FÁBRICA DE TUBOS PLÁSTICO-METÁLICOS, S.A.
TEL: 234600890 FAX: 234600899
www.grupojsa.com geral@grupojsa.com
3750-753 TRAVASSÔ – ÁGUEDA – PORTUGAL

Fabrico de tubos
PEX
PPR
LEX

PEXTUBE TUBE



DOUBLEPEX TUBE



LEXTUBE TUBE

DOUBLELEX TUBE

PERFILPPR TUBE



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Fabrico de tubos PEX PPR LEX

SALES GENERAL TERMS

PRICES: Do not include taxes and can be altered in the orders on hand.

TRANSPORT: As agreed with the client.

COMPLAINTS: Will only be considered if presented within 5 workdays after delivery date.

DEVOLUTIONS: Will only be accepted after having been previously resolved by our Commercial Department.

INDEMNITIES: An indemnity will only be given if accepted by our Quality Department.

PAYMENTS: As agreed with the client.

NOTE: In case of litigation it is the Court of Águeda the competent one for the judgement.

HANDLING OF COMPLAINTS

Complaints must be processed in the following way:

1. Explanatory communication in writing to our Company.
2. Site visit by our technicians (when possible).
3. In view of the results, decisions will be taken by our commercial department in the following way:
    - Total or partial acceptance with or without indemnity.
    - Declination of total or partial responsibility.

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Fabrico de tubos PEX PPR LEX

IMPORTANT

PRESSURE TEST FOR WATER INSTALLATIONS

THE INSTALLATIONS FOR EVERY TYPE OF PIPE, FOR DRINKING WATER OR HEATING, SHOULD BE TESTED BEFORE LAYING OF CONCRETE, TO THE PRESSURE OF 2,5 TIMES THE MAXIMUM PRESSURE OF THE PUBLIC WATER SUPPLY.
THUS WE ADVISE THE FOLLOWING VALUES FOR THE DIFFERENT KINDS OF PIPES.APPLIED

TESTING PRESSURE THAT WATER INSTALLATIONS MUST BE SUBJECTED TO DURING A PERIOD OF 24 HOURS:

PEX PIPES WITH COMPRESSION OR PRESS FITTINGS – **15 bar**
Pipe manufactured according to the standards UNE EN ISO 15875-2 and DIN 16892

DOUBLEPEX WITH COMPRESSION OR PRESS FITTINGS – **15 bar**
Pipe manufactured according to the standards DIN 4726/EN ISO 15875

PP-R WITH TERMO-FUSION FITTINGS – **15 bar**
Pipe manufactured according to the standards UNE EN ISO 15874-2 and DIN 8077/78

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Fabrico de tubos PEX PPR LEX

Company Presentation

Established in 1999, it manufactures **TUBES IN PLASTIC MATERIALS** in several colours, measures, types, and designs for all purposes.

At the moment it is a member of the group **Indústrias JSA**, it has about 30 collaborators, in a covered area of 5.000 m^2, with an annual sales volume of 5.000.000€, at an annual growth rate of 30% and exporting for 25 countries.

Constant and main concerns of the company:

- Product quality improvement
- Raw material updating
- Rendered service improvement
- Price improvement
- Short delivery terms

With the help of our Collaborators, Suppliers and Customers, the Management hopes to keep up the growth rate pace, set from the very first day of its existence.

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3750-753 TRAVASSÔ – ÁGUEDA – PORTUGAL

Organisation Chart

General Manager	Ing. Joaquim Almeida	**geral@grupojsa.com**
Manager	Dr. Pedro Almeida	
General Director	Dr.ª Manuela Santos	**dir.geral@grupojsa.com**
Production Director	Mr. Pedro Tavares	**geral@grupojsa.com**
Quality Responsible	Ing. Fausto Batista	**geral@grupojsa.com**
Commercial Director		**dir.comercial@grupojsa.com**
Account Responsable	Mr. Jorge Almeida	**dp.contabilidade@grupojsa.com**
Export Responsable	Mrs. Laurentina Pinho	**exportacao@grupojsa.com**

We are CERTIFIED according to the standard

NP EN ISO 9001:2008

Certificado de Conformidade
Certificate of Registration

NÚMERO **1999/CEP.923**
Number

APCER – Associação Portuguesa de Certificação certifica que o Sistema de Gestão da Qualidade da
APCER – Associação Portuguesa de Certificação *certifies that the Quality Management System of*

INDÚSTRIAS JSA – Fabrico e Comercialização de Tubos, S.A.
ISOLTUBEX – Fábrica de Tubos e Perfis Isolantes, Lda.
COMPOESTOR – Fábrica de Componentes para Estores, Lda.
PEXTUBE – Fábrica de Tubos Plástico–Metálicos, S.A.
REVESTUBE – Fábrica de Tubos Revestidos, Lda.

Sede / *Head Office*: 3750 – 753 TRAVASSÔ – ÁGUEDA – PORTUGAL
Instalações Fabris / *Production Unit*: COVÃO – ÁGUEDA – PORTUGAL
e / *and*
PERFILTUBO – Fábrica de Tubos e Perfis, S.A.

Sede e Instalações Fabris / *Head Office and Production Unit*: 3750 – 753 TRAVASSÔ – ÁGUEDA – PORTUGAL

implementado nas actividades especificadas em anexo, cumpre os requisitos da
implemented in the activities specified in annex, meets the requirements of

NP EN ISO 9001:2008
Sistemas de Gestão da Qualidade – Requisitos
Quality Management Systems – Requirements

Data de emissão 2012-03-11
Date of issue

Válido até 2015-03-10
Valid until

José Leitão
CEO

Qualquer esclarecimento adicional sobre este certificado pode obter-se consultando a APCER
Any additional clarification concerning this certificate may be obtained by consulting APCER

APCER – Associação Portuguesa de Certificação
Edifício de Serviços da Exponor, 2º Andar, Av. Dr. António Macedo
4450-617 Leça da Palmeira
www.apcer.pt

APCER parceiro da

Certificado de Conformidade
Certificate of Registration

ANEXO AO CERTIFICADO Nº 1999/CEP.923
ANNEX TO THE CERTIFICATE Nr.
Este certificado contempla o âmbito da certificação da
This certificate contemplates the scope of certification of

Entidade *Entity*	***Âmbito*** *Scope*
INDÚSTRIAS JSA – Fabrico e Comercialização de Tubos, S.A.	Fabrico de tubos em aço inox, de tubos isolantes de polietileno expandido (nu e revestido), de tubos de polietileno reticulado (inerte ou não ao oxigénio) de tubos de polipropileno, de tubos octogonais galvanizados de manga corrugada, de estores venezianos e termolacados *Production of stainless steel tubes, coated and uncoated expanded polyethylene insulating pipe, cross-linked polyethylene (PE-X) (with or without oxygen barrier) pipes, polypropylene pipes, octagonal galvanised tubes, corrugated sleeve, venetian blinds and thermo lacquered roll shutters*
ISOLTUBEX – Fábrica de Tubos e Perfis Isolantes, Lda.	Concepção, desenvolvimento e fabrico de tubo isolante de polietileno expandido, nu e revestido *Design, development and manufacturing of coated and uncoated expanded polyethylene insulating pipe*
COMPOESTOR – Fábrica de Componentes para Estores, Lda.	Concepção, desenvolvimento e fabrico de estores venezianos, termolacados e tubos octogonais *Design, development and manufacturing of venetian blinds, thermo-lacquered and octogonal tubes*
PEXTUBE – Fábrica de Tubos Plástico – Metálicos, S.A.	Concepção, desenvolvimento e fabrico de tubos de polietileno reticulado, inerte ou não ao oxigénio e tubos de polipropileno *Design, development and production of pipes made of crosslinked polyethylene (PE-X) with or without oxygen barrier and polypropylene pipes*
REVESTUBE – Fábrica de Tubos Revestidos, Lda.	Concepção, desenvolvimento e fabrico de manga corrugada *Design, development and production of corrugated sleeve*
PERFILTUBO – Fábrica de Tubos e Perfis, S.A.	Concepção, desenvolvimento e fabrico de tubos de aço inox *Design, development and production of stainless steel tubes*

Data de emissão 2012-03-11
Date of issue

Válido até 2015-03-10
Valid until

José Leitão
CEO

Qualquer esclarecimento adicional sobre este certificado pode obter-se consultando a APCER
Any additional clarification concerning this certificate may be obtained by consulting APCER

APCER – Associação Portuguesa de Certificação
Edifício de Serviços da Exponor, 2º Andar, Av. Dr. António Macedo
4450-617 Leça da Palmeira
www.apcer.pt

APCER parceiro da

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
AENOR
hereby certify that the organization

PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A.

HEAD OFFICE
753 -3750 TRAVASSO
AGUEDA
Portugal

SEE ADDRESSES SPECIFIED IN ANNEX

for the following field of activities

SPECIFIED IN ANNEX TO THE CERTIFICATE

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2008

Issued on: 2002-12-16 Renewed on: 2012-06-30 Validity date: 2015-03-10

Registration Number: **ES-1634/2002**

Michael Drechsel
President of IQNet

Avelino BRITO
Chief Executive Officer

AENOR

IQNet Partners*:
AENOR *Spain* AFNOR Certification *France* AIB-Vincotte International *Belgium* ANCE *Mexico* APCER *Portugal* CCC *Cyprus* CISQ *Italy* CQC *China* CQM *China* CQS *Czech Republic* Cro Cert *Croatia* DQS Holding GmbH *Germany* DS *Denmark* ELOT *Greece* FCAV *Brazil* FONDONORMA *Venezuela* ICONTEC *Colombia* IMNC *Mexico* INNORPI *Tunisia* Inspecta Certification *Finland* IRAM *Argentina* JQA *Japan* KFQ *Korea* MSZT *Hungary* Nemko AS *Norway* NSAI *Ireland* PCBC *Poland* Quality Austria *Austria* RR *Russia* SII *Israel* SIQ *Slovenia* SIRIM QAS International *Malaysia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* TSE *Turkey* YUQS *Serbia*
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.
* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

THE INTERNATIONAL CERTIFICATION NETWORK

Annex to IQNet Certificate Number ES-1634/2002

PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A.

INDUSTRIAS JSA - Fabrico e Comercializaçao de Tubos, S.A.
Production of stainless steel tubes, coated and uncoated expanded polyethylene insulating pipe, crosslinked polyethilene (PE-X) (with or without oxygen barrier) pipes, octagonal galvanized tubes, corrugated sleeve, venetian blinds and thermo lacquered rol.

ISOLTUBEX - Fábrica de Tubos e Perfis Isolantes, Lda.
Design, development and manufacturing of coated and uncoated expanded polythylene insulating pipe.

COMPOESTOR - Fábrica de Componentes para Estores, Lda.
Design, development and manufacturing of venetian blinds, thermo-lacqued and octagonal tubes.

PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A.
Design, development and production of pipes made of crosslinked polyethylene (PE-X) with or without oxygen barrier, and polypropylene pipes.

REVESTUBE - Fábrica de Tubos Revestidos, Lda.
Design, development and production of corrugated sleeve.

PERFILTUBO - Fábrica de Tubos e Perfis, S.A.
Design, development and production of stainless steel tubes.

Issued on: 2002-12-16 Renewed on: 2012-06-30 Validity date: 2015-03-10
This annex is only valid in connection with the above-mentioned certificate.

Michael Drechsler
President of IQNet

Avelino BRITO
Chief Executive Officer

AENOR

IQNet Partners*:
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THE INTERNATIONAL CERTIFICATION NETWORK

Annex to IQNet Certificate Number ES-1634/2002

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INDUSTRIAS JSA - Fabrico e Comercializaçao de Tubos, S.A.
Head Office: 3750-753 TRAVASSO (AGUEDA - Portugal)
Production Unit: COVÃO. - AGUEDA (Portugal)

ISOLTUBEX - Fábrica de Tubos e Perfis Isolantes, Lda.
Head Office: 3750-753 TRAVASSO (AGUEDA - Portugal)
Production Unit: COVÃO. - AGUEDA (Portugal)

COMPOESTOR - Fábrica de Componentes para Estores, Lda.
Head Office: 3750-753 TRAVASSO (AGUEDA - Portugal)
Production Unit: COVÃO. - AGUEDA (Portugal)

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Head Office: 3750-753 TRAVASSO (AGUEDA - Portugal)
Production Unit: COVÃO. - AGUEDA (Portugal)

REVESTUBE - Fábrica de Tubos Revestidos, Lda.
Head Office: 3750-753 TRAVASSO (AGUEDA - Portugal)
Production Unit: COVÃO. - AGUEDA (Portugal)

PERFILTUBO - Fábrica de Tubos e Perfis, S.A.
Head Office and Production Unit: 3750-753 TRAVASSO (AGUEDA - Portugal)

Issued on: 2002-12-16 Renewed on: 2012-06-30 Validity date: 2015-03-10
This annex is only valid in connection with the above-mentioned certificate.

Michael Drechsler
President of IQNet

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Certificado de Sistema de Gestão Qualidade

AENOR
ER
Empresa Registrada
UNE-EN ISO 9001

ER-1634/2002

AENOR, Associação Espanhola de Normalização e Certificação certifica que a organização

PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A.

dispõe de um sistema de Gestão da qualidade conforme com a norma UNE-EN ISO 9001:2008

para as actividades: VER ACTIVIDADES INDICADAS NO ANEXO

que se realizam: HEAD OFFICE. 753 -3750 TRAVASSO. - AGUEDA (Portugal)

VER DIRECÇÕES INDICADAS NO ANEXO

Data de emissão: 2002-12-16
Data de Renovação: 2012-06-30
Data de validade: 2015-03-10

Avelino BRITO
Director Geral da AENOR

AENOR Asociación Española de Normalización y Certificación | Génova, 6. 28004 Madrid. España Tel. 902 102 201 – www.aenor.es

AENOR INTERNACIONAL Génova, 6. 28004 Madrid. España - www.aenorinternacional.com

AENOR é membro da REDE IQNet (Rede Internacional de Certificação)

Certificado de Sistema de Gestão Qualidade

AENOR
ER
Empresa Registrada
UNE-EN ISO 9001

ER-1634/2002

Anexo ao Certificado

Estabelecimientos: INDUSTRIAS JSA - Fabrico e Comercialização de Tubos, S.A..
Fabrico de tubos em aço inox, de tubos isolantes de polietileno expandido (nu e revestido), de tubos de polietileno reticulado (inerte ou não ao oxigénio), de tubos octogonais galvanizados de manga corrugada, de estores venezianos e termolacados.

ISOLTUBEX - Fábrica de Tubos e Perfis Isolantes, Lda..
Concepção, desenvolvimento e fabrico de tubo isolante de polietileno expandido, nu e revestido.

COMPOESTOR - Fábrica de Componentes para Estores, Lda.
Concepção, desenvolvimento e fabrico de estores venezianos, termolacados e tubos octogonais.

PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A.
Concepção, desenvolvimento e fabrico de tubos de polietileno reticulado, inerte ou não ao oxigênio e tubos de polipropileno.

REVESTUBE - Fábrica de Tubos Revestidos, Lda.
Concepção, desenvolvimento e fabrico de manga corrugada.

PERFILTUBO - Fábrica de Tubos e Perfis, S.A.
Concepção, desenvolvimento e fabrico de tubos de aço inox.

Data de emissão: 2002-12-16
Data de Renovação: 2012-06-30
Data de validade: 2015-03-10

Avelino BRITO
Director Geral da AENOR

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Certificado de Sistema de Gestão Qualidade

AENOR
ER
Empresa Registrada
UNE-EN ISO 9001

ER-1634/2002

Anexo ao Certificado

Estabelecimientos: INDUSTRIAS JSA - Fabrico e Comercialização de Tubos, S.A..
Sede. - 3750-753 TRAVASSO (AGUEDA - Portugal)
Instalaçoes Fabris: COVÃO. - AGUEDA (Portugal)

ISOLTUBEX - Fábrica de Tubos e Perfis Isolantes, Lda..
Sede. - 3750-753 TRAVASSO (AGUEDA - Portugal)
Instalaçoes Fabris: COVÃO. - AGUEDA (Portugal)

COMPOESTOR - Fábrica de Componentes para Estores, Lda.
Sede. - 3750-753 TRAVASSO (AGUEDA - Portugal)
Instalaçoes Fabris: COVÃO. - AGUEDA (Portugal)

PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A.
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Instalaçoes Fabris: COVÃO. - AGUEDA (Portugal)

REVESTUBE - Fábrica de Tubos Revestidos, Lda.
Sede. - 3750-753 TRAVASSO (AGUEDA - Portugal)
Instalaçoes Fabris: COVÃO. - AGUEDA (Portugal)

PERFILTUBO - Fábrica de Tubos e Perfis, S.A.
Sede e Instalaçoes Fabris: 3750-753 TRAVASSO (AGUEDA - Portugal)

Data de emissão: 2002-12-16
Data de Renovação: 2012-06-30
Data de validade: 2015-03-10

Avelino BRITO
Director Geral da AENOR

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AENOR INTERNACIONAL Génova, 6. 28004 Madrid. España - www.aenorinternacional.com

AENOR é membro da REDE IQNet (Rede Internacional de Certificação)

AENOR Asociación Española de Normalización y Certificación

CERTIFICADO AENOR DE PRODUCTO Nº 001 / 002924

AENOR PRODUCT CERTIFICATE Nº

La Asociación Española de Normalización y Certificación (AENOR) certifica que el producto
The Spanish Association for Standardisation and Certification (AENOR) certifies that the product

TUBOS DE POLIETILENO RETICULADO (PE-X), POR EL MÉTODO DEL SILANO, PARA INSTALACIONES DE AGUA CALIENTE Y FRÍA

CROSSLINKED POLYETHYLENE (PE-X) PIPES, BY SILANE METHOD, FOR HOT AND COLD WATER INSTALLATIONS

detallado en la(s) página(s) siguiente(s), detailed in the following page(s),

suministrado por supplied by

PEXTUBE - FABRICA DE TUBOS PLASTICO-METALICOS, LDA.
3750-753 TRAVASSÔ - AGUEDA (PORTUGAL)

y elaborado en and manufactured in

ZONA INDUSTRIAL DO COVAO
3750 AGUEDA (PORTUGAL)

es conforme con complies with

UNE-EN ISO 15875-1:2004
UNE-EN ISO 15875-2:2004

Para conceder este Certificado, AENOR ha ensayado el producto y ha comprobado el sistema de la calidad aplicado para su elaboración. AENOR realiza estas actividades periódicamente mientras el Certificado no haya sido anulado, según se establece en el Reglamento Particular RP 01.52.

In order to grant this Certificate, AENOR has tested the product and has verified the quality system used in its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with the stipulations of the Specific Rules RP 01.52.

Fecha de concesión: **2004-07-27**
First issued on:

Fecha de renovación: **2008-05-21**
Renewed on:

Fecha de caducidad: **2013-05-21**
Expires on:

El Director General de AENOR
General Manager

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AENOR Asociación Española de Normalización y Certificación

CERTIFICADO AENOR DE PRODUCTO Nº 001 / 002924

AENOR PRODUCT CERTIFICATE Nº

MARCA COMERCIAL: PEXTUBE
TRADEMARK:

SERIE SERIE	DIÁMETROS (mm) DIAMETERS (mm)	CLASE DE APLICACIÓN / PRESIÓN DE DISEÑO (bar) APPLICATION CLASS / DESIGN PRESSURE (bar)	OPACIDAD OPACITY
2,5	12	1/10 ; 2/10 ; 4/10 ; 5/10	NO
3,2	16 - 20 - 25	1/10 ; 2/10 ; 4/10 ; 5/10	NO
3,5	16	1/10 ; 2/10 ; 4/10 ; 5/8	NO
4,0	16	1/8 ; 2/8 ; 4/10 ; 5/8	NO
4,5	20	1/8 ; 2/6 ; 4/8 ; 5/6	NO
5,0	20 - 25 - 32	1/6 ; 2/6 ; 4/8 ; 5/6	NO

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AENOR - Génova, 6 - 28004 MADRID - Teléfono 914 32 60 00 - Telefax 913 10 46 83

Entidad acreditada por ENAC con nº 01/C-PR002.001
Body accredited by ENAC (number 01/C-PR002.001)

AENOR Asociación Española de Normalización y Certificación

CERTIFICADO AENOR DE PRODUCTO Nº 001 / 005805

AENOR PRODUCT CERTIFICATE Nº

La Asociación Española de Normalización y Certificación (AENOR) certifica que el producto
The Spanish Association for Standardisation and Certification (AENOR) certifies that the product

TUBOS DE POLIPROPILENO (PP-R)
PARA INSTALACIONES DE AGUA CALIENTE Y FRÍA

POLYPROPYLENE (PP-R) PIPES FOR HOT AND COLD WATER INSTALLATIONS

detallado en la(s) página(s) siguiente(s), detailed in the following page(s),

suministrado por supplied by

PEXTUBE - FABRICA DE TUBOS PLASTICO-METALICOS, LDA.

3750-753 TRAVASSÔ - AGUEDA (Portugal)

y elaborado en and manufactured in

ZONA INDUSTRIAL DO COVAO
3750 AGUEDA (Portugal)

es conforme con complies with

UNE-EN ISO 15874-1:2004
UNE-EN ISO 15874-1:2004/A1:2007
UNE-EN ISO 15874-2:2004
UNE-EN ISO 15874-2:2004/A1:2007

Para conceder este Certificado, AENOR ha ensayado el producto y ha comprobado el sistema de la calidad aplicado para su elaboración. AENOR realiza estas actividades periódicamente mientras el Certificado no haya sido anulado, según se establece en el Reglamento Particular RP 01.52.

In order to grant this Certificate, AENOR has tested the product and has verified the quality system used in its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with the stipulations of the Specific Rules RP 01.52.

Fecha de concesión: **2012-07-26**
First issued on:

Fecha de caducidad: **2013-06-16**
Expires on:

Avelino BRITO MARQUINA
Director General de AENOR
Chief Executive Officer

Este certificado anula y sustituye al certificado 001/003450, de fecha 2008-06-16. This certificate supersedes certificate 001/003450, dated 2008-06-16.
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AENOR Asociación Española de Normalización y Certificación

CERTIFICADO AENOR DE PRODUCTO Nº 001 / 005805

AENOR PRODUCT CERTIFICATE Nº

MARCA COMERCIAL: PERFILPPR
TRADEMARK:

SERIE SERIE	DIÁMETROS (mm) DIAMETERS (mm)	CLASE DE APLICACIÓN / PRESIÓN DE DISEÑO (bar) APPLICATION CLASS /DESIGN PRESSURE (bar)	OPACIDAD OPACITY
2,5	16 - 20 - 25 - 32 - 40 - 50 - 63 - 75 - 90	1/10 ; 2/8 ; 4/10 ; 5/6	NO
3,2	16 - 20 - 25 - 32 - 40 - 50 - 63 - 75 - 90	1/8 ; 2/6 ; 4/10 ; 5/6	NO
5,0	16 - 20 - 25 - 32 - 40 - 50 - 63	1/6 ; 2/4 ; 4/6	NO

Este certificado anula y sustituye al certificado 001/003450, de fecha 2008-06-16. This certificate supersedes certificate 001/003450, dated 2008-06-16.
No está autorizada la reproducción parcial de este documento. The partial reproduction of this document is not permitted.

AENOR - Génova, 6 - 28004 MADRID - Teléfono 914 32 60 00 - Telefax 913 10 46 83

Entidad de certificación de producto acreditada por ENAC con nº C-PR002.01
Product certification body accredited by ENAC, number C-PR002.01

AENOR Asociación Española de Normalización y Certificación

CERTIFICADO AENOR DE PRODUCTO Nº 001 / 005536

AENOR PRODUCT CERTIFICATE Nº

La Asociación Española de Normalización y Certificación (AENOR) certifica que el producto
The Spanish Association for Standardisation and Certification (AENOR) certifies that the product

TUBOS DE POLIETILENO RESISTENTE A LA TEMPERATURA (PE-RT) PARA INSTALACIONES DE AGUA CALIENTE Y FRÍA

POLYETHYLENE TEMPERATURE RESISTANCE (PE-RT) PIPES FOR HOT AND COLD WATER INSTALLATIONS

detallado en la(s) página(s) siguiente(s), detailed in the following page(s),

suministrado por supplied by

PEXTUBE - FABRICA DE TUBOS PLASTICO-METALICOS, LDA.
3750-753 TRAVASSÔ - AGUEDA (Portugal)

y elaborado en and manufactured in

ZONA INDUSTRIAL DO COVAO
3750 AGUEDA (Portugal)

es conforme con complies with

UNE-EN ISO 22391-1:2010
UNE-EN ISO 22391-2:2010

Para conceder este Certificado, AENOR ha ensayado el producto y ha comprobado el sistema de la calidad aplicado para su elaboración. AENOR realiza estas actividades periódicamente mientras el Certificado no haya sido anulado, según se establece en el Reglamento Particular RP 01.67.

In order to grant this Certificate, AENOR has tested the product and has verified the quality system used in its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with the stipulations of the Specific Rules RP 01.67.

Fecha de concesión: **2011-05-03**
First issued on:

Fecha de caducidad: **2016-02-16**
Expires on:

AENOR Asociación Española de Normalización y Certificación
El Director General de AENOR
General Manager

Este certificado anula y sustituye al certificado 001/005503, de fecha 2011-02-16. No está autorizada la reproducción parcial de este documento.

This certificate supersedes certificate 001/005503, dated 2011-02-16. The partial reproduction of this document is not permitted.

AENOR Asociación Española de Normalización y Certificación

CERTIFICADO AENOR DE PRODUCTO Nº 001 / 005536

AENOR PRODUCT CERTIFICATE Nº

MARCA COMERCIAL: LEXTUBE
TRADEMARK:

SERIE SERIE	DIÁMETROS (mm) DIAMETERS (mm)	CLASE DE APLICACIÓN / PRESIÓN DE DISEÑO (bar) APPLICATION CLASS / DESIGN PRESSURE (bar)	TIPO DE MATERIAL TYPE OF MATERIAL	OPACIDAD OPACITY
2,5	12	1/10 ; 2/10 ; 4/10 ; 5/10	PE-RT TIPO II	NO
3,2	16 - 20 - 25	1/10 ; 2/10 ; 4/10 ; 5/8	PE-RT TIPO II	NO
3,5	16	1/10 ; 2/8 ; 4/8 ; 5/8	PE-RT TIPO II	NO
4,0	16	1/8 ; 2/8 ; 4/8 ; 5/6	PE-RT TIPO II	NO
4,5	20	1/6 ; 2/6 ; 4/6 ; 5/6	PE-RT TIPO II	NO
5,0	20 - 25 - 32	1/6 ; 2/6 ; 4/6 ; 5/4	PE-RT TIPO II	NO

AENOR Asociación Española de Normalización y Certificación

Este certificado anula y sustituye al certificado 001/005503, de fecha 2011-02-16. No está autorizada la reproducción parcial de este documento.

This certificate supersedes certificate 001/005503, dated 2011-02-16. The partial reproduction of this document is not permitted.

AENOR - Génova, 6 - 28004 MADRID - Teléfono 914 32 60 00 - Telefax 913 10 46 83

DVGW CERT

DVGW CERT GMBH

DVGW-Baumusterprüfzertifikat

DVGW type examination certificate

DW-8306BP0234
Registriernummer
registration number

Anwendungsbereich ***field of application***	Produkte der Wasserversorgung *products of water supply*
Zertifikatinhaber ***owner of certificate***	PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A. Apartado 3010, P-3750- 753 Travasso-Agueda
Vertreiber ***distributor***	PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A. Apartado 3010, P-3750- 753 Travasso-Agueda
Produktart ***product category***	Kunststoffrohre für die Trinkwasserinstallation: PE-Xb, Fert.-Gr. 1 (8306)
Produktbezeichnung ***product description***	Kunststoffrohr aus PE-Xb für die Trinkwasserinstallation
Modell ***model***	PE-Xb-Rohr "PEXTUBE"
Prüfberichte ***test reports***	Mechanikprüfung: K 07 1798.2 vom 13.06.2008 (MPD) Mechanikprüfung: 113947 vom 04.05.2004 (TKS) KTW-Prüfung: 243A0 vom 29.11.2007 (TZW) Mikrobiologische Prüfung: 16308_02 vom 10.11.2008 (TZW)
Prüfgrundlagen ***basis of type examination***	DVGW W 544 (01.05.2007) UBA KTW (16.05.2007) DVGW W 270 (01.11.2007)
Ablaufdatum / AZ ***date of expiry / file no.***	04.05.2014 / 09-0317-WNV

02.09.2009 GI A-1/2
Datum, Bearbeiter, Blatt, Leiter der Zertifizierungsstelle
date, issued by, sheet, head of certification body

DVGW CERT GmbH - von der Deutschen Akkreditierungsstelle Technik (DATech) in der TGA GmbH akkreditiert für die Konformitätsbewertung von Produkten der Gas- und Wasserversorgung

DVGW CERT GmbH - accredited by Deutsche Akkreditierungsstelle Technik (DATech) in the TGA GmbH for conformity assessment of products of gas and water supply

Deutscher Akkreditierungs Rat
DAR
DAT-ZE-009/96-02

DVGW CERT GmbH
Josef-Wirmer-Straße 1-3
53123 Bonn
Telefon: +49 228 91 88-888
Telefax: +49 228 91 88-993
eMail: info@dvgw-cert.com

Typ ***type***	**Technische Daten** ***technical data***	**Bemerkungen** ***remarks***
PE-Xb-Rohr "PEXTUBE"	Fertigungsgruppe: 1	Abmessungen: 10 bis 63 mm

Verwendungshinweise / Bemerkungen
hints of utilization / remarks

geprüfte Abmessungen (bis 20 bar): 12 x 2,0 mm, 16 x 2,2 mm, 20 x 2,8 mm und 25 x 3,5 mm

DVGW CERT

DVGW CERT GMBH

DVGW type examination certificate

DW-8317BQ0361
registration number

field of application	products of water supply
owner of certificate	PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A. Apartado 3010, P-3750- 753 Travasso-Agueda
distributor	PEXTUBE - Fábrica de Tubos Plástico-Metálicos, S.A. Apartado 3010, P-3750- 753 Travasso-Agueda
product category	plastic pipes for drinking water installations: PP-R, SDR 6 (PN 20) (8317)
product description	pipe made of plastic PP-R für the drinking water installation
model	PERFILPPR
test reports	mechanical test: K 10 0010.4 -.5 from 30.08.0110 (MPD) mechanical test: 615691 from 28.06.2005 (MPD) KTW testing: KR 154/10 from 03.09.2010 (TZW) hygienic testing: MO 245/09 from 12.10.2009 (TZW)
basis of type examination	DVGW W 544 (01.05.2007) BGA KTW (07.01.1977) DVGW W 270 (01.11.2007)
date of expiry / file no.	28.06.2015 / 10-0456-WNV

27.10.2010 GI A-1/2
date, issued by, signed/head of certification body

DVGW CERT GmbH - accredited by Deutsche Akkreditierungsstelle Technik (DATech) in the TGA GmbH for conformity assessment of products of gas and water supply

Deutscher Akkreditierungs Rat
DAR
DAT-ZE-009/96-02

DVGW CERT GmbH
Josef-Wirmer-Straße 1-3
53123 Bonn
Telefon: +49 228 91 88-888
Telefax: +49 228 91 88-993
eMail: info@dvgw-cert.com

type	technical data	remarks
PERFILPPR	manufacturing group: 1	diameters: up to 63 mm

hints of utilization / remarks

With the test report MO 245/09, date: 12.10.2009 (TZW) it is proven, that the requirements according the standard DVGW W270 (01.11.2007) appendix A.1.1: "Material for the standard application in contact with potable water" are fulfilled.

certif Certificado

Certificado nº TMP-009/2011
Certificate no.

PRODUTO CERTIFICADO certif

Nome e morada do titular do certificado: *Name and address of the certificate holder:*	PEXTUBE – Fábrica de tubos plástico-metálicos S.A. 3750-753 Travassô - Águeda Portugal
Nome e morada do fabricante: *Manufacturer's name and address:*	PEXTUBE – Fábrica de tubos plástico-metálicos S.A. 3750-753 Travassô – Águeda Portugal
Produto: *Product:*	Tubos em plástico para instalações de água quente e fria – Polietileno reticulado – PE-X *Plastic pipes for cold and hot water installations – Crosslinked polyethylene (PE-X)*
Referências: *Type references:*	Ver anexo / *See annex*
Marca(s) comercial(is): *Trademark(s):*	PEXTUBE e/ *and* HELITHERM
Características técnicas: *Technical characteristics:*	Ver anexo / *See annex*
Este produto está em conformidade com: *This product is in conformity with:*	NP EN ISO 15875-1:2005; NP EN ISO 15875-2:2005
Relatórios de ensaios nº(s) / emitidos por: *Test report(s) no. / issued by:*	LMP-0086/2009-Rev02; PLA-0825/2010 e / *and* PLA-0220/2010 / CEIS K 10 0010.2 / MPA 08-0212 / INSA EM2010004 / AEMITEQ
Informação adicional (se existir): *Additional information (if any):*	Local de fabrico / *Factory location:* Zona Industrial do Covão 3750 – 836 Águeda No produto pode ser colocada esta marca ◁Certif▷ *Can be placed on the product the following mark*
Este certificado é válido até: *This certificate is valid until:*	2015-12-16
e substitui o certificado nº: *and supersedes the certificate no:*	TMP-036/2010
Data de emissão: *Date of issue:*	2011-04-04

Francisco Barroca
Director Geral / *General Manager*

IPAC acreditação

Este Certificado é constituído por um Anexo com 1(uma) página
This Certificate includes one Annex with 1 (one) page

certif Certificado

Anexo ao Certificado nº TMP-009/2011
Annex to Certificate no.

PRODUTO CERTIFICADO certif

Referências e características técnicas / *Type references and technical characteristics:*

- Tubos em PE-Xb não colorados / *PE-Xb pipes without colouring*
- Compostos / *compounds:*
  - AEI Compounds SX720 + MC488
  - Solvay Padanaplast POLIDAN T/A –HF + CATALYST PS/2

Referência *Type reference*	Scalc	Série *Series*	Classe de dimensão *Dimension class*	DN	Classe de aplicação / Pressão de serviço (bar) *Application class / Design pressure (bar)*				Opacidade *Opacity*
PEXTUBE e/ *and* HELITHERM	2,5	--	C	12	1/10	2/10	4/10	5/10	Não / *No*
	--	3,2	A	16	1/10	2/10	4/10	5/10	
	3,5	--	C	16	1/10	2/10	4/10	5/8	
	--	4	A	16	1/8	2/8	4/10	5/8	
	--	3,2	A	20	1/10	2/10	4/10	5/10	
	4,5	--	C	20	1/8	2/6	4/8	5/6	
	--	5	A	20	1/6	2/6	4/8	5/6	
	--	3,2	A	25	1/10	2/10	4/10	5/10	
	--	5	A	25	1/6	2/6	4/8	5/6	
	--	5	A	32	1/6	2/6	4/8	5/6	

Data de emissão: 2011-04-04
Date of issue:

Francisco Barroca
Director Geral / *General Manager*

IPAC acreditação

certif Certificado

Certificado nº *Certificate no.* **TMP-041/2011**

Nome e morada do titular do certificado: *Name and address of certificate holder:*
PEXTUBE – Fábrica de tubos plástico-metálicos, S.A.
3750-753 Travassó – Águeda
Portugal

Nome e morada do fabricante: *Manufacturer's name and address:*
PEXTUBE – Fábrica de tubos plástico-metálicos, S.A.
3750-753 Travassó – Águeda
Portugal

Produto: *Product:*
Tubos em plástico para instalações de água quente e fria – Polipropileno (PP)
Plastic pipes for hot and cold water installations – Polypropylene (PP)

Referências: *Type references:*
Ver características técnicas / *See technical characteristics*

Marca(s) comercial(is): *Trademark(s):*
PERFILPPR; GIACOMETI; BM

Características técnicas: *Technical characteristics:*
Ver anexo / *See annex*

Este produto está em conformidade com: *This product is in conformity with:*
NP EN ISO 15874-1:2005; EN ISO 15874-1:2003/A1:2007
NP EN ISO 15874-2:2005; EN ISO 15874-2:2003/A1:2007

Relatórios de ensaios nº(s) / emitidos por: *Test report(s) no. / issued by:*
LMP-0003/2010; PLA-0310/2010; PLA-0311/2010; PLA-0423/11-1 / CEIS
08-0211 / INSA
EM2009005; EM2009013; EM2011004 / AEMITEQ

Informação adicional (se existir): *Additional information (if any):*
Local de fabrico / *Factory location:*
Zona Industrial do Covão
3750 – 836 Águeda
No produto pode ser colocada esta marca ◁Certif▷
Can be placed on the product the following mark

Este certificado é válido até: *This certificate is valid until:*
2014-12-16

e substitui o certificado nº: *and supersedes certificate no:*
TMP-022/2011

Data de emissão: *Date of issue:*
2011-12-20

Francisco Barroca
Director Geral / *General Manager*

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certif Certificado

Anexo ao Certificado nº *Annex to Certificate no.* **TMP-041/2011**

Referências e características técnicas / *Type references and technical characteristics:*

Tubos em PP-R nas cores verde e azul / *PP-R pipes in green and blue colours*

Compostos / *Compounds:*

Tubos na cor verde / *Green colour pipes:*
- Borealis RA 130E-6015
- Repsol PR210T312
- Repsol ISPLEN PR210X6E + Pigmento / *Masterbacth* Rofalcor R/G 4520

Tubos na cor azul / *Blue colour pipes:*
- Repsol ISPLEN PR210X6E + Pigmento / *Masterbacth* Flexaco FL-5/0489PP

DN	Série *Series*	Classe de dimensão *Dimension class*	Classe de aplicação / pressão de serviço (bar) *Application class / design pressure (bar)*				Opacidade *Opacity*
16	2,5	A	1/10	2/8	4/10	5/6	Não / *No*
20							
25							
32							
40							
50							
63							
75							
90							
16	5		1/6	2/4	4/6		
20							
25							
32							
40							
50							
63							

Data de emissão: *Date of issue:* 2011-12-20

Francisco Barroca
Director Geral / *General Manager*

certif Certificado

Certificado nº *Certificate no.* **TMP-017/2012**

Nome e morada do titular do certificado: *Name and address of certificate holder:*
PEXTUBE – Fábrica de tubos plástico-metálicos S.A.
3750-753 Travassó - Águeda
Portugal

Nome e morada do fabricante: *Manufacturer's name and address:*
PEXTUBE – Fábrica de tubos plástico-metálicos S.A.
3750-753 Travassó – Águeda
Portugal

Produto: *Product:*
Tubos em plástico para instalações de água quente e fria – Polietileno de resistência melhorada à temperatura (PE-RT)
Plastic pipes for cold and hot water installations – Polyethylene of raised temperature resistance (PE-RT)

Referências: *Type references:*
Ver anexo / *See annex*

Marca(s) comercial(is): *Trademark(s):*
LEXTUBE

Características técnicas: *Technical characteristics:*
Ver anexo / *See annex*

Este produto está em conformidade com: *This product is in conformity with:*
NP EN ISO 22391-1:2010; NP EN ISO 22391-2:2011

Relatórios de ensaios nº(s) / emitidos por: *Test report(s) no. / issued by:*
PLA-0826/2010; PLA-0764/2010; PLA-0953/2010 / CEIS
EM2009006 / AEMITEQ

Informação adicional (se existir): *Additional information (if any):*
Local de fabrico / *Factory location:*
Zona Industrial do Covão
3750 – 836 Águeda
No produto pode ser colocada esta marca ◁Certif▷
Can be placed on the product the following mark

Este certificado é válido até: *This certificate is valid until:*
2016-01-30

e substitui o certificado nº: *and supersedes certificate no:*

Data de emissão: *Date of issue:*
2012-03-05

Francisco Barroca
Director Geral / *General Manager*

Este Certificado é constituído por um Anexo com 1(uma) página
This Certificate includes one Annex with 1 (one) page

certif Certificado

Anexo ao Certificado nº *Annex to Certificate no.* **TMP-017/2012**

Referências e características técnicas / *Type references and technical characteristics:*

- Tubos em PE-RT de cor neutra / *PE-RT pipes in neutral colour*
- Composto / *Compound*: DOW DOWLEX 2388 (PE-RT tipo / *type* II)

DN (mm)	Série *Series*	Scalc	Classe de dimensão *Dimension class*	Classe de aplicação / Pressão de serviço (bar) *Application class / Design pressure (bar)*				Opacidade *Opacity*
12	--	2,5	C	1/10	2/10	4/10	5/10	Não / *No*
16	3,2	--	A	1/10	2/10	4/10	5/8	
	--	3,5	C	1/10	2/8	4/8	5/8	
	4	--	A	1/8	2/8	4/8	5/6	
20	3,2	--		1/10	2/10	4/10	5/8	
	--	4,5	C	1/6	2/6	4/6	5/6	
25	5	--	A	1/6	2/6	4/6	5/4	
	3,2	--		1/10	2/10	4/10	5/8	
	5	--		1/6	2/6	4/6	5/4	
32	5	--		1/6	2/6	4/6	5/4	

Data de emissão: *Date of issue:* 2012-03-05

Francisco Barroca
Director Geral / *General Manager*

TYYPPIHYVÄKSYNTÄPÄÄTÖS

Myönnetty: 28.9.2009

Voimassa: 27.9.2014

VTT on rakennustuotteiden hyväksynnästä annetun lain (230/2003) 9§ nojalla ja ottaen huomioon lain 4 luvun säännökset sekä rakennustuotteiden hyväksynnästä annetun ympäristöministeriön asetuksen (1245/2003) 5 luvun säännökset myöntänyt seuraavan tyyppihyväksynnän.

TUOTE

Pextube PE-Xb Sitmitys-, käyttövesi ja jäähdytysputket, joiden knot (rimellinen ulkohalkaisija x vähimmäisseinämänpaksuus) ovat 12 x 2,0, 15 x 2,5, 18 x 2,5, 22 x 3,0, 25 x 3,5 ja 28 x 4,0 mm.

HAKIJA

Pextube S.A, Portugali

VALMISTAJA

Pextube S.A, Portugali

HYVÄKSYNNÄN LAAJUUS

Tällä hyväksynnällä todetaan edellä mainitujen PEX-putkien täyttävän Suomen rakentamismääräyskokoelmassa vesilaitteistolle asetetut vaatimukset ja soveltuvan käytettäviksi kylmä- ja lämminvesilaitteistoissa.

HYVÄKSYNNÄN EHDOT

Putket sijoitetaan ja asennetaan vaihdettaviksi siten, että ne on helppo rakenteita rikkomatta tarkastaa ja korjata, sekä siten, että mahdollinen vesivuoto ohjautuu näkyville ja tästä estetään veden huomaamaton ja haitallinen tunkeutuminen rakenteisiin.

LAADUNVALVONTA

Laadunvalvonnassa noudatetaan hakijan ja MPA Darmstadtin välillä 7.8.2006 voimassaolevia laadunvalvontasopimusta.

MERKITSEMINEN

PEX-putkiin merkitään tämän päätöksen liitteen mukainen tyyppihyväksyntämerkki sekä EN 15875-2 kohdan 10.2 mukaiset merkinnät.

VOIMASSOLOAIKA

Päätös tulee voimaan 28.9.2009 ja on voimassa toistaiseksi, kuitenkin enintään 27.9.2014 saakka.

VALTION TEKNILLINEN TUTKIMUSKESKUS
Sertifiointi ja tarkastuspalvelut
PL 1000 (Kemistintie 3), 02044 VTT
Puh. 020 722 4911
Faksi 020 722 7003
www.vtt.fi

TYYPPIHYVÄKSYNTÄPÄÄTÖS

Mikäli kyseisten tuotteiden CE-merkintä tulee mahdolliseksi ennen tämän hyväksynnän voimassaolon päättymistä, päättyy tämän hyväksynnän voimassaolo harmonisoidun standardin (hEN) siirtymäajan lopuhus.

HUOMAUTUKSET

HYVÄKSYNNÄN PERUSTEET

Ympäristöministeriön asetus PEX-putkien tyyppihyväksynnästä 15.6.2007.

Liisa Rautiainen
Arviointipäällikkö
Puh. 020 722 4920
liisa.rautiainen@vtt.fi

Ritva Puolanne
Tutkija

LIITTEET

Tyyppihyväksyntämerkki
Oikeusvaatimus- ja valitusohje

TIEDOKSI

Staatlihen Materialprüfungsanstalt Darmstadt, Grafenstrasse 2, D-64283 Darmstadt, Germany

VALTION TEKNILLINEN TUTKIMUSKESKUS
Sertifiointi ja tarkastuspalvelut
PL 1000 (Kemistintie 3), 02044 VTT
Puh. 020 722 4911
Faksi 020 722 7003
www.vtt.fi

Staatliche Materialprüfungsanstalt MPA Darmstadt
Grafenstraße 2, 64283 Darmstadt
Zertifizierungsstelle

Zertifikat

Reg.-Nr. K 1368 / 01.2013

Die	Zertifizierungsstelle der MPA Darmstadt
bestätigt dem Hersteller	Pextube, S.A. Apartado 3010 3750-753 Travassô-Águeda Portugal
die Übereinstimmung des Produkts	Heizungsleitungen der Abmessungen 12 mm x 2,0 mm, 15 mm x 2,5 mm, 16 mm x 2,0 mm, 16 mm x 2,2 mm, 17 mm x 2,0 mm und 20 mm x 2,0 mm aus silanvernetztem Polyethylen (PE-Xb)
des Herstellwerkes	Pextube, S.A. 3750-802 Coväo-Águeda Portugal
mit dem Zertifizierungsprogramm	ZP-431 [Heizungsleitungen aus vernetztem Polyethylen (PE-X) nach DIN EN ISO 15875-2:2004-03 Abschnitt 4 bis 8 und 10 sowie DIN 4726:2008-10 Abschnitt 4.4 und 5.4]

Das Zertifikat wird auf Grundlage der Ergebnisse der regelmäßigen Inspektion durch die Inspektionsstelle der MPA Darmstadt erteilt. Die regelmäßige Inspektion umfasst:

- Kontrolle der werkseigenen Produktionskontrolle,
- Produktprüfung nach DIN EN ISO 15875-2:2004-03 Abschnitt 4 bis 8 und 10 sowie DIN 4726:2008-10 Abschnitt 4.4 und 5.4.

Der Hersteller ist somit berechtigt, das Produkt mit dem MPA-CERT-Zeichen gemäß den Bestimmungen der MPA Darmstadt für die Verwendung des MPA-CERT-Zeichens zu kennzeichnen.

Dieses Zertifikat ist nur in Verbindung mit dem letzten Inspektionsbericht gültig.

Darmstadt, 04.03.2013

Dr.-Ing. Jörg Beyer
Leiter der Zertifizierungsstelle

Dipl.-Ing. Hansgeorg Haupt
Zertifizierungsfachverantwortlicher

TECHNISCHE UNIVERSITÄT DARMSTADT

Our Ref: NJ/M120119
Test Report: M105221

18th April 2012

PEXTUBE – Fábrica de Tubos Plástico-Metálicos, S.A.
Apartado 3010
3750-753 Travassô – Águeda
Portugal

WATER REGULATIONS ADVISORY SCHEME (WRAS)
MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS 6920-1:2000 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

POLYETHYLENE - COMPONENTS **5240**

Doublepex. Extruded, triple layered pipe, consisting of white coloured inner and outer polyethylene layers with EVOH oxygen barrier middle layer. For use with water up to 85°C.

APPROVAL NUMBER: 1204503
APPROVAL HOLDER: PEXTUBE – FÁBRICA DE TUBOS PLÁSTICO-METÁLICOS, S.A.

The Scheme reserves the right to review approval. This approval is valid between April 2012 and April 2017.

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

Water Regulations Advisory Scheme Ltd.
30 Fern Close, Pen-y-Fan Industrial Estate,
Oakdale, Gwent. NP11 3EH. UK.
Tel: 01495 246454. Fax: 01495 236289.
E-mail: info@wras.co.uk. Website: www.wras.co.uk

SEGURO DE RESPONSABILIDADE CIVIL RISCOS EMPRESARIAIS
APÓLICE Nº 0002698699

1. TOMADOR/ SEGURADO . **PEXTUBE – Fábrica de Tubos Plástico-Metálicos, S.A.**

2. ÂMBITO DA COBERTURA . De harmonia com o disposto nas Condições Gerais e dentro dos limites fixados nestas Condições Particulares, este seguro terá por objecto a garantia da **Responsabilidade Civil Extracontratual**, que nos termos da lei civil e do clausulado deste seguro, seja imputável ao Segurado, na qualidade ou no exercício da actividade segura.

3. ACTIVIDADE SEGURA . **Fabrico e comércio de tubos e acessórios**

4. CONDIÇÕES ESPECIAIS . Ao presente contrato são aplicáveis as seguintes condições especiais:
- **Responsabilidade Civil Exploração**
- **Responsabilidade Civil Produtos**
- **Responsabilidade Civil Poluição e/ou Contaminação - Actividades Industriais de Risco**

5. CAPITAL SEGURO PR. COMERCIAL/ TAXA AJUSTE .

Capital seguro	
Por sinistro e anuidade (RC Exploração + RC Produtos)	**€ 1.000.000,00**
Por sinistro e anuidade (RC Poluição)	**€ 100.000,00**
Prémio Comercial	
Provisional Não Estornável (1)	**€ 2.500,00**
Taxa de ajuste	
A aplicar sobre volume de facturação no valor de € 4.013.871,00 (2)	**0,70 ‰**

1) Ao valor indicado acresce € 5,00 por Apólice ou acta e 9% de selos legais.

2) Para o efeito, o Segurado compromete-se a fornecer à Seguradora o volume de facturação verificada em cada anuidade, sob pena de se considerar um aumento de 20% no prémio provisional, sendo no futuro, esse acerto agravado para 50% e 100% caso se verifique a omissão dessa informação à Tranquilidade, respectivamente durante 2 ou 3 anuidades consecutivas.

Mod. 651/999 - Novembro 2009

TRANQUILIDADE VIDA

Companhia de Seguros Tranquilidade, S.A. Capital Social €135.000.000 Registo C.R.C. de Lisboa n.º 640 NIPC 500 940 231

T-Vida, Companhia de Seguros, S.A. Capital Social €65.000.000 Registo C.R.C. de Lisboa e NIPC 507 684 486

Sede Av. da Liberdade, 242 1250-149 Lisboa
Site www.tranquilidade.pt
E-mail infogeral@tranquilidade.pt

Linha Clientes 707 24 07 07 8h45/21h - dias úteis Assistência 24h - 7 dias / semana

SEGURO DE RESPONSABILIDADE CIVIL RISCOS EMPRESARIAIS
APÓLICE Nº 0002698699

6. FRANQUIAS . 10% do valor do sinistro com o mínimo de **€ 100,00** e máximo de **€10.000,00 (RC Exploração)**

10 % do valor do sinistro com o mínimo de **€ 1.000,00** e máximo de **€10.000,00 (RC Produtos)**

7. AMBITO TERRITORIAL . União Europeia restantes países da Europa, Síria, República Dominicana, Marrocos, Chile, Bahrain, Islândia, China, Cabo Verde, Angola, Argélia e Moçambique.

8. EXCLUSÕES . **Para além das exclusões previstas nas Condições Gerais, Especiais e Cláusulas Particulares consideram-se igualmente excluídas as reclamações ou danos:**

a) Resultantes da inobservância ou infracção das leis, regulamentos ou usos que regem o exercício da actividade segura;
b) Pela interrupção ou suspensão total ou parcial da actividade exercida pelo Segurado;
c) Causados por falta de entrega, da entrega tardia ou defeituosa, ou quaisquer despesas inerentes à retoma de mercado, imagem ou confiança dos clientes;
d) Por Custos de Retirada, Reparação, Perda de uso e Reposição dos produtos no Mercado e União e Mistura;
e) Ou reclamações baseadas na aplicação de coimas, multas ou outras penalidades;
f) Por qualquer tipo de poluição e/ou contaminação;
g) No âmbito da RC Ambiental (DL 147 /2008);
h) Em consequência de obras ou trabalhos de ampliação, modificação ou reconstrução das instalações, excepto os trabalhos de simples conservação ou reparação;
i) Derivados ou em conexão com ou causados directa ou indirectamente pelo amianto (asbestos), as fibras de amianto, o chumbo ou os derivados destes produtos;
j) Em bens confiados ao segurado.

9. PERÍODO DO SEGURO . **Ano e seguintes**, com vencimento em 01-01- de cada ano.

Porto, 11 de Agosto de 2011 **COMPANHIA DE SEGUROS TRANQUILIDADE, S.A.**

Mod. 651/999 - Novembro 2009

TRANQUILIDADE VIDA

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SEGURO DE RESPONSABILIDADE CIVIL RISCOS EMPRESARIAIS
APÓLICE Nº 0002698699

RESPONSABILIDADE CIVIL POLUIÇÃO E/OU CONTAMINAÇÃO
Actividades Industriais de Risco

CONDIÇÃO ESPECIAL

A aplicar exclusivamente no âmbito do seguro obrigatório de Actividades Industriais de Elevado Risco.

1. ÂMBITO DE COBERTURA

Correspondendo ao legalmente exigido quanto à obrigação de segurar (Portarias nº 1235/2003 e 1058/2004) esta condição especial, independentemente do que possa ser estipulado noutras cláusulas ou garantias desta apólice, garante as indemnizações que legalmente sejam exigíveis ao Segurado no âmbito da **Responsabilidade Civil Extracontratual** e por terceiros, proprietários de instalações contíguas às seguras, em consequência de danos decorrentes de **Poluição ou Contaminação** da água e solo quando estes danos tenham sido resultado de um evento súbito e imprevisto.

a) Apenas ficam garantidos os danos decorrentes de poluição ou contaminação súbita e imprevista, incluindo o custo de remoção, anulação ou limpeza das substâncias contaminantes desde que tais danos tenham sido detectados até 7 dias após o momento da libertação.

b) Pela presente Condição Especial não fica garantida a responsabilidade por danos à Biodiversidade ou danos ao ambiente ao abrigo da Directiva 2004/35 /CE de 21/04/2004, Decreto Lei 147/2008 de 29/07 e 245/2009 de 22/09.

2. LIMITES DE INDEMNIZAÇÃO

- € 100.000,00 por sinistro e anuidade.

3. PRESSUPOSTO

A aceitação e posterior validade desta condição especial fica subordinada à prévia emissão e manutenção de licença de exploração industrial por entidade coordenadora habilitada para o efeito, ficando a respectiva cópia da licença a ser parte integrante da apólice.

4. DIREITO DE REGRESSO

Sem prejuízo do estipulado nas Condições Gerais de Responsabilidade Civil Geral , e nos termos do Art.8º da Portaria 1058/2004 , esta condição especial prevê o exercício do direito de regresso por parte da Seguradora nos seguintes casos:

Mod. 651/999 - Novembro 2009

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SEGURO DE RESPONSABILIDADE CIVIL RISCOS EMPRESARIAIS
APÓLICE Nº 0002698699

- Actos ou omissões do segurado ou de pessoas por quem seja civilmente responsável quando praticados em estado de demência, sob efeito de álcool, droga ou produtos tóxicos sem prescrição médica;
- Exercício da actividade por pessoal não qualificado;
- Por inexistência de plano de emergência exigido para as actividades abrangidas pelo regime especifico de prevenção de acidentes graves que envolvam substâncias perigosas;
- Falta de manutenção das instalações e equipamentos do segurado.

5. VALIDADE TEMPORAL

Com carácter de excepção em relação ao estipulado nas Condições Gerais de Responsabilidade Civil, esta condição especial cobre os danos por sinistros ocorridos durante a vigência da apólice desde que reclamados até dois anos após a sua ocorrência.

6. FRANQUIA

No caso de ser estipulada franquia contratual para esta condição especial, a mesma não poderá ser oponível a terceiros lesados.

7. RESOLUÇÃO DA APÓLICE

No caso de resolução do contrato de seguro, a Seguradora obriga-se a informar a entidade coordenadora (a indicar previamente pelos segurados) do respectivo processo de licenciamento industrial no prazo máximo de 30 dias, após a data em que esta produziu efeitos, sob pena da sua inoponíbilidade perante terceiros.

Mod. 651/999 - Novembro 2009

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PRODUTO RESP. CIVIL EMPRESARIAL

APÓLICE	EFEITO	VENC. ANUAL
0002698699	01/03/2011	01/01 *
TERMO	CLIENTE	NATUREZA
*	0900166182	ADICIONAL
FORMA DE PAGAMENTO	DURAÇÃO	
ANUAL	ANO E SEGUINTES	

CONDIÇÕES PARTICULARES DA APÓLICE

* - Às 0.00 Horas do dia indicado

LINHA DE NEGÓCIO : RESPONS. CIVIL EXPLORAÇAO

São aplicáveis as seguintes cláusulas particulares :

O prémio inicial do presente contrato (prémio mínimo anual não estornável) é determinado com base na estimativa do volume de facturação indicada pelo Tomador de Seguro / Segurado à Tranquilidade, sendo o mesmo posteriormente ajustado em cada vencimento, em função do valor real efectivamente facturado. Para o efeito o Tomador de Seguro / Segurado compromete-se, no final de cada ano civil ou sempre que solicitado pela Tranquilidade, a facultar o volume de facturação real relativo ao período compreendido entre Janeiro e Dezembro do ano anterior.
Caso essa informação não seja facultada à Tranquilidade nas datas indicadas, será automaticamente considerado a título de ajuste para o prémio da anuidade de seguro em questão, um acerto correspondente a 20% do prémio comercial mínimo anual em vigor nessa data, sendo nos anos seguintes, esse acerto agravado para 50% e 100% do prémio comercial mínimo anual à data, caso se verifique a omissão dessa informação à Tranquilidade, respectivamente, durante duas ou três anuidades consecutivas.

A Garantia concedida pela presente apólice cobre as reclamações feitas durante o período da sua vigência, em consequência de eventos ocorridos durante este mesmo período.
OBJECTO SEGURO : ACTIVIDADE

SEGURO DE RESPONSABILIDADE CIVIL RISCOS EMPRESARIAIS, CONFORME CONDIÇÕES ANEXAS.

ACTIVIDADE SEGURA Fabrico e comércio de tubos e acessórios

TAXA COMERCIAL DE AJUSTE: 0,70 /MIL.

COBERTURAS,CAPITAIS E/OU LIMITES DE INDEMNIZAÇÃO E FRANQUIAS

POLUIÇÃO — CAPITAL: €100 000,00
Franquia: 10,0000% — Percentagem do Valor do Sinistro

COMPANHIA DE SEGUROS TRANQUILIDADE, S.A.

Tomé Pedroso
Administrador

Peter de Brito e Cunha
Presidente da Comissão Executiva

Porto, 11 de Agosto de 2011

Companhia de Seguros Tranquilidade, S.A.
Capital Social €210.000.000
(realizado €160.000.000)
Registo C.R.C. de Lisboa n.º 640

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PRODUTO RESP. CIVIL EMPRESARIAL

APÓLICE	EFEITO	VENC. ANUAL
0002698699	01/03/2011	01/01 *
TERMO	CLIENTE	NATUREZA
*	0900166182	ADICIONAL
FORMA DE PAGAMENTO	DURAÇÃO	
ANUAL	ANO E SEGUINTES	

CONDIÇÕES PARTICULARES DA APÓLICE

* - Às 0.00 Horas do dia indicado

Valor mínimo : €100,00 Valor máximo : €10 000,00

RESPONS. CIVIL EXPLORAÇÃO — CAPITAL: €1 000 000,00
Franquia: 10,0000% — Percentagem do Valor do Sinistro
Valor mínimo : €100,00 Valor máximo : €10 000,00

COMPANHIA DE SEGUROS TRANQUILIDADE, S.A.

Tomé Pedroso
Administrador

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PRODUTO RESP. CIVIL EMPRESARIAL

APÓLICE	EFEITO	VENC. ANUAL
0002698699	01/03/2011	01/01 *
TERMO	CLIENTE	NATUREZA
*	0900166182	ADICIONAL
FORMA DE PAGAMENTO	DURAÇÃO	
ANUAL	ANO E SEGUINTES	

CONDIÇÕES PARTICULARES DA APÓLICE

* - Às 0.00 Horas do dia indicado

LINHA DE NEGÓCIO : RC PRODUTOS

São aplicáveis as seguintes cláusulas particulares :

Derrogando o disposto nas Condições Gerais aplicáveis, a Tranquilidade só poderá resolver o contrato nos seguintes casos:
a) Falta de pagamento do prémio;
b) Fraude ou tentativa de fraude;
c) Agravamento do risco;
d) Incumprimentos das obrigações contratuais a cargo do Tomador de Seguro / Segurado;
e) Alteração das circunstancias nas quais as partes basearam a celebração do contrato.
f) Após ocorrência de um sinistro;
g) Alteração imposta pelos Resseguradores ao tratado de resseguro.
Em caso de resolução, o prémio a devolver terá em consideração o período de tempo ainda não decorrido, bem como o capital seguro ainda disponível.

OBJECTO SEGURO : PRODUTO

COBERTURAS,CAPITAIS E/OU LIMITES DE INDEMNIZAÇÃO E FRANQUIAS

RESPOS. CIVIL PRODUTOS — CAPITAL: €1 000 000,00
Franquia: 10,0000% — Percentagem do Valor do Sinistro
Valor mínimo : €1 000,00 Valor máximo : €10 000,00

COMPANHIA DE SEGUROS TRANQUILIDADE, S.A.

Tomé Pedroso
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FÁBRICA DE TUBOS PLÁSTICO-METÁLICOS, S.A.
TEL: 234600890 FAX: 234600899
www.grupojsa.com geral@grupojsa.com
3750-753 TRAVASSÔ – ÁGUEDA – PORTUGAL

Fabrico de tubos PEX PPR LEX

Presentation Of The Products

Reticulated Polyethylene Tube

- **Brand:** PEXTUBE;
- **Formats:** Round;
- **Measures:**
  - **Length:** 25 to 600 meters;
  - **Diameters:** 12 to 32 mm (external diameter)
  - **Thickness:** 1,8 to 4 mm;

Applications

- **Sanitary, cold or hot water;**
- **Drinking water lines;**
- **Central heating.**

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Fabrico de tubos PEX PPR LEX

SOME CHARACTERISTICS OF THE PEXTUBE TUBE

1. **DUE TO ITS COMPLETELY SMOOTH INNER SURFACE** – It has a very low loss of charge.

2. **RESISTANT TO CHEMICAL CORROSION** – Both by basic solutions or by acid solutions. Due to its bad electrical conductivity it is also resistant to electrochemical corrosion.

3. **NO NEED FOR CURVES OR CROSS-BINDINGS** – The PEXTUBE tube is a highly flexible product. The tube can be forced through any trajectory without the use of fittings.

4. **CAN BE USED IN SEISMIC AREAS** – Due to the fact that the PEXTUBE tube is completely loose inside the corrugated pipe there is no possibility of rupture in case of oscillation.

5. **EASY TO HANDLE** – The low weight of the tubes along with the fact of not needing fastening points makes its installation really quick.

6. **LOW THERMAL DISSIPATION** – The low thermal conductivity of the PEXTUBE tube allows it to have an excellent insulation and low thermal dissipation.

7. **ELECTRICAL INSULATOR** – The absence of ferrous materials in its chemical composition makes it an electrical insulator.

8. **HYGIENIC MATERIAL** – Can be used in drinking water lines for human consumption, liquid alimentary products, etc.

9. **THERMAL MEMORY** – After having been bent and warmed up again at the softening temperature of about 130° C to 135° C, the tube will reacquire its original shape allowing it to correct, if necessary, previous bends forced on to the tube.

10. **MALLEABLENESS** - The PEXTUBE tube can be curved at cold temperature. The ratio of curvature at 0ºC must be at least 8 times superior to the diameter of the tube, as for normal conditions (20ºC) it must be at least 6 times superior to the diameter of the tube. Curvature ratios inferior to 6 times the diameter of the tube must be made by warming the area to be curved, with a hot air gun, until it becomes semitransparent.

11. **EASY TO REMOVE** – In case of damage, the PEXTUBE tube can be easily removed once it has been installed inside corrugated pipe (2 X ∅ PEX pipe) and the terminals are in shunt boxes.

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Fabrico de tubos PEX PPR LEX

PEXTUBE TUBE USAGE

1. The tube is supplied in individual cardboard boxes and should only be removed from them at the installation site, seeing that the PEXTUBE tube, when exposed to UV radiation, is subjected to precocious aging.
2. The tube can be hand bent, but in the case of a tighter curve hot water can be used to heat up the pipe, if this is impossible you can use a hot air gun. The temperature should reach about 130°C, curve the tube immediately , after making the curve cool it down with cold water.

P.S Never use a flame to warm up the pipe.

3. The transportation should be done in a correct and orderly manner, its storage should be always done away from sunlight.
4. The tubes should always be unwinded in the opposite way they were winded.
5. Due to the fact that the PEXTUBE tube is a 100% plastic material, it dilates a lot with the variation of temperature. Cutting corners should be avoided by using corrugated pipe around the PEX tube.
6. After having completed the assembling procedure, tests should be carried out at ambient temperature at a pressure of 15 bars.
7. Connections should always be made by using compression fittings. Gluing or welding of the PEXTUBE tube is impossible.
8. The bending radius of the corrugated pipe should be of about 6 to 8 times its diameter.
9. The corrugated pipe should have no strangulations, creases or torsions.
10. Due to the fact that the PEXTUBE tube is white, red corrugated pipe should be used to identify hot water lines and blue corrugated pipe for cold water lines.
11. To avoid the inconvenient introduction of strange objects into the PEXTUBE tube the use of tampons on the ends of the tubes is highly recommended.
12. The introduction of the PEX tube into the corrugated pipe should be made with a ferrule.
13. The corrugated pipe should get as less as possible into the shunt box to make the assembly of the fittings as easy as possible.
14. The corrugated pipe should have a bigger ∅ than the one of the PEXTUBE tube (about 2X ∅ PEX tube) in a way that the PEX tube may move freely within the corrugated pipe.
15. The walls of the corrugated pipe should be strong enough to withstand the application of cement. The crushing of the corrugated pipe would not allow the passing through of the PEX tube.

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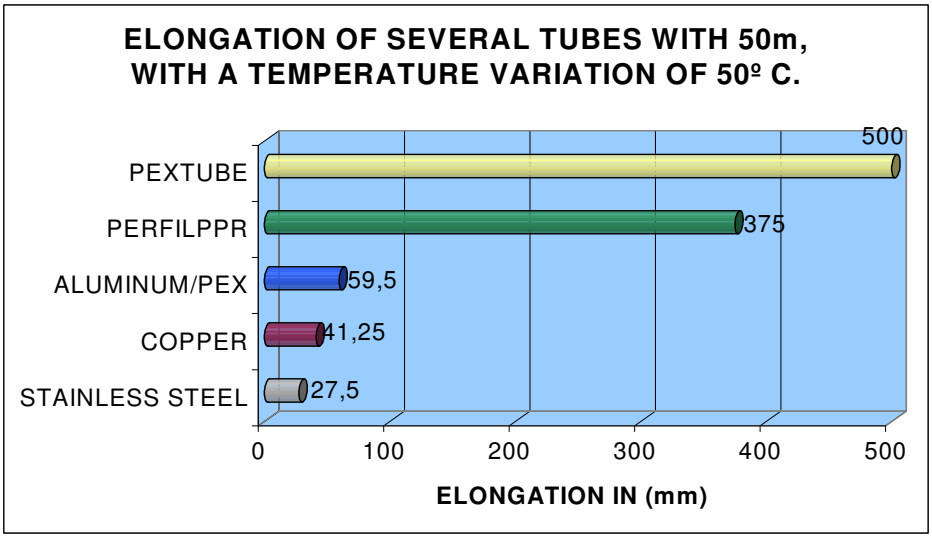
Fabrico de tubos PEX PPR LEX

TECHNICAL DATA

CHART 1

MAXIMUM USAGE TEMPERATURE[1)]	95 ºC	
DENSITY[2)]	0,942 g/cm^3	ASTM D-792
RATE OF THERMAL EXPANSION BETWEEN 0 ºC AND 70 ºC[3)]	1,9 X 10^{-4} K^{-1}	DIN 53752
THERMAL CONDUCTIVITY[3)]	0,41 WK^{-1} m^{-1}	DIN 52612-1
ELASTICITY TO FLEXION MODULE[2)] AT –40 ºC AT – 0 ºC AT – 23 ºC	 498 N/mm^2 312 N/mm^2 183 N/mm^2	DIN EN ISO 178
RESISTANCE TO TRACTION[2)]	20 N/mm^2	ASTM D-538
ELONGATION AT RUPTURE[2)]	400%	ASTM D-538
SUPERFICIAL RESISTIVITY[3)]	> 10 ^{12} Ω	IEC 60093

1) According to norm DIN 16893-2000
2) Type values indicated by the raw material manufacturer
3) Type values indicated by norm DIN 16892-2000



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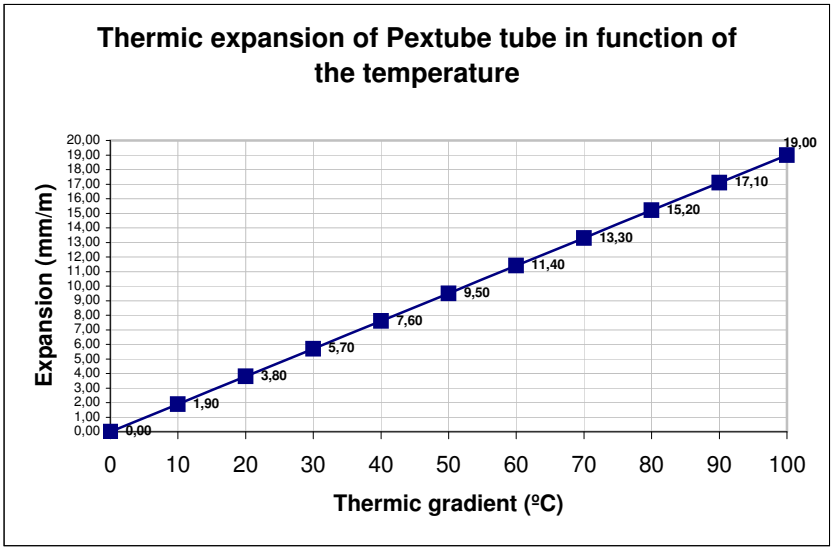
Fabrico de tubos
PEX
PPR
LEX



DURABILITY WHEN SUBJECTED TO DIFFERENT Temperatures/Pressures

W0RKING PRESSURES ALLOWED FOR PE-X TUBES FOR WATER CONDUCTION USING SECURITY FACTOR 1.5[1)]

CHART 2

TEMPERATURE ºC	YEARS OF USE	TUBE SERIES			
		6,3	5	4	3,2
		SDR			
		13,6	11	9	7,4
		WORKING PRESSURE (bar)			
20	10	10,2	12,8	16,2	20,4
	25	10,1	12,7	16,0	20,1
	50	10,0	12,6	15,9	20,0
30	10	9,0	11,4	14,3	18,1
	25	8,9	11,3	14,2	17,9
	50	8,9	11,2	14,1	17,7
40	10	8,0	10,1	12,7	16,1
	25	7,9	10,0	12,6	15,9
	50	7,9	9,9	12,5	15,7
50	10	7,1	9,0	11,3	14,3
	25	7,0	8,9	11,2	14,1
	50	7,0	8,8	11,1	14,0
60	10	6,4	8,0	10,1	12,8
	25	6,3	7,9	10,0	12,6
	50	6,2	7,9	9,9	12,5
70	10	5,7	7,2	9,1	11,4
	25	5,6	7,1	9,0	11,3
	50	5,6	7,0	8,9	11,2
95	1	4,5	5,7	7,1	9,0
	5	4,4	5,5	7,0	8,8

[1)] ACORDING TO DIN 16893-2000

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Fabrico de tubos PEX PPR LEX

PIPE SERIE

The pipe série is a relation between the nominal external diameter and the nominal thickness of the pipe. It is by this relation that the working pressure is defined for the diferent application classes . This information is important in order to be able to interpert the information that is mentioned in the product certificates.

Ø (mm)	Thickness (mm)	Tube Pex Série	Ø (mm)	Thickness (mm)	Tube Pex Série
12	2	2,5	20	1,9	5,0
15	2,5	2,5		2	5,0
16	1,8	4,0		2,8	3,2
	2	4,0	22	3	3,2
	2,2	3,2	25	2,3	5,0
17	2	4,0		3,5	3,2
18	2	4,0	28	4	3,2
	2,5	3,2	32	2,9	5,0

CHART 3
Classification of service conditions (Standard ISO 15875-1: 2003)

Application class	Working temperature T_D (ºC)	Time at T_D (years)	T_{max} (ºC)	Time at T_{max} (years)	T_{mal} (ºC)	Time at T_{mal} (hours)	Typical application field
1	60	49	80	1	95	100	Water distribution (60 ºC)
2	70	49	80	1	95	100	Water distribution (70 ºC)
4	20 | 2,5 Followed by 40 | 20 Followed by 60 | 25 Followed by (see next column)		70	2,5	100	100	Under floor heating and low temperature radiators
5	20 | 14 Followed by 60 | 25 Followed by 80 | 10 Followed by (see next column)		90	1	100	100	High temperature radiators

All systems that satisfy these conditions are adequate for distribution of cold water during 50 years at a temperature of 20 ºC with a working pressure of 10 bar.

Being:

T_D (Working temperature) – Temperature or combination of water temperature depending on the working conditions for which the system was made
T_{max} (Maximum temperature) – maximum temperature for which the system was made, that may occur only for short periods of time.
T_{mal} (Temperature of bad functioning) – highest temperature that may be reached when the control limits are exceeded

PS: To know which is the working pressure for the pipe, you should verify the printing on the pipe and see for the application class you want, which is the applicable pressure. For example, Class 2/8 bar means that if the pipe is applied for distribution of water at 70º C the working pressure is 8 bar.

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CHART 4
Pressure comparison of PEX vs PE-RT

S/Scalc		Pipe	Working Temperature = 60 ºC Maximum Temperature = 80 ºC			Working Temperature = 70 ºC Maximum Temperature = 80 ºC		
			Class 1			Class 2		
			PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)	PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)
S	2,5	12x2,0	10	10	10	10	10	10
Scalc	2,5	15x2,5	10	10	10	10	10	10
S	4	16x1,8	8	8	8	8	6	8
Scalc	3,5	16x2,0	10	8	10	10	6	8
S	3,2	16x2,2	10	10	10	10	8	10
Scalc	3,1	18x2,5	10	10	10	10	8	10
S	5	20x1,9	6	6	6	6	4	6
Scalc	4,5	20x2,0	8	6	6	6	6	6
S	3,2	20x2,8	10	10	10	10	8	10
Scalc	3,2	22x3,0	10	10	10	10	8	10
S	5	25x2,3	6	6	6	6	4	6
S	3,2	25x3,5	10	10	10	10	8	10
Scalc	3	28x4,0	10	10	10	10	8	10
S	5	32x2,9	6	6	6	6	4	6

S/Scalc		Pipe	Working T. = (20 + 40 + 60) ºC Maximum Temperature = 70 ºC			Working T. = (20 + 60 + 80) ºC Maximum Temperature = 90 ºC		
			Class 4			Class 5		
			PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)	PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)
S	2,5	12x2,0	10	10	10	10	8	10
Scalc	2,5	15x2,5	10	10	10	10	8	10
S	4	16x1,8	10	8	8	8	6	6
Scalc	3,5	16x2,0	10	8	8	8	6	8
S	3,2	16x2,2	10	10	10	10	6	8
Scalc	3,1	18x2,5	10	10	10	10	6	8
S	5	20x1,9	8	6	6	6	4	4
Scalc	4,5	20x2,0	8	6	6	6	4	6
S	3,2	20x2,8	10	10	10	10	6	8
Scalc	3,2	22x3,0	10	10	10	10	6	8
S	5	25x2,3	8	6	6	6	4	4
S	3,2	25x3,5	10	10	10	10	6	8
Scalc	3	28x4,0	10	10	10	10	8	8
S	5	32x2,9	8	6	6	6	4	4

Note 1: The PEX pipe is certified according to standard EN ISO 15875.
Nota 2: Which is the difference between PE-RT type I and type II? The PE-RT type II is a 2nd generation PE-RT more resistant and therefore with higher pressures in some series The raw-material we use at the moment and with which we will certify our PE-RT pipe is type II.
Nota 3: LEXTUBE pipe will be certified according to the standard ISO 22391:2009, which already includes the 2 types of PE-RT.

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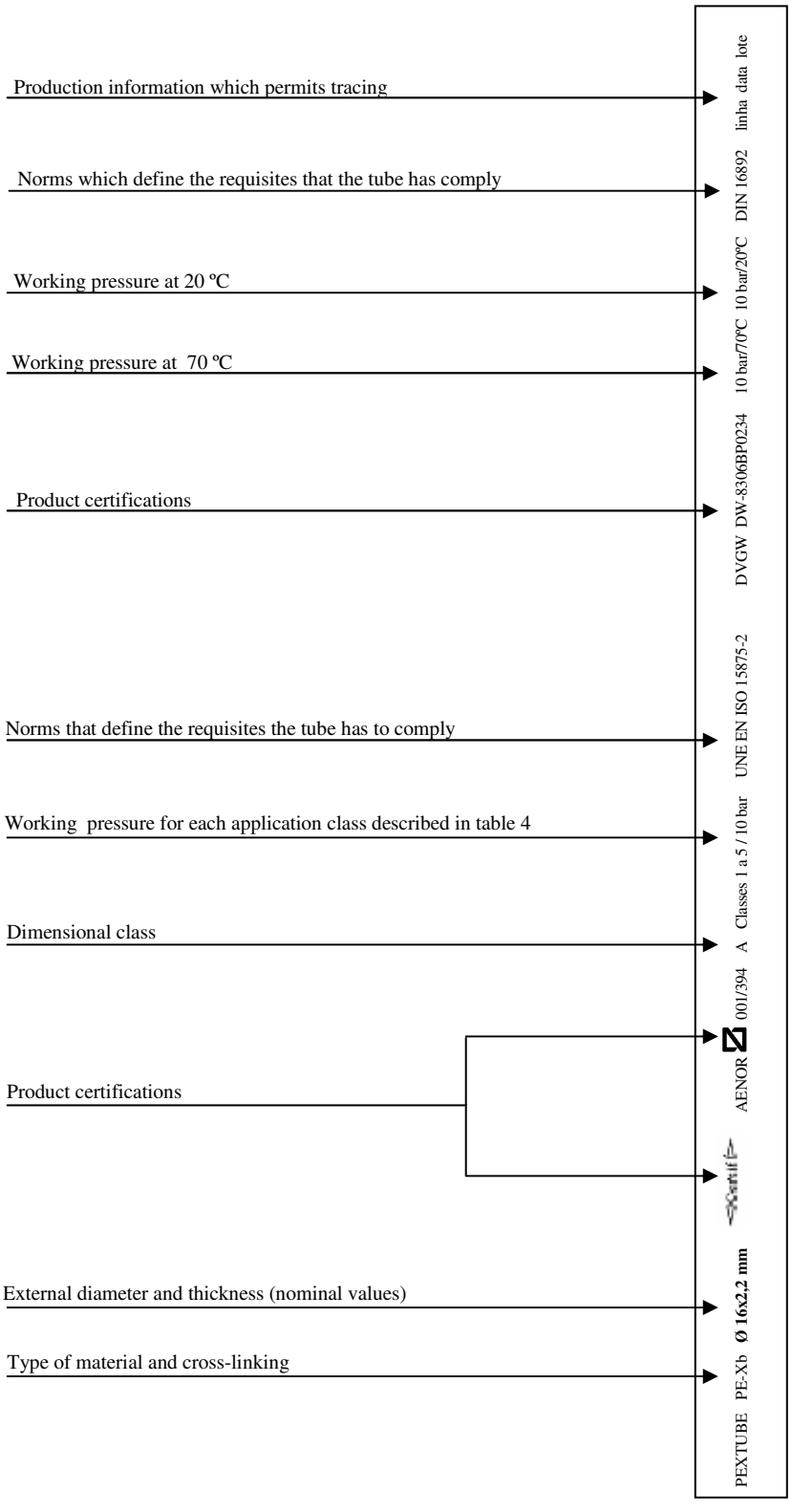
Fabrico de tubos
PEX
PPR
LEX

PRINTING OF PEXTUBE TUBES



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PME líder '12

AENOR ER Empresa Registrada ER - 1634/2/02

Fabrico de tubos
PEX
PPR
LEX

CHARGE LOSS TABLE FOR PEXTUBE PIPE WITH WATER AT 20ºC

TABLE 4

Current (l/s)	12x2,0		16x1,8		16x2,0		16x2,2		20x1,9		20x2,0		20x2,8		25x2,3		25x3,5		32x2,9	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0010343	0,20	0,0001792	0,08	0,0002043	0,09	0,0002340	0,09	0,0000615	0,05	0,0000646	0,05	0,0000985	0,06	0,0000245	0,03	0,0000404	0,04	0,0000090	0,02
0,02	0,0043957	0,40	0,0003584	0,17	0,0004086	0,18	0,0004679	0,19	0,0001230	0,10	0,0001293	0,10	0,0001970	0,12	0,0000489	0,06	0,0000807	0,08	0,0000180	0,04
0,03	0,0087008	0,60	0,0011174	0,25	0,0013024	0,27	0,0015261	0,28	0,0001845	0,15	0,0001939	0,15	0,0005560	0,18	0,0000734	0,09	0,0001211	0,12	0,0000270	0,06
0,04	0,0141908	0,80	0,0018115	0,33	0,0021124	0,35	0,0024764	0,38	0,0005185	0,19	0,0005495	0,20	0,0008993	0,25	0,0000978	0,12	0,0003170	0,16	0,0000360	0,07
0,05	0,0207905	0,99	0,0026424	0,41	0,0030825	0,44	0,0036149	0,47	0,0007541	0,24	0,0007993	0,25	0,0013097	0,31	0,0002565	0,15	0,0004605	0,20	0,0000450	0,09
0,06	0,0284467	1,19	0,0036034	0,50	0,0042047	0,53	0,0049322	0,57	0,0010260	0,29	0,0010876	0,30	0,0017839	0,37	0,0003482	0,18	0,0006259	0,24	0,0001081	0,11
0,07	0,0371186	1,39	0,0046893	0,58	0,0054729	0,62	0,0064212	0,66	0,0013327	0,34	0,0014129	0,35	0,0023191	0,43	0,0004515	0,21	0,0008124	0,28	0,0001399	0,13
0,08	0,0467736	1,59	0,0058958	0,66	0,0068822	0,71	0,0080763	0,76	0,0016731	0,39	0,0017738	0,40	0,0029133	0,49	0,0005661	0,24	0,0010193	0,31	0,0001751	0,15
0,09	0,0573846	1,79	0,0072195	0,75	0,0084286	0,80	0,0098926	0,85	0,0020461	0,44	0,0021695	0,45	0,0035649	0,55	0,0006914	0,28	0,0012458	0,35	0,0002135	0,17
0,1	0,0689289	1,99	0,0086575	0,83	0,0101088	0,88	0,0118661	0,95	0,0024509	0,49	0,0025988	0,50	0,0042723	0,61	0,0008274	0,31	0,0014916	0,39	0,0002552	0,19
0,2	0,2322400	3,98	0,0288835	1,66	0,0337516	1,77	0,0396506	1,89	0,0081233	0,97	0,0086161	0,99	0,0142020	1,23	0,0027257	0,61	0,0049303	0,79	0,0008349	0,37
0,3	0,4756824	5,97	0,0588635	2,48	0,0688119	2,65	0,0808712	2,84	0,0164998	1,46	0,0175036	1,49	0,0288900	1,84	0,0055193	0,92	0,0100005	1,18	0,0016846	0,56
0,4	0,7931673	7,96	0,0978286	3,31	0,1143918	3,54	0,1344745	3,78	0,0273623	1,94	0,0290300	1,99	0,0479564	2,46	0,0091347	1,22	0,0165694	1,57	0,0027816	0,74
0,5	1,1808539	9,95	0,1452952	4,14	0,1699269	4,42	0,1997981	4,73	0,0405740	2,43	0,0430502	2,49	0,0711624	3,07	0,0135257	1,53	0,0245537	1,96	0,0041119	0,93
0,6	1,6359814	11,94	0,2009168	4,97	0,2350125	5,31	0,2763667	5,68	0,0560369	2,91	0,0594603	2,98	0,0983373	3,68	0,0186592	1,84	0,0338939	2,36	0,0056651	1,11
0,7	2,1564184	13,93	0,2644262	5,80	0,3093366	6,19	0,3638141	6,62	0,0736756	3,40	0,0781804	3,48	0,1293494	4,30	0,0245100	2,14	0,0445441	2,75	0,0074336	1,30
0,8	2,7404423	15,92	0,3356079	6,62	0,3926475	7,07	0,4618445	7,57	0,0934293	3,88	0,0991459	3,98	0,1640926	4,91	0,0310575	2,45	0,0564675	3,14	0,0094110	1,48
0,9	3,3866167	17,90	0,4142824	7,45	0,4847352	7,96	0,5702117	8,52	0,1152475	4,37	0,1223033	4,48	0,2024784	5,53	0,0382849	2,75	0,0696333	3,54	0,0115923	1,67
1	4,0937143	19,89	0,5002964	8,28	0,5854210	8,84	0,6887054	9,46	0,1390869	4,85	0,1476067	4,97	0,2444315	6,14	0,0461776	3,06	0,0840154	3,93	0,0139728	1,85
1,2	5,6865372	23,87	0,6938265	9,94	0,8119829	10,61	0,9553635	11,35	0,1926843	5,82	0,2044977	5,97	0,3387853	7,37	0,0639102	3,67	0,1163400	4,72	0,0193171	2,23
1,4	7,5117424	27,85	0,9153050	11,59	1,0712895	12,38	1,2605929	13,25	0,2539703	6,79	0,2695523	6,96	0,4467149	8,60	0,0841711	4,28	0,1532889	5,50	0,0254180	2,60
1,6	9,5635244	31,83	1,1640097	13,25	1,3624968	14,15	1,6034018	15,14	0,3227419	7,76	0,3425553	7,96	0,5678652	9,82	0,1068924	4,90	0,1947389	6,29	0,0322549	2,97
1,8		35,81	1,4393374	14,91	1,6848999	15,92	1,9829623	17,03	0,3988299	8,73	0,4233271	8,95	0,7019400	11,05	0,1320173	5,51	0,2405875	7,07	0,0398104	3,34
2		39,79	1,7407731	16,56	2,0378967	17,68	2,3985668	18,92	0,4820896	9,70	0,5117143	9,95	0,8486863	12,28	0,1594974	6,12	0,2907470	7,86	0,0480697	3,71
2,2		43,77	2,0678684	18,22	2,4209632	19,45	2,8495995	20,82	0,5723954	10,67	0,6075835	10,94	1,0078838	13,51	0,1892909	6,73	0,3451411	8,65	0,0570201	4,08
2,4		47,75	2,4202275	19,87	2,8336368	21,22	3,3355169	22,71	0,6696362	11,64	0,7108172	11,94	1,1793384	14,74	0,2213604	7,34	0,4037027	9,43	0,0666503	4,45
2,6		51,73	2,7974973	21,53	3,2755046	22,99	3,8558335	24,60	0,7737132	12,61	0,8213101	12,93	1,3628767	15,96	0,2556731	7,95	0,4663718	10,22	0,0769501	4,82
2,8		55,70	3,1993591	23,19	3,7461942	24,76	4,4101119	26,49	0,8845371	13,58	0,9389678	13,93	1,5583424	17,19	0,2921990	8,57	0,5330944	11,00	0,0879105	5,19
3		59,68	3,6255235	24,84	4,2453670	26,53	4,9979540	28,39	1,0020268	14,55	1,0637042	14,92	1,7655935	18,42	0,3309111	9,18	0,6038213	11,79	0,0995233	5,56
3,2		63,66	4,0757254	26,50	4,7727132	28,29	5,6189957	30,28	1,1261082	15,52	1,1954405	15,92	1,9845001	19,65	0,3717846	9,79	0,6785075	12,58	0,1117809	5,94
3,4		67,64	4,5497208	28,15	5,3279475	30,06	6,2729017	32,17	1,2567129	16,50	1,3341045	16,91	2,2149423	20,88	0,4147968	10,40	0,7571119	13,36	0,1246764	6,31
3,6		71,62	5,0472838	29,81	5,9108058	31,83	6,9593615	34,06	1,3937778	17,47	1,4796289	17,90	2,4568096	22,10	0,4599266	11,01	0,8395961	14,15	0,1382034	6,68
3,8		75,60	5,5682043	31,47	6,5210425	33,60	7,6780862	35,96	1,5372442	18,44	1,6319516	18,90	2,7099989	23,33	0,5071543	11,63	0,9259245	14,93	0,1523558	7,05
4		79,58	6,1122861	33,12	7,1584281	35,37	8,4288064	37,85	1,6870571	19,41	1,7910142	19,89	2,9744140	24,56	0,5564617	12,24	1,0160640	15,72	0,1671283	7,42
4,2		83,56	6,6793455	34,78	7,8227477	37,14	9,2112693	39,74	1,8431652	20,38	1,9567623	20,89	3,2499650	25,79	0,6078316	12,85	1,1099835	16,50	0,1825155	7,79
4,4		87,54	7,2692095	36,44	8,5137991	38,90		41,63	2,0055203	21,35	2,1291446	21,88	3,5365669	27,02	0,6612479	13,46	1,2076536	17,29	0,1985125	8,16
4,6		91,51	7,8817151	38,09	9,2313918	40,67		43,53	2,1740766	22,32	2,3081128	22,88	3,8341401	28,25	0,7166955	14,07	1,3090469	18,08	0,2151148	8,53
4,8		95,49	8,5167081	39,75	9,9753453	42,44		45,42	2,3487913	23,29	2,4936212	23,87	4,1426088	29,47	0,7741600	14,69	1,4141372	18,86	0,2323180	8,90
5		99,47	9,1740424	41,40		44,21		47,31	2,5296234	24,26	2,6856265	24,87	4,4619017	30,70	0,8336278	15,30	1,5229000	19,65	0,2501180	9,27
5,2		103,45	9,8535790	43,06		45,98		49,20	2,7165341	25,23	2,8840874	25,86	4,7919505	31,93	0,8950860	15,91	1,6353116	20,43	0,2685108	9,65
5,4		107,43		44,72		47,75		51,10	2,9094866	26,20	3,0889650	26,86	5,1326906	33,16	0,9585222	16,52	1,7513499	21,22	0,2874927	10,02
5,6		111,41		46,37		49,51		52,99	3,1084456	27,17	3,3002217	27,85	5,4840601	34,39	1,0239248	17,13	1,8709934	22,01	0,3070601	10,39
5,8		115,39		48,03		51,28		54,88	3,3133775	28,14	3,5178219	28,85	5,8460002	35,61	1,0912825	17,75	1,9942218	22,79	0,3272097	10,76
6		119,37		49,68		53,05		56,77	3,5242502	29,11	3,7417314	29,84	6,2184541	36,84	1,1605847	18,36	2,1210157	23,58	0,3479381	11,13
6,2		123,35		51,34		54,82		58,67	3,7410326	30,08	3,9719175	30,84	6,6013679	38,07	1,2318210	18,97	2,2513564	24,36	0,3692424	11,50
6,4		127,32		53,00		56,59		60,56	3,9636953	31,05	4,2083488	31,83	6,9946895	39,30	1,3049816	19,58	2,3852260	25,15	0,3911194	11,87
6,6		131,30		54,65		58,36		62,45	4,1922096	32,02	4,4509950	32,83	7,3983690	40,53	1,3800570	20,19	2,5226072	25,94	0,4135663	12,24
6,8		135,28		56,31		60,13		64,34	4,4265483	32,99	4,6998270	33,82	7,8123582	41,75	1,4570381	20,80	2,6634834	26,72	0,4365804	12,61
7		139,26		57,96		61,89		66,24	4,6666850	33,96	4,9548168	34,82	8,2366108	42,98	1,5359161	21,42	2,8078388	27,51	0,4601590	12,98
7,2		143,24		59,62		63,66		68,13	4,9125940	34,93	5,2159375	35,81	8,6710821	44,21	1,6166825	22,03	2,9556579	28,29	0,4842994	13,35
7,4		147,22		61,28		65,43		70,02	5,1642509	35,90	5,4831628	36,80	9,1157289	45,44	1,6993292	22,64	3,1069258	29,08	0,5089993	13,73
7,6		151,20		62,93		67,20		71,91	5,4216319	36,87	5,7564676	37,80	9,5705095	46,67	1,7838482	23,25	3,2616281	29,87	0,5342562	14,10
7,8		155,18		64,59		68,97		73,81	5,6847140	37,84	6,0358275	38,79		47,89	1,8702318	23,86	3,4197510	30,65	0,5600679	14,47
8		159,15		66,25		70,74		75,70	5,9534748	38,81	6,3212188	39,79		49,12	1,9584728	24,48	3,5812810	31,44	0,5864320	14,84
8,2		163,13		67,90		72,50		77,59	6,2278929	39,78	6,6126187	40,78		50,35	2,0485639	25,09	3,7462051	32,22	0,6133464	15,21
8,4		167,11		69,56		74,27		79,48	6,5079473	40,75	6,9100048	41,78		51,58	2,1404981	25,70	3,9145105	33,01	0,6408090	15,58
8,6		171,09		71,21		76,04		81,38	6,7936177	41,72	7,2133557	42,77		52,81	2,2342687	26,31	4,0861850	33,80	0,6688177	15,95
8,8		175,07		72,87		77,81		83,27	7,0848843	42,69	7,5226505	43,77		54,03	2,3298691	26,92	4,2612167	34,58	0,6973706	16,32
9		179,05		74,53		79,58		85,16	7,3817279	43,66	7,8378686	44,76		55,26	2,4272929	27,54	4,4395940	35,37	0,7264657	16,69
9,2		183,03		76,18		81,35		87,05	7,6841300	44,63	8,1589905	45,76		56,49	2,5265340	28,15	4,6213056	36,15	0,7561012	17,06
9,4		187,01		77,84		83,11		88,95	7,9920723	45,60	8,4859967	46,75		57,72	2,6275863	28,76	4,8063405	36,94	0,7862751	17,44
9,6		190,99		79,49		84,88		90,84	8,3055371	46,57	8,8188686	47,75		58,95	2,7304440	29,37	4,9946880	37,73	0,8169858	17,81
9,8		194,96		81,15		86,65		92,73	8,6245073	47,55	9,1575878	48,74		60,17	2,8351012	29,98	5,1863378	38,51	0,8482316	18,18
10		198,94		82,81		88,42		94,62	8,9489659	48,52	9,5021365	49,74		61,40	2,9415525	30,59	5,3812797	39,30	0,8800106	18,55

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PME líder '12

AENOR ER Empresa Registrada ER - 1634/2/02

Fabrico de tubos
PEX
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LEX

CHARGE LOSS TABLE FOR PEXTUBE PIPE WITH WATER AT 70 ºC

TABLE 5

Current (l/s)	12x2,0		16x1,8		16x2,0		16x2,2		20x1,9		20x2,0		20x2,8		25x2,3		25x3,5		32x2,9	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0010286	0,20	0,0000729	0,08	0,0001546	0,09	0,0001811	0,09	0,0000250	0,05	0,0000263	0,05	0,0000401	0,06	0,0000100	0,03	0,0000164	0,04	0,0000037	0,02
0,02	0,0033426	0,40	0,0004250	0,17	0,0004957	0,18	0,0005813	0,19	0,0001213	0,10	0,0001286	0,10	0,0002107	0,12	0,0000413	0,06	0,0000741	0,08	0,0000073	0,04
0,03	0,0067227	0,60	0,0008485	0,25	0,0009904	0,27	0,0011621	0,28	0,0002410	0,15	0,0002555	0,15	0,0004195	0,18	0,0000816	0,09	0,0001469	0,12	0,0000253	0,06
0,04	0,0110773	0,80	0,0013917	0,33	0,0016249	0,35	0,0019074	0,38	0,0003941	0,19	0,0004178	0,20	0,0006868	0,25	0,0001330	0,12	0,0002398	0,16	0,0000410	0,07
0,05	0,0163495	0,99	0,0020471	0,41	0,0023909	0,44	0,0028072	0,47	0,0005783	0,24	0,0006133	0,25	0,0010091	0,31	0,0001949	0,15	0,0003517	0,20	0,0000600	0,09
0,06	0,0224985	1,19	0,0028097	0,50	0,0032822	0,53	0,0038545	0,57	0,0007924	0,29	0,0008403	0,30	0,0013836	0,37	0,0002665	0,18	0,0004815	0,24	0,0000819	0,11
0,07	0,0294934	1,39	0,0036754	0,58	0,0042942	0,62	0,0050439	0,66	0,0010351	0,34	0,0010978	0,35	0,0018085	0,43	0,0003477	0,21	0,0006286	0,28	0,0001067	0,13
0,08	0,0373088	1,59	0,0046411	0,66	0,0054232	0,71	0,0063710	0,76	0,0013055	0,39	0,0013847	0,40	0,0022822	0,49	0,0004381	0,24	0,0007924	0,31	0,0001342	0,15
0,09	0,0459241	1,79	0,0057041	0,75	0,0066662	0,80	0,0078321	0,85	0,0016029	0,44	0,0017002	0,45	0,0028034	0,55	0,0005374	0,28	0,0009725	0,35	0,0001645	0,17
0,1	0,0553215	1,99	0,0068623	0,83	0,0080206	0,88	0,0094243	0,95	0,0019266	0,49	0,0020437	0,50	0,0033710	0,61	0,0006454	0,31	0,0011685	0,39	0,0001973	0,19
0,2	0,1896263	3,98	0,0233363	1,66	0,0272921	1,77	0,0320892	1,89	0,0065175	0,97	0,0069152	0,99	0,0114303	1,23	0,0021729	0,61	0,0039443	0,79	0,0006606	0,37
0,3	0,3918583	5,97	0,0480265	2,48	0,0561856	2,65	0,0660831	2,84	0,0133769	1,46	0,0141950	1,49	0,0234888	1,84	0,0044488	0,92	0,0080865	1,18	0,0013488	0,56
0,4	0,6572196	7,96	0,0803318	3,31	0,0939990	3,54	0,1105817	3,78	0,0223352	1,94	0,0237033	1,99	0,0392502	2,46	0,0074161	1,22	0,0134922	1,57	0,0022443	0,74
0,5	0,9826628	9,95	0,1198718	4,14	0,1402879	4,42	0,1650628	4,73	0,0332854	2,43	0,0353263	2,49	0,0585272	3,07	0,0110388	1,53	0,0200961	1,96	0,0033361	0,93
0,6	1,3659871	11,94	0,1663722	4,97	0,1947317	5,31	0,2291501	5,68	0,0461501	2,91	0,0489823	2,98	0,0811851	3,68	0,0152911	1,84	0,0278516	2,36	0,0046162	1,11
0,7	1,8054876	13,93	0,2196210	5,80	0,2570827	6,19	0,3025524	6,62	0,0608700	3,40	0,0646080	3,48	0,1071196	4,30	0,0201530	2,14	0,0367224	2,75	0,0060787	1,30
0,8	2,2997826	15,92	0,2794465	6,62	0,3271403	7,07	0,3850340	7,57	0,0773967	3,88	0,0821525	3,98	0,1362463	4,91	0,0256084	2,45	0,0466794	3,14	0,0077186	1,48
0,9	2,8477169	17,90	0,3457053	7,45	0,4047369	7,96	0,4763980	8,52	0,0956902	4,37	0,1015729	4,48	0,1684950	5,53	0,0316439	2,75	0,0576983	3,54	0,0095318	1,67
1	3,4483019	19,89	0,4182750	8,28	0,4897293	8,84	0,5764761	9,46	0,1157159	4,85	0,1228328	4,97	0,2038054	6,14	0,0382479	3,06	0,0697581	3,93	0,0115148	1,85
1,2	4,8040794	23,87	0,5819326	9,94	0,6814171	10,61	0,8022056	11,35	0,1608484	5,82	0,1707484	5,97	0,2834081	7,37	0,0531228	3,67	0,0969305	4,72	0,0159783	2,23
1,4	6,3613169	27,85	0,7697019	11,59	0,9013649	12,38	1,0612365	13,25	0,2125933	6,79	0,2256859	6,96	0,3747027	8,60	0,0701660	4,28	0,1280748	5,50	0,0210887	2,60
1,6	8,1153067	31,83	0,9810010	13,25	1,1488926	14,15	1,3527693	15,14	0,2707878	7,76	0,2874728	7,96	0,4774037	9,82	0,0893233	4,90	0,1630926	6,29	0,0268296	2,97
1,8		35,81	1,2153432	14,91	1,4234309	15,92	1,6761348	17,03	0,3352959	8,73	0,3559646	8,95	0,5912726	11,05	0,1105493	5,51	0,2019014	7,07	0,0331871	3,34
2		39,79	1,4723116	16,56	1,7244925	17,68	2,0307601	18,92	0,4060010	9,70	0,4310377	9,95	0,7161052	12,28	0,1338051	6,12	0,2444307	7,86	0,0401493	3,71
2,2		43,77	1,7515429	18,22	2,0516524	19,45	2,4161457	20,82	0,4828017	10,67	0,5125845	10,94	0,8517235	13,51	0,1590568	6,73	0,2906192	8,65	0,0477061	4,08
2,4		47,75	2,0527162	19,87	2,4045353	21,22	2,8318502	22,71	0,5656083	11,64	0,6005099	11,94	0,9979702	14,74	0,1862748	7,34	0,3404126	9,43	0,0558485	4,45
2,6		51,73	2,3755444	21,53	2,7828054	22,99	3,2774787	24,60	0,6543408	12,61	0,6947289	12,93	1,1547048	15,96	0,2154322	7,95	0,3937625	10,22	0,0645681	4,82
2,8		55,70	2,7197681	23,19	3,1861594	24,76	3,7526747	26,49	0,7489268	13,58	0,7951646	13,93	1,3218004	17,19	0,2465050	8,57	0,4506251	11,00	0,0738579	5,19
3		59,68	3,0851517	24,84	3,6143216	26,53	4,2571140	28,39	0,8493005	14,55	0,9017474	14,92	1,4991415	18,42	0,2794713	9,18	0,5109607	11,79	0,0837112	5,56
3,2		63,66	3,4714790	26,50	4,0670393	28,29	4,7904992	30,28	0,9554018	15,52	1,0144133	15,92	1,6866225	19,65	0,3143112	9,79	0,5747329	12,58	0,0941218	5,94
3,4		67,64	3,8785509	28,15	4,5440793	30,06	5,3525565	32,17	1,0671751	16,50	1,1331035	16,91	1,8841459	20,88	0,3510060	10,40	0,6419079	13,36	0,1050842	6,31
3,6		71,62	4,3061829	29,81	5,0452260	31,83	5,9430319	34,06	1,1845689	17,47	1,2577632	17,90	2,0916213	22,10	0,3895387	11,01	0,7124549	14,15	0,1165932	6,68
3,8		75,60	4,7542031	31,47	5,5702784	33,60	6,5616892	35,96	1,3075355	18,44	1,3883419	18,90	2,3089648	23,33	0,4298935	11,63	0,7863449	14,93	0,1286440	7,05
4		79,58	5,2224511	33,12	6,1190487	35,37	7,2083077	37,85	1,4360301	19,41	1,5247919	19,89	2,5360979	24,56	0,4720554	12,24	0,8635507	15,72	0,1412321	7,42
4,2		83,56	5,7107764	34,78	6,6913609	37,14	7,8826800	39,74	1,5700108	20,38	1,6670689	20,89	2,7729469	25,79	0,5160105	12,85	0,9440472	16,50	0,1543532	7,79
4,4		87,54	6,2190374	36,44	7,2870492	38,90	8,5846115	41,63	1,7094381	21,35	1,8151310	21,88	3,0194426	27,02	0,5617458	13,46	1,0278105	17,29	0,1680035	8,16
4,6		91,51	6,7471003	38,09	7,9059572	40,67	9,3139180	43,53	1,8542749	22,32	1,9689388	22,88	3,2755196	28,25	0,6092488	14,07	1,1148181	18,08	0,1821791	8,53
4,8		95,49	7,2948386	39,75	8,5479370	42,44		45,42	2,0044860	23,29	2,1284547	23,87	3,5411162	29,47	0,6585078	14,69	1,2050487	18,86	0,1968765	8,90
5		99,47	7,8621325	41,40	9,2128482	44,21		47,31	2,1600380	24,26	2,2936435	24,87	3,8161735	30,70	0,7095118	15,30	1,2984821	19,65	0,2120924	9,27
5,2		103,45	8,4488678	43,06	9,9005573	45,98		49,20	2,3208991	25,23	2,4644714	25,86	4,1006359	31,93	0,7622503	15,91	1,3950992	20,43	0,2278236	9,65
5,4		107,43	9,0549358	44,72		47,75		51,10	2,4870391	26,20	2,6409064	26,86	4,3944503	33,16	0,8167131	16,52	1,4948818	21,22	0,2440670	10,02
5,6		111,41	9,6802329	46,37		49,51		52,99	2,6584291	27,17	2,8229179	27,85	4,6975660	34,39	0,8728908	17,13	1,5978123	22,01	0,2608198	10,39
5,8		115,39		48,03		51,28		54,88	2,8350416	28,14	3,0104765	28,85	5,0099345	35,61	0,9307741	17,75	1,7038742	22,79	0,2780792	10,76
6		119,37		49,68		53,05		56,77	3,0168503	29,11	3,2035543	29,84	5,3315093	36,84	0,9903544	18,36	1,8130515	23,58	0,2958425	11,13
6,2		123,35		51,34		54,82		58,67	3,2038296	30,08	3,4021244	30,84	5,6622462	38,07	1,0516231	18,97	1,9253288	24,36	0,3141071	11,50
6,4		127,32		53,00		56,59		60,56	3,3959555	31,05	3,6061609	31,83	6,0021021	39,30	1,1145723	19,58	2,0406916	25,15	0,3328708	11,87
6,6		131,30		54,65		58,36		62,45	3,5932043	32,02	3,8156391	32,83	6,3510362	40,53	1,1791941	20,19	2,1591257	25,94	0,3521310	12,24
6,8		135,28		56,31		60,13		64,34	3,7955537	32,99	4,0305351	33,82	6,7090088	41,75	1,2454811	20,80	2,2806174	26,72	0,3718856	12,61
7		139,26		57,96		61,89		66,24	4,0029820	33,96	4,2508259	34,82	7,0759817	42,98	1,3134262	21,42	2,4051538	27,51	0,3921324	12,98
7,2		143,24		59,62		63,66		68,13	4,2154682	34,93	4,4764891	35,81	7,4519181	44,21	1,3830222	22,03	2,5327221	28,29	0,4128692	13,35
7,4		147,22		61,28		65,43		70,02	4,4329920	35,90	4,7075034	36,80	7,8367825	45,44	1,4542627	22,64	2,6633101	29,08	0,4340941	13,73
7,6		151,20		62,93		67,20		71,91	4,6555339	36,87	4,9438480	37,80	8,2305405	46,67	1,5271410	23,25	2,7969060	29,87	0,4558051	14,10
7,8		155,18		64,59		68,97		73,81	4,8830751	37,84	5,1855028	38,79	8,6331588	47,89	1,6016509	23,86	2,9334984	30,65	0,4780003	14,47
8		159,15		66,25		70,74		75,70	5,1155970	38,81	5,4324483	39,79	9,0446052	49,12	1,6777863	24,48	3,0730763	31,44	0,5006778	14,84
8,2		163,13		67,90		72,50		77,59	5,3530821	39,78	5,6846657	40,78	9,4648484	50,35	1,7555413	25,09	3,2156288	32,22	0,5238360	15,21
8,4		167,11		69,56		74,27		79,48	5,5955129	40,75	5,9421366	41,78	9,8938581	51,58	1,8349102	25,70	3,3611456	33,01	0,5474729	15,58
8,6		171,09		71,21		76,04		81,38	5,8428729	41,72	6,2048434	42,77		52,81	1,9158874	26,31	3,5096166	33,80	0,5715871	15,95
8,8		175,07		72,87		77,81		83,27	6,0951456	42,69	6,4727686	43,77		54,03	1,9984676	26,92	3,6610319	34,58	0,5961768	16,32
9		179,05		74,53		79,58		85,16	6,3523153	43,66	6,7458956	44,76		55,26	2,0826455	27,54	3,8153821	35,37	0,6212405	16,69
9,2		183,03		76,18		81,35		87,05	6,6143666	44,63	7,0242080	45,76		56,49	2,1684160	28,15	3,9726577	36,15	0,6467766	17,06
9,4		187,01		77,84		83,11		88,95	6,8812846	45,60	7,3076899	46,75		57,72	2,2557741	28,76	4,1328498	36,94	0,6727836	17,44
9,6		190,99		79,49		84,88		90,84	7,1530545	46,57	7,5963258	47,75		58,95	2,3447150	29,37	4,2959495	37,73	0,6992601	17,81
9,8		194,96		81,15		86,65		92,73	7,4296623	47,55	7,8901006	48,74		60,17	2,4352340	29,98	4,4619484	38,51	0,7262047	18,18
10		198,94		82,81		88,42		94,62	7,7110939	48,52	8,1889996	49,74		61,40	2,5273266	30,59	4,6308379	39,30	0,7536159	18,55

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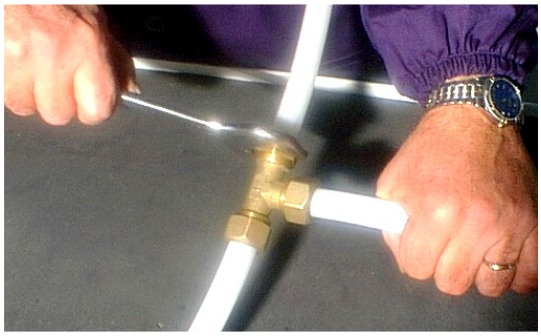
Fabrico de tubos
PEX
PPR
LEX

ASSEMBLY INSTRUCTIONS OF A 'T'

	1- CUT THE TUBE AS PERPENDICULAR AS POSSIBLE IN RELATION TO THE AXIS.
	2- INSERTS THE NUT, FOLLOWED BY THE RING AND FINALLY BY THE FITTING. THE TUBE MUST BE COMPLETELY PRESSED AGAINST THE FITTING.
	3- DRAW THE RING AND THE NUT NEAR TO THE FITTING. TIGHTEN THE NUT AS FAR AS POSSIBLE. WITH THE HELP OF A WRENCH GIVE IT A FINAL SQUEEZE UNTIL THE TUBE SHOWS A SLIGHT DEFORMATION.

ASSEMBLY OF A COLLECTOR WITH AN ADAPTER

	THE ASSEMBLY PROCESS IS EXACTLY THE SAME AS THE PREVIOUS ONE. THE ONLY DIFFERENCE WILL BE THE INSERTION OF AN ADAPTER WHICH WILL HAVE TO BE CAREFULLY INSERTED IN A WAY THAT THE TUBE WILL BE PERFECTELY PRESSED AGAINST THE ADAPTER-COLLAR.

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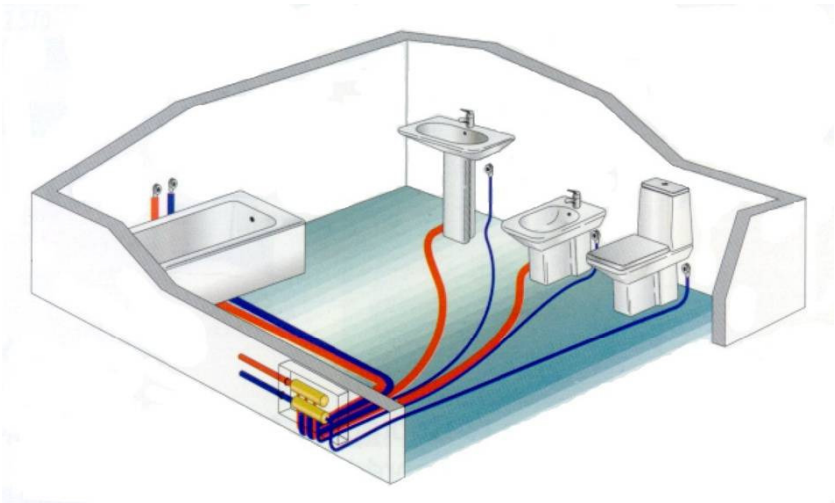
Fabrico de tubos
PEX
PPR
LEX

PEXTUBE TUBE

DESIGNATION	CODE	DIMENSION	PACKAGE / MT.
TUBE PEXTUBE (COIL) 	4100031502012	∅ 12x2,0	100
	4100031502515	∅ 15x2,5	100
	4110031502515500	∅ 15x2,5	500
	4100031501816	∅ 16x1,8	100
	4110031501816120	∅ 16x1,8	120
	4110031501816200	∅ 16x1,8	200
	4100031502016	∅ 16x2,0	100
	4100031502216	∅ 16x2,2	100
	4100031501920	∅ 20x1,9	100
	4110031501920200	∅ 20x1,9	200
	4100031502020	∅ 20x2,0	100
	4100031502820	∅ 20x2,8	100
	4100031502325	∅ 25x2,3	50
	4110031502325100	∅ 25x2,3	100
	4100031503525	∅ 25x3,5	50
	4110031502932025	∅ 32x2,9	25
	4110031502932050	∅ 32x2,9	50
	5 meter lengths		
	4100051502012	∅ 12x2,0	150
	4100051501816	∅ 16x1,8	150
	4100051501920	∅ 20x1,9	150
	4100051502325	∅ 25x2,3	100
	4100051502932	∅ 32x2,9	50



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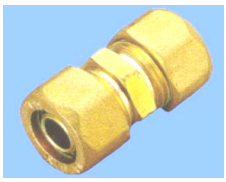
Fabrico de tubos
PEX
PPR
LEX

PEXTUBE COMPRESSION FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
STRAIGHT COUPLING MALE 	**PT**	172006120320	12x1/2"x2,0	10
		172006160320	16x1/2"x2,0	10
		172006160322	16x1/2"x2,2	10
		172006160520	16x3/4"x2,0	5
		172006160522	16x3/4"x2,2	5
		172006200320	20x1/2"x2,0	5
		172006200328	20x1/2"x2,8	5
		172006200520	20x3/4"x2,0	5
		172006200528	20x3/4"x2,8	5
		172006250523	25x3/4"x2,3	1
		172006250535	25x3/4"x3,5	1
		172006250623	25x1"x2,3	1
		172006250635	25x1"x3,5	1
		172006250630	32x1"x3,0	1
SOCKET 	**PT**	1720101220	12x2,0	10
		1720101620	16x2,0	10
		1720101622	16x2,2	10
		1720102020	20x2,0	5
		1720102028	20x2,8	5
		1720102523	25x2,3	10
STRAIGHT COUPLING FEMALE 	**PT**	172008120320	12x1/2"x2,0	10
		172008160320	16x1/2"x2,0	10
		172008160322	16x1/2"x2,2	10
		172008160520	16x3/4"x2,0	5
		172008160522	16x3/4"x2,2	5
		172008200320	20x1/2"x2,0	10
		172008200328	20x1/2"x2,8	10
		172008200520	20x3/4"x2,0	5
		172008200528	20x3/4"x2,8	5
		172008250523	25x3/4"x2,3	1
		172008250535	25x3/4"x3,5	1
		172008250623	25x1"x2,3	1
		172008320630	32x1"x3,0	1
ELBOW 	**PT**	1720181220	12x2,0	10
		1720181620	16x2,0	10
		1720181622	16X2,2	10
		1720182020	20X2,0	5
		1720182028	20x2,8	10
		1720182523	25X2,3	1

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Fabrico de tubos PEX PPR LEX

PEXTUBE COMPRESSION FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
ELBOW MALE 	PT	172021120320	12x1/2"x2,0	10
		172021160320	16x1/2"x2,0	10
		172021160322	16x1/2"x2,2	10
		172021160520	16x3/4"x2,0	10
		172021160522	16x3/4"x2,2	10
		172021200320	20x1/2"x2,0	10
		172021200328	20x1/2"x2,8	10
		172021200520	20x3/4"x2,0	5
		172021200528	20x3/4"x2,8	5
		172021250523	25x3/4"x2,3	10
		172021250623	25x1"x2,3	10
ELBOW FEMALE 	PT	172022120320	12x1/2"x2,0	10
		172022160320	16x1/2"x2,0	10
		172022160322	16x1/2"x2,2	10
		172022160520	16x3/4"x2,0	10
		172022160522	16x3/4"x2,2	10
		172022200320	20x1/2"x2,0	5
		172022200328	20x1/2"x2,8	10
		172022200520	20x3/4"x2,0	10
		172022200528	20x3/4"x2,8	5
		172022250523	25x3/4"x2,3	10
		172022250535	25x3/4"x3,5	10
		172022250623	25x1"x2,3	10
WALL-PLATE ELBOW 	PT	172023120320	12x1/2"x2,0	10
		172023160320	16x1/2"x2,0	10
TEE 	PT	1720301220	12x2,0	10
		1720301620	16x2,0	10
		1720301622	16x2,2	10
		1720302020	20x2,0	5
		1720302028	20x2,8	5
		1720302523	25x2,3	5
CENTRE THREADED TEE MALE 	PT	172033120320	12x1/2"x2,0	10
		172033160320	16x1/2"x2,0	10
		172033160322	16x1/2"x2,2	10
		172033160520	16x3/4"x2,0	10
		172033160522	16x3/4"x2,2	10
		172033200520	20x3/4"x2,0	1
		172033200528	20x3/4"x2,8	1
		172033200523	25x3/4"x2,3	10
		172033200623	25x1x"2,3	5

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PME líder'12 · EMPRESA CERTIFICADA apcer ISO 9001 · AENOR ER Empresa Registrada ER - 1634/2/02 · Fabrico de tubos PEX PPR LEX

PEXTUBE COMPRESSION FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
CENTRE THREADED TEE FEMALE 	**PT**	172032120320	12x1/2"x2,0	10
		172032160320	16x1/2"x2,0	10
		172032160322	16x1/2"x2,2	10
		172032160522	16x3/4"x2,2	10
		172032200320	20x1/2"x2,0	10
		172032200520	20x3/4"x2,0	1
		172032200528	20x3/4"x2,8	10
		172032250523	25x3/4"x2,3	1
		172032250535	25x3/4"x3,5	1
		172032250623	25x1"x2,3	5
RING 	**PT**	17203812	12	10
		17203816	16	10
		17203820	20	10
		17203825	25	10
ELBOW 105º PE X FI 	**PT**	172041120320	12x1/2"x2,0	10
		172041160320	16x1/2"x2,0	10
		172041160322	16x1/2"x2,2	10
		172041200320	20x1/2"x2,0	10
		172041200328	20x1/2"x2,8	10
		172041250323	25x1/2"x2,3	5
MANIFOLD - 2 WAYS WIHTOUT ADAPTOR 	**PT**	17204605	3/4"	1
MANIFOLD - 3 WAYS WIHTOUT ADAPTOR 	**PT**	17204705	3/4"	1
MANIFOLD - 4 WAYS WIHTOUT ADAPTOR 	**PT**	17204805	3/4"	1

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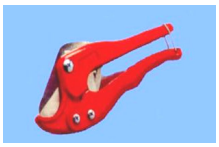
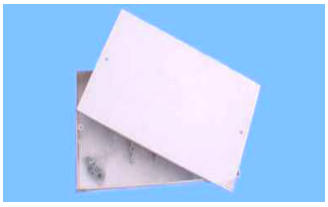
PME líder '12

Fabrico de tubos
PEX
PPR
LEX

PEXTUBE COMPRESSION FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
MANIFOLD ADAPTOR 	**PT**	1720491220	12x2,0	10
		1720491620	16x2,0	10
		1720491622	16x2,2	10
PLASTIC TERMINAL 		412051153	12-16	1
		412051156	20	1
CUTTING NIPPERS 		412069	UNIQUE	1
MANIFOLD PLASTIC BOX 		4120543028	30x28	17
		4120544528	45x28	12
		4120533028	30x28 (c/rede)	1
		4120534528	45x28 (c/rede)	1
WATER METER BOX 		412055500400	500x400	1
		412055600400	600x400	1

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Fabrico de tubos
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PRESS FITTINGS FOR PEXTUBE

DESIGNATION	CODE	DIMENSION	PACKAGE
FIXED FITTING MALE 	173006160318	16x1/2"x1,8	10
	173006160518	16x3/4"x1,8	10
	173006200319	20x1/2"x1,9	10
	173006200519	20x3/4"x1,9	10
	173006250323	25x1/2"x2,3	5
	173006250523	25x3/4"x2,3	5
	173006320629	32x1"x2,9	5
FIXED FITTING FEMALE 	173008160318	16x1/2"x1,8	10
	173008200319	20x1/2"x1,9	10
	173008200519	20x3/4"x1,9	10
	173008250523	25x3/4"x2,3	5
	173008250623	25x1"x2,3	5
	173008250623	32x1"x2,3	5
FEMALE SWIIVEL FITTING 	17300816031801	16x1/2"x1,8	10
	17300816051801	16x3/4"x1,8	10
	17300820031901	20x1/2"x1,9	10
	17300820051901	20x3/4"x1,9	5
	17300825052301	25x3/4"x2,3	5
	17300825062301	25x1"x2,3	5
	17300832062901	32x1"x2,9	5
EQUAL UNION 	1730101618	16x1,8	10
	1730102019	20x1,9	10
	1730102523	25x2,3	5
	1730103229	32x2,9	5
SHUT OFF VALVE 	17332416	16	1
	17332420	20	1
	17332425	25	1

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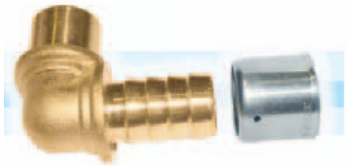
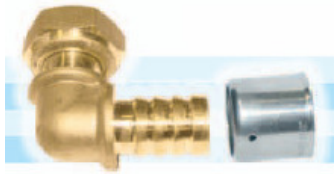
PRESS FITTINGS FOR PEXTUBE

DESIGNATION	CODE	DIMENSION	PACKAGE
REDUCING UNION 	1730132016	20x16	10
	1730132516	25x16	10
	1730132520	25x20	5
	1730133225	32x25	5
PER COPPER ELBOW 	17301816121502	16-12/15	10
	173018201802	20-18	5
	173018252202	25-22	5
ELBOW 	1730181618	16x1,8	10
	1730182019	20X1,9	10
	1730182523	25X2,3	5
	1730183229	32x2,9	5
END MALE ELBOW 	173021160318	16x1/2"x1,8	10
	173021200319	20x1/2"x1,9	5
	173021250523	25x3/4"x2,3	5
FEMALE SWIVEL ELBOW 	17302116031801	16x1/2"x1,8	10
	17302120031901	20x1/2"x1,9	5
	17302120051901	20x3/4"x1,9	5
	17302125052301	25x3/4"x2,3	5
END FEMALE ELBOW 	173022160318	16x1/2"x1,8	10
	173022200319	20x1/2"x1,9	5
	173022200519	20x3/4"x1,9	5
	173022250523	25x3/4"x2,3	5
	173022320629	32x1"x2,9	5

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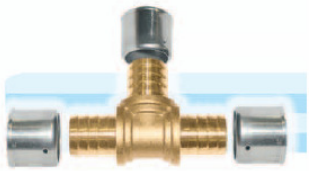
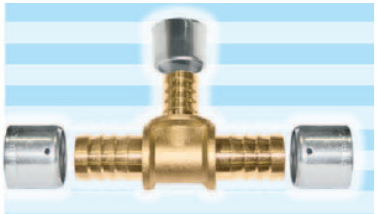
PRESS FITTINGS FOR PEXTUBE

DESIGNATION	CODE	DIMENSION	PACKAGE
DROP EAR FEMALE ELBOW 	173023160318	16x1/2"x1,8	5
	173023200319	20x1/2"x1,9	5
	173023250523	25x3/4"x2,3	5
HIGH ELBOW WITH FIXING BASE 	17302316031803	16x1/2"x1,8	5
	17302320031903	20x1/2"x1,9	5
EQUAL T 	1730301618	16x1,8	5
	1730302019	20x1,9	5
	1730302523	25x2,3	5
	1730303229	32x2,9	5
REDUCED T 	173031162016	16x20x16	5
	173031162516	16x25x16	5
	173031201616	20x16x16	5
	173031201620	20x16x20	5
	173031251620	25x16x20	5
	173031251625	25x16x25	5
	173031252020	25x20x20	5
	173031252520	25x25x20	5
	173031253225	25x32x25	5
	173031322525	32x25x25	5
	173031323225	32x32x25	5
FEMALE END T 	173032160318	16x1/2"x1,8	5
	173032200319	20x1/2"x1,9	5
	173032250523	25x3/4"x2,3	5
	173032320629	32x1"x2,9	5

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PRESS FITTINGS FOR PEXTUBE

DESIGNATION	CODE	DIMENSION	PACKAGE
MALE END T 	173033160318	16x1/2"x1,8	5
	173033200319	20x1/2"x1,9	5
	173033250523	25x3/4"x2,3	5
CROSS 	17303520162016	20x16x20x16	5
	17303520201616	20x20x16x16	5
	17303525162016	25x16x20x16	5
	17303525201616	25x20x16x16	5
	17303525202020	25x20x20x20	5
COPPER PIPE ADAPTER 	173049161215	16-12/15	10
	173049201518	20-15/18	10
SHORT EXTRACTABLE ELBOW 	173050160318	16x1/2"x1,8	4
	173050200319	20x1/2"x1,9	4
MANIFOLD 	17330620201616	20-20-16-16	2
	1733062020161616	20-20-16-16-16	2
	17330625201616	25-20-16-16	2
	1733062520161616	25-20-16-16-16	2

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Fabrico de tubos
PEX
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PIPE IN PIPE



PIPE IN PIPE COMPOSED BY:

- ❖ PE-Xb PIPE (with and without EVOH barrier) / PE-RT (with and without EVOH barrier) + CORRUGATED PIPE
- ❖ PE-Xb PIPE (with and without EVOH barrier) / PE-RT (with and without EVOH barrier) + CORRUGATED PIPE + FOAM PIPE

* STANDARD COLOURS:
  - PE-Xb PIPE (with and without EVOH barrier) / PE-RT PIPE (with and without EVOH barrier) – NATURAL
  - CORRUGATED PIPE – RED / BLUE / BLACK
  - FOAM PIPE:
    - UNCOATED – GREY
    - COATED – BLACK / WHITE / BLUE / RED

* DIMENSIONS, COIL/LENGTHS AND COLOURS, ACCORDING TO CLIENTS REQUIREMENTS

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Fabrico de tubos PEX PPR LEX

Presentation of the products

Cross linked Polyethylene Tube

With Oxygen Barrier

- **Brand:** DOUBLEPEX;
- **Formats:** Round;
- **Measures:**
  - **Length:** 50 to 600 metros;
  - **Diameters:** 12 to 32 mm (external diameter);
  - **Thickness:** 2 to 3,5 mm;

Applications

- **Sanitary, cold or hot water;**
- **Drinking water lines;**
- **Central heating – Floor Heating.**

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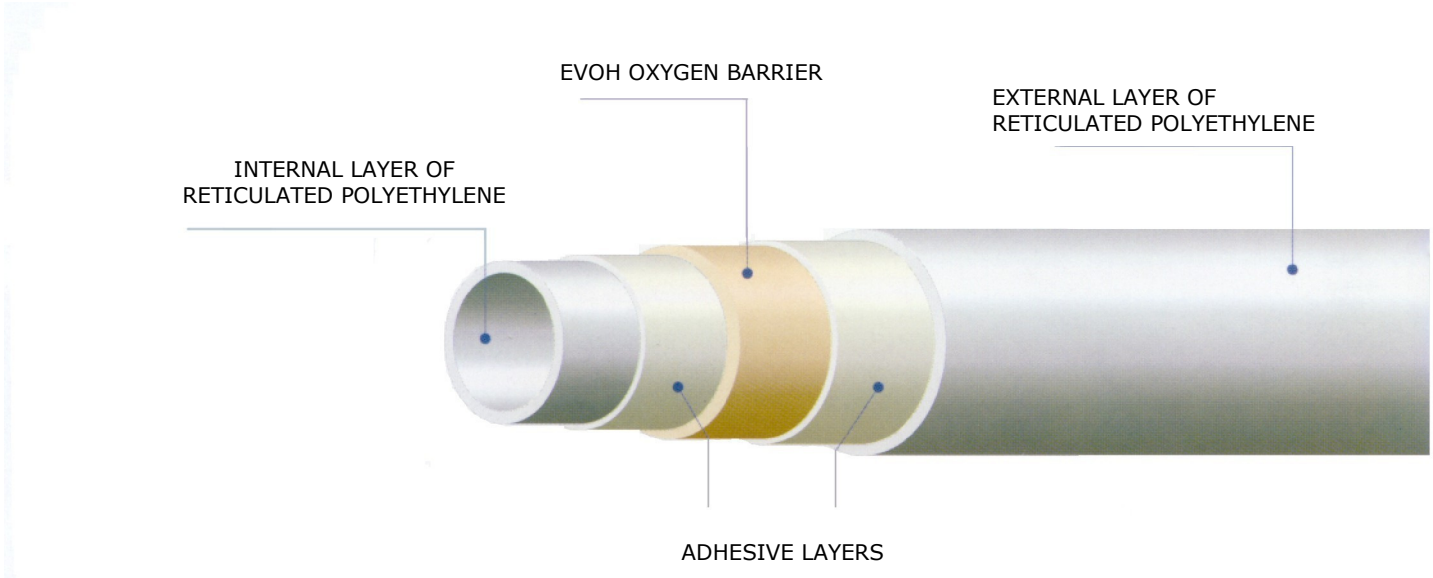
DOUBLEPEX REDUCES UP TO 55 000 TIMES THE OXYGEN WITHIN THE SYSTEM, DUE TO 5 OVERLAPPED LAYERS.

It has similar characteristics to the Pextube tube, plus the advantages resulting from the internal barrier of EVOH. This barrier, when reducing significantly the diffusion of oxygen through the tube walls, will permit that the fittings used in these installations have a bigger durability. When reducing the volume of oxygen present in the water we will also reduce the corrosion of metallic fittings, seeing that it is provoked by the presence of oxygen in the water and accelerated by its high temperature.



Due to the fact that the EVOH layer is an internal one there is no possibility of damaging it during transportation or installation.

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Fabrico de tubos PEX PPR LEX

TECHNICAL DATA

table 1

MAXIMUM USAGE TEMPERATURE[1)]	95 ºC	
DENSITY[2)]	0,942 g/cm^3	ASTM D-792
RATE OF THERMAL EXPANSION BETWEEN 0 ºC AND 70 ºC[3)]	1,5 X 10^{-4} K^{-1}	DIN 53752
THERMAL CONDUCTIVITY[3)]	0,41 WK^{-1} m^{-1}	DIN 52612-1
ELASTICITY TO FLEXION MODULE[2)] AT –40 ºC AT – 0 ºC AT – 23 ºC	 498 N/mm^2 312 N/mm^2 183 N/mm^2	DIN EN ISO 178
RESISTANCE TO TRACTION[2)]	20 N/mm^2	ASTM D-538
ELONGATION AT RUPTURE[2)]	400%	ASTM D-538
SUPERFICIAL RESISTIVITY[3)]	> 10 ^{12} Ω	IEC 60093

1) In accordance With standard DIN 16893-2000
2) Type values indicated by the raw material producers
3) Type values indicated by standard DIN 16892-2000

DURABILITY WHEN SUBJECTED TO DIFFERENT Temperatures/Pressures

W0RKING PRESSURES PERMITED FOR PE-X TUBES FOR WATER CONDUCTION USING A SECURITY FACTOR 1.5[1)]

table 2

TEMPERATURE ºC	YEARS OF USE	TUBE SERIES			
		6,3	5	4	3,2
		SDR			
		13,6	11	9	7,4
		WORKING PRESSURE (bar)			
20	10 25 50	10,2 10,1 10,0	12,8 12,7 12,6	16,2 16,0 15,9	20,4 20,1 20,0
30	10 25 50	9,0 8,9 8,9	11,4 11,3 11,2	14,3 14,2 14,1	18,1 17,9 17,7
40	10 25 50	8,0 7,9 7,9	10,1 10,0 9,9	12,7 12,6 12,5	16,1 15,9 15,7
50	10 25 50	7,1 7,0 7,0	9,0 8,9 8,8	11,3 11,2 11,1	14,3 14,1 14,0
60	10 25 50	6,4 6,3 6,2	8,0 7,9 7,9	10,1 10,0 9,9	12,8 12,6 12,5
70	10 25 50	5,7 5,6 5,6	7,2 7,1 7,0	9,1 9,0 8,9	11,4 11,3 11,2
95	1 5	4,5 4,4	5,7 5,5	7,1 7,0	9,0 8,8

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Fabrico de tubos PEX PPR LEX

PIPE SERIE

The pipe série is a relation between the nominal external diameter and the nominal thickness of the pipe. It is by this relation that the working pressure is defined for the diferent application classes . This information is important in order to be able to interpret the information that is mentioned in the product certificates.

Ø (mm)	Thickness (mm)	Tube Pex Série	Ø (mm)	Thickness (mm)	Tube Pex Série
12	2	3,2	20	2	5,0
15	2,5	3,2		2,8	4,0
16	2	4,0	22	3	4,0
	2,2	4,0	25	2,3	6,3
17	2	4,5		3,5	3,2
18	2	4,5	28	4	3,2
	2,5	4,0	32	2,9	6,3

TABLE 3
Classification of working conditions (Standard ISO 15875-1: 2003)

Application class	Working temperature T_D (ºC)	Time at T_D (years)	T_{max} (ºC)	Time at T_{max} (years)	T_{mal} (ºC)	Time at T_{mal} (hours)	Typical application field
1	60	49	80	1	95	100	Distribution of water (60 ºC)
2	70	49	80	1	95	100	Distribution of water (70 ºC)
4	20 Followed by 40 Followed by 60 Followed by (see next column)	2,5 20 25	70	2,5	100	100	Radiant floor heating and low temperature radiators
5	20 Followed by 60 Followed by 80 Followed by see next column)	14 25 10	90	1	100	100	High temperature radiators

All systems that satisfy these conditions are adequate for distribution of cold water during 50 years at a temperature of 20 ºC with a working pressure of 10 bar.

Being:

T_D (Working temperature) – Temperature or combination of temperatures of the water dependent of the working conditions for which the system was conceived.

T_{max} (Maximum temperature) – Maximum temperature for which the system was conceived, which can only occur for short periods of time.

T_{mal} (Mal functioning temperature) – Highest temperature that can be reached when the control limits are exceeded.

PS: In order to know which is the working pressure for the tube, you should consult the printing of the pipe and see, for the application class you need, which is the applicable pressure. Eg. Class 2/8 bar means that the if the tube is applied for distribution of water at 70 ºC the working pressure is 8 bar.

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Fabrico de tubos
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PRINTING FOR DOUBLEPEX TUBES

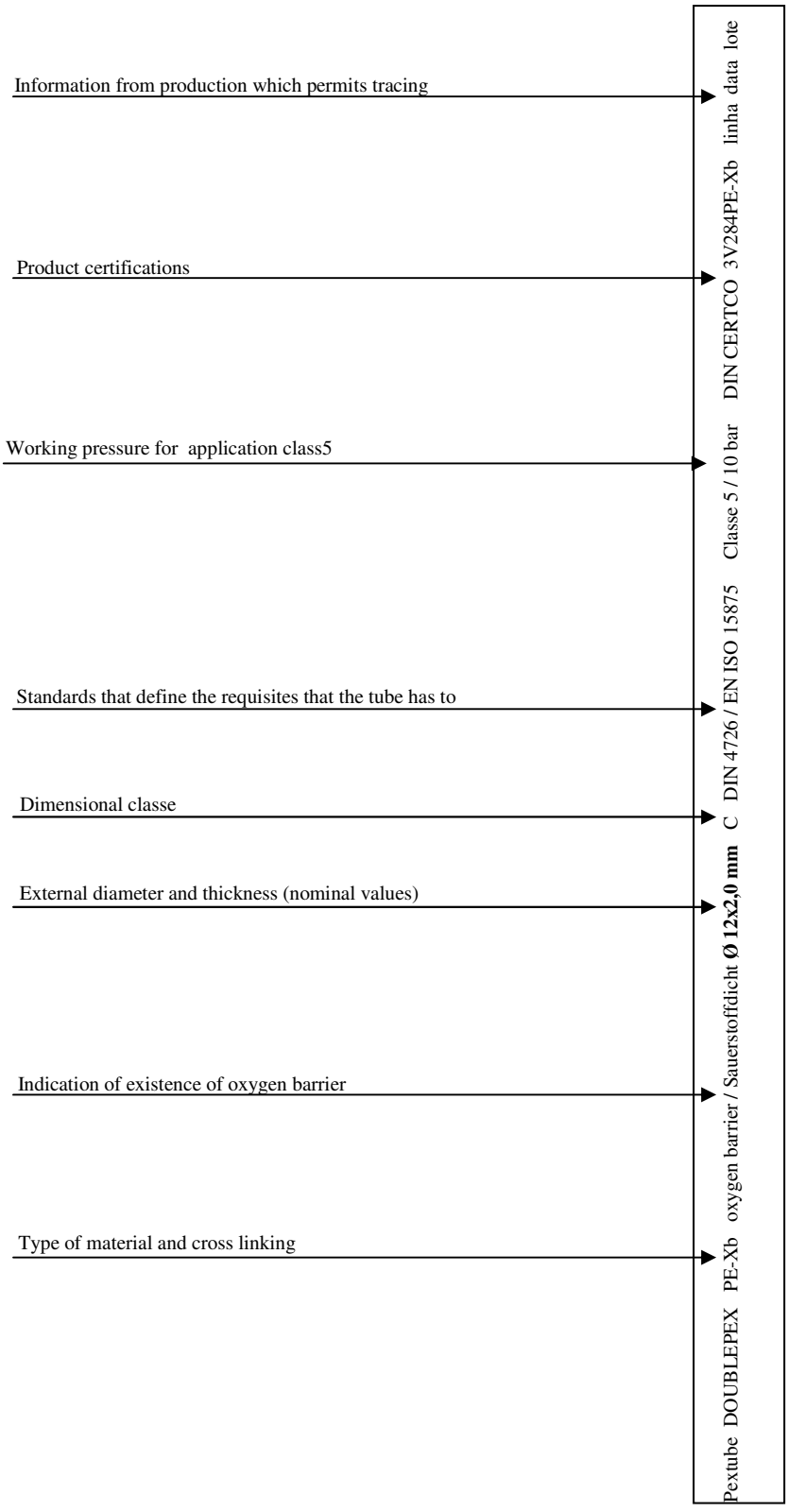

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TABLE FOR PIPE CHARGE LOSS FOR DOUBLEPEX TUBE WITH WATER AT 20 ºC

TABLE 4

Current (l/s)	12x2,0		16x1,8		16x2,0		16x2,2		20x1,9		20x2,0		20x2,8		25x2,3		25x3,5		32x2,9	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0010343	0,20	0,0001792	0,08	0,0002043	0,09	0,0002340	0,09	0,0000615	0,05	0,0000646	0,05	0,0000985	0,06	0,0000245	0,03	0,0000404	0,04	0,0000090	0,02
0,02	0,0043957	0,40	0,0003584	0,17	0,0004086	0,18	0,0004679	0,19	0,0001230	0,10	0,0001293	0,10	0,0001970	0,12	0,0000489	0,06	0,0000807	0,08	0,0000180	0,04
0,03	0,0087008	0,60	0,0011174	0,25	0,0013024	0,27	0,0015261	0,28	0,0001845	0,15	0,0001939	0,15	0,0005560	0,18	0,0000734	0,09	0,0001211	0,12	0,0000270	0,06
0,04	0,0141908	0,80	0,0018115	0,33	0,0021124	0,35	0,0024764	0,38	0,0005185	0,19	0,0005495	0,20	0,0008993	0,25	0,0000978	0,12	0,0003170	0,16	0,0000360	0,07
0,05	0,0207905	0,99	0,0026424	0,41	0,0030825	0,44	0,0036149	0,47	0,0007541	0,24	0,0007993	0,25	0,0013097	0,31	0,0002565	0,15	0,0004605	0,20	0,0000450	0,09
0,06	0,0284467	1,19	0,0036034	0,50	0,0042047	0,53	0,0049322	0,57	0,0010260	0,29	0,0010876	0,30	0,0017839	0,37	0,0003482	0,18	0,0006259	0,24	0,0001081	0,11
0,07	0,0371186	1,39	0,0046893	0,58	0,0054729	0,62	0,0064212	0,66	0,0013327	0,34	0,0014129	0,35	0,0023191	0,43	0,0004515	0,21	0,0008124	0,28	0,0001399	0,13
0,08	0,0467736	1,59	0,0058958	0,66	0,0068822	0,71	0,0080763	0,76	0,0016731	0,39	0,0017738	0,40	0,0029133	0,49	0,0005661	0,24	0,0010193	0,31	0,0001751	0,15
0,09	0,0573846	1,79	0,0072195	0,75	0,0084286	0,80	0,0098926	0,85	0,0020461	0,44	0,0021695	0,45	0,0035649	0,55	0,0006914	0,28	0,0012458	0,35	0,0002135	0,17
0,1	0,0689289	1,99	0,0086575	0,83	0,0101088	0,88	0,0118661	0,95	0,0024509	0,49	0,0025988	0,50	0,0042723	0,61	0,0008274	0,31	0,0014916	0,39	0,0002552	0,19
0,2	0,2322400	3,98	0,0288835	1,66	0,0337516	1,77	0,0396506	1,89	0,0081233	0,97	0,0086161	0,99	0,0142020	1,23	0,0027257	0,61	0,0049303	0,79	0,0008349	0,37
0,3	0,4756824	5,97	0,0588635	2,48	0,0688119	2,65	0,0808712	2,84	0,0164998	1,46	0,0175036	1,49	0,0288900	1,84	0,0055193	0,92	0,0100005	1,18	0,0016846	0,56
0,4	0,7931673	7,96	0,0978286	3,31	0,1143918	3,54	0,1344745	3,78	0,0273623	1,94	0,0290300	1,99	0,0479564	2,46	0,0091347	1,22	0,0165694	1,57	0,0027816	0,74
0,5	1,1808539	9,95	0,1452952	4,14	0,1699269	4,42	0,1997981	4,73	0,0405740	2,43	0,0430502	2,49	0,0711624	3,07	0,0135257	1,53	0,0245537	1,96	0,0041119	0,93
0,6	1,6359814	11,94	0,2009168	4,97	0,2350125	5,31	0,2763667	5,68	0,0560369	2,91	0,0594603	2,98	0,0983373	3,68	0,0186592	1,84	0,0338939	2,36	0,0056651	1,11
0,7	2,1564184	13,93	0,2644262	5,80	0,3093366	6,19	0,3638141	6,62	0,0736756	3,40	0,0781804	3,48	0,1293494	4,30	0,0245100	2,14	0,0445441	2,75	0,0074336	1,30
0,8	2,7404423	15,92	0,3356079	6,62	0,3926475	7,07	0,4618445	7,57	0,0934293	3,88	0,0991459	3,98	0,1640926	4,91	0,0310575	2,45	0,0564675	3,14	0,0094110	1,48
0,9	3,3866167	17,90	0,4142824	7,45	0,4847352	7,96	0,5702117	8,52	0,1152475	4,37	0,1223033	4,48	0,2024784	5,53	0,0382849	2,75	0,0696333	3,54	0,0115923	1,67
1	4,0937143	19,89	0,5002964	8,28	0,5854210	8,84	0,6887054	9,46	0,1390869	4,85	0,1476067	4,97	0,2444315	6,14	0,0461776	3,06	0,0840154	3,93	0,0139728	1,85
1,2	5,6865372	23,87	0,6938265	9,94	0,8119829	10,61	0,9553635	11,35	0,1926843	5,82	0,2044977	5,97	0,3387853	7,37	0,0639102	3,67	0,1163400	4,72	0,0193171	2,23
1,4	7,5117424	27,85	0,9153050	11,59	1,0712895	12,38	1,2605929	13,25	0,2539703	6,79	0,2695523	6,96	0,4467149	8,60	0,0841711	4,28	0,1532889	5,50	0,0254180	2,60
1,6	9,5635244	31,83	1,1640097	13,25	1,3624968	14,15	1,6034018	15,14	0,3227419	7,76	0,3425553	7,96	0,5678652	9,82	0,1068924	4,90	0,1947389	6,29	0,0322549	2,97
1,8		35,81	1,4393374	14,91	1,6848999	15,92	1,9829623	17,03	0,3988299	8,73	0,4233271	8,95	0,7019400	11,05	0,1320173	5,51	0,2405875	7,07	0,0398104	3,34
2		39,79	1,7407731	16,56	2,0378967	17,68	2,3985668	18,92	0,4820896	9,70	0,5117143	9,95	0,8486863	12,28	0,1594974	6,12	0,2907470	7,86	0,0480697	3,71
2,2		43,77	2,0678684	18,22	2,4209632	19,45	2,8495995	20,82	0,5723954	10,67	0,6075835	10,94	1,0078838	13,51	0,1892909	6,73	0,3451411	8,65	0,0570201	4,08
2,4		47,75	2,4202275	19,87	2,8336368	21,22	3,3355169	22,71	0,6696362	11,64	0,7108172	11,94	1,1793384	14,74	0,2213604	7,34	0,4037027	9,43	0,0666503	4,45
2,6		51,73	2,7974973	21,53	3,2755046	22,99	3,8558335	24,60	0,7737132	12,61	0,8213101	12,93	1,3628767	15,96	0,2556731	7,95	0,4663718	10,22	0,0769501	4,82
2,8		55,70	3,1993591	23,19	3,7461942	24,76	4,4101119	26,49	0,8845371	13,58	0,9389678	13,93	1,5583424	17,19	0,2921990	8,57	0,5330944	11,00	0,0879105	5,19
3		59,68	3,6255235	24,84	4,2453670	26,53	4,9979540	28,39	1,0020268	14,55	1,0637042	14,92	1,7655935	18,42	0,3309111	9,18	0,6038213	11,79	0,0995233	5,56
3,2		63,66	4,0757254	26,50	4,7727132	28,29	5,6189957	30,28	1,1261082	15,52	1,1954405	15,92	1,9845001	19,65	0,3717846	9,79	0,6785075	12,58	0,1117809	5,94
3,4		67,64	4,5497208	28,15	5,3279475	30,06	6,2729017	32,17	1,2567129	16,50	1,3341045	16,91	2,2149423	20,88	0,4147968	10,40	0,7571119	13,36	0,1246764	6,31
3,6		71,62	5,0472838	29,81	5,9108058	31,83	6,9593615	34,06	1,3937778	17,47	1,4796289	17,90	2,4568096	22,10	0,4599266	11,01	0,8395961	14,15	0,1382034	6,68
3,8		75,60	5,5682043	31,47	6,5210425	33,60	7,6780862	35,96	1,5372442	18,44	1,6319516	18,90	2,7099989	23,33	0,5071543	11,63	0,9259245	14,93	0,1523558	7,05
4		79,58	6,1122861	33,12	7,1584281	35,37	8,4288064	37,85	1,6870571	19,41	1,7910142	19,89	2,9744140	24,56	0,5564617	12,24	1,0160640	15,72	0,1671283	7,42
4,2		83,56	6,6793455	34,78	7,8227477	37,14	9,2112693	39,74	1,8431652	20,38	1,9567623	20,89	3,2499650	25,79	0,6078316	12,85	1,1099835	16,50	0,1825155	7,79
4,4		87,54	7,2692095	36,44	8,5137991	38,90		41,63	2,0055203	21,35	2,1291446	21,88	3,5365669	27,02	0,6612479	13,46	1,2076536	17,29	0,1985125	8,16
4,6		91,51	7,8817151	38,09	9,2313918	40,67		43,53	2,1740766	22,32	2,3081128	22,88	3,8341401	28,25	0,7166955	14,07	1,3090469	18,08	0,2151148	8,53
4,8		95,49	8,5167081	39,75	9,9753453	42,44		45,42	2,3487913	23,29	2,4936212	23,87	4,1426088	29,47	0,7741600	14,69	1,4141372	18,86	0,2323180	8,90
5		99,47	9,1740424	41,40		44,21		47,31	2,5296234	24,26	2,6856265	24,87	4,4619017	30,70	0,8336278	15,30	1,5229000	19,65	0,2501180	9,27
5,2		103,45	9,8535790	43,06		45,98		49,20	2,7165341	25,23	2,8840874	25,86	4,7919505	31,93	0,8950860	15,91	1,6353116	20,43	0,2685108	9,65
5,4		107,43		44,72		47,75		51,10	2,9094866	26,20	3,0889650	26,86	5,1326906	33,16	0,9585222	16,52	1,7513499	21,22	0,2874927	10,02
5,6		111,41		46,37		49,51		52,99	3,1084456	27,17	3,3002217	27,85	5,4840601	34,39	1,0239248	17,13	1,8709934	22,01	0,3070601	10,39
5,8		115,39		48,03		51,28		54,88	3,3133775	28,14	3,5178219	28,85	5,8460002	35,61	1,0912825	17,75	1,9942218	22,79	0,3272097	10,76
6		119,37		49,68		53,05		56,77	3,5242502	29,11	3,7417314	29,84	6,2184541	36,84	1,1605847	18,36	2,1210157	23,58	0,3479381	11,13
6,2		123,35		51,34		54,82		58,67	3,7410326	30,08	3,9719175	30,84	6,6013679	38,07	1,2318210	18,97	2,2513564	24,36	0,3692424	11,50
6,4		127,32		53,00		56,59		60,56	3,9636953	31,05	4,2083488	31,83	6,9946895	39,30	1,3049816	19,58	2,3852260	25,15	0,3911194	11,87
6,6		131,30		54,65		58,36		62,45	4,1922096	32,02	4,4509950	32,83	7,3983690	40,53	1,3800570	20,19	2,5226072	25,94	0,4135663	12,24
6,8		135,28		56,31		60,13		64,34	4,4265483	32,99	4,6998270	33,82	7,8123582	41,75	1,4570381	20,80	2,6634834	26,72	0,4365804	12,61
7		139,26		57,96		61,89		66,24	4,6666850	33,96	4,9548168	34,82	8,2366108	42,98	1,5359161	21,42	2,8078388	27,51	0,4601590	12,98
7,2		143,24		59,62		63,66		68,13	4,9125940	34,93	5,2159375	35,81	8,6710821	44,21	1,6166825	22,03	2,9556579	28,29	0,4842994	13,35
7,4		147,22		61,28		65,43		70,02	5,1642509	35,90	5,4831628	36,80	9,1157289	45,44	1,6993292	22,64	3,1069258	29,08	0,5089993	13,73
7,6		151,20		62,93		67,20		71,91	5,4216319	36,87	5,7564676	37,80	9,5705095	46,67	1,7838482	23,25	3,2616281	29,87	0,5342562	14,10
7,8		155,18		64,59		68,97		73,81	5,6847140	37,84	6,0358275	38,79		47,89	1,8702318	23,86	3,4197510	30,65	0,5600679	14,47
8		159,15		66,25		70,74		75,70	5,9534748	38,81	6,3212188	39,79		49,12	1,9584728	24,48	3,5812810	31,44	0,5864320	14,84
8,2		163,13		67,90		72,50		77,59	6,2278929	39,78	6,6126187	40,78		50,35	2,0485639	25,09	3,7462051	32,22	0,6133464	15,21
8,4		167,11		69,56		74,27		79,48	6,5079473	40,75	6,9100048	41,78		51,58	2,1404981	25,70	3,9145105	33,01	0,6408090	15,58
8,6		171,09		71,21		76,04		81,38	6,7936177	41,72	7,2133557	42,77		52,81	2,2342687	26,31	4,0861850	33,80	0,6688177	15,95
8,8		175,07		72,87		77,81		83,27	7,0848843	42,69	7,5226505	43,77		54,03	2,3298691	26,92	4,2612167	34,58	0,6973706	16,32
9		179,05		74,53		79,58		85,16	7,3817279	43,66	7,8378686	44,76		55,26	2,4272929	27,54	4,4395940	35,37	0,7264657	16,69
9,2		183,03		76,18		81,35		87,05	7,6841300	44,63	8,1589905	45,76		56,49	2,5265340	28,15	4,6213056	36,15	0,7561012	17,06
9,4		187,01		77,84		83,11		88,95	7,9920723	45,60	8,4859967	46,75		57,72	2,6275863	28,76	4,8063405	36,94	0,7862751	17,44
9,6		190,99		79,49		84,88		90,84	8,3055371	46,57	8,8188686	47,75		58,95	2,7304440	29,37	4,9946880	37,73	0,8169858	17,81
9,8		194,96		81,15		86,65		92,73	8,6245073	47,55	9,1575878	48,74		60,17	2,8351012	29,98	5,1863378	38,51	0,8482316	18,18
10		198,94		82,81		88,42		94,62	8,9489659	48,52	9,5021365	49,74		61,40	2,9415525	30,59	5,3812797	39,30	0,8800106	18,55

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PME líder '12

AENOR ER Empresa Registrada ER - 1634/2/02

Fabrico de tubos
PEX
PPR
LEX

TABLE FOR PIPE CHARGE LOSS FOR DOUBLEPEX TUBE WITH WATER AT 70 ºC

TABLE 5

Current (l/s)	12x2,0		16x1,8		16x2,0		16x2,2		20x1,9		20x2,0		20x2,8		25x2,3		25x3,5		32x2,9	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0010286	0,20	0,0000729	0,08	0,0001546	0,09	0,0001811	0,09	0,0000250	0,05	0,0000263	0,05	0,0000401	0,06	0,0000100	0,03	0,0000164	0,04	0,0000037	0,02
0,02	0,0033426	0,40	0,0004250	0,17	0,0004957	0,18	0,0005813	0,19	0,0001213	0,10	0,0001286	0,10	0,0002107	0,12	0,0000413	0,06	0,0000741	0,08	0,0000073	0,04
0,03	0,0067227	0,60	0,0008485	0,25	0,0009904	0,27	0,0011621	0,28	0,0002410	0,15	0,0002555	0,15	0,0004195	0,18	0,0000816	0,09	0,0001469	0,12	0,0000253	0,06
0,04	0,0110773	0,80	0,0013917	0,33	0,0016249	0,35	0,0019074	0,38	0,0003941	0,19	0,0004178	0,20	0,0006868	0,25	0,0001330	0,12	0,0002398	0,16	0,0000410	0,07
0,05	0,0163495	0,99	0,0020471	0,41	0,0023909	0,44	0,0028072	0,47	0,0005783	0,24	0,0006133	0,25	0,0010091	0,31	0,0001949	0,15	0,0003517	0,20	0,0000600	0,09
0,06	0,0224985	1,19	0,0028097	0,50	0,0032822	0,53	0,0038545	0,57	0,0007924	0,29	0,0008403	0,30	0,0013836	0,37	0,0002665	0,18	0,0004815	0,24	0,0000819	0,11
0,07	0,0294934	1,39	0,0036754	0,58	0,0042942	0,62	0,0050439	0,66	0,0010351	0,34	0,0010978	0,35	0,0018085	0,43	0,0003477	0,21	0,0006286	0,28	0,0001067	0,13
0,08	0,0373088	1,59	0,0046411	0,66	0,0054232	0,71	0,0063710	0,76	0,0013055	0,39	0,0013847	0,40	0,0022822	0,49	0,0004381	0,24	0,0007924	0,31	0,0001342	0,15
0,09	0,0459241	1,79	0,0057041	0,75	0,0066662	0,80	0,0078321	0,85	0,0016029	0,44	0,0017002	0,45	0,0028034	0,55	0,0005374	0,28	0,0009725	0,35	0,0001645	0,17
0,1	0,0553215	1,99	0,0068623	0,83	0,0080206	0,88	0,0094243	0,95	0,0019266	0,49	0,0020437	0,50	0,0033710	0,61	0,0006454	0,31	0,0011685	0,39	0,0001973	0,19
0,2	0,1896263	3,98	0,0233363	1,66	0,0272921	1,77	0,0320892	1,89	0,0065175	0,97	0,0069152	0,99	0,0114303	1,23	0,0021729	0,61	0,0039443	0,79	0,0006606	0,37
0,3	0,3918583	5,97	0,0480265	2,48	0,0561856	2,65	0,0660831	2,84	0,0133769	1,46	0,0141950	1,49	0,0234888	1,84	0,0044488	0,92	0,0080865	1,18	0,0013488	0,56
0,4	0,6572196	7,96	0,0803318	3,31	0,0939990	3,54	0,1105817	3,78	0,0223352	1,94	0,0237033	1,99	0,0392502	2,46	0,0074161	1,22	0,0134922	1,57	0,0022443	0,74
0,5	0,9826628	9,95	0,1198718	4,14	0,1402879	4,42	0,1650628	4,73	0,0332854	2,43	0,0353263	2,49	0,0585272	3,07	0,0110388	1,53	0,0200961	1,96	0,0033361	0,93
0,6	1,3659871	11,94	0,1663722	4,97	0,1947317	5,31	0,2291501	5,68	0,0461501	2,91	0,0489823	2,98	0,0811851	3,68	0,0152911	1,84	0,0278516	2,36	0,0046162	1,11
0,7	1,8054876	13,93	0,2196210	5,80	0,2570827	6,19	0,3025524	6,62	0,0608700	3,40	0,0646080	3,48	0,1071196	4,30	0,0201530	2,14	0,0367224	2,75	0,0060787	1,30
0,8	2,2997826	15,92	0,2794465	6,62	0,3271403	7,07	0,3850340	7,57	0,0773967	3,88	0,0821525	3,98	0,1362463	4,91	0,0256084	2,45	0,0466794	3,14	0,0077186	1,48
0,9	2,8477169	17,90	0,3457053	7,45	0,4047369	7,96	0,4763980	8,52	0,0956902	4,37	0,1015729	4,48	0,1684950	5,53	0,0316439	2,75	0,0576983	3,54	0,0095318	1,67
1	3,4483019	19,89	0,4182750	8,28	0,4897293	8,84	0,5764761	9,46	0,1157159	4,85	0,1228328	4,97	0,2038054	6,14	0,0382479	3,06	0,0697581	3,93	0,0115148	1,85
1,2	4,8040794	23,87	0,5819326	9,94	0,6814171	10,61	0,8022056	11,35	0,1608484	5,82	0,1707484	5,97	0,2834081	7,37	0,0531228	3,67	0,0969305	4,72	0,0159783	2,23
1,4	6,3613169	27,85	0,7697019	11,59	0,9013649	12,38	1,0612365	13,25	0,2125933	6,79	0,2256859	6,96	0,3747027	8,60	0,0701660	4,28	0,1280748	5,50	0,0210887	2,60
1,6	8,1153067	31,83	0,9810010	13,25	1,1488926	14,15	1,3527693	15,14	0,2707878	7,76	0,2874728	7,96	0,4774037	9,82	0,0893233	4,90	0,1630926	6,29	0,0268296	2,97
1,8		35,81	1,2153432	14,91	1,4234309	15,92	1,6761348	17,03	0,3352959	8,73	0,3559646	8,95	0,5912726	11,05	0,1105493	5,51	0,2019014	7,07	0,0331871	3,34
2		39,79	1,4723116	16,56	1,7244925	17,68	2,0307601	18,92	0,4060010	9,70	0,4310377	9,95	0,7161052	12,28	0,1338051	6,12	0,2444307	7,86	0,0401493	3,71
2,2		43,77	1,7515429	18,22	2,0516524	19,45	2,4161457	20,82	0,4828017	10,67	0,5125845	10,94	0,8517235	13,51	0,1590568	6,73	0,2906192	8,65	0,0477061	4,08
2,4		47,75	2,0527162	19,87	2,4045353	21,22	2,8318502	22,71	0,5656083	11,64	0,6005099	11,94	0,9979702	14,74	0,1862748	7,34	0,3404126	9,43	0,0558485	4,45
2,6		51,73	2,3755444	21,53	2,7828054	22,99	3,2774787	24,60	0,6543408	12,61	0,6947289	12,93	1,1547048	15,96	0,2154322	7,95	0,3937625	10,22	0,0645681	4,82
2,8		55,70	2,7197681	23,19	3,1861594	24,76	3,7526747	26,49	0,7489268	13,58	0,7951646	13,93	1,3218004	17,19	0,2465050	8,57	0,4506251	11,00	0,0738579	5,19
3		59,68	3,0851517	24,84	3,6143216	26,53	4,2571140	28,39	0,8493005	14,55	0,9017474	14,92	1,4991415	18,42	0,2794713	9,18	0,5109607	11,79	0,0837112	5,56
3,2		63,66	3,4714790	26,50	4,0670393	28,29	4,7904992	30,28	0,9554018	15,52	1,0144133	15,92	1,6866225	19,65	0,3143112	9,79	0,5747329	12,58	0,0941218	5,94
3,4		67,64	3,8785509	28,15	4,5440793	30,06	5,3525565	32,17	1,0671751	16,50	1,1331035	16,91	1,8841459	20,88	0,3510060	10,40	0,6419079	13,36	0,1050842	6,31
3,6		71,62	4,3061829	29,81	5,0452260	31,83	5,9430319	34,06	1,1845689	17,47	1,2577632	17,90	2,0916213	22,10	0,3895387	11,01	0,7124549	14,15	0,1165932	6,68
3,8		75,60	4,7542031	31,47	5,5702784	33,60	6,5616892	35,96	1,3075355	18,44	1,3883419	18,90	2,3089648	23,33	0,4298935	11,63	0,7863449	14,93	0,1286440	7,05
4		79,58	5,2224511	33,12	6,1190487	35,37	7,2083077	37,85	1,4360301	19,41	1,5247919	19,89	2,5360979	24,56	0,4720554	12,24	0,8635507	15,72	0,1412321	7,42
4,2		83,56	5,7107764	34,78	6,6913609	37,14	7,8826800	39,74	1,5700108	20,38	1,6670689	20,89	2,7729469	25,79	0,5160105	12,85	0,9440472	16,50	0,1543532	7,79
4,4		87,54	6,2190374	36,44	7,2870492	38,90	8,5846115	41,63	1,7094381	21,35	1,8151310	21,88	3,0194426	27,02	0,5617458	13,46	1,0278105	17,29	0,1680035	8,16
4,6		91,51	6,7471003	38,09	7,9059572	40,67	9,3139180	43,53	1,8542749	22,32	1,9689388	22,88	3,2755196	28,25	0,6092488	14,07	1,1148181	18,08	0,1821791	8,53
4,8		95,49	7,2948386	39,75	8,5479370	42,44		45,42	2,0044860	23,29	2,1284547	23,87	3,5411162	29,47	0,6585078	14,69	1,2050487	18,86	0,1968765	8,90
5		99,47	7,8621325	41,40	9,2128482	44,21		47,31	2,1600380	24,26	2,2936435	24,87	3,8161735	30,70	0,7095118	15,30	1,2984821	19,65	0,2120924	9,27
5,2		103,45	8,4488678	43,06	9,9005573	45,98		49,20	2,3208991	25,23	2,4644714	25,86	4,1006359	31,93	0,7622503	15,91	1,3950992	20,43	0,2278236	9,65
5,4		107,43	9,0549358	44,72		47,75		51,10	2,4870391	26,20	2,6409064	26,86	4,3944503	33,16	0,8167131	16,52	1,4948818	21,22	0,2440670	10,02
5,6		111,41	9,6802329	46,37		49,51		52,99	2,6584291	27,17	2,8229179	27,85	4,6975660	34,39	0,8728908	17,13	1,5978123	22,01	0,2608198	10,39
5,8		115,39		48,03		51,28		54,88	2,8350416	28,14	3,0104765	28,85	5,0099345	35,61	0,9307741	17,75	1,7038742	22,79	0,2780792	10,76
6		119,37		49,68		53,05		56,77	3,0168503	29,11	3,2035543	29,84	5,3315093	36,84	0,9903544	18,36	1,8130515	23,58	0,2958425	11,13
6,2		123,35		51,34		54,82		58,67	3,2038296	30,08	3,4021244	30,84	5,6622462	38,07	1,0516231	18,97	1,9253288	24,36	0,3141071	11,50
6,4		127,32		53,00		56,59		60,56	3,3959555	31,05	3,6061609	31,83	6,0021021	39,30	1,1145723	19,58	2,0406916	25,15	0,3328708	11,87
6,6		131,30		54,65		58,36		62,45	3,5932043	32,02	3,8156391	32,83	6,3510362	40,53	1,1791941	20,19	2,1591257	25,94	0,3521310	12,24
6,8		135,28		56,31		60,13		64,34	3,7955537	32,99	4,0305351	33,82	6,7090088	41,75	1,2454811	20,80	2,2806174	26,72	0,3718856	12,61
7		139,26		57,96		61,89		66,24	4,0029820	33,96	4,2508259	34,82	7,0759817	42,98	1,3134262	21,42	2,4051538	27,51	0,3921324	12,98
7,2		143,24		59,62		63,66		68,13	4,2154682	34,93	4,4764891	35,81	7,4519181	44,21	1,3830222	22,03	2,5327221	28,29	0,4128692	13,35
7,4		147,22		61,28		65,43		70,02	4,4329920	35,90	4,7075034	36,80	7,8367825	45,44	1,4542627	22,64	2,6633101	29,08	0,4340941	13,73
7,6		151,20		62,93		67,20		71,91	4,6555339	36,87	4,9438480	37,80	8,2305405	46,67	1,5271410	23,25	2,7969060	29,87	0,4558051	14,10
7,8		155,18		64,59		68,97		73,81	4,8830751	37,84	5,1855028	38,79	8,6331588	47,89	1,6016509	23,86	2,9334984	30,65	0,4780003	14,47
8		159,15		66,25		70,74		75,70	5,1155970	38,81	5,4324483	39,79	9,0446052	49,12	1,6777863	24,48	3,0730763	31,44	0,5006778	14,84
8,2		163,13		67,90		72,50		77,59	5,3530821	39,78	5,6846657	40,78	9,4648484	50,35	1,7555413	25,09	3,2156288	32,22	0,5238360	15,21
8,4		167,11		69,56		74,27		79,48	5,5955129	40,75	5,9421366	41,78	9,8938581	51,58	1,8349102	25,70	3,3611456	33,01	0,5474729	15,58
8,6		171,09		71,21		76,04		81,38	5,8428729	41,72	6,2048434	42,77		52,81	1,9158874	26,31	3,5096166	33,80	0,5715871	15,95
8,8		175,07		72,87		77,81		83,27	6,0951456	42,69	6,4727686	43,77		54,03	1,9984676	26,92	3,6610319	34,58	0,5961768	16,32
9		179,05		74,53		79,58		85,16	6,3523153	43,66	6,7458956	44,76		55,26	2,0826455	27,54	3,8153821	35,37	0,6212405	16,69
9,2		183,03		76,18		81,35		87,05	6,6143666	44,63	7,0242080	45,76		56,49	2,1684160	28,15	3,9726577	36,15	0,6467766	17,06
9,4		187,01		77,84		83,11		88,95	6,8812846	45,60	7,3076899	46,75		57,72	2,2557741	28,76	4,1328498	36,94	0,6727836	17,44
9,6		190,99		79,49		84,88		90,84	7,1530545	46,57	7,5963258	47,75		58,95	2,3447150	29,37	4,2959495	37,73	0,6992601	17,81

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Fabrico de tubos PEX PPR LEX

DOUBLEPEX TUBE

DESIGNATION	CODE	DIMENSION	PACKAGE / MT.
DOUBLEPEX TUBE (COIL) 	4220031502012	Ø 12x2,0	100
	4230031502012500	Ø 12x2,0	500
	4220031502515	Ø 15x2,5	100
	4230031502515500	Ø 15x2,5	500
	4220031502016	Ø 16x2,0	100
	4230031502016120	Ø 16x2,0	120
	4230031502016200	Ø 16x2,0	200
	4220031502216	Ø 16x2,2	100
	4220031502017	Ø 17x2,0	100
	4230031502017200	Ø 17x2,0	200
	4220031502018	Ø 18x2,0	100
	4230031502018500	Ø 18x2,0	500
	4230031502518500	Ø 18x2,5	500
	4220031502020	Ø 20x2,0	100
	4230031502020120	Ø 20x2,0	120
	4230031502020200	Ø 20x2,0	200
	4230031502020500	Ø 20x2,0	500
	4220031502820	Ø 20x2,8	100
	4220031503022	Ø 22x3,0	100
	4220031502325	Ø 25x2,3	50
	4220031503525	Ø 25x3,5	50

(*)Any other coils length up to 600 meter by enquiry (depending on the diameter of the tube)

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Fabrico de tubos
PEX
PPR
LEX

Presentation of the Products

FLOOR HEATING DIFUSSION ALUMINIUM PLATES

- **Formats:** Rectangular;
- **Mesures:**
  - **Length:** 1.150 mm;
  - **Diameters:** 16mm, 17mm and 20mm;
  - **Thickness:** 0,5 mm;
- **Packing:** Carton Box;

Applications

- **Central heating – Floor Heating.**

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TECHNICAL DATA

Heating by underfloor heating

Heating system by underfloor heating is based in heat emission from the floor; this emission is obtained by heating the floor. When the floor gets a certain temperature, its surface releases infrared radiation transmitting heat to the house occupiers and to the walls. This heating system has several advantages to other systems:

Feeling of comfort

The profile provided by the heating using underfloor heating offers a higher temperature level of the lower areas, where it is usually colder, and a moderate temperature of the upper areas, where the heat excess is annoying and where it is convenient to allow a bigger heat dissipation.

Safety

The heating by underfloor heating permits reaching a sufficient thermic emission level, arising from a moderate superficial temperature, i.e. , there is no surfaces that are very hot (like radiators) which can provoke burns.

Air quality

Heating system by underfloor heating does not produce an air overheating nor relevant convection currents. The air keeps the temperature level and relative humidity suitable for humans and there is no production of air flows nor consequent dust movements, which affect sensitive or allergic people. Definitely the air quality is superior.

Saving of Energy

Heating system by underfloor heating is more efficient considering an energetic point of view, once the necessary temperature is lower than the common warm-air system. Using the radiation mechanism the transmitted heat concentrates itself on the areas where it is necessary, while using the convection mechanism the heat spreads itself in the house interior, disappearing to areas where it is not useful.

Architectural conditioning

The roof height does not influence the efficiency of heating by radiation, which does not happen with other systems.

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Fabrico de tubos PEX PPR LEX

Aluminium Diffusion Plates

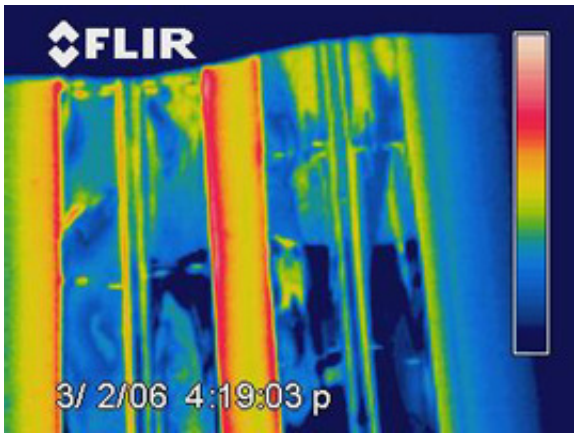
The purpose of a radiant heating system will be generating heat in the form of warming water and transferring the heat to the floor in an efficient way. It is necessary the existence of a way to transfer the heat from the pipe to the floor and then to the room to be heated. Aluminium is a material, which makes the transfer of heat exceptionally well.

In the aluminium diffusion plates, the aluminium involves the pipe and spreads itself under the floor. These plates have 3 important functions:

1. helping the heat transfer from the pipe and spreads it through the floor
2. supporting the pipe
3. reducing heat loss (heat going to the opposite side that is desired)



Picture 1



Picture 2

On Picture 1 and 2, we see the same installation in 2 different ways. Picture 1 is taken with a normal camera. Picture 2 shows us the same installation photographed with an infrared camera. On the infrared Picture we see that the aluminium plates (blue) emit less heat than the surrounding areas (red and orange), despite being with higher temperature. This is related with the aluminium properties and means that the plates are transmitting the pipe heat and distributing it on the floor, making the heat go in the desired direction.

Experiences show that by using aluminium diffusion plates the released heat is 60% superior compared to systems without aluminium plates, having the same temperature. The aluminium plates allow to work with the impulsion of warm water temperatures between 5ºC to 6ºC lower than usual in systems without diffusion plates.

If the heat direction is not controlled, all the efforts in conceiving an efficient system will be useless. It is a common error thinking that "heat goes always up". In case of radiant heat it is not true, the heat goes in every direction.
Due to its high conductivity, the aluminium plates diffuse the heat uniformly through the surface. This heat is transferred through the floor surface. Isolation (polystyrene or fibre glass) should be used directly under the plates to reduce heat losses.

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Fabrico de tubos PEX PPR LEX

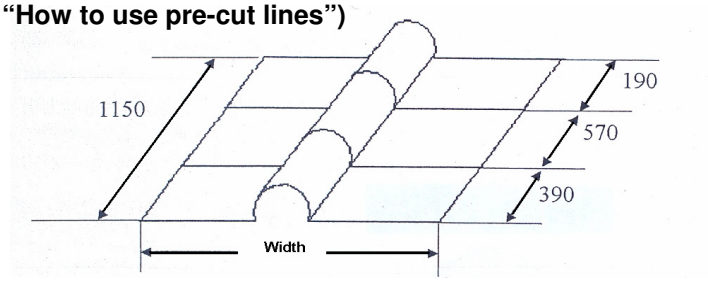
DESIGNATION	CODE	DIMENSION (pipe Ø x width)	PACKAGE / MT.
ALUMINIUM PLATES 	350145161150	Ø 16 x 145 mm	84
	350180161150	Ø 16 x 180 mm	84
	350180171150	Ø 17 x 180 mm	84
	350180201150	Ø 17 x 280 mm	60
	350280171150	Ø 20 x 180 mm	48
	350280201150	Ø 20 x 280 mm	40

- Length of Plate: 1150 mm

- Thickness of Plate : 0,5 mm

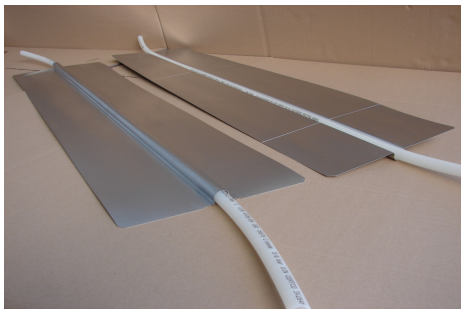
- Pre-cut lines: This characteristic allows to obtain plates with 190mm, 390mm and 570 mm, for possible adjustments in lengths.

(Please see next page **"How to use pre-cut lines"**)



- Packing: Carton box









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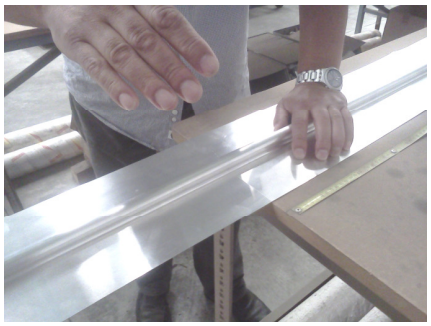
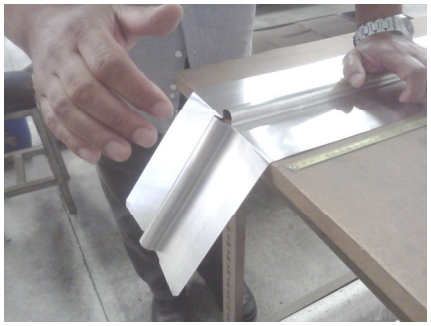
How to use pre-cut lines:	
	Place the pre-cut line of the plate on the edge of the table.
	Press downwards with hand.
	With both hands bend the plate until it breaks, as shown in picture.
	

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Presentation Of The Products

PE-RT Tube

- **Brand:** LEXTUBE;
- **Formats:** Round;
- **Measures:**
  - **Length:** 25 to 600 meters;
  - **Diameters:** 12 to 32 mm;
  - **Thickness:** 2 to 3,5 mm;

Applications

- **Sanitary, cold or hot water;**
- **Drinking water lines;**
- **Central heating.**

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SOME CHARACTERISTICS OF THE LEXTUBE

1. **DUE TO ITS COMPLETELY SMOOTH INNER SURFACE** – It has very low loss of charge.

2. **RESISTANT TO CHEMICAL CORROSION** – Both by basic solutions or by acid solutions. Due to its bad electrical conductivity it is also resistant to electrochemical corrosion.

3. **NO NEED FOR CURVES OR CROSS BINDINGS** – The Lextube tube is a highly flexible product. The tube can be forced through any trajectory without the use of fittings.

4. **CAN BE USED IN SEISMIC AREAS** – Due to the fact that the Lextube is completely loose inside the corrugated pipe there is no possibility of rupture in case of oscillation.

5. **EASY TO HANDLE** – The low weight of the tubes along with the fact of not needing fastening points makes its installation really quick.

6. **LOW THERMAL DISSIPATION** – The low thermal conductivity of the Lextube tube allows it to have an excellent insulation and low thermal dissipation.

7. **ELECTRICAL INSULATOR** – The absence of ferrous materials in its chemical composition makes it an electrical insulator.

8. **HYGIENIC MATERIAL** – Can be used in drinking water lines for human consumption, liquid alimentary products, etc.

9. **THERMAL MEMORY** – After having been bent and warmed up again at the softening temperature of about 120º C, the tube will reacquire its original shape allowing it to correct, if necessary, previous bends forced on to the tube.

10. **MALLEABLENESS** – The Lextube tube can be bent at ambient temperature between 6 to 8 times the diameter of the tube that is being installed. When warmed up it can be bent at about 2,5 times the tube diameter.

11. **EASY TO REMOVE** – in case of damage, the Lextube can be easily removed once it has been installed inside the corrugated pipe (2 X Ø PEX pipe) and the terminals placed in shunt boxes

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LEXTUBE TUBE USAGE

1. The tube is supplied in individual cardboard boxes and should only be removed from them at the installation site once the Lextube tube, when exposed to UV radiation, is subjected to precocious aging.

2. The tube can be hand bent, but in the case of a tighter curve hot water can be used to heat up the tube. A blowtorch can also be used to heat up the tube (the flame must not touch the tube, only the hot air around it. As the temperature rises at about 130º C bend the tube at once and then plunge it immediately in cold water.

3. The transportation should be done in a correct and orderly manner, its storage should always be done away from sunlight.

4. The tubes should always be unwinded in the opposite way they were winded.

5. Due to the fact that the Lextube tube is 100% plastic material, its dilation is expected when subjected to high temperatures. Cutting corners should be avoided by using corrugated pipe around the Lextube tube.

6. After having completed the assembly procedure, tests should be carried out at ambient temperature at a pressure of 15 bar.

7. Connections should always be made by using compression fittings. Gluing or welding of the tube is virtually impossible.

8. The bending radius of the corrugated pipe should be of about 6 to 8 times its diameter.

9. The corrugated pipe should have no strangulations, creases or torsions.

10. Due to the fact that the Lextube tube is white, red corrugated pipe should be used to identify hot water lines and blue corrugated pipe for cold water lines.

11. To avoid the inadvertently introduction of objects into the the Lextube tube the use of tampons at the tip of the tubes is highly recommended.

12. The introduction of the Lextube tube into the corrugated pipe should be made with a ferrule.

13. The corrugated pipe should get in as less as possible in the shunt box to make the assembly of the fittings as easy as possible.

14. The corrugated pipe should have a bigger Ø than the one of Lextube (about 2X Ø Lextube) in a way that the Lextube may move freely within the corrugated pipe.

15. The walls of the corrugated pipe should be strong enough to withstand the application of cement. The crushing of the corrugated pipe would not allow the passing through of the Lextube.

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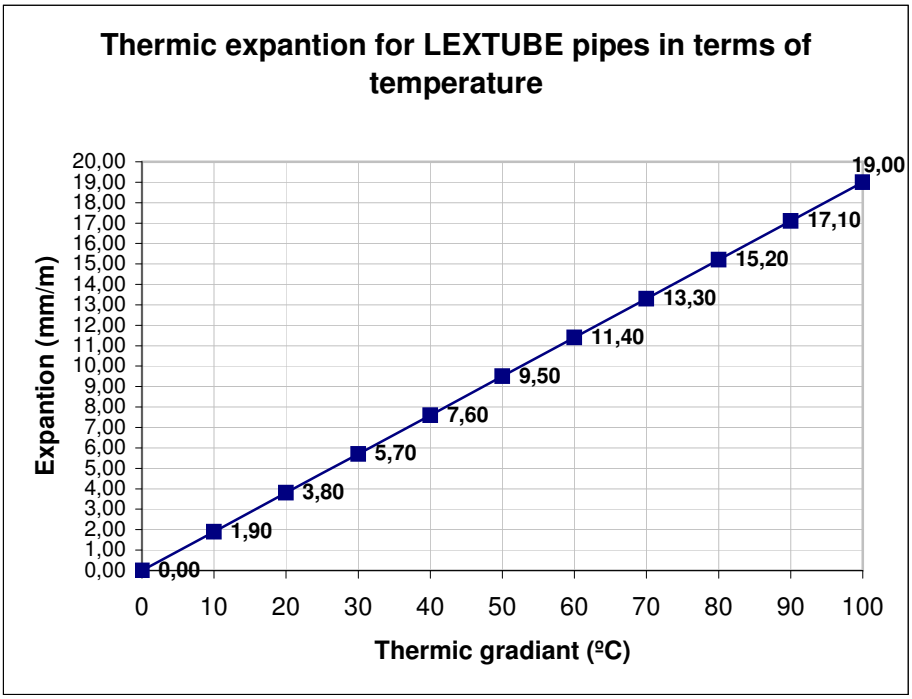
TECHNICAL DATA

CHART 1-2

MAXIMUM USAGE TEMPERATURE [1]	95ºC	
DENSITY [2]	0,941 g/cm^3	ISO 1183
RATE OF LINEAR THERMAL EXPANSION BETWEEN 0ºC AND 70ºC [3]	1,9 X 10 $^{-4}$ K^{-1}	DIN 53752 A
THERMAL CONDUCTIVITY AT 60ºC [2]	0,4 WK^{-1}m^{-1}	DIN 52612-1
ELASTICITY TO FLEXION MODULE [2]	660 N/mm^2	ISO 178
YIELD TENSILE [2]	20,3 N/mm^2	ISO 527
ULTIMATE TENSILE [2]	37 N/mm^2	ISO 527
ULTIMATE ELONGATION [2]	780 %	ISO 527
SUPERFICIAL RESISTIVITY [3]	> 10^{12} Ω	IEC 93

1) According to norm DIN 16834: 2007-05
2) Type values indicated by the raw material manufacturer
3) Type values indicated by norm DIN 16833: 2007-05



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DURABILITY WHEN SUBJECTED TO DIFFERENT

Temperatures/Pressures

Working pressures allowed on PE-RT tubes Type II for water supply, using a SF = 1,5

CHART 2-2

TEMPERATURE (ºC)	YEARS OF USAGE	TUBE SERIES					
		6,3	5	4	3,2	2,5	2
		SDR					
		13,6	11	9	7,4	6	5
		WORKING PRESSURE (bar)					
10	1	11,2	14,1	17,7	22,1	28,3	35,4
	5	11,0	13,9	17,4	21,8	27,8	34,8
	10	11,0	13,8	17,3	21,6	27,6	34,5
	25	10,9	13,7	17,1	21,4	27,4	34,2
	50	10,8	13,6	17,0	21,2	27,2	34,0
	100	10,7	13,5	16,9	21,1	27,0	33,7
20	1	10,3	13,0	16,3	20,3	26,0	32,5
	5	10,1	12,8	16,0	20,0	25,5	31,9
	10	10,1	12,7	15,8	19,8	25,3	31,7
	25	10,0	12,5	15,7	19,6	25,1	31,4
	50	9,9	12,4	15,6	19,4	24,9	31,1
	100	9,8	12,3	15,4	19,3	24,7	30,9
30	1	9,4	11,9	14,8	18,5	23,7	29,6
	5	9,2	11,6	14,5	18,2	23,3	29,1
	10	9,1	11,5	14,4	18,0	23,0	28,8
	25	9,0	11,4	14,2	17,8	22,8	28,5
	50	9,0	11,3	14,1	17,6	22,6	28,2
	100	8,9	11,2	14,0	17,5	22,4	28,0
40	1	8,5	10,7	13,4	16,7	21,4	26,7
	5	8,3	10,5	13,1	16,4	20,9	26,2
	10	8,2	10,4	13,0	16,2	20,7	25,9
	25	8,1	10,2	12,8	16,0	20,5	25,6
	50	8,1	10,1	12,7	15,9	20,3	25,4
	100	8,0	10,1	12,6	15,7	20,1	25,1
50	1	7,6	9,5	11,9	14,9	19,1	23,8
	5	7,4	9,3	11,6	14,5	18,6	23,3
	10	7,3	9,2	11,5	14,4	18,4	23,0
	25	7,2	9,1	11,4	14,2	18,2	22,7
	50	7,1	9,0	11,3	14,1	18,0	22,5
	100	7,1	8,9	11,1	13,9	17,8	22,3
60	1	6,7	8,4	10,5	13,1	16,8	21,0
	5	6,5	8,2	10,2	12,8	16,3	20,4
	10	6,4	8,1	10,1	12,6	16,1	20,2
	25	6,3	8,0	10,0	12,4	15,9	19,9
	50	6,2	7,9	9,8	12,3	15,7	19,7
70	1	5,7	7,2	9,1	11,3	14,5	18,1
	5	5,6	7,0	8,8	11,0	14,1	17,6
	10	5,5	6,9	8,7	10,9	13,9	17,4
	25	5,4	6,8	8,6	10,7	13,7	17,1
	50	5,4	6,7	8,4	10,5	13,5	16,9
80	1	4,9	6,1	7,7	9,6	12,3	15,3
	5	4,7	5,9	7,4	9,3	11,9	14,8
	10	4,6	5,9	7,3	9,1	11,7	14,6
	25	4,6	5,8	7,2	9,0	11,5	14,4
90	1	4,0	5,1	6,3	7,9	10,1	12,6
	5	3,9	4,9	6,1	7,6	9,8	12,2
	10	3,8	4,8	6,0	7,5	9,6	12,0
	(15)[a]	(3,8)[a]	(4,8)[a]	(6,0)[a]	(7,5)[a]	(9,5)[a]	(11,9)[a]
95	1	3,6	4,5	5,7	7,1	9,1	11,4
	5	3,5	4,4	5,5	6,9	8,8	11,0
	(10)[a]	(3,4)[a]	(4,3)[a]	(5,4)[a]	(6,7)[a]	(8,6)[a]	(10,8)[a]

[a] The Figures between brackets are considered by verification of tests longer than 1 year by 110º-Test

1) According to norm DIN 16834:2009

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Classification of service conditions (Standard ISO 22391-1: 2009)

Application class	Working temperature T_D(ºC)	Time at T_D (years)	T_{max} (ºC)	Time at T_{max} (years)	T_{mal} (ºC)	Time at T_{mal} (hours)	Typical application field
1	60	49	80	1	95	100	Distribution of water (60 ºC)
2	70	49	80	1	95	100	Distribution of water (70 ºC)
4	20 Followed by 40 Followed by 60 Followed by (see next column)	2,5 20 25	70	2,5	100	100	Radiant floor heating and low temperature radiators
5	20 Followed by 60 Followed by 80 Followed by see next column)	14 25 10	90	1	100	100	High temperature radiators

All systems that satisfy these conditions are adequate for distribution of cold water during 50 years at a temperature of 20 ºC with a working pressure of 10 bar.

Being:

T_D (Working temperature) – Temperature or combination of temperatures of the water dependent of the working conditions for which the system was conceived.

T_{max} (Maximum temperature) – Maximum temperature for which the system was conceived, which can only occur for short periods of time.

T_{mal} (Mal functioning temperature) – Highest temperature that can be reached when the control limits are exceeded.

PS: To know which is the working pressure for the pipe, you should verify the printing on the pipe and see for the application class you want, which is the applicable pressure. For example, Class 2/8 bar means that if the pipe is applied for distribution of water at 70º C the working pressure is 8 bar.

PIPE SERIES

Dimensionless number for pipe designation conforming to ISO 4065. It's calculated according the equation $S_{cakc} = \frac{d_n - e_n}{2e_n}$.

Ø (mm)	Espessura (mm)	Pipe LEXTUBE Series	Ø (mm)	Espessura (mm)	Pipe LEXTUBE Series
12	2	2,5	20	1,9	5,0
15	2,5	2,5		2	5,0
16	1,8	4,0		2,8	3,2
	2	4,0	22	3	3,2
	2,2	3,2	25	2,3	5,0
17	2	4,0		3,5	3,2
18	2	4,0	28	4	3,2
	2,5	3,2	32	2,9	5,0

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Fabrico de tubos PEX PPR LEX

CHART 4
Pressure comparison of PEX vs PE-RT

S/Scalc		Pipe	Working Temperature = 60 ºC Maximum Temperature = 80 ºC			Working Temperature = 70 ºC Maximum Temperature = 80 ºC		
			Class 1			Class 2		
			PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)	PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)
S	2,5	12x2,0	10	10	10	10	10	10
Scalc	2,5	15x2,5	10	10	10	10	10	10
S	4	16x2,8	8	8	8	8	6	8
Scalc	3,5	16x2,0	10	8	10	10	6	8
S	3,2	16x2,2	10	10	10	10	8	10
Scalc	3,1	18x2,5	10	10	10	10	8	10
S	5	20x1,9	6	6	6	6	4	6
Scalc	4,5	20x2,0	8	6	6	6	6	6
S	3,2	20x2,8	10	10	10	10	8	10
Scalc	3,2	22x3,0	10	10	10	10	8	10
S	5	25x2,3	6	6	6	6	4	6
S	3,2	25x3,5	10	10	10	10	8	10
Scalc	3	28x4,0	10	10	10	10	8	10
S	5	32x2,9	6	6	6	6	4	6

S/Scalc		Pipe	Working T. = (20 + 40 + 60) ºC Maximum Temperature = 70 ºC			Working T. = (20 + 60 + 80) ºC Maximum Temperature = 90 ºC		
			Class 4			Class 5		
			PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)	PE-X (EN ISO 15875)	PE-RT Type I (ISO 22391: 2009)	PE-RT Type II (ISO 22391: 2009)
S	2,5	12x2,0	10	10	10	10	8	10
Scalc	2,5	15x2,5	10	10	10	10	8	10
S	4	16x2,8	10	8	8	8	6	6
Scalc	3,5	16x2,0	10	8	8	8	6	8
S	3,2	16x2,2	10	10	10	10	6	8
Scalc	3,1	18x2,5	10	10	10	10	6	8
S	5	20x1,9	8	6	6	6	4	4
Scalc	4,5	20x2,0	8	6	6	6	4	6
S	3,2	20x2,8	10	10	10	10	6	8
Scalc	3,2	22x3,0	10	10	10	10	6	8
S	5	25x2,3	8	6	6	6	4	4
S	3,2	25x3,5	10	10	10	10	6	8
Scalc	3	28x4,0	10	10	10	10	8	8
S	5	32x2,9	8	6	6	6	4	4

Note 1: The PEX pipe is certified according to standard EN ISO 15875.
Nota 2: Which is the difference between PE-RT type I and type II? The PE-RT type II is a 2nd generation PE-RT more resistant and therefore with higher pressures in some series The raw-material we use at the moment and with which we will certify our PE-RT pipe is type II.
Nota 3: LEXTUBE pipe will be certified according to the standard ISO 22391:2009, which already includes the 2 types of PE-RT.

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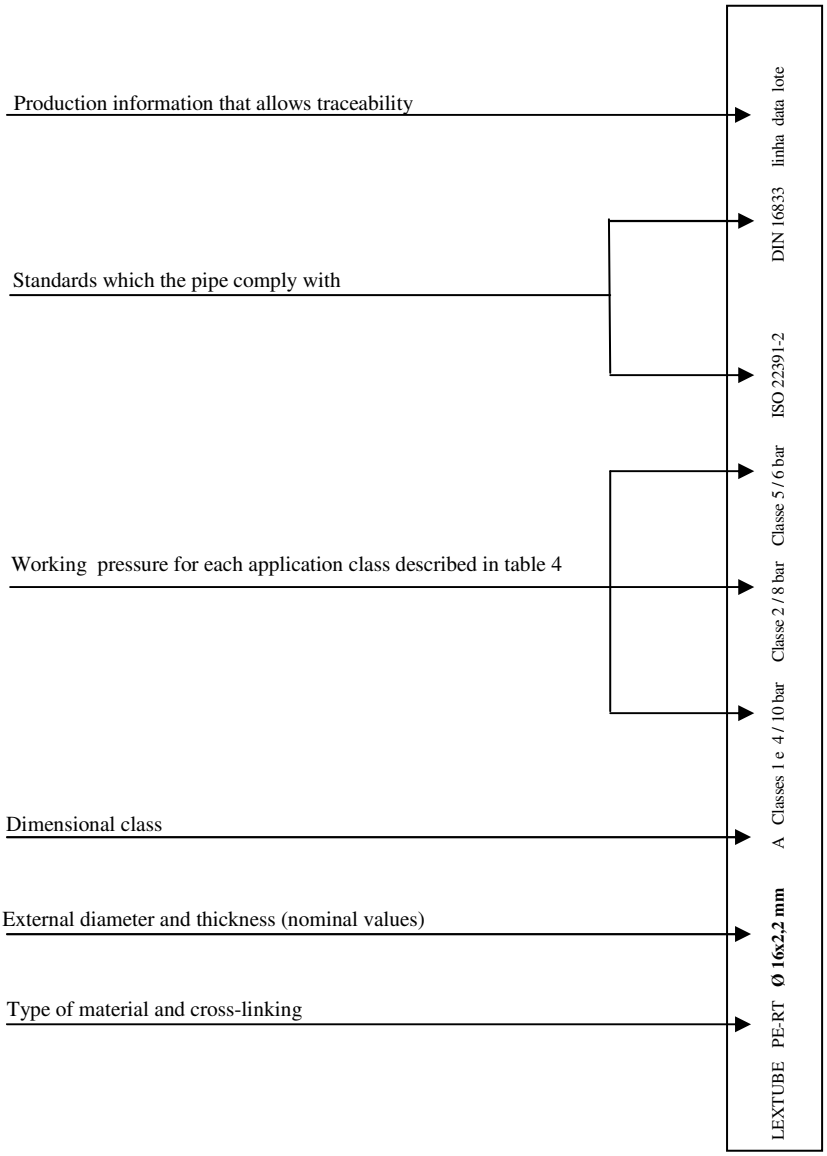
LEXTUBE PIPE MARKING



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PRESSURE DROP TABLE FOR LEXTUBE PIPE WITH WATER AT 20ºC

TABLE 4

Current (l/s)	12x2,0		16x1,8		16x2,0		16x2,2		20x1,9		20x2,0		20x2,8		25x2,3		25x3,5		32x2,9	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0010343	0,20	0,0001792	0,08	0,0002043	0,09	0,0002340	0,09	0,0000615	0,05	0,0000646	0,05	0,0000985	0,06	0,0000245	0,03	0,0000404	0,04	0,0000090	0,02
0,02	0,0043957	0,40	0,0003584	0,17	0,0004086	0,18	0,0004679	0,19	0,0001230	0,10	0,0001293	0,10	0,0001970	0,12	0,0000489	0,06	0,0000807	0,08	0,0000180	0,04
0,03	0,0087008	0,60	0,0011174	0,25	0,0013024	0,27	0,0015261	0,28	0,0001845	0,15	0,0001939	0,15	0,0005560	0,18	0,0000734	0,09	0,0001211	0,12	0,0000270	0,06
0,04	0,0141908	0,80	0,0018115	0,33	0,0021124	0,35	0,0024764	0,38	0,0005185	0,19	0,0005495	0,20	0,0008993	0,25	0,0000978	0,12	0,0003170	0,16	0,0000360	0,07
0,05	0,0207905	0,99	0,0026424	0,41	0,0030825	0,44	0,0036149	0,47	0,0007541	0,24	0,0007993	0,25	0,0013097	0,31	0,0002565	0,15	0,0004605	0,20	0,0000450	0,09
0,06	0,0284467	1,19	0,0036034	0,50	0,0042047	0,53	0,0049322	0,57	0,0010260	0,29	0,0010876	0,30	0,0017839	0,37	0,0003482	0,18	0,0006259	0,24	0,0001081	0,11
0,07	0,0371186	1,39	0,0046893	0,58	0,0054729	0,62	0,0064212	0,66	0,0013327	0,34	0,0014129	0,35	0,0023191	0,43	0,0004515	0,21	0,0008124	0,28	0,0001399	0,13
0,08	0,0467736	1,59	0,0058958	0,66	0,0068822	0,71	0,0080763	0,76	0,0016731	0,39	0,0017738	0,40	0,0029133	0,49	0,0005661	0,24	0,0010193	0,31	0,0001751	0,15
0,09	0,0573846	1,79	0,0072195	0,75	0,0084286	0,80	0,0098926	0,85	0,0020461	0,44	0,0021695	0,45	0,0035649	0,55	0,0006914	0,28	0,0012458	0,35	0,0002135	0,17
0,1	0,0689289	1,99	0,0086575	0,83	0,0101088	0,88	0,0118661	0,95	0,0024509	0,49	0,0025988	0,50	0,0042723	0,61	0,0008274	0,31	0,0014916	0,39	0,0002552	0,19
0,2	0,2322400	3,98	0,0288835	1,66	0,0337516	1,77	0,0396506	1,89	0,0081233	0,97	0,0086161	0,99	0,0142020	1,23	0,0027257	0,61	0,0049303	0,79	0,0008349	0,37
0,3	0,4756824	5,97	0,0588635	2,48	0,0688119	2,65	0,0808712	2,84	0,0164998	1,46	0,0175036	1,49	0,0288900	1,84	0,0055193	0,92	0,0100005	1,18	0,0016846	0,56
0,4	0,7931673	7,96	0,0978286	3,31	0,1143918	3,54	0,1344745	3,78	0,0273623	1,94	0,0290300	1,99	0,0479564	2,46	0,0091347	1,22	0,0165694	1,57	0,0027816	0,74
0,5	1,1808539	9,95	0,1452952	4,14	0,1699269	4,42	0,1997981	4,73	0,0405740	2,43	0,0430502	2,49	0,0711624	3,07	0,0135257	1,53	0,0245537	1,96	0,0041119	0,93
0,6	1,6359814	11,94	0,2009168	4,97	0,2350125	5,31	0,2763667	5,68	0,0560369	2,91	0,0594603	2,98	0,0983373	3,68	0,0186592	1,84	0,0338939	2,36	0,0056651	1,11
0,7	2,1564184	13,93	0,2644262	5,80	0,3093366	6,19	0,3638141	6,62	0,0736756	3,40	0,0781804	3,48	0,1293494	4,30	0,0245100	2,14	0,0445441	2,75	0,0074336	1,30
0,8	2,7404423	15,92	0,3356079	6,62	0,3926475	7,07	0,4618445	7,57	0,0934293	3,88	0,0991459	3,98	0,1640926	4,91	0,0310575	2,45	0,0564675	3,14	0,0094110	1,48
0,9	3,3866167	17,90	0,4142824	7,45	0,4847352	7,96	0,5702117	8,52	0,1152475	4,37	0,1223033	4,48	0,2024784	5,53	0,0382849	2,75	0,0696333	3,54	0,0115923	1,67
1	4,0937143	19,89	0,5002964	8,28	0,5854210	8,84	0,6887054	9,46	0,1390869	4,85	0,1476067	4,97	0,2444315	6,14	0,0461776	3,06	0,0840154	3,93	0,0139728	1,85
1,2	5,6865372	23,87	0,6938265	9,94	0,8119829	10,61	0,9553635	11,35	0,1926843	5,82	0,2044977	5,97	0,3387853	7,37	0,0639102	3,67	0,1163400	4,72	0,0193171	2,23
1,4	7,5117424	27,85	0,9153050	11,59	1,0712895	12,38	1,2605929	13,25	0,2539703	6,79	0,2695523	6,96	0,4467149	8,60	0,0841711	4,28	0,1532889	5,50	0,0254180	2,60
1,6	9,5635244	31,83	1,1640097	13,25	1,3624968	14,15	1,6034018	15,14	0,3227419	7,76	0,3425553	7,96	0,5678652	9,82	0,1068924	4,90	0,1947389	6,29	0,0322549	2,97
1,8		35,81	1,4393374	14,91	1,6848999	15,92	1,9829623	17,03	0,3988299	8,73	0,4233271	8,95	0,7019400	11,05	0,1320173	5,51	0,2405875	7,07	0,0398104	3,34
2		39,79	1,7407731	16,56	2,0378967	17,68	2,3985668	18,92	0,4820896	9,70	0,5117143	9,95	0,8486863	12,28	0,1594974	6,12	0,2907470	7,86	0,0480697	3,71
2,2		43,77	2,0678684	18,22	2,4209632	19,45	2,8495995	20,82	0,5723954	10,67	0,6075835	10,94	1,0078838	13,51	0,1892909	6,73	0,3451411	8,65	0,0570201	4,08
2,4		47,75	2,4202275	19,87	2,8336368	21,22	3,3355169	22,71	0,6696362	11,64	0,7108172	11,94	1,1793384	14,74	0,2213604	7,34	0,4037027	9,43	0,0666503	4,45
2,6		51,73	2,7974973	21,53	3,2755046	22,99	3,8558335	24,60	0,7737132	12,61	0,8213101	12,93	1,3628767	15,96	0,2556731	7,95	0,4663718	10,22	0,0769501	4,82
2,8		55,70	3,1993591	23,19	3,7461942	24,76	4,4101119	26,49	0,8845371	13,58	0,9389678	13,93	1,5583424	17,19	0,2921990	8,57	0,5330944	11,00	0,0879105	5,19
3		59,68	3,6255235	24,84	4,2453670	26,53	4,9979540	28,39	1,0020268	14,55	1,0637042	14,92	1,7655935	18,42	0,3309111	9,18	0,6038213	11,79	0,0995233	5,56
3,2		63,66	4,0757254	26,50	4,7727132	28,29	5,6189957	30,28	1,1261082	15,52	1,1954405	15,92	1,9845001	19,65	0,3717846	9,79	0,6785075	12,58	0,1117809	5,94
3,4		67,64	4,5497208	28,15	5,3279475	30,06	6,2729017	32,17	1,2567129	16,50	1,3341045	16,91	2,2149423	20,88	0,4147968	10,40	0,7571119	13,36	0,1246764	6,31
3,6		71,62	5,0472838	29,81	5,9108058	31,83	6,9593615	34,06	1,3937778	17,47	1,4796289	17,90	2,4568096	22,10	0,4599266	11,01	0,8395961	14,15	0,1382034	6,68
3,8		75,60	5,5682043	31,47	6,5210425	33,60	7,6780862	35,96	1,5372442	18,44	1,6319516	18,90	2,7099989	23,33	0,5071543	11,63	0,9259245	14,93	0,1523558	7,05
4		79,58	6,1122861	33,12	7,1584281	35,37	8,4288064	37,85	1,6870571	19,41	1,7910142	19,89	2,9744140	24,56	0,5564617	12,24	1,0160640	15,72	0,1671283	7,42
4,2		83,56	6,6793455	34,78	7,8227477	37,14	9,2112693	39,74	1,8431652	20,38	1,9567623	20,89	3,2499650	25,79	0,6078316	12,85	1,1099835	16,50	0,1825155	7,79
4,4		87,54	7,2692095	36,44	8,5137991	38,90		41,63	2,0055203	21,35	2,1291446	21,88	3,5365669	27,02	0,6612479	13,46	1,2076536	17,29	0,1985125	8,16
4,6		91,51	7,8817151	38,09	9,2313918	40,67		43,53	2,1740766	22,32	2,3081128	22,88	3,8341401	28,25	0,7166955	14,07	1,3090469	18,08	0,2151148	8,53
4,8		95,49	8,5167081	39,75	9,9753453	42,44		45,42	2,3487913	23,29	2,4936212	23,87	4,1426088	29,47	0,7741600	14,69	1,4141372	18,86	0,2323180	8,90
5		99,47	9,1740424	41,40		44,21		47,31	2,5296234	24,26	2,6856265	24,87	4,4619017	30,70	0,8336278	15,30	1,5229000	19,65	0,2501180	9,27
5,2		103,45	9,8535790	43,06		45,98		49,20	2,7165341	25,23	2,8840874	25,86	4,7919505	31,93	0,8950860	15,91	1,6353116	20,43	0,2685108	9,65
5,4		107,43		44,72		47,75		51,10	2,9094866	26,20	3,0889650	26,86	5,1326906	33,16	0,9585222	16,52	1,7513499	21,22	0,2874927	10,02
5,6		111,41		46,37		49,51		52,99	3,1084456	27,17	3,3002217	27,85	5,4840601	34,39	1,0239248	17,13	1,8709934	22,01	0,3070601	10,39
5,8		115,39		48,03		51,28		54,88	3,3133775	28,14	3,5178219	28,85	5,8460002	35,61	1,0912825	17,75	1,9942218	22,79	0,3272097	10,76
6		119,37		49,68		53,05		56,77	3,5242502	29,11	3,7417314	29,84	6,2184541	36,84	1,1605847	18,36	2,1210157	23,58	0,3479381	11,13
6,2		123,35		51,34		54,82		58,67	3,7410326	30,08	3,9719175	30,84	6,6013679	38,07	1,2318210	18,97	2,2513564	24,36	0,3692424	11,50
6,4		127,32		53,00		56,59		60,56	3,9636953	31,05	4,2083488	31,83	6,9946895	39,30	1,3049816	19,58	2,3852260	25,15	0,3911194	11,87
6,6		131,30		54,65		58,36		62,45	4,1922096	32,02	4,4509950	32,83	7,3983690	40,53	1,3800570	20,19	2,5226072	25,94	0,4135663	12,24
6,8		135,28		56,31		60,13		64,34	4,4265483	32,99	4,6998270	33,82	7,8123582	41,75	1,4570381	20,80	2,6634834	26,72	0,4365804	12,61
7		139,26		57,96		61,89		66,24	4,6666850	33,96	4,9548168	34,82	8,2366108	42,98	1,5359161	21,42	2,8078388	27,51	0,4601590	12,98
7,2		143,24		59,62		63,66		68,13	4,9125940	34,93	5,2159375	35,81	8,6710821	44,21	1,6166825	22,03	2,9556579	28,29	0,4842994	13,35
7,4		147,22		61,28		65,43		70,02	5,1642509	35,90	5,4831628	36,80	9,1157289	45,44	1,6993292	22,64	3,1069258	29,08	0,5089993	13,73
7,6		151,20		62,93		67,20		71,91	5,4216319	36,87	5,7564676	37,80	9,5705095	46,67	1,7838482	23,25	3,2616281	29,87	0,5342562	14,10
7,8		155,18		64,59		68,97		73,81	5,6847140	37,84	6,0358275	38,79		47,89	1,8702318	23,86	3,4197510	30,65	0,5600679	14,47
8		159,15		66,25		70,74		75,70	5,9534748	38,81	6,3212188	39,79		49,12	1,9584728	24,48	3,5812810	31,44	0,5864320	14,84
8,2		163,13		67,90		72,50		77,59	6,2278929	39,78	6,6126187	40,78		50,35	2,0485639	25,09	3,7462051	32,22	0,6133464	15,21
8,4		167,11		69,56		74,27		79,48	6,5079473	40,75	6,9100048	41,78		51,58	2,1404981	25,70	3,9145105	33,01	0,6408090	15,58
8,6		171,09		71,21		76,04		81,38	6,7936177	41,72	7,2133557	42,77		52,81	2,2342687	26,31	4,0861850	33,80	0,6688177	15,95
8,8		175,07		72,87		77,81		83,27	7,0848843	42,69	7,5226505	43,77		54,03	2,3298691	26,92	4,2612167	34,58	0,6973706	16,32
9		179,05		74,53		79,58		85,16	7,3817279	43,66	7,8378686	44,76		55,26	2,4272929	27,54	4,4395940	35,37	0,7264657	16,69
9,2		183,03		76,18		81,35		87,05	7,6841300	44,63	8,1589905	45,76		56,49	2,5265340	28,15	4,6213056	36,15	0,7561012	17,06
9,4		187,01		77,84		83,11		88,95	7,9920723	45,60	8,4859967	46,75		57,72	2,6275863	28,76	4,8063405	36,94	0,7862751	17,44
9,6		190,99		79,49		84,88		90,84	8,3055371	46,57	8,8188686	47,75		58,95	2,7304440	29,37	4,9946880	37,73	0,8169858	17,81
9,8		194,96		81,15		86,65		92,73	8,6245073	47,55	9,1575878	48,74		60,17	2,8351012	29,98	5,1863378	38,51	0,8482316	18,18
10		198,94		82,81		88,42		94,62	8,9489659	48,52	9,5021365	49,74		61,40	2,9415525	30,59	5,3812797	39,30	0,8800106	18,55

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PME líder '12

AENOR Empresa Registrada ER - 1634/2/02

Fabrico de tubos
PEX
PPR
LEX

PRESSURE DROP TABLE FOR LEXTUBE PIPE WITH WATER AT 20ºC

TABLE 5

Current (l/s)	12x2,0		16x1,8		16x2,0		16x2,2		20x1,9		20x2,0		20x2,8		25x2,3		25x3,5		32x2,9	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0010286	0,20	0,0000729	0,08	0,0001546	0,09	0,0001811	0,09	0,0000250	0,05	0,0000263	0,05	0,0000401	0,06	0,0000100	0,03	0,0000164	0,04	0,0000037	0,02
0,02	0,0033426	0,40	0,0004250	0,17	0,0004957	0,18	0,0005813	0,19	0,0001213	0,10	0,0001286	0,10	0,0002107	0,12	0,0000413	0,06	0,0000741	0,08	0,0000073	0,04
0,03	0,0067227	0,60	0,0008485	0,25	0,0009904	0,27	0,0011621	0,28	0,0002410	0,15	0,0002555	0,15	0,0004195	0,18	0,0000816	0,09	0,0001469	0,12	0,0000253	0,06
0,04	0,0110773	0,80	0,0013917	0,33	0,0016249	0,35	0,0019074	0,38	0,0003941	0,19	0,0004178	0,20	0,0006868	0,25	0,0001330	0,12	0,0002398	0,16	0,0000410	0,07
0,05	0,0163495	0,99	0,0020471	0,41	0,0023909	0,44	0,0028072	0,47	0,0005783	0,24	0,0006133	0,25	0,0010091	0,31	0,0001949	0,15	0,0003517	0,20	0,0000600	0,09
0,06	0,0224985	1,19	0,0028097	0,50	0,0032822	0,53	0,0038545	0,57	0,0007924	0,29	0,0008403	0,30	0,0013836	0,37	0,0002665	0,18	0,0004815	0,24	0,0000819	0,11
0,07	0,0294934	1,39	0,0036754	0,58	0,0042942	0,62	0,0050439	0,66	0,0010351	0,34	0,0010978	0,35	0,0018085	0,43	0,0003477	0,21	0,0006286	0,28	0,0001067	0,13
0,08	0,0373088	1,59	0,0046411	0,66	0,0054232	0,71	0,0063710	0,76	0,0013055	0,39	0,0013847	0,40	0,0022822	0,49	0,0004381	0,24	0,0007924	0,31	0,0001342	0,15
0,09	0,0459241	1,79	0,0057041	0,75	0,0066662	0,80	0,0078321	0,85	0,0016029	0,44	0,0017002	0,45	0,0028034	0,55	0,0005374	0,28	0,0009725	0,35	0,0001645	0,17
0,1	0,0553215	1,99	0,0068623	0,83	0,0080206	0,88	0,0094243	0,95	0,0019266	0,49	0,0020437	0,50	0,0033710	0,61	0,0006454	0,31	0,0011685	0,39	0,0001973	0,19
0,2	0,1896263	3,98	0,0233363	1,66	0,0272921	1,77	0,0320892	1,89	0,0065175	0,97	0,0069152	0,99	0,0114303	1,23	0,0021729	0,61	0,0039443	0,79	0,0006606	0,37
0,3	0,3918583	5,97	0,0480265	2,48	0,0561856	2,65	0,0660831	2,84	0,0133769	1,46	0,0141950	1,49	0,0234888	1,84	0,0044488	0,92	0,0080865	1,18	0,0013488	0,56
0,4	0,6572196	7,96	0,0803318	3,31	0,0939990	3,54	0,1105817	3,78	0,0223352	1,94	0,0237033	1,99	0,0392502	2,46	0,0074161	1,22	0,0134922	1,57	0,0022443	0,74
0,5	0,9826628	9,95	0,1198718	4,14	0,1402879	4,42	0,1650628	4,73	0,0332854	2,43	0,0353263	2,49	0,0585272	3,07	0,0110388	1,53	0,0200961	1,96	0,0033361	0,93
0,6	1,3659871	11,94	0,1663722	4,97	0,1947317	5,31	0,2291501	5,68	0,0461501	2,91	0,0489823	2,98	0,0811851	3,68	0,0152911	1,84	0,0278516	2,36	0,0046162	1,11
0,7	1,8054876	13,93	0,2196210	5,80	0,2570827	6,19	0,3025524	6,62	0,0608700	3,40	0,0646080	3,48	0,1071196	4,30	0,0201530	2,14	0,0367224	2,75	0,0060787	1,30
0,8	2,2997826	15,92	0,2794465	6,62	0,3271403	7,07	0,3850340	7,57	0,0773967	3,88	0,0821525	3,98	0,1362463	4,91	0,0256084	2,45	0,0466794	3,14	0,0077186	1,48
0,9	2,8477169	17,90	0,3457053	7,45	0,4047369	7,96	0,4763980	8,52	0,0956902	4,37	0,1015729	4,48	0,1684950	5,53	0,0316439	2,75	0,0576983	3,54	0,0095318	1,67
1	3,4483019	19,89	0,4182750	8,28	0,4897293	8,84	0,5764761	9,46	0,1157159	4,85	0,1228328	4,97	0,2038054	6,14	0,0382479	3,06	0,0697581	3,93	0,0115148	1,85
1,2	4,8040794	23,87	0,5819326	9,94	0,6814171	10,61	0,8022056	11,35	0,1608484	5,82	0,1707484	5,97	0,2834081	7,37	0,0531228	3,67	0,0969305	4,72	0,0159783	2,23
1,4	6,3613169	27,85	0,7697019	11,59	0,9013649	12,38	1,0612365	13,25	0,2125933	6,79	0,2256859	6,96	0,3747027	8,60	0,0701660	4,28	0,1280748	5,50	0,0210887	2,60
1,6	8,1153067	31,83	0,9810010	13,25	1,1488926	14,15	1,3527693	15,14	0,2707878	7,76	0,2874728	7,96	0,4774037	9,82	0,0893233	4,90	0,1630926	6,29	0,0268296	2,97
1,8		35,81	1,2153432	14,91	1,4234309	15,92	1,6761348	17,03	0,3352959	8,73	0,3559646	8,95	0,5912726	11,05	0,1105493	5,51	0,2019014	7,07	0,0331871	3,34
2		39,79	1,4723116	16,56	1,7244925	17,68	2,0307601	18,92	0,4060010	9,70	0,4310377	9,95	0,7161052	12,28	0,1338051	6,12	0,2444307	7,86	0,0401493	3,71
2,2		43,77	1,7515429	18,22	2,0516524	19,45	2,4161457	20,82	0,4828017	10,67	0,5125845	10,94	0,8517235	13,51	0,1590568	6,73	0,2906192	8,65	0,0477061	4,08
2,4		47,75	2,0527162	19,87	2,4045353	21,22	2,8318502	22,71	0,5656083	11,64	0,6005099	11,94	0,9979702	14,74	0,1862748	7,34	0,3404126	9,43	0,0558485	4,45
2,6		51,73	2,3755444	21,53	2,7828054	22,99	3,2774787	24,60	0,6543408	12,61	0,6947289	12,93	1,1547048	15,96	0,2154322	7,95	0,3937625	10,22	0,0645681	4,82
2,8		55,70	2,7197681	23,19	3,1861594	24,76	3,7526747	26,49	0,7489268	13,58	0,7951646	13,93	1,3218004	17,19	0,2465050	8,57	0,4506251	11,00	0,0738579	5,19
3		59,68	3,0851517	24,84	3,6143216	26,53	4,2571140	28,39	0,8493005	14,55	0,9017474	14,92	1,4991415	18,42	0,2794713	9,18	0,5109607	11,79	0,0837112	5,56
3,2		63,66	3,4714790	26,50	4,0670393	28,29	4,7904992	30,28	0,9554018	15,52	1,0144133	15,92	1,6866225	19,65	0,3143112	9,79	0,5747329	12,58	0,0941218	5,94
3,4		67,64	3,8785509	28,15	4,5440793	30,06	5,3525565	32,17	1,0671751	16,50	1,1331035	16,91	1,8841459	20,88	0,3510060	10,40	0,6419079	13,36	0,1050842	6,31
3,6		71,62	4,3061829	29,81	5,0452260	31,83	5,9430319	34,06	1,1845689	17,47	1,2577632	17,90	2,0916213	22,10	0,3895387	11,01	0,7124549	14,15	0,1165932	6,68
3,8		75,60	4,7542031	31,47	5,5702784	33,60	6,5616892	35,96	1,3075355	18,44	1,3883419	18,90	2,3089648	23,33	0,4298935	11,63	0,7863449	14,93	0,1286440	7,05
4		79,58	5,2224511	33,12	6,1190487	35,37	7,2083077	37,85	1,4360301	19,41	1,5247919	19,89	2,5360979	24,56	0,4720554	12,24	0,8635507	15,72	0,1412321	7,42
4,2		83,56	5,7107764	34,78	6,6913609	37,14	7,8826800	39,74	1,5700108	20,38	1,6670689	20,89	2,7729469	25,79	0,5160105	12,85	0,9440472	16,50	0,1543532	7,79
4,4		87,54	6,2190374	36,44	7,2870492	38,90	8,5846115	41,63	1,7094381	21,35	1,8151310	21,88	3,0194426	27,02	0,5617458	13,46	1,0278105	17,29	0,1680035	8,16
4,6		91,51	6,7471003	38,09	7,9059572	40,67	9,3139180	43,53	1,8542749	22,32	1,9689388	22,88	3,2755196	28,25	0,6092488	14,07	1,1148181	18,08	0,1821791	8,53
4,8		95,49	7,2948386	39,75	8,5479370	42,44		45,42	2,0044860	23,29	2,1284547	23,87	3,5411162	29,47	0,6585078	14,69	1,2050487	18,86	0,1968765	8,90
5		99,47	7,8621325	41,40	9,2128482	44,21		47,31	2,1600380	24,26	2,2936435	24,87	3,8161735	30,70	0,7095118	15,30	1,2984821	19,65	0,2120924	9,27
5,2		103,45	8,4488678	43,06	9,9005573	45,98		49,20	2,3208991	25,23	2,4644714	25,86	4,1006359	31,93	0,7622503	15,91	1,3950992	20,43	0,2278236	9,65
5,4		107,43	9,0549358	44,72		47,75		51,10	2,4870391	26,20	2,6409064	26,86	4,3944503	33,16	0,8167131	16,52	1,4948818	21,22	0,2440670	10,02
5,6		111,41	9,6802329	46,37		49,51		52,99	2,6584291	27,17	2,8229179	27,85	4,6975660	34,39	0,8728908	17,13	1,5978123	22,01	0,2608198	10,39
5,8		115,39		48,03		51,28		54,88	2,8350416	28,14	3,0104765	28,85	5,0099345	35,61	0,9307741	17,75	1,7038742	22,79	0,2780792	10,76
6		119,37		49,68		53,05		56,77	3,0168503	29,11	3,2035543	29,84	5,3315093	36,84	0,9903544	18,36	1,8130515	23,58	0,2958425	11,13
6,2		123,35		51,34		54,82		58,67	3,2038296	30,08	3,4021244	30,84	5,6622462	38,07	1,0516231	18,97	1,9253288	24,36	0,3141071	11,50
6,4		127,32		53,00		56,59		60,56	3,3959555	31,05	3,6061609	31,83	6,0021021	39,30	1,1145723	19,58	2,0406916	25,15	0,3328708	11,87
6,6		131,30		54,65		58,36		62,45	3,5932043	32,02	3,8156391	32,83	6,3510362	40,53	1,1791941	20,19	2,1591257	25,94	0,3521310	12,24
6,8		135,28		56,31		60,13		64,34	3,7955537	32,99	4,0305351	33,82	6,7090088	41,75	1,2454811	20,80	2,2806174	26,72	0,3718856	12,61
7		139,26		57,96		61,89		66,24	4,0029820	33,96	4,2508259	34,82	7,0759817	42,98	1,3134262	21,42	2,4051538	27,51	0,3921324	12,98
7,2		143,24		59,62		63,66		68,13	4,2154682	34,93	4,4764891	35,81	7,4519181	44,21	1,3830222	22,03	2,5327221	28,29	0,4128692	13,35
7,4		147,22		61,28		65,43		70,02	4,4329920	35,90	4,7075034	36,80	7,8367825	45,44	1,4542627	22,64	2,6633101	29,08	0,4340941	13,73
7,6		151,20		62,93		67,20		71,91	4,6555339	36,87	4,9438480	37,80	8,2305405	46,67	1,5271410	23,25	2,7969060	29,87	0,4558051	14,10
7,8		155,18		64,59		68,97		73,81	4,8830751	37,84	5,1855028	38,79	8,6331588	47,89	1,6016509	23,86	2,9334984	30,65	0,4780003	14,47
8		159,15		66,25		70,74		75,70	5,1155970	38,81	5,4324483	39,79	9,0446052	49,12	1,6777863	24,48	3,0730763	31,44	0,5006778	14,84
8,2		163,13		67,90		72,50		77,59	5,3530821	39,78	5,6846657	40,78	9,4648484	50,35	1,7555413	25,09	3,2156288	32,22	0,5238360	15,21
8,4		167,11		69,56		74,27		79,48	5,5955129	40,75	5,9421366	41,78	9,8938581	51,58	1,8349102	25,70	3,3611456	33,01	0,5474729	15,58
8,6		171,09		71,21		76,04		81,38	5,8428729	41,72	6,2048434	42,77		52,81	1,9158874	26,31	3,5096166	33,80	0,5715871	15,95
8,8		175,07		72,87		77,81		83,27	6,0951456	42,69	6,4727686	43,77		54,03	1,9984676	26,92	3,6610319	34,58	0,5961768	16,32
9		179,05		74,53		79,58		85,16	6,3523153	43,66	6,7458956	44,76		55,26	2,0826455	27,54	3,8153821	35,37	0,6212405	16,69
9,2		183,03		76,18		81,35		87,05	6,6143666	44,63	7,0242080	45,76		56,49	2,1684160	28,15	3,9726577	36,15	0,6467766	17,06
9,4		187,01		77,84		83,11		88,95	6,8812846	45,60	7,3076899	46,75		57,72	2,2557741	28,76	4,1328498	36,94	0,6727836	17,44
9,6		190,99		79,49		84,88		90,84	7,1530545	46,57	7,5963258	47,75		58,95	2,3447150	29,37	4,2959495	37,73	0,6992601	17,81
9,8		194,96		81,15		86,65		92,73	7,4296623	47,55	7,8901006	48,74		60,17	2,4352340	29,98	4,4619484	38,51	0,7262047	18,18
10		198,94		82,81		88,42		94,62	7,7110939	48,52	8,1889996	49,74		61,40	2,5273266	30,59	4,6308379	39,30	0,7536159	18,55

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3750-753 TRAVASSÔ – ÁGUEDA – PORTUGAL

Fabrico de tubos
PEX
PPR
LEX

LEXTUBE TUBE

DESIGNATION	CODE	DIMENSION	PACKAGE / MT.
TUBE LEXTUBE (COIL) 	4700031502012	Ø 12x2,0	100
	4700031502515	Ø 15x2,5	100
	4710031502515500	Ø 15x2,5	500
	4700031502016	Ø 16x2,0	100
	4700031502216	Ø 16x2,2	100
	4700031502020	Ø 20x2,0	100
	4700031502820	Ø 20x2,8	100
	4700031502325	Ø 25x2,3	50
	4710031502325100	Ø 25x2,3	100
	4700031503525	Ø 25x3,5	50
	4710031502932025	Ø 32x2,9	25
	4710031502932050	Ø 32x2,9	50

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Presentation Of The Products

PE-RT Tube With Oxygen Barrier

- **Brand:** DOUBLELEX;
- **Formats:** Round;
- **Measures:**
  - **Length:** 25 to 600 meters;
  - **Diameters:** 12 to 32 mm;
  - **Thickness:** 2 to 3,5 mm;

Applications

- **Sanitary, cold or hot water;**
- **Drinking water lines;**
- **Central heating.**

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Fabrico de tubos
PEX
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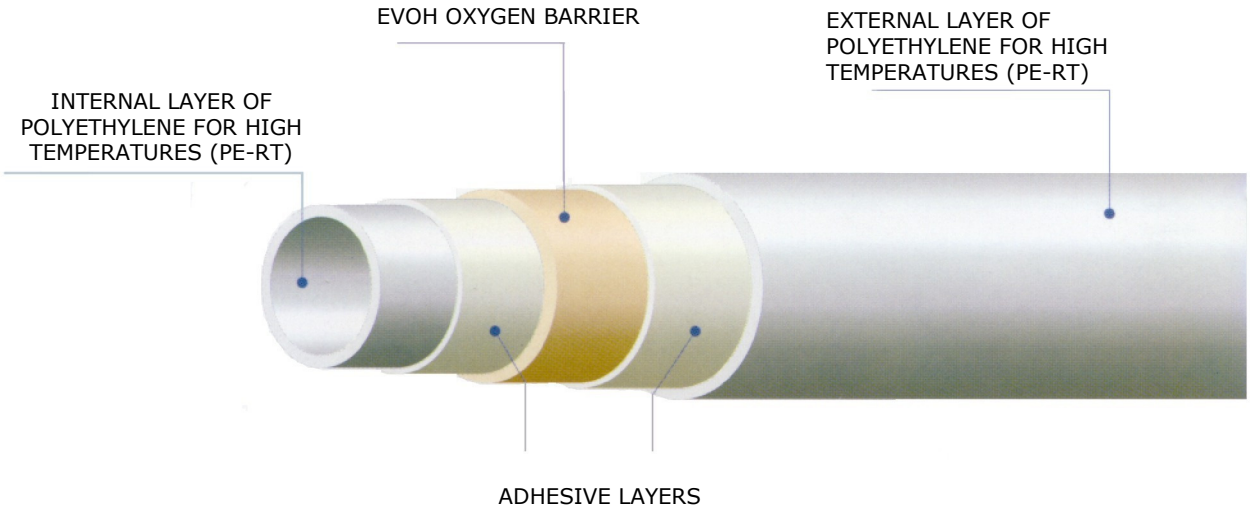
DOUBLELEX REDUCES UP TO 55 000 TIMES THE OXYGEN WITHIN THE SYSTEM, DUE TO 5 OVERLAPPED LAYERS.

It has similar characteristics to the Lextube tube, plus the advantages resulting from the internal barrier of EVOH. This barrier, when reducing significantly the diffusion of oxygen through the tube walls, will permit that the fittings used in these installations have a bigger durability. When reducing the volume of oxygen present in the water we will also reduce the corrosion of metallic fittings, seeing that it is provoked by the presence of oxygen in the water and accelerated by its high temperature.



Due to the fact that the EVOH layer is an internal one there is no possibility of damaging it during transportation or installation.

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Fabrico de tubos
PEX
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LEX

TECHNICAL DATA

CHART 1-2

MAXIMUM USAGE TEMPERATURE [1]	95ºC	
DENSITY [2]	0,933 g/cm^3	ISO 1183
RATE OF LINEAR THERMAL EXPANSION BETWEEN 0ºC AND 70ºC [2]	1,95 X 10 $^{-4}$ K^{-1}	DIN 53752 A
THERMAL CONDUCTIVITY AT 60ºC [2]	0,4 WK^{-1}m^{-1}	DIN 52612-1
ELASTICITY TO FLEXION MODULE [2]	550 N/mm^2	ISO 178
YIELD TENSILE (50 mm/min) [2]	16,5 N/mm^2	ISO 527
ULTIMATE TENSILE (50 mm/min) [2]	34 N/mm^2	ISO 527
ULTIMATE ELONGATION (50 mm/min) [2]	> 800 %	ISO 527
SUPERFICIAL RESISTIVITY [3]	> 10^{12} Ω	IEC 93

1) According to norm DIN 16834: 2001-06
2) Type values indicated by the raw material manufacturer
3) Type values indicated by norm DIN 16833: 2001-06

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Fabrico de tubos PEX PPR LEX

DURABILITY WHEN SUBJECTED TO DIFFERENT

Temperatures/Pressures

Working pressures allowed on PE-RT tubes Type II for water supply, using a SF = 1,5

CHART 2-2

TEMPERATURE (ºC)	YEARS OF USAGE	TUBE SERIES					
		6,3	5	4	3,2	2,5	2
		SDR					
		13,6	11	9	7,4	6	5
		WORKING PRESSURE (bar)					
10	1	11,2	14,1	17,7	22,1	28,3	35,4
	5	11,0	13,9	17,4	21,8	27,8	34,8
	10	11,0	13,8	17,3	21,6	27,6	34,5
	25	10,9	13,7	17,1	21,4	27,4	34,2
	50	10,8	13,6	17,0	21,2	27,2	34,0
	100	10,7	13,5	16,9	21,1	27,0	33,7
20	1	10,3	13,0	16,3	20,3	26,0	32,5
	5	10,1	12,8	16,0	20,0	25,5	31,9
	10	10,1	12,7	15,8	19,8	25,3	31,7
	25	10,0	12,5	15,7	19,6	25,1	31,4
	50	9,9	12,4	15,6	19,4	24,9	31,1
	100	9,8	12,3	15,4	19,3	24,7	30,9
30	1	9,4	11,9	14,8	18,5	23,7	29,6
	5	9,2	11,6	14,5	18,2	23,3	29,1
	10	9,1	11,5	14,4	18,0	23,0	28,8
	25	9,0	11,4	14,2	17,8	22,8	28,5
	50	9,0	11,3	14,1	17,6	22,6	28,2
	100	8,9	11,2	14,0	17,5	22,4	28,0
40	1	8,5	10,7	13,4	16,7	21,4	26,7
	5	8,3	10,5	13,1	16,4	20,9	26,2
	10	8,2	10,4	13,0	16,2	20,7	25,9
	25	8,1	10,2	12,8	16,0	20,5	25,6
	50	8,1	10,1	12,7	15,9	20,3	25,4
	100	8,0	10,1	12,6	15,7	20,1	25,1
50	1	7,6	9,5	11,9	14,9	19,1	23,8
	5	7,4	9,3	11,6	14,5	18,6	23,3
	10	7,3	9,2	11,5	14,4	18,4	23,0
	25	7,2	9,1	11,4	14,2	18,2	22,7
	50	7,1	9,0	11,3	14,1	18,0	22,5
	100	7,1	8,9	11,1	13,9	17,8	22,3
60	1	6,7	8,4	10,5	13,1	16,8	21,0
	5	6,5	8,2	10,2	12,8	16,3	20,4
	10	6,4	8,1	10,1	12,6	16,1	20,2
	25	6,3	8,0	10,0	12,4	15,9	19,9
	50	6,2	7,9	9,8	12,3	15,7	19,7
70	1	5,7	7,2	9,1	11,3	14,5	18,1
	5	5,6	7,0	8,8	11,0	14,1	17,6
	10	5,5	6,9	8,7	10,9	13,9	17,4
	25	5,4	6,8	8,6	10,7	13,7	17,1
	50	5,4	6,7	8,4	10,5	13,5	16,9
80	1	4,9	6,1	7,7	9,6	12,3	15,3
	5	4,7	5,9	7,4	9,3	11,9	14,8
	10	4,6	5,9	7,3	9,1	11,7	14,6
	25	4,6	5,8	7,2	9,0	11,5	14,4
90	1	4,0	5,1	6,3	7,9	10,1	12,6
	5	3,9	4,9	6,1	7,6	9,8	12,2
	10	3,8	4,8	6,0	7,5	9,6	12,0
	(15)[a]	(3,8)[a]	(4,8)[a]	(6,0)[a]	(7,5)[a]	(9,5)[a]	(11,9)[a]
95	1	3,6	4,5	5,7	7,1	9,1	11,4
	5	3,5	4,4	5,5	6,9	8,8	11,0
	10	(3,4)[a]	(4,3)[a]	(5,4)[a]	(6,7)[a]	(8,6)[a]	(10,8)[a]

[a] The Figures between brackets are considered by verification of tests longer than 1 year by 110º-Test

1) According to norm DIN 16834:2009

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Fabrico de tubos
PEX
PPR
LEX

DOUBLELEX TUBE

DESIGNATION	CODE	DIMENSION	PACKAGE / MT.
DOUBLELEX TUBE (COIL) 	4920031502012	Ø 12x2,0	100
	4930031502012500	Ø 12x2,0	500
	4920031502515	Ø 15x2,5	100
	4930031502515500	Ø 15x2,5	500
	4920031502016	Ø 16x2,0	100
	4930031502016120	Ø 16x2,0	120
	4930031502016200	Ø 16x2,0	200
	4920031502216	Ø 16x2,2	100
	4920031502017	Ø 17x2,0	100
	4930031502017200	Ø 17x2,0	200
	4920031502018	Ø 18x2,0	100
	4930031502018500	Ø 18x2,0	500
	4920031502518	Ø 18x2,5	100
	4930031502518500	Ø 18x2,5	500
	4920031502020	Ø 20x2,0	100
	4930031502020120	Ø 20x2,0	120
	4930031502020200	Ø 20x2,0	200
	4930031502020500	Ø 20x2,0	500
	4920031502820	Ø 20x2,8	100
	4920031503022	Ø 22x3,0	100
	4920031502325	Ø 25x2,3	50
	4920031503525	Ø 25x3,5	50
	493003150293250	Ø 32x2,9	50

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Fabrico de tubos
PEX
PPR
LEX

Presentation Of The Products

Polypropylene Tube – Random Copolymer

- **Brand:** PERFILPPR;
- **Formats:** Round;
- **Measures:**
  - **Length:** 4 meters;
  - **Diameters:** 16 to 90 mm;
  - **Thickness:** 2,7 to 15 mm;

Applications

- **Sanitary, cold or hot water;**
- **Drinking water lines;**
- **Industrial, non-corrosive fluids.**

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Fabrico de tubos PEX PPR LEX

SOME CHARACTERISTICS OF THE PERFILPPR TUBE

1. **IT IS IMPOSSIBLE TO EXIST INCRUSTATIONS** – Due to its perfectly smooth walls.
2. **LOW CHARGE LOSS** – Due to its good finishing of the interior walls, the PERFILPPR tube reduces fluid friction.
3. **IT IS NOT SUBJECT TO CORROSION** – Of any kind of water.
4. **IT CAN BE USED IN SEISMIC AREAS** – Its elasticity allows the tube to absorb shocks and displacements caused by earthquakes.
5. **HIGH RESISTANCE TO CHEMICAL PRODUCTS** - The PERFILPPR tube resists to alkaline products and basics.
6. **EASY TO HANDLE** – The low weight and its easy assembly makes it a time saver in relation to other systems.
7. **EXCELLENT ACOUSTIC INSULATOR** - The PERFILPPR tube is extremely elastic and absorbs the noise caused by the passing of fluids.
8. **RESISTENT TO FLUID EROSION**
9. **LOW THERMAL DISSIPATION** – The low thermal conductivity of the PERFILPPR tube permits it an excellent insulation and little thermal dissipation.
10. **ELECTRICAL INSULATOR** – Due to the absence of ferrous materials in its chemical composition it is an electrical insulator.
11. **LONGEVITY** – When installed correctly and when pressures and working temperatures are respected, is should resist about 50 years.
12. **HIGYENIC MATERIAL** – It can be used for human consumption water lines.

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Fabrico de tubos PEX PPR LEX

PERFILPPR TUBE USAGE AND ASSEMBLY

1. The PERFILPPR tube should be installed within the walls or in a protective case in order to avoid its rapid degradation and respective fittings, because the combination of the UV sun rays and oxygen make a combination which is very aggressive to PERFILPPR tube.

2. The PERFILPPR tube should be stored in facilities that protect it from sunlight.

3. Do not attempt to bend the tube in cold or with the help of heat, you should use fittings that we commercialise (curves, bends etc.).

4. We highly recommend the use of a leveller. If the threads of the fittings aren't parallel to the tube, it may break.

5. Do not use damaged threads. You will only damage the thread that was in good condition. The use of linen should also be avoided; it's more advisable to use TEFLON tape. Tighten the threaded fitting by hand and only after having done so to the maximum you may use a specific tool to turn the threaded fitting another ½ turn. Never tighten the fitting too much.

6. At temperatures bellow 0°C it is advisable to avoid impact with the ends of the tubes. Do not use cracked, defective or deformed tubes.

7. When welding the machine should be as perpendicular as possible to the tube on order to get a uniform welding.

8. Drafts should be avoided during welding specially for diameters superior to 40 mm.

9. Before installing the last component the whole system should be subjected to testing.

10. For the assembly of PERFILPPR tube within the walls it is advisable to protect it with insulating tube and the fittings with adhesive tape. This kind of protection will avoid probable cuts or damages in the system caused by pieces of brick, blocks or even small stones that can be found within the walls. Besides the diminishing of loss of temperature we also reduce the noise provoked by passing fluids. When assembling the PPR tube on the exterior of the walls you should leave the brackets placed at certain distance between each other in order to allow the tube to dilate or contract with temperature variation.

11. When the PERFILPPR tubes are applied on the exterior of the walls and getting to transport hot water, these are subject to a variation in length (dilation) which will be bigger, the bigger the variation of temperature in relation to the ambient temperature. To absorb these dilations you can use "expansion curves" or " expansion U's".

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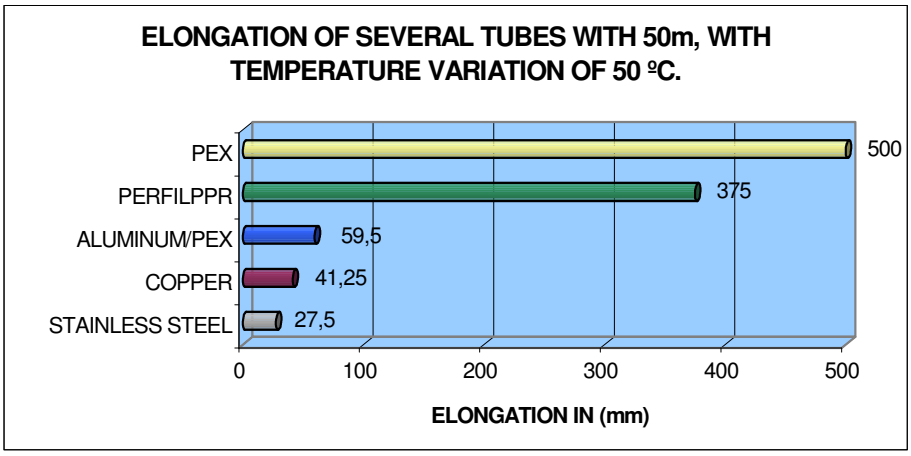
Fabrico de tubos PEX PPR LEX

TECHNICAL DATA

Table 1

MAXIMUM USAGE TEMPERATURE[1)]	95 ºC	
DENSITY[2)]	0,905 g/cm^3	ISO 1183
RATE OF THERMAL EXPANSION BETWEEN 0 ºC AND 110 ºC[3)]	1,5 X 10^{-4} K^{-1}	DIN 53752
THERMAL CONDUCTIVITY[3)]	0,23 WK^{-1} m^{-1}	DIN 52615-1
ELASTICITY MODULE[3)]	900 N/mm^2	DIN 53457
BREAKDOWN TENSION TO TRACTION (50 mm/min)[2)]	25 N/mm^2	ISSO 527-2
CHARPY IMPACT TEST WITHOUT NOTCH[2)] AT – 0 ºC AT – 23 ºC	 Doesn't break Doesn't break	ISO 179/1eU
SUPERFICIAL RESISTANCE[3)]	> 10 ^{12} Ω	DIN 53482

1) According to norm DIN 8077-2008
2) Type values indicated by the raw material manufacturer
3) Type values indicated by norm DIN 8078-2008



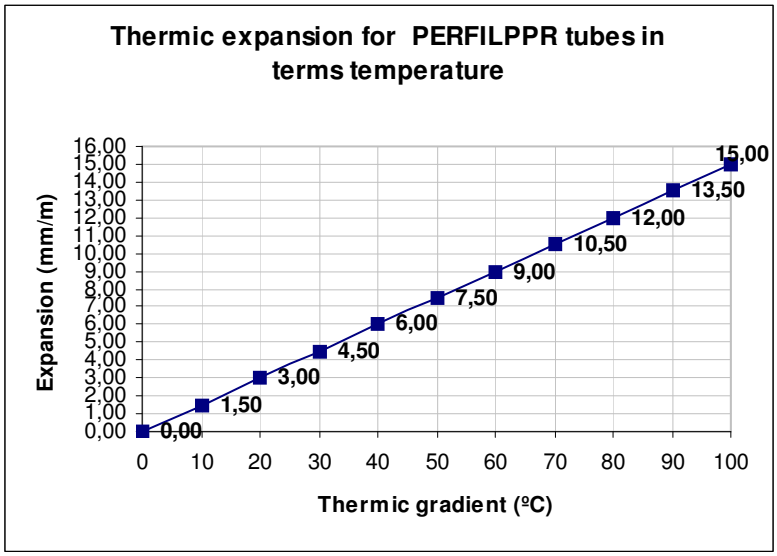


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TABELA 2

Distance between clamps in terms of the temperature gradient and the external diameter of tube

Thermic gradient (ºC)	**Tube diameter (in mm)**								
	16	**20**	**25**	**32**	**40**	**50**	**63**	**75**	**90**
	Distance between clamps (in cm)								
0	70	85	105	125	140	165	190	205	220
20	50	60	75	90	100	120	140	150	160
30	50	60	75	90	100	120	140	150	160
40	50	60	70	80	90	110	130	140	150
50	50	60	70	80	90	110	130	140	150
60	50	55	65	75	85	100	115	125	140
70	50	50	60	70	80	95	105	115	125

DURABILITY WHEN SUBJECTED TO DIFERENT TEMPERATURES/ PRESSURES

TABLE 3

Working pressures permitted on PPR tube for conduction of water , using a security factor of 1.5 [1)]

TEMPERATURE ºC	WORKING YEARS	TUBE SERIE	
		5	2,5
		WORKING PRESSURE (bar)	
20	10 25 50	13,7 13,2 12,9	27,4 26,4 25,7
30	10 25 50	11,6 11,2 10,9	23,2 22,3 21,7
40	10 25 50	9,8 9,4 9,2	19,6 18,8 18,3
50	10 25 50	8,2 7,9 7,7	16,5 15,9 15,4
60	10 25 50	6,9 6,6 6,4	13,9 13,3 12,9
70	10 25 50	5,8 5,0 4,2	11,6 10,0 8,5
95	1 5	3,8 2,6	7,6 5,2

1) In accordance with standard DIN 8077: 2008

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PIPE SERIE

The pipe série is a relation between the nominal external diameter and the nominal thickness of the pipe. It is by this relation that the working pressure is defined for the different application classes . This information is important in order to be able to interpret the information that is mentioned in the product certificates.

Designation PN	**Série**	**Tube dimension PERFILPPR correspondent**
Relation indicated in the standard DIN 8077		
10	5	Ø 16x1,9 mm
		Ø 20x1,9 mm
		Ø 25x2,3 mm
		Ø 32x2,9 mm
		Ø 40x3,7 mm
		Ø 50x4,6 mm
		Ø 63x8,3 mm
20	2,5	Ø 16x2,7 mm
		Ø 20x3,4 mm
		Ø 25x4,2 mm
		Ø 32x5,4 mm
		Ø 40x6,7 mm
		Ø 50x8,3 mm
		Ø 63x10,5 mm
		Ø 75x12,5 mm
		Ø 90x15 mm

Table 4
Classification of working conditions (Standard ISO 15874-1: 2003)

Application classe	Working temperature T_D (ºC)	Time at T_D (years)	T_{max} (ºC)	Time at T_{max} (years)	T_{mal} (ºC)	Time at T_{mal} (hours)	Typical application field
1	60	49	80	1	95	100	Distribution of water (60 ºC)
2	70	49	80	1	95	100	Distribution of water (70 ºC)
4	20 Followed by 40 Followed by 60 Followed by (see next column)	2,5 20 25	70	2,5	100	100	Radiant floor heating and low temperature radiators
5	20 Followed by 60 Followed by 80 Followed by see next column)	14 25 10	90	1	100	100	High temperature radiators
All systems that satisfy these conditions are adequate for distribution of cold water during 50 years at a temperature of 20 ºC with a working pressure of 10 bar.							

Being:

T_D (Working temperature) – Temperature or combination of temperatures of the water dependent of the working conditions for which the system was conceived.

T_{max} (Maximum temperature) – Maximum temperature for which the system was conceived, which can only occur for short periods of time.

T_{mal} (Mal functioning temperature) – Highest temperature that can be reached when the control limits are exceeded.

PS: In order to know which is the working pressure for the tube, you should consult the printing of the pipe and see, for the application class you need, which is the applicable pressure. Eg. Class 2/10 bar means that the if the tube is applied for distribution of water at 70 ºC the working pressure is 10 bar

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PRINTING FOR PERFILPPR TUBES

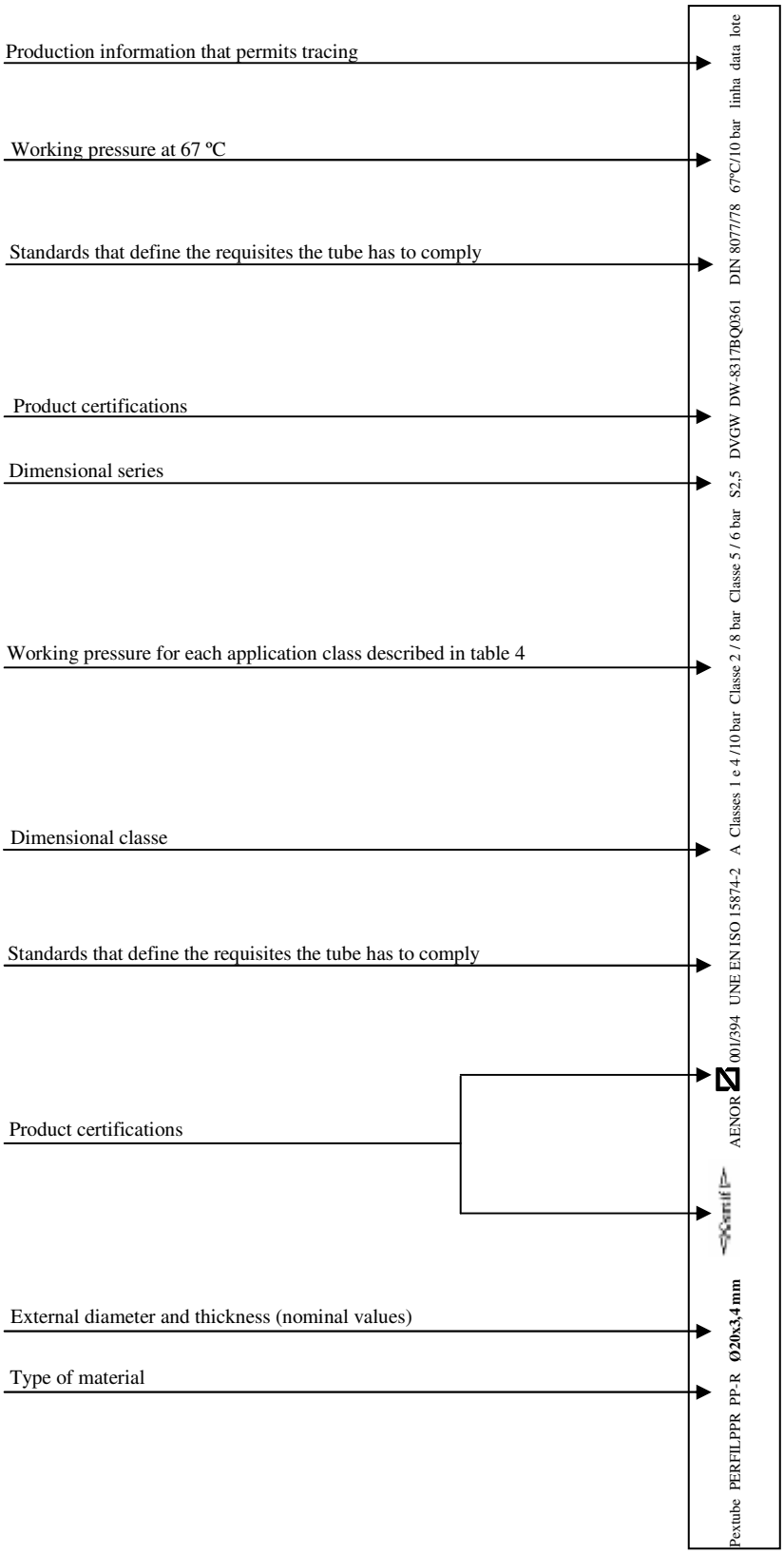

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TABLE FOR PIPE CHARGE LOSS
FOR PERFILPPR TUBE (PN 10 SERIE 5) WITH WATER AT 20 ºC

TABLE 5

Current (l/s)	20x1,9		25x2,3		32x2,9		40x3,7		50x4,6		63x5,8	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0000615	0,05	0,0000245	0,03	0,0000090	0,02	0,0000038	0,01	0,0000015	0,01	0,0000006	0,00
0,02	0,0001230	0,10	0,0000489	0,06	0,0000180	0,04	0,0000075	0,02	0,0000031	0,02	0,0000012	0,01
0,03	0,0001845	0,15	0,0000734	0,09	0,0000270	0,06	0,0000113	0,04	0,0000046	0,02	0,0000018	0,01
0,04	0,0005185	0,19	0,0000978	0,12	0,0000360	0,07	0,0000150	0,05	0,0000061	0,03	0,0000024	0,02
0,05	0,0007541	0,24	0,0002565	0,15	0,0000450	0,09	0,0000188	0,06	0,0000076	0,04	0,0000030	0,02
0,06	0,0010260	0,29	0,0003482	0,18	0,0001081	0,11	0,0000225	0,07	0,0000092	0,05	0,0000036	0,03
0,07	0,0013327	0,34	0,0004515	0,21	0,0001399	0,13	0,0000504	0,08	0,0000107	0,05	0,0000042	0,03
0,08	0,0016731	0,39	0,0005661	0,24	0,0001751	0,15	0,0000630	0,10	0,0000122	0,06	0,0000049	0,04
0,09	0,0020461	0,44	0,0006914	0,28	0,0002135	0,17	0,0000767	0,11	0,0000269	0,07	0,0000055	0,04
0,1	0,0024509	0,49	0,0008274	0,31	0,0002552	0,19	0,0000916	0,12	0,0000321	0,08	0,0000061	0,05
0,2	0,0081233	0,97	0,0027257	0,61	0,0008349	0,37	0,0002976	0,24	0,0001034	0,15	0,0000349	0,10
0,3	0,0164998	1,46	0,0055193	0,92	0,0016846	0,56	0,0005985	0,36	0,0002073	0,23	0,0000697	0,14
0,4	0,0273623	1,94	0,0091347	1,22	0,0027816	0,74	0,0009862	0,48	0,0003407	0,31	0,0001143	0,19
0,5	0,0405740	2,43	0,0135257	1,53	0,0041119	0,93	0,0014556	0,60	0,0005020	0,38	0,0001681	0,24
0,6	0,0560369	2,91	0,0186592	1,84	0,0056651	1,11	0,0020030	0,72	0,0006899	0,46	0,0002307	0,29
0,7	0,0736756	3,40	0,0245100	2,14	0,0074336	1,30	0,0026257	0,84	0,0009035	0,54	0,0003018	0,34
0,8	0,0934293	3,88	0,0310575	2,45	0,0094110	1,48	0,0033215	0,96	0,0011418	0,61	0,0003810	0,39
0,9	0,1152475	4,37	0,0382849	2,75	0,0115923	1,67	0,0040885	1,08	0,0014044	0,69	0,0004683	0,43
1	0,1390869	4,85	0,0461776	3,06	0,0139728	1,85	0,0049251	1,20	0,0016907	0,76	0,0005633	0,48
1,2	0,1926843	5,82	0,0639102	3,67	0,0193171	2,23	0,0068019	1,44	0,0023324	0,92	0,0007762	0,58
1,4	0,2539703	6,79	0,0841711	4,28	0,0254180	2,60	0,0089427	1,68	0,0030637	1,07	0,0010185	0,67
1,6	0,3227419	7,76	0,1068924	4,90	0,0322549	2,97	0,0113401	1,92	0,0038822	1,22	0,0012896	0,77
1,8	0,3988299	8,73	0,1320173	5,51	0,0398104	3,34	0,0139881	2,16	0,0047856	1,38	0,0015886	0,87
2	0,4820896	9,70	0,1594974	6,12	0,0480697	3,71	0,0168813	2,40	0,0057722	1,53	0,0019149	0,96
2,2	0,5723954	10,67	0,1892909	6,73	0,0570201	4,08	0,0200153	2,64	0,0068404	1,68	0,0022680	1,06
2,4	0,6696362	11,64	0,2213604	7,34	0,0666503	4,45	0,0233860	2,88	0,0079888	1,84	0,0026475	1,16
2,6	0,7737132	12,61	0,2556731	7,95	0,0769501	4,82	0,0269898	3,11	0,0092161	1,99	0,0030530	1,25
2,8	0,8845371	13,58	0,2921990	8,57	0,0879105	5,19	0,0308236	3,35	0,0105214	2,14	0,0034840	1,35
3	1,0020268	14,55	0,3309111	9,18	0,0995233	5,56	0,0348844	3,59	0,0119035	2,29	0,0039402	1,45
3,2	1,1261082	15,52	0,3717846	9,79	0,1117809	5,94	0,0391695	3,83	0,0133615	2,45	0,0044213	1,54
3,4	1,5476978	16,50	0,4147968	10,40	0,1246764	6,31	0,0436765	4,07	0,0148947	2,60	0,0049271	1,64
3,6	1,7271436	17,47	0,4599266	11,01	0,1382034	6,68	0,0484032	4,31	0,0165022	2,75	0,0054573	1,73
3,8	1,9162681	18,44	0,5071543	11,63	0,1523558	7,05	0,0533473	4,55	0,0181832	2,91	0,0060116	1,83
4	2,1150648	19,41	0,5564617	12,24	0,1671283	7,42	0,0585070	4,79	0,0199372	3,06	0,0065898	1,93
4,2	2,3235275	20,38	0,6078316	12,85	0,1825155	7,79	0,0638805	5,03	0,0217634	3,21	0,0071917	2,02
4,4	2,5416508	21,35	0,6612479	13,46	0,1985125	8,16	0,0694659	5,27	0,0236614	3,37	0,0078171	2,12
4,6	2,7694300	22,32	0,7166955	14,07	0,2151148	8,53	0,0752616	5,51	0,0256304	3,52	0,0084658	2,22
4,8	3,0068607	23,29	0,7741600	14,69	0,2323180	8,90	0,0812662	5,75	0,0276701	3,67	0,0091376	2,31
5	3,2539390	24,26	0,8336278	15,30	0,2501180	9,27	0,0874781	5,99	0,0297798	3,82	0,0098325	2,41
5,2	3,5106613	25,23	0,8950860	15,91	0,2685108	9,65	0,0938959	6,23	0,0319591	3,98	0,0105501	2,51
5,4	3,7770243	26,20	1,1714005	16,52	0,2874927	10,02	0,1005184	6,47	0,0342076	4,13	0,0112903	2,60
5,6	4,0530251	27,17	1,2561058	17,13	0,3070601	10,39	0,1073443	6,71	0,0365249	4,28	0,0120531	2,70
5,8	4,3386608	28,14	1,3437190	17,75	0,3272097	10,76	0,1143724	6,95	0,0389104	4,44	0,0128383	2,80
6	4,6339290	29,11	1,4342387	18,36	0,3479381	11,13	0,1216015	7,19	0,0413639	4,59	0,0136457	2,89
6,2	4,9388272	30,08	1,5276637	18,97	0,3692424	11,50	0,1290305	7,43	0,0438849	4,74	0,0144752	2,99
6,4	5,2533534	31,05	1,6239926	19,58	0,3911194	11,87	0,1366585	7,67	0,0464731	4,90	0,0153267	3,08
6,6	5,5775055	32,02	1,7232246	20,19	0,4135663	12,24	0,1444842	7,91	0,0491281	5,05	0,0162001	3,18
6,8	5,9112816	32,99	1,8253584	20,80	0,4365804	12,61	0,1525069	8,15	0,0518496	5,20	0,0170953	3,28
7	6,2546799	33,96	1,9303932	21,42	0,4601590	12,98	0,1607255	8,39	0,0546373	5,35	0,0180121	3,37
7,2	6,6076988	34,93	2,0383280	22,03	0,4842994	13,35	0,1691392	8,63	0,0574908	5,51	0,0189505	3,47
7,4	6,9703368	35,90	2,1491620	22,64	0,5089993	13,73	0,1777470	8,87	0,0604099	5,66	0,0199103	3,57
7,6	7,3425924	36,87	2,2628944	23,25	0,5342562	14,10	0,1865482	9,11	0,0633943	5,81	0,0208915	3,66
7,8	7,7244643	37,84	2,3795246	23,86	0,5600679	14,47	0,1955419	9,34	0,0664436	5,97	0,0218939	3,76
8	8,1159511	38,81	2,4990516	24,48	0,5864320	14,84	0,2047272	9,58	0,0695577	6,12	0,0229175	3,86
8,2	8,5170516	39,78	2,6214750	25,09	0,6133464	15,21	0,2141035	9,82	0,0727362	6,27	0,0239622	3,95
8,4	8,9277647	40,75	2,7467941	25,70	0,6408090	15,58	0,2236700	10,06	0,0759789	6,42	0,0250280	4,05
8,6	9,3480893	41,72	2,8750082	26,31	0,6688177	15,95	0,2334260	10,30	0,0792856	6,58	0,0261146	4,14
8,8	9,7780244	42,69	3,0061169	26,92	0,6973706	16,32	0,2433708	10,54	0,0826560	6,73	0,0272221	4,24
9		43,66	3,1401196	27,54	0,8815587	16,69	0,2535037	10,78	0,0860898	6,88	0,0283503	4,34
9,2		44,63	3,2770158	28,15	0,9195729	17,06	0,2638240	11,02	0,0895869	7,04	0,0294992	4,43
9,4		45,60	3,4168050	28,76	0,9583763	17,44	0,2743310	11,26	0,0931471	7,19	0,0306687	4,53
9,6		46,57	3,5594868	29,37	0,9979687	17,81	0,2850243	11,50	0,0967700	7,34	0,0318588	4,63
9,8		47,55	3,7050607	29,98	1,0383499	18,18	0,2959031	11,74	0,1004555	7,50	0,0330693	4,72
10		48,52	3,8535264	30,59	1,0795197	18,55	0,3069669	11,98	0,1042035	7,65	0,0343003	4,82

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Fabrico de tubos PEX PPR LEX

TABLE FOR PIPE CHARGE LOSS
FOR PERFILPPR TUBE (PN 10 SERIE 5) WITH WATER AT 70 ºC

TABLE 6

Current (l/s)	20x1,9		25x2,3		32x2,9		40x3,7		50x4,6		63x5,8	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0000250	0,05	0,0000100	0,03	0,0000037	0,02	0,0000015	0,01	0,0000006	0,01	0,0000002	0,00
0,02	0,0001213	0,10	0,0000413	0,06	0,0000073	0,04	0,0000031	0,02	0,0000012	0,02	0,0000005	0,01
0,03	0,0002410	0,15	0,0000816	0,09	0,0000253	0,06	0,0000091	0,04	0,0000019	0,02	0,0000007	0,01
0,04	0,0003941	0,19	0,0001330	0,12	0,0000410	0,07	0,0000147	0,05	0,0000052	0,03	0,0000010	0,02
0,05	0,0005783	0,24	0,0001949	0,15	0,0000600	0,09	0,0000215	0,06	0,0000075	0,04	0,0000025	0,02
0,06	0,0007924	0,29	0,0002665	0,18	0,0000819	0,11	0,0000293	0,07	0,0000102	0,05	0,0000035	0,03
0,07	0,0010351	0,34	0,0003477	0,21	0,0001067	0,13	0,0000381	0,08	0,0000132	0,05	0,0000045	0,03
0,08	0,0013055	0,39	0,0004381	0,24	0,0001342	0,15	0,0000478	0,10	0,0000166	0,06	0,0000056	0,04
0,09	0,0016029	0,44	0,0005374	0,28	0,0001645	0,17	0,0000586	0,11	0,0000203	0,07	0,0000069	0,04
0,1	0,0019266	0,49	0,0006454	0,31	0,0001973	0,19	0,0000702	0,12	0,0000244	0,08	0,0000082	0,05
0,2	0,0065175	0,97	0,0021729	0,61	0,0006606	0,37	0,0002339	0,24	0,0000807	0,15	0,0000270	0,10
0,3	0,0164998	1,46	0,0044488	0,92	0,0013488	0,56	0,0004763	0,36	0,0001638	0,23	0,0000697	0,14
0,4	0,0273623	1,94	0,0074161	1,22	0,0022443	0,74	0,0007911	0,48	0,0002716	0,31	0,0001143	0,19
0,5	0,0405740	2,43	0,0110388	1,53	0,0033361	0,93	0,0011745	0,60	0,0004027	0,38	0,0001681	0,24
0,6	0,0560369	2,91	0,0152911	1,84	0,0046162	1,11	0,0016237	0,72	0,0005561	0,46	0,0002307	0,29
0,7	0,0736756	3,40	0,0201530	2,14	0,0060787	1,30	0,0021364	0,84	0,0007311	0,54	0,0003018	0,34
0,8	0,0934293	3,88	0,0256084	2,45	0,0077186	1,48	0,0027109	0,96	0,0009270	0,61	0,0003810	0,39
0,9	0,1152475	4,37	0,0316439	2,75	0,0095318	1,67	0,0033458	1,08	0,0011434	0,69	0,0004683	0,43
1	0,1390869	4,85	0,0382479	3,06	0,0115148	1,85	0,0040398	1,20	0,0013799	0,76	0,0005633	0,48
1,2	0,1926843	5,82	0,0531228	3,67	0,0159783	2,23	0,0056011	1,44	0,0019114	0,92	0,0007762	0,58
1,4	0,2539703	6,79	0,0701660	4,28	0,0210887	2,60	0,0073874	1,68	0,0025191	1,07	0,0010185	0,67
1,6	0,3227419	7,76	0,0893233	4,90	0,0268296	2,97	0,0093930	1,92	0,0032011	1,22	0,0012896	0,77
1,8	0,3988299	8,73	0,1105493	5,51	0,0331871	3,34	0,0116129	2,16	0,0039555	1,38	0,0015886	0,87
2	0,4820896	9,70	0,1338051	6,12	0,0401493	3,71	0,0140431	2,40	0,0047810	1,53	0,0019149	0,96
2,2	0,5723954	10,67	0,1944089	6,73	0,0477061	4,08	0,0166798	2,64	0,0056763	1,68	0,0022680	1,06
2,4	0,6696362	11,64	0,2297774	7,34	0,0558485	4,45	0,0195199	2,88	0,0066403	1,84	0,0026475	1,16
2,6	0,7737132	12,61	0,2680518	7,95	0,0645681	4,82	0,0225605	3,11	0,0076721	1,99	0,0030530	1,25
2,8	0,8845371	13,58	0,3092293	8,57	0,0738579	5,19	0,0257990	3,35	0,0087708	2,14	0,0034840	1,35
3	1,0020268	14,55	0,3533073	9,18	0,0837112	5,56	0,0292331	3,59	0,0099354	2,29	0,0039402	1,45
3,2	1,1261082	15,52	0,4002839	9,79	0,0941218	5,94	0,0328606	3,83	0,0111654	2,45	0,0044213	1,54
3,4	1,5476978	16,50	0,4501572	10,40	0,1050842	6,31	0,0366796	4,07	0,0124600	2,60	0,0049271	1,64
3,6	1,7271436	17,47	0,5029258	11,01	0,1165932	6,68	0,0406883	4,31	0,0138187	2,75	0,0054573	1,73
3,8	1,9162681	18,44	0,5585883	11,63	0,1566985	7,05	0,0448849	4,55	0,0152407	2,91	0,0060116	1,83
4	2,1150648	19,41	0,6171435	12,24	0,1729444	7,42	0,0492678	4,79	0,0167256	3,06	0,0065898	1,93
4,2	2,3235275	20,38	0,6785903	12,85	0,1899789	7,79	0,0538357	5,03	0,0182729	3,21	0,0071917	2,02
4,4	2,5416508	21,35	0,7429278	13,46	0,2078015	8,16	0,0585870	5,27	0,0198821	3,37	0,0078171	2,12
4,6	2,7694300	22,32	0,8101553	14,07	0,2264116	8,53	0,0635204	5,51	0,0215527	3,52	0,0084658	2,22
4,8	3,0068607	23,29	0,8802718	14,69	0,2458090	8,90	0,0686348	5,75	0,0232843	3,67	0,0091376	2,31
5	3,2539390	24,26	0,9532768	15,30	0,2659933	9,27	0,0739288	5,99	0,0250766	3,82	0,0098325	2,41
5,2	3,5106613	25,23	1,0291697	15,91	0,2869641	9,65	0,0794015	6,23	0,0269290	3,98	0,0105501	2,51
5,4	3,7770243	26,20	1,1079497	16,52	0,3087211	10,02	0,0850518	6,47	0,0288413	4,13	0,0112903	2,60
5,6	4,0530251	27,17	1,1896165	17,13	0,3312641	10,39	0,0908785	6,71	0,0308131	4,28	0,0120531	2,70
5,8	4,3386608	28,14	1,2741695	17,75	0,3545929	10,76	0,1170348	6,95	0,0328441	4,44	0,0128383	2,80
6	4,6339290	29,11	1,3616083	18,36	0,3787072	11,13	0,1249183	7,19	0,0349339	4,59	0,0136457	2,89
6,2	4,9388272	30,08	1,4519325	18,97	0,4036067	11,50	0,1330547	7,43	0,0370823	4,74	0,0144752	2,99
6,4	5,2533534	31,05	1,5451416	19,58	0,4292913	11,87	0,1414438	7,67	0,0392889	4,90	0,0153267	3,08
6,6	5,5775055	32,02	1,6412354	20,19	0,4557609	12,24	0,1500855	7,91	0,0415535	5,05	0,0162001	3,18
6,8	5,9112816	32,99	1,7402135	20,80	0,4830151	12,61	0,1589797	8,15	0,0438757	5,20	0,0170953	3,28
7	6,2546799	33,96	1,8420756	21,42	0,5110540	12,98	0,1681263	8,39	0,0462555	5,35	0,0180121	3,37
7,2	6,6076988	34,93	1,9468214	22,03	0,5398772	13,35	0,1775252	8,63	0,0486923	5,51	0,0189505	3,47
7,4	6,9703368	35,90	2,0544506	22,64	0,5694848	13,73	0,1871764	8,87	0,0511862	5,66	0,0199103	3,57
7,6	7,3425924	36,87	2,1649630	23,25	0,5998765	14,10	0,1970798	9,11	0,0537367	5,81	0,0208915	3,66
7,8	7,7244643	37,84	2,2783583	23,86	0,6310522	14,47	0,2072352	9,34	0,0563437	5,97	0,0218939	3,76
8	8,1159511	38,81	2,3946363	24,48	0,6630119	14,84	0,2176427	9,58	0,0590069	6,12	0,0229175	3,86
8,2	8,5170516	39,78	2,5137968	25,09	0,6957553	15,21	0,2283022	9,82	0,0617262	6,27	0,0239622	3,95
8,4	8,9277647	40,75	2,6358395	25,70	0,7292825	15,58	0,2392136	10,06	0,0645013	6,42	0,0250280	4,05
8,6	9,3480893	41,72	2,7607643	26,31	0,7635932	15,95	0,2503768	10,30	0,0673321	6,58	0,0261146	4,14
8,8	9,7780244	42,69	2,8885711	26,92	0,7986875	16,32	0,2617919	10,54	0,0702182	6,73	0,0272221	4,24
9		43,66	3,0192595	27,54	0,8345652	16,69	0,2734587	10,78	0,0731596	6,88	0,0283503	4,34
9,2		44,63	3,1528295	28,15	0,8712263	17,06	0,2853772	11,02	0,0761561	7,04	0,0294992	4,43
9,4		45,60	3,2892808	28,76	0,9086706	17,44	0,2975474	11,26	0,0953618	7,19	0,0306687	4,53
9,6		46,57	3,4286134	29,37	0,9468980	17,81	0,3099693	11,50	0,0993056	7,34	0,0318588	4,63
9,8		47,55	3,5708271	29,98	0,9859086	18,18	0,3226427	11,74	0,1033281	7,50	0,0330693	4,72
10		48,52	3,7159218	30,59	1,0257023	18,55	0,3355676	11,98	0,1074293	7,65	0,0343003	4,82

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PPR
LEX

TABLE FOR PIPE CHARGE LOSS
FOR PERFILPPR TUBE (PN 20 SERIE 2,5) WITH WATER AT 20 ºC

TABLE 7

Current (l/s)	16x2,7		20x3,4		25x4,2		32x5,4		40x6,7		50x8,3		63x10,5		75x12,5		90x15	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0003356	0,11	0,0001395	0,07	0,0000558	0,05	0,0000210	0,03	0,0000085	0,02	0,0000034	0,01	0,0000014	0,01	0,0000007	0,01	0,0000003	0,00
0,02	0,0006711	0,23	0,0002791	0,15	0,0001116	0,09	0,0000419	0,06	0,0000169	0,04	0,0000068	0,02	0,0000027	0,01	0,0000014	0,01	0,0000007	0,01
0,03	0,0023266	0,34	0,0008345	0,22	0,0001674	0,14	0,0000629	0,08	0,0000254	0,05	0,0000102	0,03	0,0000041	0,02	0,0000020	0,02	0,0000010	0,01
0,04	0,0037803	0,45	0,0013515	0,29	0,0004626	0,18	0,0000839	0,11	0,0000338	0,07	0,0000136	0,05	0,0000054	0,03	0,0000027	0,02	0,0000013	0,01
0,05	0,0055233	0,57	0,0019702	0,37	0,0006727	0,23	0,0002143	0,14	0,0000423	0,09	0,0000170	0,06	0,0000068	0,04	0,0000034	0,03	0,0000016	0,02
0,06	0,0075414	0,68	0,0026853	0,44	0,0009150	0,28	0,0002908	0,17	0,0001007	0,11	0,0000204	0,07	0,0000082	0,04	0,0000041	0,03	0,0000020	0,02
0,07	0,0098238	0,79	0,0034930	0,51	0,0011884	0,32	0,0003770	0,20	0,0001303	0,13	0,0000450	0,08	0,0000095	0,05	0,0000047	0,04	0,0000023	0,02
0,08	0,0123616	0,91	0,0043902	0,58	0,0014917	0,37	0,0004725	0,23	0,0001631	0,14	0,0000562	0,09	0,0000109	0,06	0,0000054	0,04	0,0000026	0,03
0,09	0,0151478	1,02	0,0053744	0,66	0,0018240	0,42	0,0005771	0,25	0,0001989	0,16	0,0000685	0,10	0,0000235	0,06	0,0000061	0,05	0,0000029	0,03
0,1	0,0181762	1,13	0,0064432	0,73	0,0021847	0,46	0,0006904	0,28	0,0002377	0,18	0,0000818	0,11	0,0000280	0,07	0,0000068	0,05	0,0000033	0,04
0,2	0,0608622	2,27	0,0214639	1,46	0,0072362	0,92	0,0022720	0,57	0,0007772	0,36	0,0002655	0,23	0,0000902	0,14	0,0000398	0,10	0,0000169	0,07
0,3	0,1242659	3,40	0,0437095	2,19	0,0146934	1,39	0,0045983	0,85	0,0015679	0,54	0,0005337	0,34	0,0001807	0,22	0,0000794	0,15	0,0000336	0,11
0,4	0,2067755	4,53	0,0726072	2,92	0,0243617	1,85	0,0076078	1,13	0,0025886	0,72	0,0008791	0,46	0,0002970	0,29	0,0001302	0,20	0,0000551	0,14
0,5	0,3073765	5,67	0,1077972	3,65	0,0361192	2,31	0,0112619	1,42	0,0038260	0,90	0,0012973	0,57	0,0004376	0,36	0,0001916	0,25	0,0000809	0,18
0,6	0,4253409	6,80	0,1490216	4,38	0,0498785	2,77	0,0155332	1,70	0,0052709	1,08	0,0017850	0,68	0,0006012	0,43	0,0002630	0,31	0,0001109	0,21
0,7	0,5601071	7,93	0,1960818	5,12	0,0655724	3,23	0,0204006	1,98	0,0069159	1,26	0,0023397	0,80	0,0007872	0,51	0,0003440	0,36	0,0001449	0,25
0,8	0,7112219	9,07	0,2488174	5,85	0,0831469	3,70	0,0258469	2,27	0,0087551	1,44	0,0029594	0,91	0,0009948	0,58	0,0004344	0,41	0,0001828	0,28
0,9	0,8783076	10,20	0,3070950	6,58	0,1025569	4,16	0,0318581	2,55	0,0107838	1,62	0,0036424	1,03	0,0012235	0,65	0,0005339	0,46	0,0002246	0,32
1	1,0610416	11,33	0,3708007	7,31	0,1237638	4,62	0,0384221	2,83	0,0129978	1,80	0,0043874	1,14	0,0014727	0,72	0,0006424	0,51	0,0002700	0,35
1,2	1,4723672	13,60	0,5141122	8,77	0,1714392	5,54	0,0531676	3,40	0,0179679	2,16	0,0060586	1,37	0,0020314	0,87	0,0008852	0,61	0,0003717	0,42
1,4	2,4202221	15,86	0,6780883	10,23	0,2259494	6,47	0,0700134	3,97	0,0236414	2,52	0,0079648	1,60	0,0026680	1,01	0,0011618	0,71	0,0004875	0,50
1,6	3,1264108	18,13	0,8621922	11,69	0,2871135	7,39	0,0889027	4,53	0,0299990	2,88	0,0100992	1,83	0,0033804	1,15	0,0014711	0,81	0,0006169	0,57
1,8	3,9213663	20,40	1,0659760	13,15	0,3547809	8,32	0,1097884	5,10	0,0370245	3,24	0,0124566	2,05	0,0041667	1,30	0,0018123	0,92	0,0007595	0,64
2	4,8049663	22,66	1,2890569	14,61	0,4288228	9,24	0,1326302	5,67	0,0447043	3,60	0,0150322	2,28	0,0050253	1,44	0,0021848	1,02	0,0009151	0,71
2,2	5,7771161	24,93	1,8941538	16,08	0,5091271	10,17	0,1573930	6,23	0,0530264	3,96	0,0178219	2,51	0,0059549	1,59	0,0025879	1,12	0,0010835	0,78
2,4	6,8377405	27,20	2,2381425	17,54	0,5955952	11,09	0,1840459	6,80	0,0619803	4,32	0,0208223	2,74	0,0069542	1,73	0,0030211	1,22	0,0012644	0,85
2,6	7,9867781	29,46	2,6103365	19,00	0,6881388	12,01	0,2125614	7,37	0,0715567	4,68	0,0240300	2,97	0,0080222	1,88	0,0034839	1,32	0,0014575	0,92
2,8	9,2241783	31,73	3,0107077	20,46	0,7866786	12,94	0,2429147	7,93	0,0817470	5,04	0,0274423	3,20	0,0091580	2,02	0,0039759	1,43	0,0016628	0,99
3		34,00	3,4392320	21,92	0,8911424	13,86	0,2750831	8,50	0,0925436	5,40	0,0310565	3,42	0,0103605	2,17	0,0044968	1,53	0,0018801	1,06
3,2		36,26	3,8958894	23,38	1,0014640	14,79	0,3090462	9,07	0,1039395	5,76	0,0348703	3,65	0,0116291	2,31	0,0050461	1,63	0,0021092	1,13
3,4		38,53	4,3806624	24,85	1,3680742	15,71	0,3447849	9,63	0,1159283	6,12	0,0388814	3,88	0,0129629	2,45	0,0056236	1,73	0,0023500	1,20
3,6		40,79	4,8935360	26,31	1,5264970	16,63	0,3822816	10,20	0,1285039	6,48	0,0430879	4,11	0,0143614	2,60	0,0062289	1,83	0,0026023	1,27
3,8		43,06	5,4344970	27,77	1,6934473	17,56	0,4215201	10,77	0,1416609	6,84	0,0474879	4,34	0,0158239	2,74	0,0068618	1,94	0,0028661	1,34
4		45,33	6,0035337	29,23	1,8689187	18,48	0,4624851	11,33	0,1553941	7,20	0,0520796	4,57	0,0173497	2,89	0,0075220	2,04	0,0031412	1,41
4,2		47,59	6,6006358	30,69	2,0529056	19,41	0,5051623	11,90	0,1696985	7,56	0,0568614	4,79	0,0189384	3,03	0,0082093	2,14	0,0034275	1,49
4,4		49,86	7,2257943	32,15	2,2454029	20,33	0,5495384	12,46	0,1845698	7,92	0,0618317	5,02	0,0205894	3,18	0,0089234	2,24	0,0037250	1,56
4,6		52,13	7,8790007	33,61	2,4464061	21,25	0,5956006	13,03	0,2000035	8,28	0,0669891	5,25	0,0223022	3,32	0,0096642	2,34	0,0040335	1,63
4,8		54,39	8,5602476	35,08	2,6559112	22,18	0,6433371	13,60	0,2159956	8,64	0,0723322	5,48	0,0240764	3,46	0,0104314	2,44	0,0043530	1,70
5		56,66	9,2695283	36,54	2,8739144	23,10	0,6927366	14,16	0,2325423	9,00	0,0778597	5,71	0,0259115	3,61	0,0112249	2,55	0,0046834	1,77
5,2		58,93		38,00	3,1004123	24,03	0,7437881	14,73	0,2496399	9,36	0,0835704	5,93	0,0278071	3,75	0,0120444	2,65	0,0050245	1,84
5,4		61,19		39,46	3,3354020	24,95	0,7964816	15,30	0,2672850	9,72	0,0894631	6,16	0,0297629	3,90	0,0128898	2,75	0,0053764	1,91
5,6		63,46		40,92	3,5788806	25,88	0,8508073	15,86	0,2854742	10,08	0,0955367	6,39	0,0317784	4,04	0,0137609	2,85	0,0057390	1,98
5,8		65,72		42,38	3,8308455	26,80	1,1060968	16,43	0,3042044	10,44	0,1017901	6,62	0,0338532	4,19	0,0146576	2,95	0,0061122	2,05
6		67,99		43,84	4,0912944	27,72	1,1804713	17,00	0,3234726	10,80	0,1082222	6,85	0,0359871	4,33	0,0155797	3,06	0,0064959	2,12
6,2		70,26		45,31	4,3602250	28,65	1,2572255	17,56	0,3432758	11,16	0,1148322	7,08	0,0381797	4,48	0,0165271	3,16	0,0068900	2,19
6,4		72,52		46,77	4,6376354	29,57	1,3363583	18,13	0,3636113	11,52	0,1216191	7,30	0,0404307	4,62	0,0174996	3,26	0,0072946	2,26
6,6		74,79		48,23	4,9235235	30,50	1,4178687	18,70	0,3844764	11,88	0,1285819	7,53	0,0427398	4,76	0,0184971	3,36	0,0077096	2,33
6,8		77,06		49,69	5,2178877	31,42	1,5017558	19,26	0,4058685	12,24	0,1357198	7,76	0,0451067	4,91	0,0195195	3,46	0,0081348	2,41
7		79,32		51,15	5,5207262	32,34	1,5880187	19,83	0,4277851	12,60	0,1430319	7,99	0,0475311	5,05	0,0205667	3,57	0,0085703	2,48
7,2		81,59		52,61	5,8320376	33,27	1,6766566	20,40	0,4502239	12,96	0,1505176	8,22	0,0500128	5,20	0,0216384	3,67	0,0090160	2,55
7,4		83,86		54,07	6,1518204	34,19	1,7676687	20,96	0,4731826	13,32	0,1581758	8,45	0,0525514	5,34	0,0227347	3,77	0,0094719	2,62
7,6		86,12		55,54	6,4800733	35,12	1,8610543	21,53	0,4966588	13,68	0,1660060	8,67	0,0551467	5,49	0,0238555	3,87	0,0099379	2,69
7,8		88,39		57,00	6,8167949	36,04	1,9568128	22,10	0,5206506	14,04	0,1740074	8,90	0,0577986	5,63	0,0250005	3,97	0,0104139	2,76
8		90,65		58,46	7,1619840	36,96	2,0549435	22,66	0,5451557	14,40	0,1821792	9,13	0,0605067	5,77	0,0261697	4,07	0,0109000	2,83
8,2		92,92		59,92	7,5156396	37,89	2,1554457	23,23	0,5701721	14,76	0,1905209	9,36	0,0632708	5,92	0,0273630	4,18	0,0113960	2,90
8,4		95,19		61,38	7,8777605	38,81	2,2583191	23,80	0,5956980	15,12	0,1990317	9,59	0,0660907	6,06	0,0285803	4,28	0,0119020	2,97
8,6		97,45		62,84	8,2483458	39,74	2,3635629	24,36	0,6217313	15,48	0,2077109	9,82	0,0689661	6,21	0,0298215	4,38	0,0124179	3,04
8,8		99,72		64,31	8,6273944	40,66	2,4711768	24,93	0,6482703	15,84	0,2165581	10,04	0,0718970	6,35	0,0310866	4,48	0,0129436	3,11
9		101,99		65,77	9,0149054	41,58	2,5811601	25,50	0,6753131	16,20	0,2255725	10,27	0,0748830	6,50	0,0323754	4,58	0,0134792	3,18
9,2		104,25		67,23	9,4108780	42,51	2,6935126	26,06	0,8517859	16,56	0,2347535	10,50	0,0779240	6,64	0,0336878	4,69	0,0140246	3,25
9,4		106,52		68,69	9,8153114	43,43	2,8082336	26,63	0,8877033	16,92	0,2441007	10,73	0,0810197	6,78	0,0350237	4,79	0,0145797	3,32
9,6		108,79		70,15		44,36	2,9253229	27,20	0,9243502	17,28	0,2536134	10,96	0,0841700	6,93	0,0363832	4,89	0,0151445	3,40
9,8		111,05		71,61		45,28	3,0447801	27,76	0,9617263	17,63	0,2632911	11,19	0,0873748	7,07	0,0377660	4,99	0,0157190	3,47
10		113,32		73,07		46,21	3,1666046	28,33	0,9998314	17,99	0,2731333	11,41	0,0906338	7,22	0,0391722	5,09	0,0163032	3,54

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Fabrico de tubos
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PPR
LEX

TABLE FOR PIPE CHARGE LOSS
FOR PERFILPPR TUBE (PN 20 SERIE 2,5) WITH WATER AT 70 ºC

TABLE 8

Caudal (l/s)	16x2,7		20x3,4		25x4,2		32x5,4		40x6,7		50x8,3		63x10,5		75x12,5		90x15	
	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)	Charge loss (bar/m)	Velocity (m/s)
0,01	0,0002758	0,11	0,0000568	0,07	0,0000227	0,05	0,0000085	0,03	0,0000034	0,02	0,0000014	0,01	0,0000006	0,01	0,0000003	0,01	0,0000001	0,00
0,02	0,0008882	0,23	0,0003169	0,15	0,0001082	0,09	0,0000345	0,06	0,0000069	0,04	0,0000028	0,02	0,0000011	0,01	0,0000006	0,01	0,0000003	0,01
0,03	0,0017782	0,34	0,0006320	0,22	0,0002149	0,14	0,0000681	0,08	0,0000235	0,05	0,0000081	0,03	0,0000017	0,02	0,0000008	0,02	0,0000004	0,01
0,04	0,0029215	0,45	0,0010358	0,29	0,0003513	0,18	0,0001110	0,11	0,0000382	0,07	0,0000132	0,05	0,0000045	0,03	0,0000011	0,02	0,0000005	0,01
0,05	0,0043028	0,57	0,0015228	0,37	0,0005154	0,23	0,0001625	0,14	0,0000558	0,09	0,0000192	0,06	0,0000065	0,04	0,0000029	0,03	0,0000012	0,02
0,06	0,0059114	0,68	0,0020892	0,44	0,0007060	0,28	0,0002223	0,17	0,0000762	0,11	0,0000261	0,07	0,0000089	0,04	0,0000039	0,03	0,0000017	0,02
0,07	0,0077389	0,79	0,0027321	0,51	0,0009221	0,32	0,0002899	0,20	0,0000993	0,13	0,0000340	0,08	0,0000116	0,05	0,0000051	0,04	0,0000022	0,02
0,08	0,0097787	0,91	0,0034490	0,58	0,0011629	0,37	0,0003652	0,23	0,0001249	0,14	0,0000427	0,09	0,0000145	0,06	0,0000064	0,04	0,0000027	0,03
0,09	0,0120253	1,02	0,0042380	0,66	0,0014277	0,42	0,0004479	0,25	0,0001531	0,16	0,0000522	0,10	0,0000177	0,06	0,0000078	0,05	0,0000033	0,03
0,1	0,0144740	1,13	0,0050975	0,73	0,0017160	0,46	0,0005379	0,28	0,0001837	0,18	0,0000626	0,11	0,0000212	0,07	0,0000093	0,05	0,0000040	0,04
0,2	0,0493653	2,27	0,0173141	1,46	0,0058020	0,92	0,0018093	0,57	0,0006147	0,36	0,0002085	0,23	0,0000703	0,14	0,0000308	0,10	0,0000130	0,07
0,3	0,1017486	3,40	0,0356107	2,19	0,0119053	1,39	0,0037027	0,85	0,0012548	0,54	0,0004244	0,34	0,0001427	0,22	0,0000624	0,15	0,0000263	0,11
0,4	0,1703601	4,53	0,0595403	2,92	0,0198748	1,85	0,0061707	1,13	0,0020877	0,72	0,0007048	0,46	0,0002366	0,29	0,0001032	0,20	0,0000434	0,14
0,5	0,2543991	5,67	0,0888200	3,65	0,0296150	2,31	0,0091831	1,42	0,0031030	0,90	0,0010462	0,57	0,0003507	0,36	0,0001528	0,25	0,0000642	0,18
0,6	0,4425779	6,80	0,1232459	4,38	0,0410572	2,77	0,0127186	1,70	0,0042935	1,08	0,0014461	0,68	0,0004843	0,43	0,0002108	0,31	0,0000884	0,21
0,7	0,5950532	7,93	0,1626607	5,12	0,0541484	3,23	0,0167603	1,98	0,0056535	1,26	0,0019025	0,80	0,0006365	0,51	0,0002769	0,36	0,0001161	0,25
0,8	0,7697012	9,07	0,2069366	5,85	0,0688456	3,70	0,0212950	2,27	0,0071783	1,44	0,0024140	0,91	0,0008071	0,58	0,0003509	0,41	0,0001470	0,28
0,9	0,9664904	10,20	0,3168511	6,58	0,0851131	4,16	0,0263114	2,55	0,0088642	1,62	0,0029791	1,03	0,0009954	0,65	0,0004326	0,46	0,0001811	0,32
1	1,1853974	11,33	0,3878319	7,31	0,1029202	4,62	0,0317999	2,83	0,0107079	1,80	0,0035969	1,14	0,0012011	0,72	0,0005218	0,51	0,0002183	0,35
1,2	1,6894954	13,60	0,5509331	8,77	0,1430500	5,54	0,0441610	3,40	0,0148578	2,16	0,0049865	1,37	0,0016636	0,87	0,0007221	0,61	0,0003019	0,42
1,4	2,2818881	15,86	0,7421734	10,23	0,2317237	6,47	0,0583225	3,97	0,0196090	2,52	0,0065763	1,60	0,0021924	1,01	0,0009511	0,71	0,0003974	0,50
1,6	2,9625028	18,13	0,9615121	11,69	0,2994191	7,39	0,0742391	4,53	0,0249460	2,88	0,0083612	1,83	0,0027856	1,15	0,0012078	0,81	0,0005044	0,57
1,8	3,7312866	20,40	1,2089202	13,15	0,3756322	8,32	0,0918730	5,10	0,0308561	3,24	0,0103367	2,05	0,0034419	1,30	0,0014917	0,92	0,0006227	0,64
2	4,5881997	22,66	1,4843756	14,61	0,4603508	9,24	0,1111920	5,67	0,0373282	3,60	0,0124991	2,28	0,0041600	1,44	0,0018022	1,02	0,0007520	0,71
2,2	5,5332110	24,93	1,7878614	16,08	0,5535657	10,17	0,1321678	6,23	0,0443529	3,96	0,0148453	2,51	0,0049388	1,59	0,0021389	1,12	0,0008921	0,78
2,4	6,5662953	27,20	2,1193639	17,54	0,6552696	11,09	0,1891327	6,80	0,0519217	4,32	0,0173723	2,74	0,0057772	1,73	0,0025013	1,22	0,0010429	0,85
2,6	7,6874321	29,46	2,4788722	19,00	0,7654563	12,01	0,2205768	7,37	0,0600270	4,68	0,0200777	2,97	0,0066746	1,88	0,0028890	1,32	0,0012043	0,92
2,8	8,8966043	31,73	2,8663771	20,46	0,8841210	12,94	0,2543986	7,93	0,0686621	5,04	0,0229590	3,20	0,0076301	2,02	0,0033017	1,43	0,0013759	0,99
3		34,00	3,2818707	21,92	1,0112595	13,86	0,2905958	8,50	0,0778207	5,40	0,0260143	3,42	0,0086430	2,17	0,0037392	1,53	0,0015579	1,06
3,2		36,26	3,7253465	23,38	1,1468682	14,79	0,3291667	9,07	0,0874974	5,76	0,0292417	3,65	0,0097126	2,31	0,0042010	1,63	0,0017499	1,13
3,4		38,53	4,1967987	24,85	1,2909442	15,71	0,3701096	9,63	0,0976867	6,12	0,0326393	3,88	0,0108385	2,45	0,0046871	1,73	0,0019519	1,20
3,6		40,79	4,6962224	26,31	1,4434846	16,63	0,4134231	10,20	0,1083840	6,48	0,0362055	4,11	0,0120199	2,60	0,0051970	1,83	0,0021639	1,27
3,8		43,06	5,2236131	27,77	1,6044874	17,56	0,4591061	10,77	0,1451444	6,84	0,0399388	4,34	0,0132565	2,74	0,0057307	1,94	0,0023856	1,34
4		45,33	5,7789670	29,23	1,7739503	18,48	0,5071574	11,33	0,1601816	7,20	0,0438379	4,57	0,0145477	2,89	0,0062879	2,04	0,0026171	1,41
4,2		47,59	6,3622806	30,69	1,9518716	19,41	0,5575761	11,90	0,1759477	7,56	0,0479013	4,79	0,0158931	3,03	0,0068684	2,14	0,0028583	1,49
4,4		49,86	6,9735506	32,15	2,1382497	20,33	0,6103614	12,46	0,1924424	7,92	0,0521279	5,02	0,0172923	3,18	0,0074720	2,24	0,0031090	1,56
4,6		52,13	7,6127744	33,61	2,3330830	21,25	0,6655124	13,03	0,2096651	8,28	0,0565165	5,25	0,0187449	3,32	0,0080986	2,34	0,0033692	1,63
4,8		54,39	8,2799493	35,08	2,5363703	22,18	0,7230286	13,60	0,2276156	8,64	0,0610659	5,48	0,0202505	3,46	0,0087479	2,44	0,0036388	1,70
5		56,66	8,9750729	36,54	2,7481104	23,10	0,7829093	14,16	0,2462935	9,00	0,0657751	5,71	0,0218088	3,61	0,0094199	2,55	0,0039178	1,77
5,2		58,93	9,6981432	38,00	2,9683021	24,03	0,8451539	14,73	0,2656985	9,36	0,0706431	5,93	0,0234194	3,75	0,0101144	2,65	0,0042061	1,84
5,4		61,19		39,46	3,1969445	24,95	0,9097619	15,30	0,2858302	9,72	0,0756690	6,16	0,0250820	3,90	0,0108312	2,75	0,0045037	1,91
5,6		63,46		40,92	3,4340365	25,88	0,9767329	15,86	0,3066885	10,08	0,0808518	6,39	0,0267963	4,04	0,0115703	2,85	0,0048105	1,98
5,8		65,72		42,38	3,6795774	26,80	1,0460664	16,43	0,3282731	10,44	0,0861906	6,62	0,0285621	4,19	0,0123315	2,95	0,0051264	2,05
6		67,99		43,84	3,9335664	27,72	1,1177620	17,00	0,3505837	10,80	0,0916848	6,85	0,0303789	4,33	0,0131146	3,06	0,0054513	2,12
6,2		70,26		45,31	4,1960027	28,65	1,1918193	17,56	0,3736202	11,16	0,1177071	7,08	0,0322467	4,48	0,0139196	3,16	0,0057854	2,19
6,4		72,52		46,77	4,4668857	29,57	1,2682380	18,13	0,3973823	11,52	0,1251203	7,30	0,0341650	4,62	0,0147463	3,26	0,0061284	2,26
6,6		74,79		48,23	4,7462146	30,50	1,3470177	18,70	0,4218700	11,88	0,1327563	7,53	0,0361338	4,76	0,0155947	3,36	0,0064803	2,33
6,8		77,06		49,69	5,0339890	31,42	1,4281582	19,26	0,4470830	12,24	0,1406150	7,76	0,0381526	4,91	0,0164646	3,46	0,0068412	2,41
7		79,32		51,15	5,3302082	32,34	1,5116593	19,83	0,4730211	12,60	0,1486964	7,99	0,0402214	5,05	0,0173560	3,57	0,0072109	2,48
7,2		81,59		52,61	5,6348717	33,27	1,5975205	20,40	0,4996843	12,96	0,1570002	8,22	0,0423398	5,20	0,0182687	3,67	0,0075895	2,55
7,4		83,86		54,07	5,9479790	34,19	1,6857417	20,96	0,5270724	13,32	0,1655266	8,45	0,0445078	5,34	0,0192026	3,77	0,0079768	2,62
7,6		86,12		55,54	6,2695297	35,12	1,7763227	21,53	0,5551853	13,68	0,1742753	8,67	0,0467249	5,49	0,0201577	3,87	0,0083729	2,69
7,8		88,39		57,00	6,5995233	36,04	1,8692631	22,10	0,5840228	14,04	0,1832464	8,90	0,0489912	5,63	0,0211339	3,97	0,0087777	2,76
8		90,65		58,46	6,9379594	36,96	1,9645629	22,66	0,6135849	14,40	0,1924398	9,13	0,0513063	5,77	0,0221310	4,07	0,0091911	2,83
8,2		92,92		59,92	7,2848375	37,89	2,0622219	23,23	0,6438714	14,76	0,2018553	9,36	0,0536701	5,92	0,0231491	4,18	0,0096132	2,90
8,4		95,19		61,38	7,6401574	38,81	2,1622397	23,80	0,6748823	15,12	0,2114931	9,59	0,0560825	6,06	0,0241880	4,28	0,0100440	2,97
8,6		97,45		62,84	8,0039187	39,74	2,2646164	24,36	0,7066174	15,48	0,2213529	9,82	0,0585431	6,21	0,0252476	4,38	0,0104833	3,04
8,8		99,72		64,31	8,3761210	40,66	2,3693516	24,93	0,7390766	15,84	0,2314348	10,04	0,0610519	6,35	0,0263280	4,48	0,0109311	3,11
9		101,99		65,77	8,7567640	41,58	2,4764453	25,50	0,7722599	16,20	0,2417387	10,27	0,0636087	6,50	0,0274289	4,58	0,0113874	3,18
9,2		104,25		67,23	9,1458473	42,51	2,5858973	26,06	0,8061672	16,56	0,2522645	10,50	0,0662134	6,64	0,0285504	4,69	0,0118523	3,25
9,4		106,52		68,69	9,5433708	43,43	2,6977074	26,63	0,8407985	16,92	0,2630123	10,73	0,0688657	6,78	0,0296923	4,79	0,0123256	3,32
9,6		108,79		70,15	9,9493341	44,36	2,8118755	27,20	0,8761536	17,28	0,2739820	10,96	0,0715655	6,93	0,0308547	4,89	0,0128073	3,40
9,8		111,05		71,61		45,28	2,9284016	27,76	0,9122324	17,63	0,2851735	11,19	0,0743128	7,07	0,0320373	4,99	0,0132974	3,47
10		113,32		73,07		46,21	3,0472853	28,33	0,9490350	17,99	0,2965869	11,41	0,0927891	7,22	0,0332403	5,09	0,0137959	3,54

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Fabrico de tubos PEX PPR LEX

PERFILPPR TUBE WELDING

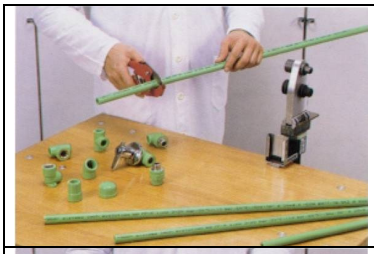
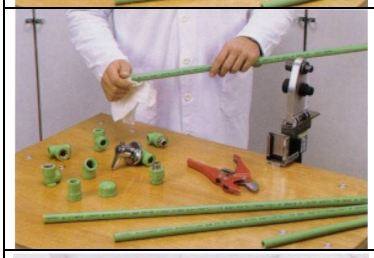
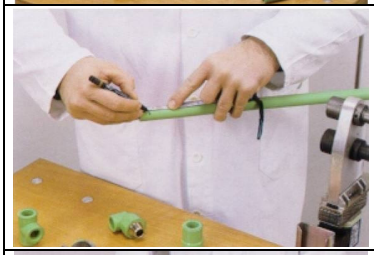
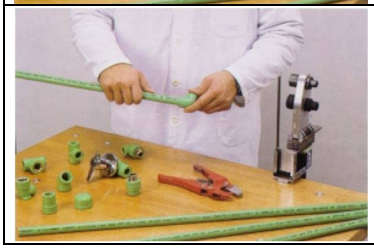
	1 – Cut the tube perpendicular to its axis.
	2 – Clean up well the tip that is going to be welded.
	3 – Draw a line on the tube corresponding to the length that is going to be inserted (see TABLE 9). 4 – When the welding machine reaches the right temperature the green light will go off. Insert the tube and the fitting at the same time simmetrically. To avoid any deformity do not twist the parts while heating them up.
	5 – After having waited for the parts to reach the right temperaure (see Table 9), withdraw both parts from the machine at the same time.Insert the tube at once and simmetrically in the fitting . Pressure them against each other. Notice that the tube only gets in up to the line that was initially drawn.
	6 – While keeping the parts under pressure according to (see table 9), you'll still be able to correct the tube position (about 20°). Never twist the parts in a way that the tube axis is no longer coincident with the fitting axis. 7 – After the period of cooling down (see table 9), the set is ready to be used.

Table 9
Parameters for soldering of PERFILPPR tubes

Ø EXTERIOR	TUBE INSERTION	HEATING TIME	PRESSING TIME	COOLING TIME
20 mm	14 mm	5 sec.	4 sec.	2 min.
25 mm	15 mm	7sec.	4 sec.	2 min.
32 mm	16.5 mm	8 sec.	6 sec.	4 min.
40 mm	18 mm	12 sec.	6 sec.	4 min.
50 mm	20 mm	18 sec.	6 sec.	4 min.
63 mm	24 mm	24 sec.	8 sec.	6 min.
75 mm	28 mm	30 sec.	10 sec.	8 min.
90 mm	30 mm	40 sec.	11 sec.	8 min.

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Fabrico de tubos
PEX
PPR
LEX

BLUE PERFILPPR TUBE

DESIGNATION	CODE	DIMENSION	PACKAGE / MT.
PPR TUBE PN20 (4 meters)			
	4300051543420100	Ø 20x3,4	100
	4300051544225100	Ø 25x4,2	100
	4300051545432	Ø 32x5,4	60
	4300051546740040	Ø 40x6,7	40
	4300051548350020	Ø 50x8,3	20
	4300051541056320	Ø 63x10,5	20
	43000515412575	Ø 75x12,5	8
	4300051541590	Ø 90x15	8

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PERFILPPR TUBE

DESIGNATION	CODE	DIMENSION	
PPR TUBE PN20 (4 meters) 	4300051552716	Ø 16x2,7	100
	4300051553420100	Ø 20x3,4	100
	4300051554225100	Ø 25x4,2	100
	4300051555432	Ø 32x5,4	60
	4300051556740040	Ø 40x6,7	40
	4300051558450020	Ø 50x8,3	20
	4300051551056320	Ø 63x10,5	20
	43000515512575	Ø 75x12,5	8
	4300051551590	Ø 90x15	8

DESIGNATION	CODE	DIMENSION	
PPR TUBE PN10 (4 meters) 	4300051551916100	Ø 16x1,9	100
	4300051551920100	Ø 20x1,9	100
	4300051552325100	Ø 25x2,3	100
	4300051552932060	Ø 32x2,9	60
	4300051553740040	Ø 40x3,7	40
	4300051554650020	Ø 50x4,6	20
	4300051555863020	Ø 63x5,8	20

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Fabrico de tubos PEX PPR LEX

BLUE PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
ADAPTOR SOCKET FM 	PT	1670062003	20x1/2"	10
		1670062005	20x3/4"	5
		1670062503	25x1/2"	5
		1670062505	25x3/4"	5
		1670063206	32x1"	5
		1670064007	40x11/4"	2
		1670065008	50x11/2"	1
		1670066309	63x2"	1
ADAPTOR SOCKET FF 	PT	1670082003	20x1/2"	10
		1670082005	20x3/4"	10
		1670082503	25x1/2"	10
		1670082505	25x3/4"	5
		1670083206	32x1"	5
		1670084007	40x11/4"	2
		1670085008	50x11/2"	1
		1670086309	63x2"	1
SOCKET FF 	PT	1670102020	20x20	10
		1670102525	25x25	10
		1670103232	32x32	5
		1670104040	40x40	2
		1670105050	50x50	1
		1670106363	63x63	1
		1670107575	75x75	1
		1670109090	90x90	1
REDUCING BUSH 	PT	1670142520	25x20	10
		1670143220	32x20	5
		1670143225	32x25	5
		1670144025	40x25	5
		1670144032	40x32	5
		1670145032	50x32	2
		1670145040	50x40	2
		1670146332	63x32	2
		1670146340	63x40	2
		1670146350	63x50	2
		1670147540	75x40	4
		1670147550	75x50	4
		1670147563	75x63	1
		1670149050	90x50	1
		1670149063	90x63	1
		1670149075	90x75	1
PLASTIC PIPE CLAMP 	PT	16706720	20	10
		16706725	25	10
		16706732	32	10
		16706740	40	5
		16706750	50	5
		16706763	63	5

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Fabrico de tubos
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BLUE PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
ELBOW 90º FF 	**PT**	1670192020	20x20	10
		1670192525	25x25	5
		1670193232	32x32	5
		1670194040	40x40	2
		1670195050	50x50	1
		1670196363	63x63	1
		1670197575	75x75	1
		1670199090	90x90	1
ADAPTOR ELBOW 90º FF 	**PT**	1670222003	20x1/2"	5
		1670222005	20x3/4"	5
		1670222503	25x1/2"	5
		1670222505	25x3/4"	5
		1670223205	32x3/4"	5
		1670223206	32x1"	2
ADAPTOR ELBOW 90º FM 	**PT**	1670212003	20x1/2"	5
		1670212503	25x1/2"	5
		1670212505	25x3/4"	5
		1670213206	32x1"	2
ADAPTOR PLATE BACK ELBOW FF 	**PT**	167023203	20x1/2"	5
		1670232503	25x1/2"	5
ELBOW 45° FF 	**PT**	1670272020	20x20	10
		1670272525	25x25	5
		1670273232	32x32	5
		1670274040	40x40	2
		1670275050	50x50	1
		1670276363	63x63	1
		1670277575	75x75	1
		167279090	90x90	1
SWAN NECK 	**PT**	1670152020	20x20	10
		1670152525	25x25	5
		1670153232	32x32	5

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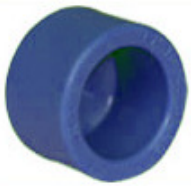
DESIGNATION		CODE	DIMENSION	PACKAGE
TÊE 90º FF 	**PT**	167030202020	20x20x20	10
		167030252525	25x25x25	5
		167030323232	32x32x32	2
		167030404040	40x40x40	1
		167030505050	50x50x50	1
		167030636363	63x63x63	1
		167030757575	75x75x75	1
		167030909090	90x90x90	1
ADAPTOR TÊE 90º FF 	**PT**	1670322003	20x1/2"	5
		1670322503	25x1/2"	5
		1670322505	25x3/4"	5
		1670323206	32x1"	2
ADAPTOR TÊE 90º MF 	**PT**	1670332003	20x1/2"	5
REDUCING TÊE 90º FF 	**PT**	167031252025	25x20x25	5
		167031322032	32x20x32	2
		167031322532	32x25x32	2
		167031402040	40x20x40	2
		167031402540	40x25x40	2
		167031403240	40x32x40	2
		167031502550	50x25x50	1
		167031503250	50x32x50	1
		167031504050	50x40x50	2
		167031633263	63x32x63	1
		167031634063	63x40x63	1
		167031635063	63x50x63	2
		167031753275	75x32x75	1
		167031753275	75x40x75	1
		167031755075	75x50x75	1
		167031756375	75x63x75	1
		167031904090	90x40x90	1
		167031905090	90x50x90	1
		167031906390	90x63x90	1
		167031907590	90x75x90	1
CAP FF 	**PT**	16703620	20	10
		16703625	25	5
		16703632	32	5
		16703640	40	5
		16703650	50	5
		16703663	63	2
		16703675	75	1
		16703690	90	1

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Fabrico de tubos
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BLUE PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
STOP COCK FF 	PT	1670392020	20x20	1
		1670392525	25x25	1
		1670393232	32x32	1
COCK BODY 	PT	1670582005	20x1/2"	5
		1670582505	25x3/4"	2

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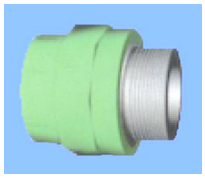
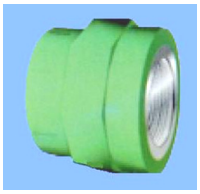
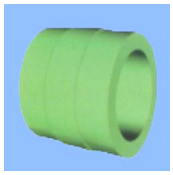
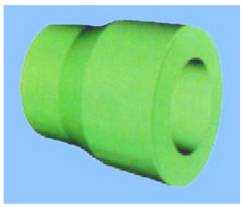
Fabrico de tubos PEX PPR LEX

PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
ADAPTOR SOCKET FM 	PT	4320062003	20x1/2"	10
		4320062005	20x3/4"	5
		4320062503	25x1/2"	5
		4320062505	25x3/4"	5
		4320063206	32x1"	5
		4320064007	40x11/4"	2
		4320065008	50x11/2"	1
		4320066309	63x2"	1
ADAPTOR SOCKET FF 	PT	4320082003	20x1/2"	10
		4320082005	20x3/4"	10
		4320082503	25x1/2"	10
		4320082505	25x3/4"	5
		4320083206	32x1"	5
		4320084007	40x11/4"	2
		4320085008	50x11/2"	1
		4320086309	63x2"	1
SOCKET FF 	PT	4320102020	20x20	10
		4320102525	25x25	10
		4320103232	32x32	5
		4320104040	40x40	2
		4320105050	50x50	1
		4320106363	63x63	1
		4310107575	75x75	2
		4320109090	90x90	1
REDUCING BUSH 	PT	4320142520	25x20	10
		4320143220	32x20	5
		4320143225	32x25	5
		4320144025	40x25	5
		4320144032	40x32	5
		4320145032	50x32	2
		4320145040	50x40	2
		4320146332	63x32	2
		4320146340	63x40	2
		4320146350	63x50	2
		4320147540	75x40	4
		4320147550	75x50	4
		4320147563	75x63	1
		4320149050	90x50	1
		4320149063	90x63	1
		4320149075	90x75	1
PLASTIC PIPE CLAMP 	PT	43206720	20	10
		43206725	25	10
		43206732	32	10
		43206740	40	5
		43206750	50	5
		43206763	63	5

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Fabrico de tubos
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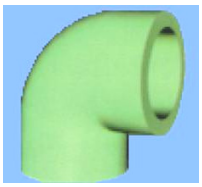
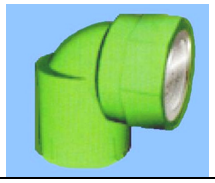
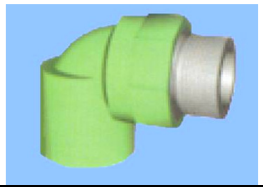
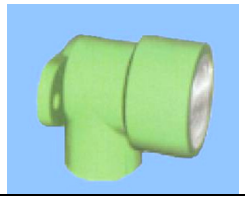
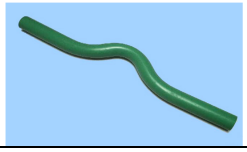
PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
ELBOW 90º FF 	PT	4320192020	20x20	10
		4320192525	25x25	5
		4320193232	32x32	5
		4320194040	40x40	2
		4320195050	50x50	1
		4320196363	63x63	1
		4320197575	75x75	2
		4320199090	90x90	1
ADAPTOR ELBOW 90º FF 	PT	4320222003	20x1/2"	5
		4320222005	20x3/4"	5
		4320222503	25x1/2"	5
		4320222505	25x3/4"	5
		4320223205	32x3/4"	5
		4320223206	32x1"	2
ADAPTOR ELBOW 90º fM 	PT	4320212003	20x1/2"	5
		4320212503	25x1/2"	5
		4320212505	25x3/4"	5
		4320213206	32x1"	2
ADAPTOR PLATE BACK ELBOW FF 	PT	4320232003	20x1/2"	5
		4320232503	25x1/2"	5
ELBOW 90º MF 	PT	4320202020	20x20	10
		4320202525	25x25	5
		4320203232	32x32	5
SWAN NECK 	PT	4320152020	20x20	10
		4320152525	25x25	5
		4320153232	32x32	5

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PME líder '12

Fabrico de tubos
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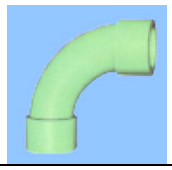
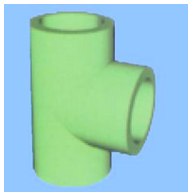
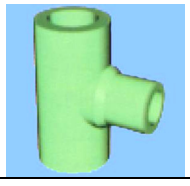
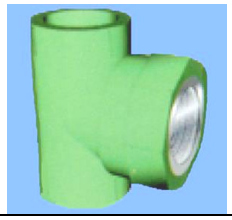
PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
ELBOW 45° FF 	PT	4320272020	20x20	10
		4320272525	25x25	5
		4320273232	32x32	5
		4320274040	40x40	2
		4320275050	50x50	1
		4320276363	63x63	1
		4320277575	75x75	1
		4320279090	90x90	1
ELBOW 45° MF 	PT	4320282020	20x20	10
		4320282525	25x25	10
		4320283232	32x32	5
BEND FF 	PT	4320292020	20x20	5
		4320292525	25x25	5
		4320293232	32x32	2
TÊE 90º FF 	PT	432030202020	20x20x20	10
		432030252525	25x25x25	5
		432030323232	32x32x32	2
		432030404040	40x40x40	1
		432030505050	50x50x50	1
		432030636363	63x63x63	1
		432030757575	75x75x75	1
		732030909090	90x90x90	1
TÊE 90º MF 	PT	432034202020	20x20x20	10
ADAPTOR TÊE 90º FF 	PT	4320322003	20x1/2"	5
		4320322503	25x1/2"	5
		4320322505	25x3/4"	5
		4320323205	32x3/4"	2
		4320323206	32x1"	2

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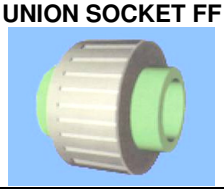
DESIGNATION		CODE	DIMENSION	PACKAGE
ADAPTOR TÊE 90º MF 	**PT**	4320332003	20x1/2"	5
REDUCING TÊE 90º FF 	**PT**	432031252020	25x20x20	10
		432031252025	25x20x25	5
		432031322025	32x20x25	4
		432031322032	32x20x32	2
		432031322532	32x25x32	2
		432031402040	40x20x40	2
		432031402540	40x25x40	2
		432031403240	40x32x40	2
		432031502550	50x25x50	1
		432031503250	50x32x50	1
		432031504050	50x40x50	2
		432031633263	63x32x63	1
		432031634063	63x40x63	1
		432031635063	63x50x63	2
		432031753275	75x32x75	1
		432031754075	75x40x75	1
		432031755075	75x50x75	1
		432031756375	75x63x75	1
		432031904090	90x40x90	1
		432031905090	90x50x90	1
		432031906390	90x63x90	1
		432031907590	90x75x90	1
NICKEL PLATED M. FITTING FOR ADAPTOR UNION 	**PT**	4320170503	3/4"x1/2"	10
		4320170605	1"x3/4"	10
		4320170706	11/4"x1"	10
UNION SOCKET FF 	**PT**	4320162020	20x20	5
		4320162525	25x25	3
		4320163232	32x32	2
		4320164040	40x40	2
		4320166363	63x63	1

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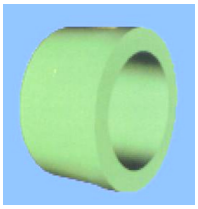
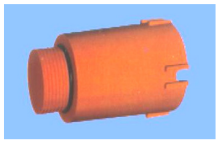
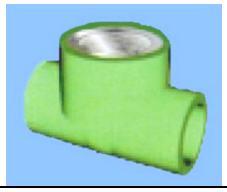
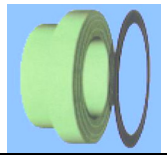
Fabrico de tubos PEX PPR LEX

PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
CAP FF 	PT	43203620	20	10
		43203625	25	5
		43203632	32	5
		43203640	40	5
		43203650	50	5
		43203663	63	2
		43203675	75	1
		43203690	90	1
PLUG FOR LINE TEST 	PT	43206203	1/2"	20
STOP COCK FF 	PT	CONCEALED COCK		
		4320392020	20x20	1
		4320392525	25x25	1
		4320393232	32x32	1
		4320402020	20x20	1
		4320402525	25x25	1
		4320403232	32x32	1
COCK BODY 	PT	4320582005	20x1/2"	5
		4320582505	25x3/4"	2
COCK PIN 	PT	43205903	1/2"	5
		43205905	3/4"	5
FLANGE ADAPTOR F W/ FLAT SEALING SURFACE 	PT	43205640	40	5
		43205650	50	2
		43205663	63	2

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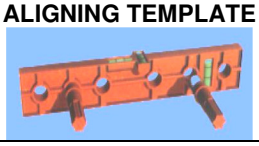
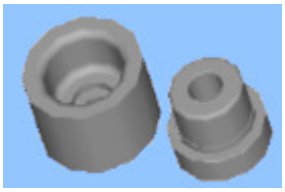
PME líder '12

AENOR ER Empresa Registrada ER - 1634/2/02

Fabrico de tubos
PEX
PPR
LEX

PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
ALIGNING TEMPLATE 	PT	4320612063	20 - 63	1
SEALING PASTE FOR THREADS 	PT	432063100	100 ML	1
HOLE MENDER 	PT	4320647	7	1
		43206411	11	1
CUTTING NIPPERS  		4320692040	20 - 40	1
		4320694063	40 - 63	1
FUSION WELDING KIT W/ CASE  	With box (R63 TFE) – 800W; includes jaws 20-25-32			
	432065202532 with/ Support		16-63	1
	Without box (R125Q TFE) – 1400W; does not include jaws			
	4320657590 with/ Support		16-125	1
HEATING TOOLS FOR WELDER 		43206620	20	1
		43206625	25	1
		43206632	32	1
		43206640	40	1
		43206650	50	1
		43206663	63	1
		43206675	75	1
		43206690	90	1

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Fabrico de tubos
PEX
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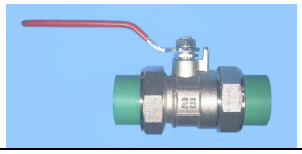
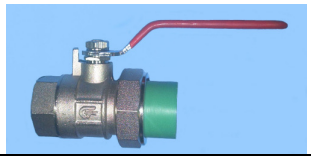
LEX

PERFILPPR FITTINGS

DESIGNATION		CODE	DIMENSION	PACKAGE
COCK COVER 	PT	43206005	3/4"	5
DOUBLE UNION BALL VALVE 		4323262020	20	1
		4323262525	25	1
		4323263232	32	1
SINGLE UNION BALL VALVE 		4323252003	20X1/2F	
		4323252505	25X3/4F	
		4323253206	32X1F	