterhead paper)

Centre Scientifique et Technique du Bâtiment
Direction Hydraulique et Equipements Sanitaires, (HES)
Division Robinetterie et Appareils Sanitaires (RAS)
For the attention of Mr. Laurent Rousseau
84, avenue Jean Jaurès
Champs sur Marne
F-77447 Marne La Vallée Cedex 2

Subject: **ECAU and/or EChAU rating admission application**

Attachment(s): a technical file.

Dear Sir, Madam,

I would like to request an ECAU and/or EChAU rating:

- for the following product/range of products: (detailed list of the product/range of products or specify "as set out in the list included with this application");
- produced at the following production unit: (company name, address);
- and for the following trade name: (trademark and/or specific trade reference, which may be on the list included with this application).

For this purpose, I declare that I have read and accept technical document 077 associated with this rating and undertake to comply with it and to inform my commercial network during the entire validity period of the ECAU and/or EChAU rating and in particular to comply without restrictions or reservations with the decisions made by CSTB.

Yours faithfully,

**Date, signature and name in full of the
applicant/holder's legal representative**

STANDARD LETTER 1B
ECAU AND/OR EChAU RATINGS

ECAU OR EChAU RATING APPLICATION FORM
FOR APPLICANTS LOCATED OUTSIDE OF THE EUROPEAN ECONOMIC AREA

(to be drawn up on the applicant's/holder's letterhead paper)

Centre Scientifique et Technique du Bâtiment (CSTB)
Direction Hydraulique et Equipements Sanitaires, (HES)
Division Robinetterie et Appareils Sanitaires (RAS)
For the attention of Mr. Laurent Rousseau
84, avenue Jean Jaurès
Champs sur Marne
F-77447 Marne La Vallée Cedex 2

Subject: **ECAU and/or EChAU rating admission application (with a representative)**
Attachment(s): a technical file.

Dear Sir, Madam,

I would like to request an ECAU and/or EChAU rating:

- for the following product/range of products: (detailed list of the product/range of products or specify "as set out in the list included with this application");
- produced at the following production unit: (company name, address);
- and for the following trade name: (trademark and/or specific trade reference, which may be on the list included with this application).

For this purpose, I declare that I have read and accept technical document 077 associated with this rating and undertake to comply with it and to inform my commercial network during the entire validity period of the ECAU and/or EChAU rating and in particular to comply without restrictions or reservations with the decisions made by CSTB.

Furthermore, I appoint the Company (company name), (company legal form), (registered office) represented by Mr/Ms (name of the legal representative) in that person's capacity as (position) to represent me in the European Economic Area for all matters relative to ECAU and/or EChAU ratings.

I undertake to immediately notify CSTB of any new appointment of the representative designated above.

In this regard, I request that the expenses that are to be borne by me be invoiced directly to the representative. They will make the payments on my behalf and in my name as soon as the invoices are received, as agreed when accepting the role of representative.

Yours faithfully,

Date, signature and name in full of the applicant's legal representative

preceded by the handwritten wording "Approving representation"

Date, signature and name in full of the representative in the European Economic Area

preceded by the handwritten wording "Accepting representation".

STANDARD LETTER 2A
ECAU AND/OR EChAU RATINGS

**COMPLEMENTARY APPLICATION FORM FOR ECAU AND/OR EChAU RATING
FOR APPLICANTS LOCATED IN THE EUROPEAN ECONOMIC AREA**

(to be drawn up on the applicant's/holder's letterhead paper)

Centre Scientifique et Technique du Bâtiment (CSTB)
Direction Hydraulique et Equipements Sanitaires, (HES)
Division Robinetterie et Appareils Sanitaires (RAS)
For the attention of Mr. Laurent Rousseau
84, avenue Jean Jaurès
Champs sur Marne
F-77447 Marne La Vallée Cedex 2

Subject: **Complementary application for the ECAU and/or EChAU rating**
Attachment(s): a technical file.

Dear Sir, Madam,

As holder of the ECAU and/or EChAU rating for the product(s) of our manufacture identified below:

- designation of the product(s):
- production unit:
- right of use granted on (date) and bearing the following number: (*number of valid certificate*)

I am writing to apply for the ECAU and/or EChAU rating for the following product/range of products that we manufacture:

- detailed list of the product/range of products:
- specific trade reference:

(*this information may be included in a list attached to this application*)

For an extension application, please provide the information below:

*This product deviates from the certified product/range of products due to the following modifications:
<description of the modifications>.*

The product/range of products for which I am seeking an extension will replace the certified product listed above:

- NO (1);
- YES (1).

I declare that the products/product range covered by this application are, with relation to the other characteristics, strictly in conformity with the products/product range already certified and manufactured under the same conditions.

For this purpose, I declare that I have read and accept technical document 077 associated with this rating and undertake to comply with it and to inform my commercial network during the entire validity period of the ECAU and/or EChAU rating and in particular to comply without restrictions or reservations with the decisions made by CSTB.

Yours faithfully,

**Date, signature and name in full
of the applicant/holder's legal representative**

(1) Delete as appropriate.

STANDARD LETTER 2B
ECAU AND/OR EChAU RATINGS

**COMPLEMENTARY APPLICATION FORM FOR ECAU AND/OR EChAU RATING
FOR APPLICANTS LOCATED OUTSIDE OF THE EUROPEAN ECONOMIC AREA**

(to be drawn up on the applicant's/holder's letterhead paper)

Centre Scientifique et Technique du Bâtiment (CSTB)
Direction Hydraulique et Equipements Sanitaires, (HES)
Division Robinetterie et Appareils Sanitaires (RAS)
For the attention of Mr. Laurent Rousseau
84, avenue Jean Jaurès
Champs sur Marne
F-77447 Marne La Vallée Cedex 2

Subject: **Complementary application for the ECAU and/or EChAU rating (with a representative)**
Attachment(s): a technical file.

Dear Sir, Madam,

As holder of the ECAU and/or EChAU rating for the product(s) of our manufacture identified below:

- designation of the product(s):
- production unit:
- right of use granted on (date) and bearing the following number: (*number of valid certificate*)

I am writing to apply for the ECAU and/or EChAU rating for the following product/range of products that we manufacture:

- detailed list of the product/range of products:
- specific trade reference:

(*this information may be included in a list attached to this application*)

For an extension application, please provide the information below:

This product deviates from the certified product/range of products due to the following modifications: <description of the modifications>.

The product/range of products for which I am seeking an extension will replace the certified product listed above:

- NO (1);
- YES (1).

I declare that the products/product range covered by this application are, with relation to the other characteristics, strictly in conformity with the products/product range already certified and manufactured under the same conditions.

For this purpose, I declare that I have read and accept technical document 077 associated with this rating and undertake to comply with it and to inform my commercial network during the entire validity period of the ECAU and/or EChAU rating and in particular to comply without restrictions or reservations with the decisions made by CSTB.

Furthermore, I appoint the Company (company name), (company legal form), (registered office) represented by Mr/Ms (name of the legal representative) in that person's capacity as (position) to represent me in the European Economic Area for all matters relative to ECAU and/or EChAU ratings.

I undertake to immediately notify CSTB of any new appointment of the representative designated above.

In this regard, I request that the expenses that are to be borne by me be invoiced directly to the representative. They will make the payments on my behalf and in my name as soon as the invoices are received, as agreed when accepting the role of representative.

Yours faithfully,

**Date, signature and name in full
of the applicant's legal representative**

preceded by the handwritten wording "Approving representation"

**Date, signature and name in full
of the representative in the European Economic Area**

preceded by the handwritten wording "Accepting representation".

(1) Delete as appropriate.

STANDARD LETTER 4A
ECAU AND/OR EChAU RATINGS

**APPLICATION FORM FOR RENUNCIATION OF THE ECAU AND/OR EChAU RATING
FOR APPLICANTS LOCATED IN THE EUROPEAN ECONOMIC AREA**

(to be drawn up on the applicant's/holder's letterhead paper)

Centre Scientifique et Technique du Bâtiment (CSTB)
Direction Hydraulique et Equipements Sanitaires, (HES)
Division Robinetterie et Appareils Sanitaires (RAS)
For the attention of Mr. Laurent Rousseau
84, avenue Jean Jaurès
Champs sur Marne
F-77447 Marne La Vallée Cedex 2

Subject: **Application for renunciation of the ECAU and/or EChAU rating**

Dear Sir, Madam,

As holder of the ECAU and/or EChAU rating, I would like to renounce the ECAU and/or EChAU rating for the product(s) that we manufacture identified by the following references:

- designation of the product(s):
- manufacturing unit: (company name, address):
- brand name:
- commercial reference:
- date of ECAU and/or EChAU rating admission: or certificate No.:

for the following reasons:

-

for a maximum duration of 6 months, renewable once.

Manufacturing is due to cease on:

The inventories of these products with packaging marked ECAU or EChAU are the following:

The anticipated time it will take to deplete them is:

Yours faithfully,

**Date, signature and name in full of the holder's
legal representative**

STANDARD LETTER 4 B
ECAU AND/OR EChAU RATINGS

(to be drawn up on the distributor's letterhead)

APPLICATION FOR RENUNCIATION OF THE ECAU AND/OR EChAU RATING WITH A REPRESENTATIVE FOR APPLICANTS LOCATED OUTSIDE OF THE EUROPEAN ECONOMIC AREA

For the attention of Mr Laurent Rousseau
Division Robinetterie et Appareils Sanitaires
(Tapware and Sanitaryware Division)
Direction HES
CSTB
84 avenue Jean Jaurès
CHAMPS-SUR-MARNE
77447 MARNE LA VALLEE CEDEX 2 (France)

Subject: **Application for renunciation of the ECAU and/or EChAU rating with a representative**

Dear Sir, Madam,

As holder of the ECAU and/or EChAU rating, I would like to renounce the ECAU and/or EChAU rating for the product(s) that we manufacture identified by the following references:

- designation of the product(s):
- manufacturing unit: (company name, address):
- brand name:
- commercial reference:
- date of ECAU and/or EChAU rating admission or admission no.:

for the following reasons:

Manufacturing is due to cease on:

The inventories of these products with packaging marked ECAU or EChAU are the following:

The expected time for their depletion is:

Yours faithfully,

Date and signature of the holder's legal representative

Date and signature of the representative in the European Economic Area

STANDARD LETTER 5A
ECAU AND/OR EChAU RATINGS

**APPLICATION FORM FOR SUSPENSION OF THE ECAU AND/OR EChAU RATING
FOR APPLICANTS LOCATED IN THE EUROPEAN ECONOMIC AREA**

(to be drawn up on the applicant's/holder's letterhead paper)

Centre Scientifique et Technique du Bâtiment (CSTB)
Direction Hydraulique et Equipements Sanitaires, (HES)
Division Robinetterie et Appareils Sanitaires (RAS)
For the attention of Mr. Laurent Rousseau
84, avenue Jean Jaurès
Champs sur Marne
F-77447 Marne La Vallée Cedex 2

Subject: **Application for suspension of the ECAU and/or EChAU ratings**

Dear Sir, Madam,

As holder of the ECAU and/or EChAU rating, I would like to request the suspension of the ECAU and/or EChAU rating for the product(s) that we manufacture identified by the following references:

- designation of the product(s):
- manufacturing unit: (company name, address):
- brand name:
- commercial reference:
- date of ECAU and/or EChAU rating admission: or certificate No.:

for the following reasons:

-

for a maximum duration of 6 months, renewable once.

Manufacturing is due to cease on:

The inventories of these products with packaging marked ECAU or EChAU are the following:

The anticipated time it will take to deplete them is:

Yours faithfully,

**Date, signature and name in full of the holder's
legal representative**

STANDARD LETTER 5B
ECAU AND/OR EChAU RATINGS

**APPLICATION FORM FOR SUSPENSION OF THE ECAU AND/OR EChAU RATING
FOR APPLICANTS LOCATED OUTSIDE OF THE EUROPEAN ECONOMIC AREA**

(to be drawn up on the applicant's/holder's letterhead paper)

Centre Scientifique et Technique du Bâtiment (CSTB)
Direction Hydraulique et Equipements Sanitaires, (HES)
Division Robinetterie et Appareils Sanitaires (RAS)
For the attention of Mr. Laurent Rousseau
84, avenue Jean Jaurès
Champs sur Marne
F-77447 Marne La Vallée Cedex 2

Subject: **Application for suspension of the ECAU and/or EChAU ratings (with a representative)**

Dear Sir, Madam,

As holder of the ECAU and/or EChAU rating, I would like to request the suspension of the ECAU and/or EChAU rating for the product(s) that we manufacture identified by the following references:

- designation of the product(s):
- manufacturing unit: (company name, address):
- brand name:
- commercial reference:
- date of ECAU and/or EChAU rating admission: or certificate No.:

for the following reasons:

-

for a maximum duration of 6 months, renewable once.

Manufacturing is due to cease on:

The inventories of these products with packaging marked ECAU or EChAU are the following:

The anticipated time it will take to deplete them is:

Yours faithfully,

**Date, signature and name in full of the holder's
legal representative**

**Date, signature and name in full of the
representative in the European Economic Area**

STANDARD SHEET 7
ECAU AND/OR EChAU RATINGS

SPECIFIC ITEMS ALL APPLICANTS (INDUSTRIALISTS, IMPORTERS, DISTRIBUTORS, ETC.) MUST PRODUCE AS PART OF A NEW ADMISSION APPLICATION WHEN THE RATING HAS BEEN WITHDRAWN AS A RESULT OF A SANCTION

In the event of an act of deceptive commercial practice under Articles L 121-2 to L121-5 of the Consumer Code (indication of a false rating of a certified product or a false label).

The applicant is responsible for determining and carrying out a course of action that will fully address and remedy the causes and consequences of their commitments as regards the correct usage of the certification mark.

ACTIONS	MINIMUM PROOF TO BE SUPPLIED BY THE CSTB APPLICANT SHOWING THE ACTIONS THEY HAVE UNDERTAKEN TO FULLY ADDRESS AND REMEDY THE CAUSES AND CONSEQUENCES	VALIDITY OF THE PROOF RECEIVED
CURATIVE ACTIONS	<ul style="list-style-type: none"> A list of those affected including full contact details (customers, prospects, technical controllers, etc.) who have received false attestations/false certificates; failing that, a list of those affected (customers, prospects, technical controllers, etc.) who have been contacted over the preceding 24 months. 	<input type="checkbox"/> List sent <input type="checkbox"/> List not sent <i>Comments:</i>
	<ul style="list-style-type: none"> List of customers, including full contact details, who have received products with inappropriately marked packaging information; otherwise, the list of customers of the past 24 months. 	<input type="checkbox"/> List sent <input type="checkbox"/> List not sent <i>Comments:</i>
	<ul style="list-style-type: none"> Letter written by the Applicant's manager informing those affected of the invalidity of the false attestations/false certificates they have been sent. 	<p><i>CSTB will verify that this action has been carried out by contacting 5% of those affected or at least 5 customers and technical controllers.</i></p> <input type="checkbox"/> Letter of information duly implemented, corroborated by those affected <input type="checkbox"/> Letter of information not implemented or partially implemented <i>Comments:</i>
	<ul style="list-style-type: none"> Letter written by the Applicant's manager informing the customers of products that are inappropriately marked or products bearing the certification mark(s). 	<p><i>CSTB will verify that this action has been carried out by contacting 5% of the customers or at least 5 customers</i></p> <input type="checkbox"/> Letter of information duly implemented, corroborated by those affected <input type="checkbox"/> Letter of information not implemented or partially implemented <i>Comments:</i>
	<ul style="list-style-type: none"> Action undertaken against the person or persons responsible for approving and issuing the false attestations/false certificates and/or delivering inappropriately marked products. 	<input type="checkbox"/> Action is relevant <input type="checkbox"/> Action is not relevant <i>Comments:</i>

4 Prices

The purpose of this chapter is to determine the amount due for services related to the ECAU and EChAU ratings and describe the terms of payment.

The ECAU and EChAU ratings include the following services:

- Development, examination of application and implementation of ECAU and/or EChAU ratings;
- Operation of ECAU and/or EChAU ratings;
- Testing;
- Services related to the ECAU and EChAU ratings

Nature of the service	Definition of the service	Paying for the services
<p><u>Management:</u> Development and implementation of ratings, examination of the rating application</p>	<p>Participation in the implementation of the ratings, including preparation of the associated technical document.</p> <p>Services including examination of application files, relations with applicants, laboratories and assessment of inspection results.</p>	<p>➤ <i>Initial/complementary application: See § 4.1.1</i></p>
<p><u>Management:</u> Rating operation</p>	<p>Services including management of rating files, relations with holders, laboratories, publication of ratings data on certificates, assessment of inspection results.</p>	<p>➤ <i>Monitoring: See § 4.1.2</i></p>
<p>Tests</p>	<p>Laboratories' testing services</p>	<p>The laboratories' price lists are provided upon request.</p> <p>The applicant/holder supplies samples free of charge and makes them available at the laboratory's address.</p> <p>The costs related to the import duties and taxes are to be borne by the test applicant; the applicant shall pay all duties and taxes before sending the samples.</p> <p>➤ <i>Initial/complementary application: See § 4.1.1</i></p> <p>➤ <i>Monitoring: See § 4.1.2</i></p>

4.1 Paying for the services

4.1.1 Initial application/complementary application

Management and testing fees related to examination services are invoiced in the framework of an initial or complementary ECAU and/or EChAU rating application. They are payable in one instalment, at the time at which the application is filed, for official registration.

Such fees shall remain payable even if the ECAU and/or EChAU rating is not granted or extended or if the application is withdrawn during the examination.

4.1.2 Monitoring

Fees for annual services related to management and testing of ECAU and/or EChAU ratings are invoiced during the first quarter of each year and shall remain payable in the event of non-renewal, withdrawal, cancellation or suspension of the ECAU and/or EChAU rating during the year.

4.1.3 Non-payment of amounts due

The applicant or holder of the ECAU and/or EChAU rating must pay all fees in accordance with the established terms of payment. Any failure on their part is an obstacle to the fulfilment by CSTB of the responsibilities of inspection and corrective action that are incumbent upon it hereunder.

If a first official notice by registered letter with acknowledgement of receipt does not result in the payment of all amounts due within one month, any established penalties may be applied for all of the products accepted for such holder.

4.2 Prices

Prices are reviewed annually, in the form of a price list drawn up by CSTB. This revision is reported by CSTB.

If holders refuse to recognise the annual revision of fees, they shall be deemed to have voluntarily terminated the ratings for their products.

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