

CERTIFICATION Guidelines  
EHP/001/July 2009

Approved by the Euroheat & Power Board

**EUROHEAT & POWER CERTIFICATION  
GUIDELINES FOR QUALITY  
ASSESSMENT OF DISTRICT HEATING  
PIPES**

**EHP/001/July 2009**

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# EUROHEAT & POWER CERTIFICATION GUIDELINES FOR QUALITY ASSESSMENT OF DISTRICT HEATING PIPES

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## INTRODUCTION

Certification involves confirmation from an independent third party that a product conforms to the requirements stipulated in standards or other specifications.

Requirements on environmental or quality system certification or that the company operates structured environmental/quality management work are not part of this document, but these may be a purchaser's procurement criteria or requirement.

EUROHEAT & POWER offers through these guidelines, the manufacturers of district heating pipes and fittings called also "supplier" the possibility of product certification and quality marking.

These certification regulations define the

- conditions for certification
- implementation stipulations of certification procedure
- product technical requirements
- type test requirements
- requirements on manufacturer's quality control during production
- requirements on periodical external inspections.

Certification according to these guidelines represents a common tool for the procurement of standardised EN 253, 448, 14419 and EN 15698-1 products.

It should be noted, however, that the guidelines cannot cover all possible special cases in which further or restrictive measures may be required. In the same line of thinking, they are not intended to hinder the development of new and better products. Certification does not absolve anyone of responsibility for their own actions. Accordingly, Euroheat & Power disclaims any responsibility for any consequence caused by the certification and/or the application of the certification guidelines by its members or third parties. Nor can Euroheat & Power be held responsible for malfunctioning (financially or otherwise) of the Certification Board.

These certification guidelines have been prepared by EUROHEAT & POWER Task Force "Transport & Distribution" and will be updated by the "Certification Board."

All producers are encouraged to apply the certification procedure according to these guidelines.

Euroheat & Power recommends its member associations to refer to these guidelines for the procurement of standardised EN 253, EN 448, EN 15698-1 and EN 14419 products. Concerning the products which fall under the scope of these guidelines (see clause 3 of the guidelines), Euroheat & Power strongly encourages its member associations to recommend their member companies to buy and use only certified products. EHP certificate should be part of requirements in invitation to tender documents of the district heating companies. In procurements falling under Public Procurement Directive 2004/17/EC EHP certificate or equivalent third party certificate/declaration should be required. Should products which are not included on the Euroheat & Power Certificate list be offered by the bidder, this shall clearly be stated in the bid to avoid confusion.

Manufacturers with the right to carry out EHP quality marking are introduced on an open list, which is kept up-to-date by EUROHEAT & POWER.

## 2 OBJECT

The purpose is to

- provide a voluntary certification system which is economical and beneficial for both suppliers and users
- provide users an easy way to obtain required assurance of the sufficient quality of the products by introducing a certificate and a quality mark
- ensure the required quality of products mentioned in chapter 3
- provide more uniform, equal and fair competition conditions in Europe and avoid unsound price competition at the expense of quality.

## 3 SCOPE AND REQUIREMENTS

The scope of these certification guidelines embrace district heating pipes (single pipe system) manufactured according to EN 253 "District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene", fittings manufactured according to EN 448 "District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Fitting assemblies of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene", surveillance systems according to EN 14419 "District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Surveillance systems" and district heating pipes (twin pipe system) manufactured according to EN 15698-1 "District heating pipes -Preinsulated bonded twin pipe systems for directly buried hot water networks-Part 1: Twin pipe assembly of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene".

Also twin pipe fittings, for which there exists no European standard yet, are covered by applying the requirements of single pipe fittings and twin pipe assemblies (see annexes 1 and 2).

In case the preinsulated pipe manufacturer does not produce casings, only certified casing pipes are allowed to be used for production of pipes and fittings covered by a certificate. Therefore certificates can also be issued to producers of casing pipes only.

Product technical requirements and type test requirements are directly adopted from EN 253, EN 448, EN 14419 and EN 15698-1. Requirements on manufacturer's quality control and external inspections are based on informative annexes D of EN 253, A of EN 448, F of EN 14419 and A of EN 15698-1. The Certification guidelines can also be updated when a new reference standard or revision of existing standard is printed in prEN version (preliminary requirements) and has been formally approved after the enquiry phase for formal vote.

One and the same certificate can cover both pipes and fittings in both single and twin pipe systems.

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## GENERAL RULES

All suppliers of pipes and fittings ("supplier") in accordance with the scope shall have even access to certification on equal financial and other conditions.

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## ADMINISTRATION, ORGANISATION

The organisation and the roles and tasks of different bodies are as follows:

### Certification Board

The Certification Board authorizes certification bodies and controls that the bodies operate according to these guidelines, has full insight in the certification procedures, investigates complaints and makes the final decision, updates the open list of certified products, takes care of matters that can affect this certification programme and updates these guidelines.

Every EHP member association has a right to nominate one member to the Board. The members shall be employees of district heating companies or district heating associations. Additionally the Board can invite experts such as representatives of manufacturers and testing institutes. When matters concerning certain certification body are on the agenda, its representative shall take part in that Board meeting.

The chairman of the "Certification Board" shall be member of EHP TF Transport & Distribution.

The Board meetings take place as often as deemed necessary, but at least once a year. The Board shall meet representatives of certification bodies at times to discuss experiences and routines.

The decisions of the Board are made on a simple majority basis. In case of even vote the decision will be allotted.

## Certification Bodies

The certification bodies accredited according to EN 45011 and EN ISO/IEC 17025 to act as a certification body and approved by the Board take care of certification operations and are responsible for reporting to the Board.

Initial and periodical external inspections are carried out and inspection reports made by certification bodies. If sub-suppliers for inspections are used, they must be accredited respectively and approved by the responsible certification body.

## Test Institutes

Type tests and spot tests for samples taken as part of external inspections are carried out and test reports made by test institutes, having a valid accreditation to do specified testing in accordance with the conditions specified by EN 253, EN 448 and EN 15698-1 and accredited according to EN 45011 and EN ISO/IEC 17025. If sub-suppliers for tests are used, they must be accredited respectively and approved by the responsible test institute.

# 6

## CERTIFICATION PROCEDURE

### 6.1 General

Procedures in order to obtain and uphold a certificate include:

- application
- initial assessment of application documents
- initial inspection at production plant
- manufacturer's quality control
- periodical external inspections

Type testing, initial assessment of documents and initial inspection is performed to obtain initial validation of materials, products, production processes and manufacturer's quality control. After successfully passing these procedures, a certificate will be issued by the certification body.

If all the results of type tests and inspections are not satisfactory for issuing a certificate, the applicant shall apply corrective actions. After that those parts of tests and/or inspections considered necessary by the certification body shall be repeated.

### 6.2 Application

A manufacturer shall submit an application to the certification body.

The application for certification shall be made in writing on a special form (annex 4) and be accompanied by:

- technical data (type test reports, drawings, etc) according to chapter 6.3.1
- description of the supplier's quality control (procedures, test items and frequencies, documentation) according to chapter 6.5

The same form shall also be used to apply for an extension of scope of existing certificate and in case of changing the place of manufacture of the certified product.

## 6.3 Initial assessment of application documents

In the initial assessment the certification body examines the submitted documents against the requirements set out in these rules.

### 6.3.1 Technical data

The applicant should present technical data for the product, which includes, as applicable:

- product description
- product norm or reference to a standard
- type test report
- quality control plan
- information about the intended marking

#### 6.3.1.1 Product description

The product description should carry the designation or number as well as the date and the last revision date.

#### 6.3.1.2 Type test report

Type test report shall show that all the technical requirements set out in annex 1 are satisfied. The report must not be older than two years at the time of application, provided that the product has not been subjected to manufacturer's quality control according to clause 6.5 and periodical external inspections according to clause 6.6.

Type testing is to be carried out in an accredited test institute to the extent stated in annex 1. Provided that the PE casing materials/suppliers and the polyol system and type of blowing agent used for fitting production are the same as for pipe production, the type test report for straight pipe production covers also fitting production in that production plant. Otherwise a specific type test report for fitting production is needed additionally. For a manufacturer of fittings only, type test specimens can be taken from a pipe, produced in the same production plant and with the same foam system, where necessary.

For a manufacturer of casing pipes only, the type testing consists of PE tests and shear strength before ageing and impact resistance tests of the pipe assembly.

Type test results only apply to products made of same materials as the type tested products were manufactured of.

The supplier is responsible for sending the samples to the test institute and for the related costs.

#### 6.3.1.3 Quality control plan

The quality control plan shall describe the methods and minimum test frequencies applied in manufacturer's internal quality control for the clauses in tables of annexes 1 and 2.

### 6.3.2 Marking

Manufacturers have the right to mark the certified products with a certification label (quality mark) consisting of an EHP logo and a certificate number as set out in annex 6. The certificate number is made up of a unique certification body number denoted with two digits and a serial number from 01 to 99.

### 6.4 Initial inspection at production plant

The initial inspection shall provide evidence that the manufacturer meets all the requirements of these certification guidelines. The initial inspection includes inspections and checks mentioned in annexes 1 and 2 column "manufacturer's type test" and a check of procedures to perform "manufacturer's quality control" (inspections and tests according to annexes 1 and 2 column "external inspection" are not carried out during initial inspection but only during periodical inspections).

### 6.5 Manufacturer's quality control

Manufacturer's quality control is performed in order to ensure that certified products continuously satisfy requirements in EN 253, EN 448, EN 14419 and EN 15698-1. The quality control shall consist of tests, measurements and inspections according to annexes 1 and 2.

The minimum requirements of quality control (items to be tested and test frequencies) are given in annexes 1 and 2. The quality control should be described in a quality manual or the like.

The quality control tests and measurements can be performed by the manufacturer itself or they can be outsourced to a subcontractor or test laboratory.

Test equipment used for internal inspection should be well-maintained, adjusted and calibrated.

All quality control tests and measurements shall be documented, giving the information of the samples, results, dates, name of controller and measures implemented due to results. These documents together with documents on manufactured products and received materials and components shall be maintained for at least 5 years and the certification body shall have access to them.

### 6.6 Periodical external inspections

External inspections are performed in order to evaluate the certificate holder's continued compliance with all the specified requirements for certification, especially the minimum extent and proper functioning of the manufacturer's quality control.

The inspection is made by the certification body once a year through a visit to the manufacturer at times determined by the body.

Checks will be made during the visit that the manufacturer's quality control works as required and documented by the manufacturer. Furthermore, testing and inspections and sampling by the certification body of certified products will be carried out according to annexes 1 and 2. Accredited test laboratories shall be employed by the manufacturer to perform tests for samples taken during inspection.

In order to facilitate the follow up of the quality of the delivered products the certificate holder shall keep record of the quality reclamations they receive from the field and the actions they have consequently taken. These records can be checked during external inspections.

If the manufacturer employs a quality system according to ISO 9000 certified by an accredited certification body the audit of quality control can be limited to the inspection of conformity of the quality control plan to these guidelines (annex 1 and 2) and the audit and revision reports.

The results of the inspection shall be reported in writing to the manufacturer and - if the certificate holder is not the same as the manufacturer - also to the certificate holder.

If inspections, testing and/or the audit of the manufacturer's quality control result in non-conformity the certification body initiates an investigation into the causes. The investigation can result in a note, request for corrective acts, new inspection visit, retesting or requirements for changes to the quality control.

#### 6.7 Modification of a certified product

The holder of a certificate is obliged to notify the certification body before modifications to the design, material or implementation are made. The certification body then determines whether the modifications are of a type that can be accepted without renewed testing, inspection or revision of the certificate based on the principle described in Annex 3.

#### 6.8 Modification of standards and certification guidelines

In case of amendment or revision to the relevant EN standards or these certification guidelines a supplementary inspection and/or type testing of the changed element(s) will be required by the certification body in order to prove compliance with the changed requirements in order to re-issue the certificate. The certificate holder should be given reasonable time to adapt to the revised regulations, unless there are special motives for other action.

### 7.1 Period of validity for the certificate

The certificate is issued for 3 full calendar years at a time and it is valid under the condition that the products continuously conform to the requirements and that manufacturer's quality control continuously works as required and documented. Every 3 years a new certificate will automatically be re-issued by the certification body. Every 6 years a new type test needs to be performed in order to re-issue the Certificate.

Other conditions are evident from chapters 7.2 to 7.12.

### 7.2 Responsibility of the certificate holder

The certificate holder bears responsibility that the manufactured products embraced by the certificate and to which the certificate marks are attached, conform in all respects to the certified product in accordance with the certificate, and that the products are suited to their purpose and cannot generally cause injury or damage. This also applies even if the certificate holder is not the manufacturer of the product and the manufacturer's quality control agreement has been signed between the manufacturer and the certification body.

### 7.3 The certificate holder's right to use the quality mark

The certificate holder has the right to mark the products embraced by the certificate and to use the mark in procurement documents, marketing and advertising the certified products. However, this must not take place so that confusion between certified and non-certified products can occur.

### 7.4 Certificate

The certificate covers the production unit mentioned in the certificate. The certificate structure is given in annex 5.

The certificate must not be transferred to another production unit or another company.

The design and the colour of the quality mark is evident from annex 6. The size of the mark may be freely chosen, but the mark shall be clearly visible.

### 7.5 Actions in case of non-compliance, non-conformity or misuse of certificate or quality mark

Any non-compliance on the part of the manufacturer in the application of these certification guidelines or any non-conformity of the products with the specified requirements, e.g. required minimum test frequencies in quality control are not met or spot tests on samples taken during external inspections reveal substandard quality, may result in one of the following actions:

- corrective action by the manufacturer, specified by the certification body, e.g. remark and correction claim, additional/intensified quality control for a specified

period, repeated external inspections and/or additional sampling for spot tests at the cost of the manufacturer

- reduction of the scope of products on the certificate
- public warning (notified to the members of Euroheat & Power)
- suspension of the certificate
- withdrawal of the certificate

## 7.6 Withdrawal of the certificate

The certification body can, with immediate effect, finally or temporarily, withdraw the certificate if:

- the certificate holder has used the certificate mark on or in connection with products that do not conform to the requirements
- the certificate holder has used the certificate mark on products that are not embraced by the certificate
- manufacturer's quality control ceases or shows serious defects on products or in performing of quality control
- required corrective actions have not been taken as referred or do not have desired effect
- if the manufacturer has not ordered the required tests for samples taken during external inspection and delivered the test samples to the test institute within one month
- the certificate holder has in any other way violated the conditions for the certificate
- the certificate holder has not paid fees within the prescribed time; or
- the certificate holder has been declared bankrupt, gone into liquidation or transferred activities
- inaccuracies in the certificate are discovered. However, the certificate holder should be given reasonable time to convert to changed conditions, unless there are special motives for other action
- the product is shown to be unsuitable for its purpose and in general can cause injury or damage.

The certification body notifies the certificate holder of the withdrawal with justification in writing. Misuse of the certificate mark can, besides the withdrawal of the certificate, result in legal action.

## 7.7 The certificate holder's obligation with the withdrawal of the certificate

Certificate holders receiving notification that his certificate has been withdrawn, finally or temporarily, shall:

- immediately stop all reference to the certificate in procurement documents, marketing and advertisements of the product in question
- arrange for the quality mark to be removed from all products in stock, if so required by the certification body.

## 7.8 Validation of a withdrawn certificate

After a temporary withdrawal of the certificate, the same regulations apply as when the certificate was issued for the first time. Renewed type testing is not necessary if less than one year has passed since the certificate was withdrawn, as long as the certification conditions or production conditions have not changed.

## 7.9 Responsibility of the certification body

The certification body bears responsibility that the audit of certified products against the requirements in these guidelines has been carried out with appropriate care and according to procedures in the certification body's quality system.

The certification body bears no responsibility for the marked products (see 7.2).

The certification body shall keep records of its decisions.

## 7.10 Confidentiality

The information obtained by the certification body and the Board during certification activities is confidential. However, the Board and the certification body have the right to

- publish lists of applicable certificates, including information about: certificate holder, certificate number, certified products, any classification as well as the period of validity.
- make public the decisions about the withdrawal of certificates and the misuse of certificates or markings.

## 7.11 Fees

The applicant/certificate holder is responsible for the costs associated with application, initial assessment, type tests, initial and external inspections and administration of the certification scheme.

Fees for the certification and certificate management, extension of the certificate's scope and for revision of the certificate are documented by the certification body in a separate price list and are borne by the applicant/certificate holder.

Inspection costs are regulated between the supplier and the certification body and testing costs between supplier and test institute.

On proposal of the Certification Board Euroheat & Power's Board of Directors determines the administrative fee set out in Annex 7 and to be invoiced by the Euroheat & Power. The fee covers the cost for the administration of the certification scheme. The invoices are established in accordance with the provisions in Annex 7.

## 7.12 Appeals

Appeals against decisions concerning certification and quality marking shall be made in writing to the certification body within one month from the notification of the decision. Appeals shall be investigated and measures as a result of the appeal processed by the Board as soon as possible.

# ANNEX 1

(normative)

## PREINSULATED DH PIPES

### Testing, quality control and inspection programme

Straight pipes (single pipe system: EN 253, twin pipe system: EN 15698-1).

In accordance with the following tables

|                        |   |
|------------------------|---|
| the supplier           | through type testing verifies that the products comply with the specified requirements  |
| the manufacturer       | through continuous quality control ensures that only products which comply with the specified requirements are labelled with the certification mark |
| the certification body | through annual external inspection verifies the results from the manufacturer's quality control   |

Tables 1.1 to 1.3 and 1.5 are to be applied to both single and twin pipe systems, even if references are only made to clauses in EN 253.

Note: Type tests shall be performed on two pipes by the length of 12 meter.

Table 1.1 - Service pipe inspection

| Clause in EN 253 | Item                                  | Test frequency           |                                |  |
|------------------|---------------------------------------|--------------------------|--------------------------------|--|
|                  |                                       | Manufacturer's type test | Manufacturer's quality control | External inspection                    |
| 4.2.1            | Make, marking, delivery specification | None                     | Receiving inspection procedure | Inspection of records and certificates |
| 4.2.2<br>4.2.3   | Dimensions                            | None                     | Receiving inspection procedure | Inspection of records and certificates |
| 4.2.4            | Finish, surfaces, etc                 | None                     | Receiving inspection procedure | Inspection of records and certificates |

ANNEX 1 *cont.*

Table 1.2 – Polyethylene casing inspection

| Clause in EN 253   | Item                          | Test frequency   |   |   |
|--------------------|-------------------------------|--|---|---|
|                    |                               | Manufacturer´s type test   | Manufacturer´s quality control  | External inspection   |
| 4.3.1              | Material                      | Inspection of the certificates   | Per delivery/ batch no.: melt mass-flow rate and thermal stability and carbon black content<br><br>Or: Receiving inspection procedure | Inspection of internal test records and certificates                  |
| 4.3.1.1            | Carbon black dispersion       | Once per material type<br><br>Inspection of certificates                                     | Inspection of certificates  | Inspection of records   |
| 4.3.1.3            | Thermal stability             | Inspection of certificates   | Production batches containing rework material<br><br>Inspection of records  | Inspection of records   |
| 4.3.1.4            | Use of rework material        | None   | Inspection of records   | None  |
| 4.3.2.1<br>4.3.2.2 | Diameter<br>Wall thickness    | Inspection of production records.  | Min. once per 2 h per extruder<br><br>Or: Receiving inspection procedure  | Inspection of records and certificates and check of measuring methods |
| 4.3.2.3            | Appearance and surface finish | Inspection of records and check of measuring methods   | Once per production batch<br><br>Or: receiving inspection procedure   | Inspection of internal records  |
| 4.3.2.4            | Elongation at break           | Inspection of internal records.<br><br>One sample taken each from three different pipe sizes | Once per production batch containing rework material  | Inspection of internal records  |
| 4.3.2.5            | Heat reversion                | One sample taken each from three different pipe sizes  | None  | None  |
| 4.3.2.6            | Stress crack resistance       | Once per material type   | Min. 4 tests per material type per year, equally distributed over used extruders and yearly production                                | Inspection of internal records  |

ANNEX 1 *cont.*

Table 1.3 – Polyurethane foam insulation (PUR) inspection

| Clause in EN 253  | Item  | Test frequency                                    |   |   |
|---|---|---|---|---|
|   |   | Manufacturer's type test                          | Manufacturer's quality control  | External inspection   |
| 4.4.1   | Composition<br>Make,<br>marking and<br>delivery<br>specifications | Inspection of<br>documentation                    | Inspection of machine settings and<br>production parameters:<br><br>Min. once a day<br><br>-----<br>Inspection of production<br>parameters:<br><br>Once per raw material batch<br><br>Or receiving inspection procedure | Inspection of the internal<br>records                           |
| 4.4.2   | Voids and<br>bubbles  | Once by taking out of<br>pipe for other tests     | Min twice a year per machine  | Once per inspection visit<br><br>Inspection of internal records |
| 4.4.3   | Compressive<br>strength   | Once per<br>isocyanate/polyol type<br>per machine | Once a month per machine  | Once per inspection visit<br><br>Inspection of internal records |
| 5.4.6,<br>5.4.7<br>in EN<br>489   | Density<br>or<br>Water<br>absorption                              | None  | Density or water absorption:<br><br>Once per shift per machine<br>Requirement: Manufacturer's<br>specification  | None  |
| NOTE: In type and external inspection test reports all PUR-properties should be reported together with the density of the foam. |   |   |   |   |

ANNEX 1 *cont.*

Table 1.4 - Pipe assembly inspection

Single pipes

| Clause in EN 253 | Item  | Test frequency                                 |  |   |
|------------------|---|--|--|---|
|                  |   | Manufacturer's type test                       | Manufacturer's quality control           | External inspection   |
| 4.5.2 and 4.5.3  | Dimensions of pipe ends and outside diameter        | Measured on one pipe per dimension             | Measured min. once per shift per machine | Once per inspection visit<br>Inspection of internal records   |
| 4.5.4            | Centre line deviation                               | Once by taking out pipe for other tests        | Min. twice a year                        | Once per inspection visit<br>Inspection of internal records   |
| 4.5.5.2          | Shear strength before aging                         | Once by taking out pipes for other tests       | None                                     | Once per inspection visit per polyol/isocyanate type          |
| 4.5.5.2          | Shear strength after ageing                         | Once per isocyanate/polyol type per machine    | None                                     | None  |
| 4.5.6            | Thermal conductivity in unaged condition            | Once per isocyanate/polyol type                | None                                     | Once per inspection visit                                     |
| 4.5.7            | Thermal conductivity in artificially aged condition | Once per isocyanate/polyol type                | None                                     | None  |
| 4.5.8            | Impact resistance                                   | Once on pipe of each casing/material suppliers | None                                     | Once per inspection visit on a pipe taken out for other tests |

NOTE: In type and external inspection test reports the results for item 4.5.5 to 4.5.8 should be reported together with the density of the foam.

Twin pipes

| Clause in EN 15698-1 | Item  | Test frequency   |  |   |
|----------------------|---|--|--|---|
|                      |   | Manufacturer's type test   | Manufacturer's quality control                               | External inspection   |
| 4.5.1                | End alignment of forward and return service pipes | Measured once in each end on min. two dimensions                   | Measured min. once per shift per machine                     | Once per inspection visit<br>Inspection of internal records                     |
| 4.5.2                | Distance between forward and return service pipe  | Measured once in each end and in the middle on min. two dimensions | Measured min. once per shift per machine (only on pipe ends) | Once per inspection visit<br>Inspection of internal records (only on pipe ends) |
| 4.5.3                | Twisting of service pipes                         | Measured once in the ends and in the middle on min. two dimensions | Measured min. once per shift per machine (only on pipe ends) | Once per inspection visit<br>Inspection of internal records (only on pipe ends) |
| 4.5.4                | Centre line deviation                             | Once by taking out of pipe for other tests                         | Min. twice a year  | Once per inspection visit<br>Inspection of internal records                     |
| 4.5.5                | Dimensions of pipe ends                           | Measured on one pipe per dimension                                 | Measured min. once per shift per machine                     | Once per inspection visit<br>Inspection of internal records                     |
| 4.5.6                | Axial shear strength                              | Once by taking out pipes for other tests                           | None   | Once per inspection visit per polyol/isocyanate type (only in unaged condition) |
| 4.5.8                | Thermal conductivity in unaged condition          | Once per isocyanate/polyol type 1)                                 | None   | Once per inspection visit 1)  |
| 4.5.9                | Impact resistance                                 | Once on pipe of each casing/material suppliers                     | None   | Once per inspection visit on a pipe taken out for other tests                   |

NOTE: In type and external inspection test reports the results for item 4.5.6 to 4.5.9 should be reported together with the density of the foam.

1) If the polyol and blowing agent used for twin pipe production is the same as for single pipe production, and these tests have already been performed on a single pipe, then these tests don't have to be performed again.

ANNEX 1 *cont.*

Table 1.5 – Measuring wires

| Clause in EN 14419   | Item   | Test frequency           |   |  |
|--|--|--------------------------|---|--|
|  |  | Manufacturer's type test | Manufacturer's quality control            | External inspection                    |
| Compatibility test   |  |                          |   |  |
| 6.2.1  | Compatibility test   | None                     | By changing production procedure          | Inspection of records                  |
| 6.2.2  | Developed test procedure                                       | None                     | -   | Inspection of records                  |
| Measuring wires inspection                                   |  |                          |   |  |
| -  | Make, marking, delivery specification                          | None                     | Receiving inspection procedure            | Inspection of records and certificates |
| -  | Dimensions   | None                     | Receiving inspection procedure            | Inspection of records                  |
| -  | Finish, surfaces etc.  | None                     | Receiving inspection procedure            | Inspection of records                  |
| Installation process of measuring wires within pipe elements |  |                          |   |  |
| 6.3.4  | Geometry   | None                     | Once per production batch                 | Inspection of records                  |
| 6.3.5  | Mobility of wire in spacers                                    | None                     | Where relevant: Once per production batch | Inspection of records                  |
| 6.3.6  | Equipment for mechanical tightening force                      | None                     | Where relevant: Once per production batch | Inspection of records                  |
| During pipe element manufacturing                            |  |                          |   |  |
| -  | Check of linear expansion of wire due to a rise in temperature | None                     | Where relevant: Once per production batch | Inspection of records                  |
| -  | Check of mobility of wire                                      | None                     | Where relevant: Once per production batch | Inspection of records                  |
| After pipe element manufacturing                             |  |                          |   |  |
| 6.6.2  | Evaluation of result of loop test                              | None                     | Every pipe element                        | Inspection of records and certificates |
| 6.6.3  | Evaluation of result of high voltage test                      | None                     | Every pipe element                        | Inspection of records and certificates |
| By shipment of pipe elements                                 |  |                          |   |  |
| 6.5.2  | Protection of measuring wires at free end                      | None                     | Every pipe element                        | Inspection of records and certificates |

# ANNEX 2

(normative)

## PREINSULATED PIPES

### Testing, quality control and inspection programme

Fittings (single pipe system: EN 448, twin pipe system: application from EN 448 and EN 15698-1)

In accordance with the following tables

|                        |   |
|------------------------|---|
| the supplier           | through type testing verifies that the products comply with the specified requirements  |
| the manufacturer       | through continuous quality quality control ensures that only products which comply with the specified requirements are labelled with the certification mark |
| the certification body | through annual external inspection verifies the results from the manufacturer's quality quality control   |

Tables 2.1 and 2.2 are to be applied to both single and twin pipe systems, even if references are only made to clauses in EN 448.

Table 2.1 – Steel parts inspection

| Clause in EN 448   | Item   | Test frequency  |  |  |
|--------------------|--|---|--|--|
|                    |  | Manufacturer's type test  | Manufacturer's quality control   | External inspection                    |
| 4.1.1 to 4.1.6     | Dimensions of steel parts<br>- outside diameter<br>- wall thickness<br>- angle in bends and branches<br>- wall thickness, ovality and folding of cold formed bends | None  | Receiving or production inspection procedure<br><br>2 %, equally distributed over the yearly production (or receiving inspection)<br><br>In case of defect: next 4 similar parts, → 8 parts, → 16 parts etc.   | Inspection of records and certificates |
| 4.1.7.1            | Material, make, delivery, specification of steel welding   | None  | Receiving inspection procedure   | Inspection of records and certificates |
| 4.1.7.4 A, B and C | Inspection of steel welds  | A. Check of procedure<br><br>B. Check of procedure<br><br>C. Check of procedure | A. Visual surface examination<br><br>100% of welds<br><br>B. Leak tightness test<br><br>Butt welds:<br><br>DN ≤ 300: 20 % pressure test with water or air<br>DN ≥ 400: 20 % pressure test with water or air<br><br>(DN ≥ 400: 20 % radiographic, magnetic particle or dye penetrant examination can replace tightness tests)<br><br>Other welds:<br><br>DN ≤ 300: 100 % pressure test with water or air<br>DN ≥ 400: 100 % pressure test with water or air<br><br>(DN ≥ 400: 100 % radiographic, magnetic particle or dye penetrant examination can replace tightness tests)<br><br>For butt welds, in case of defect: 100 % 2 weeks, → 100 % 4 weeks, → 100 % 8 weeks etc.<br><br>C. Radiographic examination of welds:<br><br>DN ≤ 300: 2 %, for each welder, equally distributed over the yearly production<br><br>DN ≥ 400: 10 %, for each welder, equally distributed over the yearly production<br><br>For those fittings for which radiographic inspection is unable to give adequate information on the quality of the weld, magnetic particle or dye penetrant examination can replace the radiographic examination.<br><br>In case of defect: for the same welder next 2 parts, → 3 parts, → 4 parts etc<br><br>See Note | Inspection of internal records         |
| 4.1.8              | Surface condition  | None  | Receiving inspection procedure   | Inspection of internal records         |

Note: The test can also be performed in accordance with ISO 2859 2

ANNEX 2 cont.

Table 2.2 – Polyethylene casing, polyurethane and fitting assembly inspection

| Clause in EN 448 | Item   | Test frequency                               |   |   |
|------------------|--|--|---|---|
|                  |  | Manufacturer's type test                     | Manufacturer's quality control                | External inspection   |
| 4.2              | Polyethylene casing                                      | See table 1.2                                | See table 1.2                                 | See table 1.2   |
| 4.3              | Polyurethane   | See table 1.3                                | See table 1.3                                 | See table 1.3   |
| 4.4.1/<br>4.4.5  | Dimensions of fittings' ends and outside diameter        | Measured on one fitting per dimension        | Once a shift for each foaming machine         | 5 different fittings per inspection visit                   |
| 4.4.1.2          | Centre line deviation                                    | Once by taking out pipe for other tests      | Min. twice a year                             | Once per inspection visit<br>Inspection of internal records |
| 4.4.1.3          | Angular deviation between service pipe and casing        | Once by taking out pipe for other tests      | Min. twice a year                             | Once per inspection visit<br>Inspection of internal records |
| 4.4.2            | Angle between casing segments of bend and minimum length | Once by taking out pipe for other tests      | Min. twice a year                             | Once per inspection visit<br>Inspection of internal records |
| 4.4.3            | General requirements of PE welding                       | Check of procedure                           | Receiving and production inspection procedure | 5 different fittings per inspection visit                   |
| 4.4.3.3          | Visual appearance  | Once per welding process                     | 100 % visual inspection                       | 5 different fittings per inspection visit                   |
| 4.4.3.4          | Bending test   | Once per welding process                     | Min. once per year per (machine and operator) | Once per machine  |
| 4.4.4            | Leak-tightness of welded PE-casing                       | Check of procedure                           | 100 % visual inspection after foaming         | 5 different fittings per inspection visit                   |
| 4.4.6            | Minimum insulating thickness                             | Once by taking out of fitting for other test | Min. twice a year                             | Inspection of internal records                              |
| 4.4.7            | Tolerance on main fitting dimensions                     | Check of procedure                           | once a shift for each steel welding post      | Once per inspection visit per type of fitting               |

Additional items relevant for twin pipe system only

| Clause in EN 15698-1 | Item  | Test frequency   |   |   |
|----------------------|---|--|---|---|
|                      |   | Manufacturer's type test   | Manufacturer's quality control  | External inspection   |
| 4.5.1                | End alignment of forward and return service pipes | Measured once in each end on min. two dimensions                   | Measured min. once per shift per machine  | 5 different fittings per inspection visit<br>Inspection of internal records                     |
| 4.5.2                | Distance between forward and return service pipe  | Measured once in each end and in the middle on min. two dimensions | Measured min. once per shift per machine (only on pipe ends)                                      | 5 different fittings per inspection visit<br>Inspection of internal records (only on pipe ends) |
| 4.5.3                | Twisting of service pipes                         | Measured once in the ends and in the middle on min. two dimensions | Measured min. once per shift per machine (on pipe ends)<br>min. twice a year (within pipe length) | 5 different fittings per inspection visit<br>Inspection of internal records (only on pipe ends) |

Measuring wires in fittings according to ANNEX 1, table 1.5.

## ANNEX 3

### TESTS AND/OR INSPECTIONS IN CONSEQUENCE OF MODIFICATIONS

The certification body decides on the actions required because of changes or modifications to certified products based on following principles.

#### Pipes and fittings

When the basic polyethylene raw material is changed or new material will be included in the certificate, the following actions are taken:

All items in accordance with PE type test requirements (see annex 1 of these guidelines) shall be tested in external test institute and results sent to the certification body.

When the basic insulation raw material (polyol, blowing agent) is changed or new material is to be included in the certificate, the following actions are taken:

All items in accordance with PUR and pipe assembly type test requirements (see annex 1 of these guidelines) shall be tested in external test institute and results sent to the certification body.

# ANNEX 4

## APPLICATION FOR CERTIFICATE

Please forward your application to Certification Body  
A copy should be forwarded to EHP/Certification Board  
for information

### Applicant

|                      |        |
|----------------------|--------|
| Company              |        |
| Post address         |        |
| Phone                | Fax    |
| Contact person       | e-mail |
| Place of manufacture |        |

### Manufacturer (to be filled, if not the same as applicant)

|                      |     |
|----------------------|-----|
| Company              |     |
| Post address         |     |
| Phone                | Fax |
| Place of manufacture |     |

### Product information

|   |  |
|---|--|
| Product group   | Preinsulated bonded DH pipes and fittings  |
| Specifications  | 1. EN 253, EN 448, EN 488, EN 15698-1, EN 14419<br>2. Euroheat & Power certification guidelines for quality assessment of district heating pipes EHP 001 |
| Product (trade name, type, description, PE raw materials and PUR main components used, production range...) |  |
| Manufacturer's quality control plan/manual shall be enclosed  |  |

Engagement      We have studied the Euroheat & Power certification guidelines for quality assessment of the products mentioned in this application. Should the certificate be granted to us, we comply with the guidelines mentioned as well as other instructions concerning quality assessment given by the Certification Board.

\_\_\_\_\_, \_\_\_\_/\_\_\_\_/\_\_\_\_, \_\_\_\_\_  
Place                                      Date                                      Signature / Name clarification

# EUROHEAT & POWER

**CERTIFICATE NUMBER "...XX / YY..."**

|                         |   |
|-------------------------|---|
| <b>PRODUCT</b>          | "...trade name..."                              |
| <b>LICENSEE</b>         | "...company name..."<br>"...website address..." |
| <b>PRODUCTION PLANT</b> | "...name..."<br>"... address..."                |



**EUROHEAT  
& POWER**  
GUIDELINES: EHP/001  
CERTIFICATE: XX / YY

**VALID THRU "...DD/MM/YYYY..."**

**This certificate is granted in accordance with the Euroheat & Power  
Certification Guidelines for Quality Assessment of District Heating Pipes [001]**

**Name, Signature**

**Date, Place**

*logo and contacts Certification Body*

The production complies with EN 253, EN 448 and EHP Certification Guidelines [001].

The licensee may use the Euroheat & Power Certification Board quality mark.

The certificate is valid only for the production plant mentioned in the certificate.

The materials used are contained in the confidential Annex to this certificate.

The certificate is valid for 3 years subject to periodic surveillance. Re-issue is automatic.

*Refer to the Euroheat & Power Certification Guidelines [001] for full requirements and conditions*

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# EUROHEAT & POWER

## ANNEX - CONFIDENTIAL -

**CERTIFICATE NUMBER xx.yy**

The certificate covers only those combinations of PE resins and PUR insulation (polyols and types of blowing agents) provided in the table below.

|                                       |  |
|---------------------------------------|--|
| PRODUCT                               |  |
| LICENSEE                              |  |
| PRODUCTION PLANT                      |  |
| PE RESINS FOR CASING PIPE PRODUCTION  |  |
| BLOWING AGENT TYPE FOR PUR INSULATION |  |

**Name, Signature**

**Date, Place**

*Logo and contacts certification body*

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DESIGN OF THE QUALITY MARK



# ANNEX 7

## FEES

Approved by the Euroheat & Power Board  
30 June 2005  
Valid from 1 July 2005

### FEES RELATED TO CERTIFICATE

#### Annual administration fee

Annual administration fee is invoiced by Euroheat & Power per certificate in the beginning of the year. This fee covers the cost for the administration of the certification system. It can first time be invoiced in connection with issuing the certificate.

This fee is determined by the EHP Board of Directors, and can be max. 200 €.

#### Application, certification, inspection and testing fees

The certificate holder is responsible for meeting the possible annual certification fee, application fee and all the costs associated with the initial and external inspections, type and spot testing and any special inspection or testing where necessary (e.g. when dealing with non-compliance to the certification rules or complaints), invoiced by the certification body or test institute, as applicable.