



> CERTIFICATION

Référentiel de certification

CSTBat

Polyethylene pipe systems for water drainage

Identification No.: RT 15-2

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The English version is provided for information. In case of doubt or dispute, the French version only is valid.

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This certification reference system was approved by the CSTB Technical Department on **20 September 2016**.

It cancels and replaces all previous versions.

As a certifying body accredited by the COFRAC under the number 5-0010, accreditation range available at www.cofrac.fr, CSTB undertakes to draft certification reference systems that guarantee an appropriate level of requirements for the quality of the products, their suitability for use and their durability.

This certification reference system may therefore be revised, in whole or in part, by CSTB, after the interested parties have been consulted in accordance with the requirements in Standard NF X 50-067.

MODIFICATION HISTORY

Modified part	Revision no.	Date brought into application	Modification made
The whole document	08	05/04/2012	Editorial modification
The whole document	09	20/09/2016	Update of the specific measures for compliance with standard NF EN ISO CEI 17065 Update of the requirements of ISO 9001 version 2015 Changes made as compared to revision No.08 appear in red in the text.

Partie 1 APPLICATION

1.1 SCOPE

Purpose of these Specific Requirements

The purpose of Specific Requirements is to specify the practical conditions for application of the General Requirements in the specific case of polyethylene pipe systems for water drainage.

Field of application

Families

The field of application of this certification is that of pipe systems or their components (pipes and fittings) made of high and low density polyethylene, designed for the production of drainage networks:

- for rainwater,
- for wastewater (domestic wastewater and soil water),

of buildings and their annexes (outlets, drainpipes, gutters, primary and secondary ventilation), including the parts of the pipework buried within the footprint of the building up to a distance of 1 m from its outlet, thus zones B, D and BD.

This certification does not cover the elements of the pipework designed to be buried outside the building (sewage system).

The CSTBat mark strives to inspect the safety characteristics for people and goods, the fitness for use and the durability of the products, as well as any additional characteristics to enable them to stand out in the market.

1.2 CERTIFICATION ADDED VALUE

Certification is recognition from a third party that the characteristics are compliant, demonstrating the **added value of the** Polyethylene pipe systems for water drainage.

The certified characteristics of the Polyethylene pipe systems for water drainage **are described in detail in technical document 1.**

1.3 APPLYING FOR CERTIFICATION / CERTIFICATION CONTRACT

This certification reference system is available to any applicant whose products fall under the scope defined above and meet the technical requirements described in Part 2 of this document.

Definition of applicants / delegates / distributors: see part 5.

The completed and signed application letter, accompanied by a quote, if applicable, forms the Certification Contract.

The contract is governed by French law. If there is any problem with interpretation, execution or validity of the Contract, the Parties agree to solve their differences out of court unless there is an emergency that justifies calling in a competent jurisdiction acting in summary proceedings.

If the Parties are unable to resolve their differences within three (3) months from their emergence, the dispute will be taken by the most diligent Party before the competent French courts.

The Contract is entered into for an unlimited term.

Partie 2 THE CERTIFICATION SCHEME

2.1 THE CERTIFICATION PROGRAMME

The Certification Programme for this application of the CSTBat mark is made up of this Certification Reference System, which lists:

- the CSTBat mark General Requirements, which establish the organisation and conditions for use of the mark;
- The standards and the complementary specifications:

This certification reference system is consonant with the framework of the certification of products and services other than alimentary, as provided for in the Consumer Code (articles R-115-1 to R 115-3 and L 433-1 to L 433-11). It specifies the conditions for applying the General Requirements of the CSTBat mark to products defined in Part 1.

The reference system relative to certification of Polyethylene pipe systems for water drainage comprises the General Requirements of the CSTBat mark, these Specific Requirements and the relevant standards.

This is the certification reference system in the sense of the Consumer Code.

The General Requirements of the CSTBat certification

The CSTBat mark is a registered mark with General Requirements which define the general procedures for award and renewal of the right to use the mark.

The Specific Requirements of the CSTBat certification

These Specific Requirements specify the practical conditions for applying the General Requirements of the CSTBat mark to products defined in Part 1.

The right to use CSTBat certification is awarded based on this certification reference system for a product from a designated holder and manufacturing unit.

2.2 REGULATIONS

The granting of the right to use the CSTBat mark can in no way substitute CSTB's responsibility for that which is legally incumbent upon the company which holds the right to use the CSTBat mark.

The products covered by these Specific Requirements must comply with the regulations in force.

Fire safety regulations

Depending on the type of building involved (residential buildings, public-access buildings, high-rise buildings, offices, classified facilities), the fire safety regulations may feature specifications governing the pipework (pipes and fittings) and pipework installation.

In particular, it may require products to fall under a fire-reaction classification category.

This certification does not cover monitoring of this classification.

Certified characteristics

The certified characteristics are specified in Technical Document 1 relative to the different product families as defined in part 1.

2.3 ADDITIONAL STANDARDS AND SPECIFICATIONS

Product standards

The references of these standards are specified in Technical Document 1 relative to the different product families as defined in part 1.

Test standards

The references of these standards are specified in Technical Document 1 relative to the different product families as defined in part 1.

The Specific Committee may rule on the use of a previous version of a test standard to that currently valid. In this case, the version and date of issue of this standard will be specified in the relevant technical document.

Additional technical requirements: Technical Document 1.

2.4 MODIFICATION DECLARATION

This paragraph specifies the information that the holder of the right to use the CSTBat mark must provide to CSTB and the procedures it must follow in the event of any modifications to:

- the holder;
- the manufacturing plant;
- the quality organisation of the manufacturing plant;
- the product.

Failure to respect this obligation observed by CSTB may lead to a suspension or withdrawal of the right to use the CSTBat mark.

In cases not provided for earlier, CSTB determines whether the modifications bring the certification into question and if it is necessary to conduct a supplementary inspection.

Depending upon the results of the examination, CSTB communicates the appropriate decision.

2.4.1 Modification concerning the holder

The holder shall communicate in writing to CSTB any legal modification of his company or any modification in his company name.

In case of merger, liquidation or absorption of the holder, all rights to use the CSTBat mark to which it might benefit automatically stop.

A new admission application may be submitted and its examination may be moderated depending upon the modifications made.

2.4.2 **Modification concerning the manufacturing unit**

Any transfer (total or partial) of the manufacturing unit of a certified product to another production site entails an immediate halt in the CSTBat marking by the holder on the products concerned.

The holder shall declare this transfer in writing to CSTB which will organise an audit of the new production unit and, as the case may be, have tests carried out.

The inspection visit can be simplified, or even eliminated, when the new production unit is already well known by CSTB.

The procedures of assessment and of renewal decision of the certification are the same as those for admission as described in Part 3 of this certification reference system.

2.4.3 **Modification concerning the manufacturing unit's quality organisation**

The holder shall declare in writing to CSTB any modification relative to his quality organisation which might affect the conformity of the production to the requirements of this certification reference system.

In particular, he shall declare any modification in the certification of his quality management system. If distribution is carried out by a third party, the holder shall undertake to immediately inform CSTB of any modification made to the distribution of its products, and in particular any halt in supply by the designated third party

Any temporary halt in the internal inspection of a certified product entails an immediate halt in the CSTBat marking of this product by the holder, who must inform CSTB of this.

CSTB then informs the holder of a decision to suspend the right to use the CSTBat mark for a specific duration following which, if the right of use cannot be re-established, this holder's right to use the CSTBat mark will be withdrawn.

2.4.4 **Modification concerning the certified product**

Any modification to the certified product when compared with the application dossier likely to have an effect on the product's compliance with the requirements in the certification reference system, shall be declared in writing to CSTB.

According to the modification declared, CSTB determines whether this is a certification extension application.

Likewise, any modification to the Environmental and Health Declaration Sheets (FDES) for the certified product must be declared, at a minimum during the follow-up audit.

2.4.5 **Temporary or definitive halt in production**

Any definitive or temporary halt in the manufacture of the certified product (or range or products) or the relinquishment of the right to use the CSTBat mark shall be declared in writing to CSTB, specifying the time necessary to sell off the inventory of the CSTBat-labelled products. The suspension or withdrawal of the right to use the CSTBat mark is notified to the holder of the CSTBat mark by CSTB. When the period indicated by the holder expires, the product is removed from the list of certified products.

Any temporary halt in the manufacture of the certified product (or range or products) must be the subject of a suspension of the right to use the CSTBat mark for a maximum period of **6 months, renewable once**. The total duration of the suspension of the right to use the CSTBat mark for these products must not exceed one year. The lifting of the suspension may only be announced following one or more assessments **audit and test assessments**.

2.4.6 **Modification concerning the distribution circuit**

The holder must undertake to inform CSTB of any modification to the distribution of the certified products as soon as he becomes aware of such modification and, in particular, if it stops supplying a distributor who holds the right to use the CSTBat mark, which means that the right to use the CSTBat mark is no longer maintained.

The distributor whose right to use the CSTBat mark has been maintained shall undertake to inform CSTB of any modifications in its supplies that would result in the right to use the CSTBat mark no longer being maintained. The distributor's right to use the CSTBat mark can only be validated after a new examination in accordance with Part 3 of this certification reference system.

2.4.7 **Modification concerning the applicable standards and specifications**

Should a standard be withdrawn because of safety reasons, CSTB shall notify the withdrawal of the right to use the CSTBat mark, thus entailing an immediate halt in the CSTBat-mark-related production by the manufacturer as well as the withdrawal of its CSTBat-labelled products from the market.

2.5 **THE QUALITY MANAGEMENT PROVISIONS: AUDIT REFERENCE SYSTEM**

2.5.1 **Purpose**

Applicants/holders and their distributors holding a right of use are each responsible for the right to use the CSTBat mark relative to the product in question.

The applicant/holder shall implement all necessary means to guarantee that the product complies with this certification reference system at all times. In addition, they must ensure the command of their external service providers using all methods to assess all the component elements of a product or external service(s) for which they are the applicant or holder of the right to use the certification mark.

This paragraph sets the minimum provisions that the applicant/holder shall implement in terms of quality management to ensure that the products are manufactured respecting the certification reference system at all times.

The quality system depends in part on the establishment by the applicant/holder of a series of organisational systems enabling the conformity of the delivered products with standards and complementary specifications. These measures are described in paragraph 2.5.2 below.

2.5.2 **Minimum requirements for quality management**

The applicant/holder shall have implemented the ways and means which he possesses, the existence and effectiveness of which have been assessed based on the requirements of Standard NF EN ISO 9001:

- NF EN ISO 9001 revision 2008 (applicable until 15 September 2018), and
- NF EN ISO 9001 revision 2015 (applicable as of 15 September 2015).

If the manufacturing unit is not NF EN ISO 9001-certified, the applicant/holder must justify the introduction of a range of organisational provisions and a production control system to control conformity with the standards and complementary specifications for the delivered products that meet at least the requirements in this certification reference system.

The audits are carried out according to Table 1 as follows. This table indicates the specific requirements in Standard NF EN ISO 9001 which must be verified in the context of the certification.

Within the framework of an audit, all the necessary requirements identified on the shaded lines in Table 1 below, shall be audited. All the other requirements pertaining to quality management shall be audited over a period of 3 years.

Possible reduction:

If the manufacturing unit has a certified quality management system that conforms to Standard NF EN ISO 9001, the audits may be “simplified”. Only the requirements identified on a “shaded” line in Table 1 are to be audited. This simplification leads to a reduction in the audit time.

This simplification can be envisaged as long as:

- the ISO 9001 certificate includes within its scope and domain the sites and activities covered by the certification mark; and
- the ISO 9001 certificate is issued by a certifying body accredited by the COFRAC or by a member of the EA (European cooperation for Accreditation) or by a member of the IAF (International Accreditation Forum) - see signatories on the COFRAC website www.cofrac.fr, and
- the last ISO 9001 audit report of the body is forwarded to CSTB prior to the audit of the body, **or is examined during the audit of the body.**

This moderation can be questioned if the above-mentioned conditions according to which moderation has been accepted are no longer respected.

If the manufacturing unit is not ISO 9001: 2008 certified, the applicant/holder must justify that a set of organisational measures and a production control system have actually been set up to control conformity with standards and additional specifications for delivered products satisfying at least the requirements in this certification reference system.

The audits are carried out according to Table 1 as follows. This table gives the specific requirements of the NF EN ISO 9001: 2008 standard which must be checked as part of the certification procedure.

In addition, the applicant/holder shall in every case make provision for the record and processing of customer complaints in its quality management system.

A customer complaint register shall be kept and shall mention how the complaints are being dealt with. The holder’s register shall comprise the following:

- a record of all complaints and actions
- a record of action taken
- a record of the corrective measures adopted when the complaints have revealed a production anomaly.

Table 1 (Applicable requirements)

§ ISO 9001: 2008	§ ISO 9001: 2015	REQUIREMENTS	MINIMUM EVIDENCE EXPECTED	APPLICABLE
5. Management responsibility				
5.5.1 / 5.5.2.	5.3.	Organizational roles, responsibilities and authorities	<ul style="list-style-type: none"> * Organization chart * Description of responsibilities and authorities (examples: organization chart, job sheets, etc.) * Person appointed to be responsible for organizing and efficiently implementing the production system 	<ul style="list-style-type: none"> ■ <To be used for persons responsible for the inspection or with a direct impact on critical points in making the product.> All the items except: * ISO 9001 V15: §5.3 c,d
7. Substrate				
6.4.	7.1.4.	Environment for the operation of processes	Evidence of the maintenance of the work environment. Examples: storage of a product and its components to protect them from bad weather, suitable ambient conditions, etc.	<ul style="list-style-type: none"> ■ <A retenir pour les processus liés à la réalisation des produits/services>
7.6.	7.1.5.	Monitoring and measuring resources	<ul style="list-style-type: none"> * List of the inspection, measuring and test equipment used on the product/service production site and/or in the laboratory, * Identification of the equipment used to determine their validity, * Planning for the verification or calibration of the equipment having an impact on the validity of the results (in particular the equipment used to perform tests on certified characteristics) * Evidence of the verification and/or calibration operations (ex: equipment data sheet, verification or calibration report, etc.), * Evidence of connection to national or international standards (where possible) * Validation of software used to monitor and measure the specified requirements, where appropriate. 	<ul style="list-style-type: none"> ■ <A retenir pour les processus liés à la réalisation des produits/services>
6.2.	7.2.	Expertise	<ul style="list-style-type: none"> * Compliance with test methods and inspection provisions. * Actions planned to acquire the necessary competence (training, tutoring, etc.), where appropriate. 	<ul style="list-style-type: none"> ■ <To be used for persons responsible for the inspection or with a direct impact on critical points in making the product.>
4.2.	7.5.	Documented information	<ul style="list-style-type: none"> * List of the internal and external documented information. Examples: Procedures, operating methods, test methods, inspection instructions, quality records * Evidence of control of internal and external documents Example: Availability of the applicable version of the test method, the reference system, the inspection provisions, etc. 	<ul style="list-style-type: none"> ■ <A retenir pour les processus liés à la réalisation des produits/services> All the items except: * ISO 9001 v08: § 4.2.1., 4.2.2 Note: Quality manuals are no longer required.

§ ISO 9001: 2008	§ ISO 9001: 2015	REQUIREMENTS	MINIMUM EVIDENCE EXPECTED	APPLICABLE
8. Operation				
7.4.	8.4.	Control of externally provided products and services	<ul style="list-style-type: none"> * List of the service providers * Contract / order defining the requirements of the applicant / holder of the certification * Evidence of the verification of raw materials, components (1), services purchased * Evidence of the verification of subcontracting conditions: transport, handling, tests (2), etc. 	<ul style="list-style-type: none"> ■ < To be used for raw materials, bought-in components and outsourced services affecting the quality of the product/service > External providers: <ul style="list-style-type: none"> * supplier of raw materials, components, services integrated into the product/service * subcontractor of external services (ex: tests, handling, transport, etc.) (*) Specific case of applicants/holders subcontracting part of their production CSTB audits the subcontractors (as provided for in the certification reference system) All the items except: <ul style="list-style-type: none"> * ISO 9001 v08: § 7.4.1. * ISO 9001 v15: § 8.4.1.
7.5.1 / 7.5.2.	8.5.1.	Control of production and service provision	<ul style="list-style-type: none"> * Information defining the characteristics of products and services. Examples: product plan / description of the service, etc. * Information defining the activities to be carried out and the results to be obtained. Examples: operating method(s), working instruction(s), test method(s), certification reference system (expected performance) * Monitoring and measurement activities Examples: Monitoring plan, inspection procedures and instruction(s), test method(s), etc. * Conservation of documented information proving the conformity of products/services with the acceptance criteria (Same as § 8.2.4. ISO 9001 v08 and § 8.6.ISO 9001 v14) 	■
7.5.3.	8.5.2.	Identification and traceability	<ul style="list-style-type: none"> * Identification / Marking of the product in accordance with the requirements in the Certification reference system * Marking of commercial documents in compliance with this certification reference system. 	<ul style="list-style-type: none"> ■ < A retenir dans tous les cas pour l'identification (et pour la traçabilité si pertinent) >
7.5.5.	8.5.4.	Preservation of product	Verifying that the product is preserved throughout the production line (identification, handling, storage, packaging, transport, etc.)	■
-	8.5.6.	Control of changes in production / service provision	<ul style="list-style-type: none"> * Evidence of the control pertaining to the modifications in the manufacturing process / service provision, in particular the impact of modifications on the product's performance (3): <ul style="list-style-type: none"> - reviewing the modifications, - person permitting modifications and all the necessary related actions. 	■

§ ISO 9001: 2008	§ ISO 9001: 2015	REQUIREMENTS	MINIMUM EVIDENCE EXPECTED	APPLICABLE
8.2.4.	8.6.	Release of products and services	* Provisions for the control of products; records of the results of inspections and the conformity with the acceptance criteria (4) * Name of the persons responsible for releasing the finished products / services	■
8.3.	8.7.	Control of non-compliant components	* Provisions for processing non-conformities, including customer complaints, and implementation of those provisions (5) * No dispensation granted as regards the performance of a certified characteristic	■
9. Performance evaluation				
5.6.	9.3.	Management review	Management review report	■
10. Improvement				
8.5.2.	10.2.	Nonconformity and corrective action	* Implementation of corrective actions to deal with non-conformities pertaining to a certified product, including customer complaints (6) * Effectiveness of the actions taken.	■

2.6 REQUIREMENTS SPECIFIC TO THE PRODUCTS

2.6.1 General

The applicant/holder shall possess the necessary ways and means for the controls and tests defined by the standards, reference documents and complementary specifications mentioned in Paragraph 2.3 of this reference system. The applicant/holder commits himself to carry out reliable and regular verification of its production. The verification operations are organised in three phases as follows:

- Operations concerning product components;
- Operations carried out during production;
- Checks and tests carried out on finished products.

2.6.2 Verifications of the product's components

Applicants/holders are required to carry out a control of all components used in the manufacture of their certified products upon reception, and in all cases prior to use.

The "reception" internal control specified by the applicant/holder shall cover:

the control methods for products upon reception that assess conformities and/or regularities in relation to the expected characteristics,

including, as applicable, collection rules for product samples.

This control covers all management actions carried out by the supplier. For example: compliance sheet issued after a systematic control prior to delivery, which the applicant/holder requires the supplier to perform, supplier certified according to Standard NF EN ISO 9001 for relevant products or certified supplies, etc.

2.6.3 Subcontracting tests

Applicants/holders may subcontract the tests to an external laboratory, on the condition that a contract or an order is put in place. Subcontracting is only possible if the following conditions are met:

- subcontracting the tests does not result in a disruption to the production process (due to wait time for results, for example);
- the conditions for subcontracting tests are formalised in the contract or order and must define the applicable test method, the testing frequency, the requested response times for results, the notification of results in writing, the procedure in the case of non-compliant results and the type of equipment used;
- The subcontractors' laboratory where the test is carried out must be accredited according to Standard NF EN ISO/CEI 17025, otherwise the party requesting the test (holder of the certification mark) must ensure that the equipment used is compliant (calibration, test configuration, etc.) and the staff carrying out the test have the necessary skills.

2.6.4 Approach to the assessment of the complementary requirement in Standard ISO 9001 version 2015 compared to Standard ISO 9001 version 2008

Within the framework of the Product Certification audit, the only complementary requirement referred to concerns the requirements of § 8.5.6 in Table 1: "Control of changes in production / service provision".

If the applicant/holder does not comply with this requirement, the auditor shall notify as follows:

- suggested improvement (if the fact occurred prior to 15/09/18)
- a deviation (if the fact is subsequent to 15/09/18).

(4) Inspection during production and on finished products

The applicant/holder shall possess the necessary ways and means for the controls and tests defined by the standards, reference documents and complementary specifications mentioned in Paragraph 2.2 of this reference system. The applicant/holder commits himself to carry out reliable and regular verification of its production.

2.6.5 In-production inspection

A control during production must be set up by the applicant/holder. This concerns the product in its intermediate states at the main steps of fabrication and the review inspection of the set points of the production equipment (fabrication machines, tooling).

Verification instructions shall be formalised and made available to the operators. The results of those verifications shall be recorded at each operation. If the results of the controls indicate that the product does not meet the requirements of this Certification Reference System, the necessary corrective actions must be implemented immediately.

2.6.6 Inspection and testing on finished products

Applicants/holders are required to verify the characteristics of the finished products before delivery and are responsible for putting this control in place. The controls and tests of finished products manufactured by the applicant/holder are carried out according to the standards and additional specifications mentioned in this certification reference system.

The various controlled characteristics are measured using the operating procedures specified in the reference standards mentioned in Paragraph 2.3 of this certification reference system.

The controls of finished products are carried out by the applicants/holders themselves in their own manufacturing plant.

Applicants/holders shall take random samples at the end of the production line and carry out the controls and tests on these samples. The samples taken must be representative of the dimensions of the products covered by this certification reference system.

The method for collecting the samples required for testing must be clearly specified in the applicant's/holder's quality plan and must not be left to the sole discretion of the operator.

Applicants/holders shall record the results of the previous controls. Should the results of the normal inspections prove to be insufficient, the latter shall be reinforced and the causes of failure shall be detected in order to remedy this by supplementing the production inspections, where appropriate.

2.6.7 Statement of results - control register

The results of the controls and inspections for each product together with the date on which the controls were performed must be systematically recorded by means left to the discretion of the holder (registers with numbered pages, sheets, electronic records, etc.).

This means must allow immediate access and availability (detachable copies, photocopies, print-outs of electronic data, etc.) to the following information relative to the raw materials and finished products:

- identification of the batch,
- origin of the materials and the specified characteristics,
- results of the inspections and tests,
- any observations thrown up by the inspections,
- any corrective and preventive action.

2.6.8 Provisions for processing non-conformities

These notably include:

- an analysis for identifying the cause of the anomaly,
- an analysis to determine the impact of the anomaly on production since the previous control,
- management ensuring that the implementation of the corrective actions is effective,
- In the unlikely event that non-compliant products are delivered to a customer, the latter shall be notified immediately so that appropriate measures can be taken.

2.6.9 Customer complaints

The customer complaint record is audited; to do this, holders shall keep:

- a record of all the complaints and appeals pertaining to products covered by this certification reference system;
- a record of the corrective measures adopted when the complaints have revealed a production anomaly.

The holder shall be able to show the auditor extracts from these records relating to complaints that involve products covered by this certification reference system.

2.7 MARKING

Marking is an integral part of the certification of a product.

Beyond the identification of a certified product and its traceability, the marking of a product with the CSTBat logo ensures better protection of users and makes it possible to protect holders against any misuse and counterfeit products.

2.7.1 The reproduction or use of CSTB logos is strictly prohibited except with prior approval from CSTB.

In addition, the statement of the main certified characteristics is intended to make transparent for consumers and users the technical characteristics to which the CSTBat mark relates. It thus enhances the certification and its content.

Under no circumstances is it possible to make reference to the CSTBat mark **before the right to use this mark is obtained or to present counterfeit products for certification.**

The purpose of the marking rules described hereafter is to guide the holder in complying with regulatory requirements and certification requirements. The General Requirements of the CSTBat mark define the conditions of use, the conditions of validity of the right to use the CSTBat mark and the penalty arrangements in the case of wrongful use of the CSTBat mark.

Without prejudice to the penalties provided for in the General Requirements of the CSTBat mark, any incorrect declaration of the certified characteristics and any fraudulent use of the CSTBat logo will result in legal action against the holder for fraud and/or deceptive advertising.

2.7.2 The CSTBat logo

The CSTBat logo must ensure the identification of each certified product.

The holder undertakes to respect the CSTBat mark graphic charter. The CSTBat logo and its graphic charter are available from the application administrator.

The CSTBat-certified product must have a designation and identification distinguishing it from non-certified products.

The holder shall not use the CSTBat logo except to single out certified products without there being any risk of confusion whatsoever with other products, especially non-certified products.

To prevent any confusion between certified products and non-certified products, applicants/holders must ensure that the trade names used are not too similar (e.g. "Prod+" for a certified product and "Prod" for a non-certified product).

It is recommended that the holder remit to CSTB in advance all the documents upon which the certification mark appears.

If the product cannot be marked for technical reasons, CSTB must be contacted. CSTBat may be marked in full.

2.7.3 Marking conditions

This section describes both the conditions for affixing the CSTBat logo and the marking of the certified characteristics

In order to meet the requirements in article R 115-2 in the Consumer Code, the marking must integrate the following elements wherever possible.



Water distribution or drainage pipes
www.cstb.fr

List of certified characteristics defined in paragraph 2.1 of each technical document

It is recommended that consumers be informed about the primary reasons for and advantages of using a certified product. The certified characteristics must appear on at least one of the materials (product, packaging or documentation).

Marking is an integral part of the certification of a product.

Beyond the identification of a certified product and its traceability, the marking of a product with the CSTBat logo ensures an optimum defence of the mark and facilitates legal actions and convictions in cases of fraudulent imitations.

2.7.4 Logo and general conditions

The logo must ensure the identification of each certified product:



The trade reference of the certified product must be reserved for the CSTBat mark.

The manufacturer must not use the CSTBat mark except to single out certified products without there being any risk of confusion whatsoever.

The graphic tools for the logo are available from CSTB (see contact in §2.2).

References to the Certificate in commercial documents must only appear with certified components, systems or procedures and in the form shown below:

Certificate reference:

35-00



35: factory no. **- 00:** Technical holder no.

It is recommended that the holder submit to CSTB in advance all the documents upon which the CSTBat mark appears.

2.7.5 Specific conditions

The nature and frequency of the marking are defined in the Technical Documents, 1 to 6 relative to the different product families as defined in part 1.

2.8 CONDITIONS FOR TERMINATING MARKING OR FOR REMOVING THE MARK IN THE CASE OF SUSPENSION, WITHDRAWAL OR ABANDONMENT

The conditions for removing marking must be drafted according to the following principles:

2.8.1 In case of penalty

Any suspension or any withdrawal of the right to use the CSTBat mark leads to a ban on use of the CSTBat Mark and making reference to it. In the same way, CSTBat-marked products must have the marking removed. In this case, the logo affixed to the products must no longer be visible

2.8.2 In case of relinquishment

Refer to paragraph 2.4.5 Temporary or definitive halt in production

2.8.3 In case of product non-compliance

If any product is non-compliant, the product and its packaging must not be marked with the CSTBat logo or the logo must be crossed out or concealed to prevent any risk of confusion. The conditions for removing the mark per product/media and the quantities/time frames must be recorded.

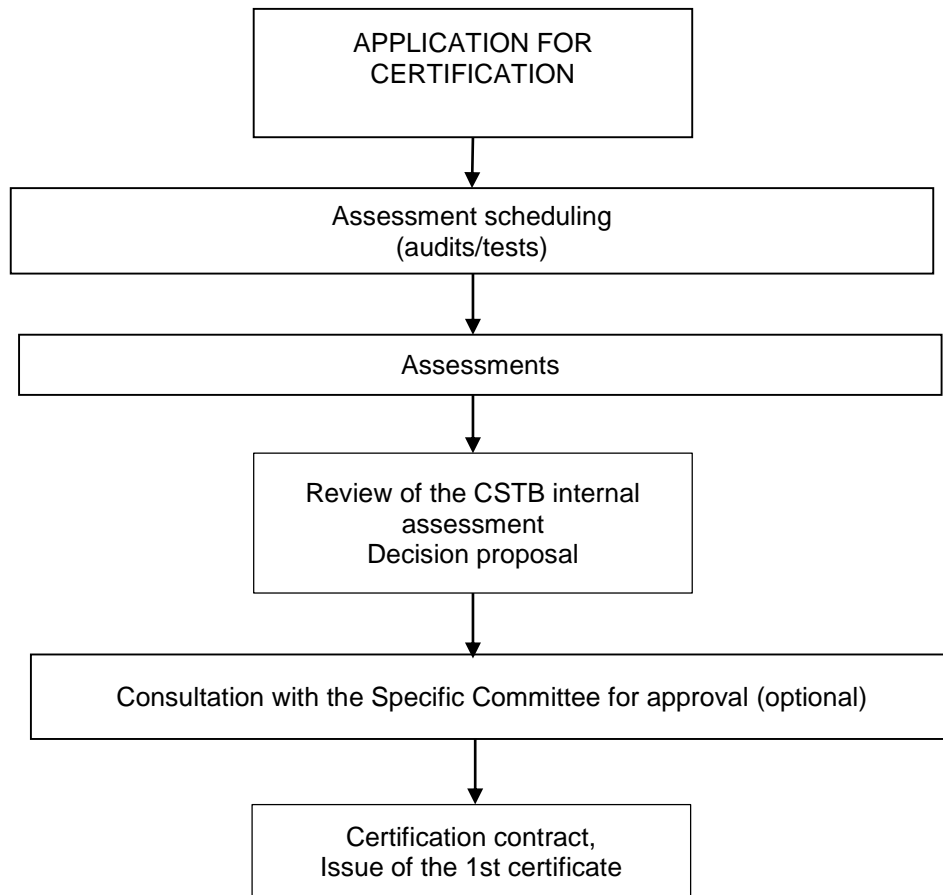
In cases 1 and 2, in addition to removing the marking on the product itself, removing the CSTBat mark concerns any reference to the CSTBat mark on all the media controlled by the manufacturer.

Partie 3 CERTIFICATION PROCESS

3.1 GENERAL

The requirements in this certification reference system are audited for admission and the follow-up audits.

3.2 CERTIFICATION APPLICATION PROCESSING PROCEDURE



The conditions for obtaining a certification and the certification follow-up procedure are described in Parts 1 and 2 of the Appendix to this certification reference system.

3.2.1 **Audit of the production site**

During the audit of the production site, the following verifications and controls are performed:

3.2.2 **Verification of the quality assurance system**

Verification that the quality assurance system covers the different points provided in appendix 1 of the "CSTBat Certificate General Rules for building products".

For companies whose quality assurance system is certified by a recognised body, verification of the quality system may be simplified and limited to the following points:

- Control operations
- Personnel, installations and equipment
- Tests
- Recording inspection results
- Customer complaints.

3.2.3 **Sampling for tests at CSTB**

Samples can be taken (1) to carry out the tests defined in § 3.2.5 below at the CSTB laboratory.

The detailed list of samples required to perform these tests indicated in the table on pages 22 and 23 is established for each application according to the range presented.

3.2.4 **Tests conducted in the factory**

For the purpose of comparison testing between the holder's laboratory and the CSTB laboratory, the auditor may carry out tests in the factory, or have them carried out in his/her presence.

3.2.5 **TESTS CONDUCTED AT THE CSTB LABORATORY**

The tests to be performed for the purpose of a certificate application are given in the table on the next page.

In case of a transfer of production, the application manager will decide on the need to perform all or part of these tests. The possibility of carrying out the annual follow-up type tests on page 28 will be examined.

(1) The samples may also be sent by the applicant before the production site visit. In this case, CSTB will specify the conditions to be respected for the choice of these samples (minimum amounts manufactured, choice of batches, etc.).

Samples for tests at the CSTB laboratory are performed according to the instructions below, with reference to the sampling standards NF X 06-021 and NF ISO 2859-1.

A) Case of pipes

The table below gives the number of types of pipes to be sampled according to the number of types submitted for admission (sampled randomly).

Number of types submitted for admission (per family)	Number of types to be sampled (per family)
1	1
2 to 8	2
9 to 15	3
16 to 25	5

B) Case of fittings

The table below gives the number of types of fittings to be sampled according to the number of fittings submitted for admission (sampled randomly).

Number of fittings submitted for admission (per family, per category and per type)	Number of fittings to be sampled (per family, category and type)
1	1
2 to 8	2
9 to 15	3
16 to 25	5
≥ 26	8

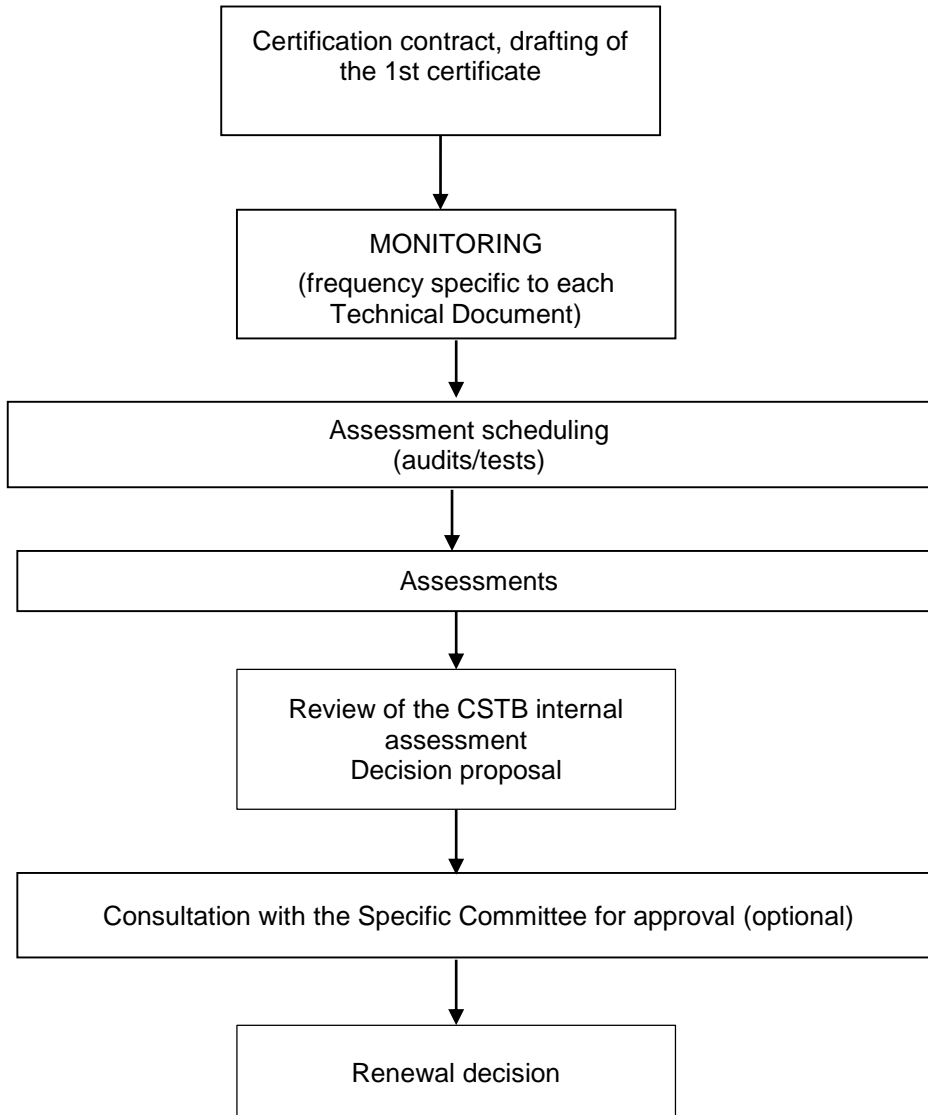
The samples taken must have been manufactured in the holder's workshops under industrial manufacturing conditions.

The samples taken are marked by the officer in charge of verification with a distinctive sign allowing them to be authenticated subsequently and sent by the holder and under its responsibility to the independent laboratory in charge of performing the test, unless the officer in charge of verification decides to take responsibility for them.

	Material	Pipe	Fitting	Assemblies
Appearance		X	X	
Dimensional characteristics		All the types submitted for admission 5 pipes per type	All the types submitted for admission: by dimensional inspection on the stock on at least half the range presented and by verification of the inspection registers for the entire range	
Melt mass-flow rate (MFR)	Virgin material for each reference used for the manufacture of pipes and fittings	1 recrushed sample		
Longitudinal reversion		1 test per type sampled		
Effects of heat			1 test per type sampled	
Thermal stability	Virgin material for each reference used for the manufacture of pipes and fittings designed for butt-welding			
Resistance to pressure	Virgin material for each reference used for the manufacture of pipes and fittings			
Ring stiffness	from DN 75	On 3 DN		
Air tightness				On 1 DN 1 assembly with electrofusion sleeve and 1 assembly with expansion joint
Watertightness				On 1 DN 1 assembly with electrofusion sleeve and 1 assembly with expansion joint

	Material	Pipe	Fitting	Assemblies
Resistance to thermal cycles				1 assembly including expansion sleeves and welded assemblies
Tightness of assemblies with elastomer sealing ring (for the BD application) from DN 75				1 sealing ring assembly Pipe/pipe or pipe/fitting On 3 DN
Long-term performance of TPE seals (for BD application)				X
Watertightness			Shaped seals: 1 test per type sampled	

3.3 MAINTAINING CERTIFICATION



3.3.1 Nature and frequency of verifications

Verification is carried out every six months, each including a production site audit and a series of tests at the CSTB laboratory.

If the plant is the subject of one of the penalties defined in article 1.2.3 of the CSTBat Certificate General Rules for building products, additional verifications may be carried out.

Simplified inspection

In the absence of significant observations during the first three years following award of the certificate, a comprehensive inspection is performed annually (visit of the production site + tests at the CSTB laboratory), with a second series of tests carried out at CSTB on samples supplied by the holder.

If the plant is the subject of one of the penalties defined in article 1.2.3 of the CSTBat Certificate General Rules for building products,

- the frequency of 2 verifications per year is immediately restored for a period of 3 years,
- additional verifications may be performed.

For each verification, a review is made of any modifications made since the certificate was awarded or since the last verification (modifications relating to organisation of the company, manufacturing, the quality assurance system, etc.).

- CSTB will ensure that the interval between two visits is not less than 9 months and does not exceed 15 months,
- The audit normally lasts one day. This period is modular according to the risk: level of development or control of the quality system, organisation of the company (process, laboratory, etc.) Moreover, if the audit is conducted in common with another application managed by CSTB, the common verifications provided in the General Requirements of the CSTBat certification reference system being audited once (Responsibility, Document Management, Control Operations, Personnel, Installations and Equipment, Processing of Non-compliant Products, Traceability and Complaints), the duration can be combined.

3.3.2 Follow-up audits

The follow-up audits are intended to check, following admission, that the provisions defined are still being maintained.

All of the provisions described in Paragraph 3.3.1 apply.

3.3.3 Verification of the quality assurance system

The follow-up audits are intended to check, following admission, that the provisions defined are still being maintained.

All of the provisions described in Paragraph 3.3.1 apply.

Inspection operations

The auditor carries out at least the following tasks, taking into account the information collected during the previous audit, the results of the last checks and any remarks made by the Specific Committee>:

- verification of the effective application of the corrective measures announced as a result of any observations made during the previous audit;
 - the verification of the compliance with the holder's quality requirements set out in this certification reference system;
 - Verification of the self-inspection records since the last audit, statistically for at least one certified product and for the products which are sampled for mark laboratory tests;
 - - verification of the sales documents: The audited sites must present or send the commercial documents (catalogues, website, etc.) to CSTB.
- * the audited sites must keep the commercial documents available (catalogues, website, etc.). Failure to comply with this requirement will be the subject of a deviation;
- verification of the changes in the characteristics of the certified products.

An audit report is prepared and submitted to the audited entity.

3.3.4 Controls on the product or component

- Verification of the appearance, colour, etc.
- Inspection of marking compliance

3.3.5 Tests conducted in the factory

For the purpose of comparison testing between the manufacturer's laboratory and the CSTB laboratory, the inspector may carry out tests in the factory, or have them carried out in his/her presence.

3.3.6 Sampling for tests at the CSTB laboratory

Samples are taken by the auditor in order to perform the tests set out in Technical Document 1 at the CSTB laboratory.

The tests listed in **Table 1** are performed twice a year on samples taken during the visit to the production site.

The minimum quantities of samples to be taken for the performance of these tests are given in the table below:

Pipe	Fitting	Virgin material
5 x 1 m sections in 3 DN	5 fittings of 3 different types	1 sachet of pipe virgin material and 1 sachet of fitting virgin material

In the case of a simplified inspection as provided in § 3.3.1 of this Certification reference system, if the manufacturing site is not visited, the samples are sent to the CSTB by the holder by request of the relevant CSTB manager.

The samples are taken so as to allow the entire range offered to be inspected in rotation.

In case of stockout for the types or DN selected by the auditor, the holder undertakes to send the samples to CSTB within two months. In this case, the holder also sends a copy of the sheet of checks carried out on the batch in question.

- The tests listed in **Table 2** are performed once every 5 years or if developments are made to the products. The samples required to perform these tests may be taken during a visit to the production site or sent to CSTB outside the visiting period.

The detailed list of samples required to perform these tests is established according to need.

In the following cases, sampling on-site during the audit can be replaced by sampling by e-mail or post:

- simplified half-yearly verification regime for the half-year which is not the subject of an audit,
- if the audit is carried out late in the half-year or year,
- for better planning of test campaigns in the CSTB laboratory.

The samples are sent to CSTB by the holder by request of the relevant CSTB administrator.

The samples are taken so as to allow the entire range offered to be inspected in rotation.

The samples taken during an audit must be sent to the Mark laboratory within 1 month as from the date of the audit.

In case of stock-out concerning the types or DN chosen by the auditor * or the administrator in the case of sampling by e-mail or post, the manufacturer undertakes to send the samples to CSTB within the time frame set by the auditor or administrator.

The manufacturer must contact the administrator to inform them in case of failure to comply with this time frame.

Failure to comply with these measures may lead to a penalty and/or additional management costs as provided in part 3 of the administrative appendix, § 3.7.

*In this case, the manufacturer sends a copy of the sheet of checks carried out on the batch in question by request of the auditor.

Table 1

	Material	Pipe	Fitting
Appearance		X	X
Dimensional characteristics		3 types of pipe 3 pipes per DN	3 types of fitting selected at random 5 fittings per type
Melt mass-flow rate (MFR)	Virgin material for each reference used for the manufacture of pipes and fittings	1 recrushed sample	1 recrushed sample
Effects of heat			On 1 type of fitting
Ring stiffness from DN 75		On 1 DN	
Longitudinal reversion		On 3 DN	
Thermal stability	Virgin material for each reference used for the manufacture of pipes and fittings designed for butt-welding		

Table 2

	Pipe	Fitting	Assembly
Tightness of assemblies with elastomer sealing ring (for the BD application) from DN 75			On 1 assembly
Resistance to thermal cycles			1 assembly including expansion sleeves and welded assemblies
Air tightness			on 1 DN 1 assembly with electrofusion sleeve and 1 assembly with expansion joint
Watertightness			on 1 DN 1 assembly with electrofusion sleeve and 1 assembly with expansion joint

Partie 4 THE STAKEHOLDERS

The bodies involved in the procedure for granting the right to use the CSTBat mark and in monitoring the certified products are specified below.

4.1 CERTIFYING BODY

The CSTBat mark is the property of CSTB which is also a certifying body. **It specifies the governance rules and the operating conditions applicable to the marks. Furthermore, it takes responsibility for the application of the reference system and the decisions taken in this context.**

Centre Scientifique et Technique du Bâtiment

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CSTB, the owner of the mark reproduced on the letterhead, takes responsibility for the application of these Specific Requirements.

4.2 SECRETARIAT OF THE APPLICATION

The secretariat is provided by CSTB which is responsible for the technical and administrative management of the Certificates.

Service Hydraulique et Equipements Sanitaires

Division Canalisations

Centre Scientifique et Technique du Bâtiment

84, avenue Jean Jaurès - CHAMPS SUR MARNE

F-77447 MARNE LA VALLEE Cedex 2

Tel: +33 (0)1 64 68 85 67

4.3 AUDIT BODY

The audit functions for the manufacturing unit and, as the case may be, on the utilisation premises, are carried out by the following organisation, designated the audit body:

Verification in factories, on worksites or in stores is carried out by CSTB agents authorised for this purpose.

Service Hydraulique et Equipements Sanitaires

Division Canalisations

Centre Scientifique et Technique du Bâtiment

84, avenue Jean Jaurès - CHAMPS SUR MARNE

F-77447 MARNE LA VALLEE Cedex 2

Tel: +33 (0)1 64 68 85 67

The auditors have the right to inspect on the premises of any applicant or holder as part of their mission.

As part of a subcontracting agreement that CSTB has signed with the following body, the latter can conduct audits **corresponding to this certification reference system**, as requested by CSTB.

Subcontracting auditors: Mr Michel FRANK (“auto-entrepreneur” (self-employed))

4.4 TEST LABORATORIES

The verification tests are carried out on components or systems either in the manufacturer's laboratory or the CSTB laboratory in agreement with the Committee.

Whenever controls carried out in the context of use of the CSTBat mark include tests on products, such tests are carried out at CSTB's request by the following laboratory, referred to as the laboratory of the mark:

Service Hydraulique et Equipements Sanitaires

Division Canalisations

Centre Scientifique et Technique du Bâtiment

84, avenue Jean Jaurès - CHAMPS SUR MARNE

F-77447 MARNE LA VALLEE Cedex 2

<http://evaluation.cstb.fr/>

4.5 SUBCONTRACTING

After assessment by the Specific Committee, the various functions described in Paragraphs 4.3 and 4.4 can be carried out by other audit bodies or recognised laboratories with which CSTB has signed a subcontracting contract. Specific conditions or restrictions may be defined by the application committee.

4.6 SUBCONTRACTED AUDIT BODIES

Subcontracting auditor: Mr Michel FRANK ("auto-entrepreneur" (self-employed))

The following requirements must be satisfied for subcontracted audit bodies:

- 1 - External auditors are subject to the same qualification procedure as CSTB internal auditors.
- 2 - Subcontracted audit may not exceed 25% of the total volume of audits performed as part of this certification.
- 3 - Only sites admitted to the mark for a full 3 years may be audited by the body subcontracted by CSTB.
- 4 - The measures concerning the audit body subcontracted by CSTB may be reconsidered each year and ruled on in the Specific Committee report.
- 5 - An audit cannot be carried out more than 3 times in succession by the subcontracted audit body.

The tests are carried out under the responsibility of the laboratories of the mark.

The tests are carried out in compliance with the standards listed in Part 2 and in the technical documents pertaining to the product groups.

A test report is prepared and remitted to the holder.

4.7 SPECIFIC COMMITTEE

An impartial consultative authority is established called the Specific Committee, the Secretariat of which is provided by CSTB. Its missions are:

The **“Water cycle”** Specific Committee common to the various CSTBat applications related to the conveyance of water in the building has been set up. The applications covered by this Committee are:

- **“WATER DISTRIBUTION OR DRAINAGE PIPES”** - RT 15-1 et 15-2

“CONNECTION HOSES” - RT 19

The composition of the Specific Committee is set to respect representation between the different parties concerned, which does not lead to any of them dominating and which guarantees their relevance.

It is composed as shown below:

- A Chairperson chosen from the members of the colleges defined below;
- A Vice Chairperson: a representative of CSTB;
- Manufacturers College (Holders): from 4 to 7 representatives;
- Users' / Specifiers' college: from 4 to 6 representatives;
- Technical Bodies', Experts' and Administrations' College: from 3 to 4 representatives.

The representatives of audit bodies and mark laboratories participate as of right in the meetings of the Specific Committee.

The Specific Committee issues decision notifications and its members shall be precluded from receiving any remuneration for the functions entrusted to them.

The time span for the appointment of the members is 3 years. This appointment is renewable by tacit agreement. The Chairperson of the Specific Committee can change every year.

The members of the Specific Committee formally undertake to keep confidential all information, particularly of an individual nature, which is communicated to them.

The Specific Committee may, where appropriate, decide to set up working groups or subcommittees and define their missions and responsibilities. The composition of the working groups is to be validated by the Specific Committee, these working groups being composed of at least one representative of the “Manufacturers” College, one representative of the “Users / Specifiers” College and one representative of CSTB. It may call upon professionals, external individuals or holders that are not members of the Specific Committee.

If a vote is held, the Specific Committee makes decisions based on a simple majority of its present or represented members, subject to the following two-fold condition:

- effective representation of the College that represents applicants or holders on the one hand, and the College that represents users and specifiers on the other hand (not representative of an interest);
- none of the Colleges has a majority of the people present or represented (predominance of an interest).

If this is not the case, there is either written consultation or a new meeting.

Partie 5 Glossary

Granting of the right to use the CSTBat mark

Authorisation granted by CSTB to an applicant to affix the CSTBat mark on the product for which the application has been made.

Warning:

Penalty that does not result in suspension. The penalty is issued by CSTB, the product is still covered by the mark but the holder must correct the deviations observed within a given period of time. When a warning is accompanied by an increase in the number of inspections, the actions must be launched within a defined time period. The warning may only be renewed once.

Applicant:

Any person who modifies the container and/or content of the product (for example, packets or loose cement distribution) becomes an applicant and may not be considered as a distributor. Therefore, this person must make a usage right admission application.

Distributor:

Person who distributes the applicant/holder's products and who does not modify the conformity of the product to the requirements of the CSTBat mark.

Distributors may be of the following types:

- Distributors who distribute the product under the holder's trade name. In this case, no action is to be taken for the purpose of the CSTBat mark.
- Distributors who distribute the product after changing the trade name. The applicant/holder shall make an application for maintenance of right of use.

If the distributor does not wish to have explicit reference to the manufacturer, then an application for admission to the CSTBat mark must be made by the distributor. In that case, the manufacturing plant is not mentioned on the certificate.

Depending on the various operations carried out by the applicant/holder or the distributor, the sites audited and the audit duration within the framework of initial certification or monitoring are to be defined case by case.

Environmental and Health Declaration Sheet (FDES):

Data based on the analysis of the life cycle of a product and that is used to assess the environmental impacts of the building works in which the product covered by the FDES sheet is likely to be used (see also www.inies.fr)

This FDES sheet shall be drawn up under the responsibility of the applicant/holder (individual sheet) or of a trade association (collective sheet)

Note: other environmental declarations are deemed equivalent, in particular the "Environmental Product Declaration" (EPD) and the "Product Environmental Profile" (PEP).

Delegate:	<p>Public body or individual based in the EEA who represents the applicant/holder outside the EEA and has a written mandate from them signifying that they may act on their behalf and specifying under which context (missions and associated responsibilities and financial aspects, complaints, contact for the certifying body, among others) in the CSTBat mark certification process according to the provisions in the certification reference system.</p> <p>The delegate may be the retailer or importer; their different functions are clearly identified.</p> <p>The delegate concept is vital once applicants are outside the E.E.A. Depending on the markets, the distributor concept may not be relevant.</p>
Maintenance:	<p>Application by which a holder requests the maintenance of its right to use the CSTBat mark for a product intended to be marketed by a distributor under a different brand and/or trade reference, but without modifying the certified characteristics.</p>
Observation:	<p>Remark aiming to draw a holder's attention to a minor non-conformity so as to avoid any propensity that might end up with a warning.</p>
Product:	<p>Element resulting from a process or manufacturing process coming from a specific manufacturing unit, defined by a trademark, a specific trade reference and technical characteristics.</p>
Receivability:	<p>Study of a dossier which enables the application to be examined. The receivability relates to the administrative and technical parts of the dossier.</p>
Renewal:	<p>Application by which the holder requests the renewal of its right to use the CSTBat mark before the end of validity of its CSTBat certificate.</p>
Certification Reference System:	<p>Technical document which defines the characteristics that a product, a service or a combination of products and services shall have, and the methods for inspecting the conformity with these characteristics, as well as the methods for communicating on the certification (including the content of the information).</p>
Withdrawal of the usage right:	<p>Decision communicated by CSTB to cancel the right to use the CSTBat mark.</p> <p>A withdrawal can be pronounced as a sanction or in case of relinquishment of the right to use the CSTBat mark by the holder.</p>
Subcontracting:	<p>Company which carries out some of the production steps for the certified product, under the control of the CSTBat mark holder.</p>
Suspension:	<p>Suspension is accompanied by a ban on using the mark on future products. The suspension must not exceed 6 months and can be renewed once, following which a withdrawal shall be declared if no action has been initiated by the holder.</p> <p>Penalty notifications that involve the right to use the mark (suspension/withdrawal) are signed by the Legal Representative, who is the decision-maker for the certifying body.</p>

Holder:

Legal entity which controls and/or is responsible for respecting all the requirements defined in the CSTBat mark certification reference system for **Water distribution or drainage pipes**.

These requirements cover at least the following steps: design, manufacture, assembly, quality control, marking, packing and market release and specify the critical points in the different steps.

CSTBat CERTIFICATE

Water distribution or drainage pipes

SPECIFIC REQUIREMENTS

- TECHNICAL DOCUMENT 1

- POLYETHYLENE PIPE SYSTEMS FOR WATER DRAINAGE - FAMILY **DT 1**

The requirements and provisions specified in this Technical Document will be updated in the case of new components or products.

1. STANDARDS

1.1. PRODUCT STANDARDS

NF EN 1519-1 April 2000: Plastic piping systems for soil water and wastewater discharge (low and high temperature) within the building structure - Polyethylene (PE) - Part 1: Requirements for pipes, fittings and for the system.

XP CEN/TS 1519-2 August 2012: Plastic piping systems for soil water and wastewater discharge (low and high temperature) within the building structure - Polyethylene (PE) - Part 2: Guide for assessment of compliance.

NF EN ISO 3126 September 2005: Plastic Piping Systems Plastic components Measurement of dimensions.

1.2. TEST STANDARDS (METHODS)

NF EN 681-1: Elastomeric seals - Materials specifications for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber.

NF EN 681-2: Elastomeric seals - Materials specifications for pipe joint seals used in water and drainage applications - Part 2: Thermoplastic elastomers.

NF EN 728: Plastic piping and ducting systems - Polyolefin pipes and fittings - Determination of oxidation induction time.

NF EN ISO 2505: Thermoplastic pipes - Longitudinal reversion -- Test method and parameters.

NF EN ISO 580: Plastic piping and ducting systems — Injection-moulded thermoplastic fittings — Methods for visually assessing the effects of heating.

NF EN ISO 1167-1: Thermoplastic pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure - Part 1: General method.

NF EN ISO 1167-2: Thermoplastic pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure - Part 2: Preparation of pipe test specimens.

NF EN 1053: Plastic piping systems - Thermoplastic piping systems for non-pressure applications - Test method for watertightness.

NF EN 1054: Plastics piping systems - Thermoplastics piping systems for soil and waste discharge - Test method for airtightness of joints.

NF EN 1055: Plastics piping systems - Thermoplastics piping systems for soil and waste discharge inside buildings - Test method for resistance to elevated temperature cycling.

ISO 1133 (November 2005) Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics.

NF EN 1277: Plastic piping systems - Thermoplastic piping systems for buried non-pressure applications - Test method for leaktightness of elastomeric sealing ring type joints.

ISO 1872/1: Plastics - Polyethylene (PE) moulding and extrusion materials - Part 1: Designation system and basis for specifications.

NF EN 1989: Plastic piping and ducting systems - Joints for buried non-pressure sewerage applications - Test method for long-term sealing performance of joints with thermoplastic elastomer (TPE) seals by estimating the sealing pressure.

ISO 4065 Thermoplastics pipes -- Universal wall thickness table.

ISO 4440-1: Thermoplastics pipes and fittings - Determination of melt mass-flow rate - Part 1: Test method.

ISO 4440-2: Thermoplastics pipes and fittings - Determination of melt mass-flow rate - Part 2: Test conditions.

NF EN ISO 9969: Thermoplastic pipes - Determination of ring stiffness.

2. CERTIFIED CHARACTERISTICS AND TEST METHODS

The conditions for verification of the characteristics certified at CSTB are listed in the table below.

				Test Methods		Specifications	
	Pipe	Fitting	Material	Reference standard	Operating conditions	Reference standard	Values
Appearance	X	X					
Geometric characteristics	X	X		NF EN ISO 3126		NF EN 1519-1	
Melt mass-flow rate MFR	X		X (Pipe and fitting)	ISO 4440-1 and ISO 4440-2 ISO 1133	Condition 18 190 °C 10 min 5 kg	NF EN 1519-1	Between 0.2 and 1.1 g/10 min Maximum pipe MFR variation in relation to the raw material 0.2 g/10 min
Longitudinal reversion	X			NF EN ISO 2505	Method A ¹⁾ liquid bath 110°C ± 2°C 30 min	NF EN 1519-1	≤ 3% no bubble or crack
Resistance to pressure <i>For BD application (material test)</i>			X (Pipe and fitting)	NF EN ISO 1167-1-3		NF EN 1519-1	At 80°C: min. resistance 165 h at 4 Mpa
Effects of heat		X		NF EN ISO 580	Method A (in air) 110°C ± 2°C 1 h	NF EN 1519-1	No deterioration > 20% of the thickness of the wall around the injection point - No opening in the weld line > 20% of the thickness of the wall
Thermal stability* <i>* material used for pipe or fittings designed for butt-welding</i>			X	NF EN 728	200 °C	NF EN 1519-1	OIT ≥ 20 min
Ring stiffness <i>(for BD application)</i>	X from DN 75			NF EN ISO 9969	23 °C ± 2°C deflection of 3% rate defined in NF EN 1519-1 according to the DN	NF EN 1519-1	SN ≥ 4k N /m ²

¹⁾: The choice of method A or method B is the responsibility of the holder. However, in case of dispute, only the reversion test performed according to the liquid bath method in standard NF EN ISO 2505 will be the reference test.

²⁾: Only for fittings made with more than one part. The means of restraint of the sealing ring is not considered as a part.

Certified characteristics - continued

				Test Methods		Specifications	
	Pipe	Fitting	Material	Reference standard	Operating conditions	Reference standard	Values
Watertightness	Shaped seals ²⁾			NF EN 1053	Water pressure: 0.5 bar	NF EN 1053	No leaks
Watertightness and airtightness	Pipe, fitting and assemblies (with seal ring and electrofusion sleeve)			NF EN 1053 and NF EN 1054		NF EN 1053 and NF EN 1054	No leaks
Resistance to elevated temperature cycling	Assembly including pipes, fittings and assemblies (with seal ring and by electrofusion sleeve)			NF EN 1055		NF EN 1055	No leaks before or after the test Deflection DN ≤ 50: ≤ 3 mm DN > 50: ≤ 0.05d _n
Tightness of assemblies with elastomer sealing ring (for the BD application)	Assembly from DN 75			NF EN 1277 Method 4 conditions B and C			Water: no leak Air: ≤ - 0.27 bar
Long-term performance of TPE seals (for BD application)				NF EN 1989		NF EN 1989	Pressure on the seal: a) at 90 days: ≥ 1.3 bars b) Using the extrapolation to 50 years: ≥ 0.6 bars

3. VERIFICATION REGIME

For products in family **DT1**, the applicable verification regime is the half-yearly regime for the 36 months following admission, then the simplified half-yearly regime (see § 3.5).

4. MARKING

4.1. COMPONENT MARKING

The marking has at least the following information:

PIPES

The pipes must be indelibly marked at least every metre.

This marking must include at least the following elements:

- identification of the material,
- identification of the manufacturer (name or logo) and/or the commercial name of the product,
- identification of the factory (if there are several production sites),
- the dimensions (DN and th),
- the CSTBat logo followed by the two last parts of the certificate number,
- the manufacturing references allowing traceability,
- reaction to fire class.

FITTINGS

Every individual fitting must bear the following marking, marked indelibly:

- identification of the material (1),
- identification of the manufacturer (name or logo) and/or the commercial name of the product,
- the DN of the associated pipe,
- the angle (if necessary),
- the CSTBat logo followed by the two last parts of the certificate number (1),
- the manufacturing references allowing traceability (1).

In all cases, the packaging must bear the CSTBat logo followed by the last two parts of the certificate number.

(1) *If it is impossible to achieve the indelible marking of this information, marking is authorised on labels affixed to the fittings themselves or marking on the packaging.*

4.2. CSTBat marking template

Representation of the CSTBat certification logo:



E.g.

PEhd - X tube - 01 - 125 x 4.8 -  aa - xyz - 01-26-16 – M4

4.3. COMMERCIAL DOCUMENTS

References to the Certificate in commercial documents must only appear with certified components, systems or procedures and in the form shown below:



(Factory No.) - (order No.)

Any other presentation must be submitted to CSTB for approval.

5. SAMPLING FOR TESTS AT CSTB

The minimum quantities of samples to be taken for the performance of these tests are given in the table below:

Pipe	Fitting	Virgin material
5 x 1 m sections in 3 DN	5 fittings of 3 different types	1 sachet of pipe virgin material and 1 sachet of fitting virgin material