adequa

AR

Soundproof evacuation system




You will only hear advantages

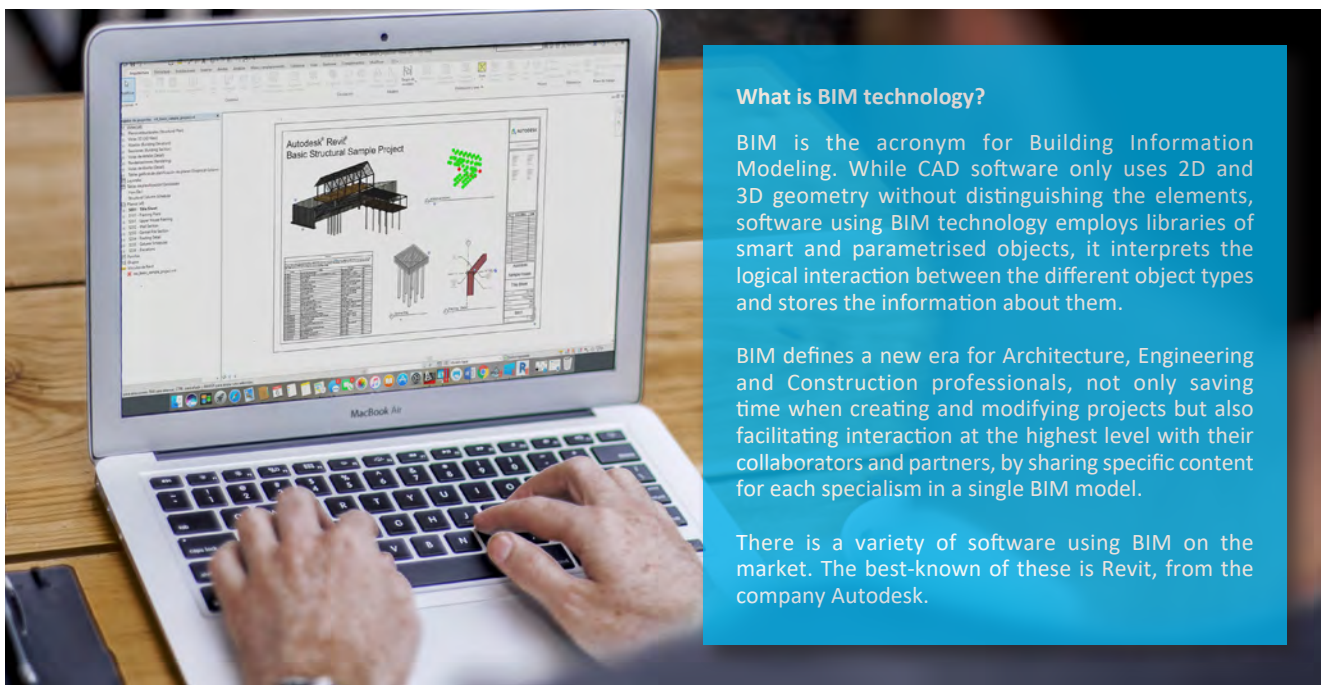
MOLECOR

Smart water

CONTENT

AR® system

All the information about the AR® soundproof evacuation system (product video, technical catalogue, certification, product data sheets, calculation and installation manual...) is available at www.molecor.com



What is BIM technology?

BIM is the acronym for Building Information Modeling. While CAD software only uses 2D and 3D geometry without distinguishing the elements, software using BIM technology employs libraries of smart and parametrised objects, it interprets the logical interaction between the different object types and stores the information about them.

BIM defines a new era for Architecture, Engineering and Construction professionals, not only saving time when creating and modifying projects but also facilitating interaction at the highest level with their collaborators and partners, by sharing specific content for each specialism in a single BIM model.

There is a variety of software using BIM on the market. The best-known of these is Revit, from the company Autodesk.

1. Introduction

The range of pipes and accessories from Molecor comprising the Soundproof Evacuation System AR® has been specifically designed to offer solutions to evacuating fluids in networks (drains, downpipes and hanging collectors) meeting the most demanding requirements in reducing noise levels. Its wide range of pieces likewise enables any type of solution proposed by the designer, while fulfilling all the requirements of the Building Code (CTE).

The specific building regulations in each country demand starting from the creation of optimal working and living conditions, a level of protection from the noise of neighbours, the installations, the outside, etc.

It must be remembered that the moment to win the battle against noise is during the conception of the building, as solving the problem by abating or damping then is more effective and cheaper than later repair or reinforcement.

The errors made in noise protection have broad and extensive consequences for builders, installers and designers, because they are often impossible to correct, or very expensive when this is possible.

Today, noise pollution is an additional factor when determining quality of life indicators.

The Building Code (CTE), in its basic requirement “Noise protection (HR)”, specifies that “buildings shall be designed, built and maintained in such a way that the elements comprising their spaces possess suitable acoustic properties for reducing the transmission of airborne noise, the noise of impacts and noise and vibrations from the building’s own facilities, and to limit reverberation of the spaces”.

2. Certification

Once of the main objectives of Molecor is to offer both products and services of the highest quality, to which end certification is incorporated into its overall strategy.

The AR® Soundproof system has recently been awarded the N certificate by AENOR with respect to noise performance, and according to the standard UNE-EN 14366.

AENOR

AENOR Product Certificate
Plastics

AENOR
Producto Certificado

001/007332

AENOR has issued this certificate to

MOLECOR CANALIZACIONES S.L.

registered office: CTRA M-206, S/N 28890 LOECHES (Madrid - España)

for the: Noise behaviour of poly (vinyl chloride) (PVC-U) pipes and fittings for soil and waste discharge

complies with the standard: UNE-EN 14366:2005 (EN 14366:2004)

Description: Trademark: ADEQUA AR PLUS
Clamp model: BISMAT 3200 y BISMAT SL

See annex for more information.

Production site: CTRA. Nacional A-2, KM 47,500 19208 Alovera - Guadalajara (España)

Certification scheme: In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. The product has been previously certified by AENOR for soil and waste discharge. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 01.80

This certificate supersedes 001/006833, dated 2019-04-10

First issued on: 2021-11-12
Validity date: 2023-05-28

Rafael GARCIA MEIRO
Chief Executive Officer

AENOR

AENOR Product Certificate
Plastics

001/007332

Annex to Certificate

To award this certificate, AENOR has tested the product and verified the quality system applied to produce it, with the product having previously been certified by AENOR for application to wastewater.

This certificate sets out the values obtained by the system made up of pipes and accessories with regard to the "*Characteristic structural noise level Lsc,A [dB(A)] behind the basement wall (UG behind)*" for certain flows (l/s) determined as follows:

Flow (l/s)	Characteristic structural noise level Lsc,A [dB(A)] behind the basement wall (UG behind)
0,5	<10
1,0	<10
2,0	10
4,0	16

AENOR UNE-EN 13501 | AENOR UNE-EN 1329 UNE-EN 1453 | AENOR UNE-EN 14366

Triple AENOR certification

This means that the AR® soundproof evacuation system has been awarded triple certification by AENOR: N for product, N for noise performance and N for fire reaction, making it the best solution for evacuating wastewater for domestic use, at low or high temperature, ventilation conduits associated to the former, and channelling rainwater within the building structure, all due to its undeniable advantages.

- Quality Management System certified to the UNE-EN ISO 9001 standard

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

AENOR has issued an IQNet recognized certificate that the organization:

MOLECOR CANALIZACIONES S.L.

A) CR. NACIONAL II, KM 47,5..	B) PI DE ANTEQUERA - AV DEL ROMERAL, 15.	C) PI ALCES - AV DE LOS VINOS, 24.
19208 - ALOVERA (GUADALAJARA)	29200 - ANTEQUERA (MÁLAGA)	13600 - ALCÁZAR DE SAN JUAN (CIUDAD REAL)

has implemented and maintains a

Quality Management System

for the following scope:

SPECIFIED IN ANNEX TO THE CERTIFICATE

which fulfills the requirements of the following standard

ISO 9001:2015

First issued on: 1999-08-01 Last issued: 2021-12-13 Validity date: 2024-03-20

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Registration Number: ES-0440/1996

Alex Stoichitoiu
President of IQNet

Rafael GARCÍA MEIRO
Chief Executive Officer

AENOR

IQNet Partners*:
AENOR Spain AFNOR Certification France APCER Portugal CCC Cyprus CISQ Italy
CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany EAGLE Certification Group USA
FCAV Brazil FONDONORMA Venezuela ICONTEC Colombia Inspecta Sertifointi Oy Finland INTECO Costa Rica
IRAM Argentina JQA Japan KFQ Korea MEITEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland
NYCE-SIGE México 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
* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

AENOR
Confía

Certificado del
Sistema de Gestión de la Calidad

AENOR
GESTIÓN DE LA CALIDAD
ISO 9001

ER-0440/1996

AENOR certifica que la organización

MOLECOR CANALIZACIONES S.L.

dispone de un sistema de gestión de la calidad conforme con la Norma ISO 9001:2015

para las actividades: Detalladas en el anexo al Certificado

que se realizan en: A) CR. NACIONAL II, KM 47,5., 19208- ALOVERA (GUADALAJARA)
B) PI DE ANTEQUERA- AV DEL ROMERAL, 15. 29200- ANTEQUERA (MÁLAGA)
C) PI ALCES - AV DE LOS VINOS, 24. 13600- ALCÁZAR DE SAN JUAN (CIUDAD REAL)

Fecha de primera emisión: 1996-09-23
Fecha de última emisión: 2021-03-20
Fecha de modificación: 2021-12-13
Fecha de expiración: 2024-03-20

Rafael GARCÍA MEIRO
Director General

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.com

- Environmental Management System certified to the UNE-EN ISO 14001 standard

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

AENOR has issued an IQNet recognized certificate that the organization:

MOLECOR CANALIZACIONES S.L.

A) CR. NACIONAL II, KM 47,5..	B) PI DE ANTEQUERA - AV DEL ROMERAL, 15.	C) PI ALCES - AV DE LOS VINOS, 24.
19208 - ALOVERA (GUADALAJARA)	29200 - ANTEQUERA (MÁLAGA)	13600 - ALCÁZAR DE SAN JUAN (CIUDAD REAL)

has implemented and maintains a

Environmental Management System

for the following scope:

SPECIFIED IN ANNEX TO THE CERTIFICATE

which fulfills the requirements of the following standard

ISO 14001:2015

First issued on: 2001-09-19 Last issued: 2021-12-13 Validity date: 2024-03-20

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Registration Number: ES-2001/0255

Alex Stoichitoiu
President of IQNet

Rafael GARCÍA MEIRO
Chief Executive Officer

AENOR

IQNet Partners*:
AENOR Spain AFNOR Certification France APCER Portugal CCC Cyprus CISQ Italy
CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany EAGLE Certification Group USA
FCAV Brazil FONDONORMA Venezuela ICONTEC Colombia Inspecta Sertifointi Oy Finland INTECO Costa Rica
IRAM Argentina JQA Japan KFQ Korea MEITEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland
NYCE-SIGE México 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

AENOR
Confía

Certificado del
Sistema de Gestión Ambiental

AENOR
GESTIÓN AMBIENTAL
ISO 14001

GA-2001/0255

AENOR certifica que la organización

MOLECOR CANALIZACIONES S.L.

dispone de un sistema de gestión ambiental conforme con la Norma ISO 14001:2015

para las actividades: Detalladas en el anexo al Certificado

que se realiza/n en: A) CR. NACIONAL II, KM 47,5., 19208- ALOVERA (GUADALAJARA)
B) PI DE ANTEQUERA - AV DEL ROMERAL, 15. 29200- ANTEQUERA (MÁLAGA)
C) PI ALCES - AV DE LOS VINOS, 24. 13600- ALCÁZAR DE SAN JUAN (CIUDAD REAL)

Fecha de primera emisión: 2001-09-19
Fecha de última emisión: 2021-03-20
Fecha de modificación: 2021-12-13
Fecha de expiración: 2024-03-20

Rafael GARCÍA MEIRO
Director General

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.com

CERTIFICATION

- AENOR product certificate for PVC structured wall piping for the evacuation of rainwater and wastewater to the standard UNE-EN 1453-1

AENOR

AENOR Product Certificate
Plastics

AENOR
Producto Certificado

001/007316

AENOR certifies that the organization

MOLECOR CANALIZACIONES S.L.

registered office: CTRA M-206, S/N 28890 LOECHES (Madrid - España)

supplies: Unplasticized poly (vinyl chloride) (PVC-U) with structured-wall pipes for soil and waste discharge (low and high temperature) inside buildings

in compliance with: UNE-EN 1453-1:2017 (EN 1453-1:2017)

Trademark: ADEQUA AR PLUS
Serie: B
Outside diameter (mm): 40 - 50 - 90 - 110 - 125 - 160 - 200

Production site: P.I. Alces - AV. de los Vinos, 24 13600 Alcázar de San Juan - Ciudad Real (España)

Certification scheme: In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 01.44.

This certificate supersedes 001/006422, dated 2020-07-20

First issued on: 2021-11-12
Validity date: 2025-07-20

Rafael GARCÍA MEIRO
Chief Executive Officer

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.com

Product certification body accredited by ENAC, number 1/C-PR271

Original Electronic Certificate

- AENOR product certificate for PVC injected accessories for the evacuation of rainwater and wastewater to the standard UNE-EN 1329

AENOR

AENOR Product Certificate
Plastics

AENOR
Producto Certificado

001/007328

AENOR certifies that the organization

MOLECOR CANALIZACIONES S.L.

registered office: CTRA M-206, S/N 28890 LOECHES (Madrid - España)

supplies: Unplasticized poly (vinyl chloride) (PVC-U) fittings for soil and waste discharge (low and high temperature) within the building structure

in compliance with: UNE-EN 1329-1:2014 (EN 1329-1:2014)

Trademark: ADEQUA AR

See annex for more information.

Production site: CTRA. Nacional A-2, KM 47,500 19208 Alovera - Guadalajara (España)

Certification scheme: In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 01.31.

This certificate supersedes 001/006787, dated 2019-04-10

First issued on: 2021-11-12
Validity date: 2022-12-19

Rafael GARCÍA MEIRO
Chief Executive Officer

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.com

Product certification body accredited by ENAC, number 1/C-PR271

Original Electronic Certificate

CERTIFICATION

- AENOR product fire reaction certificate for PVC structured wall piping for the evacuation of rainwater and wastewater to the standard UNE-EN 13501-1 with fire class B-s1,d0

AENOR

AENOR Product Certificate
Plastics

AENOR
Producto Certificado

001/007318

AENOR has issued this certificate to

MOLECOR CANALIZACIONES S.L.

registered office: CTRA M-206, S/N 28890 LOECHES (Madrid - España)

for the: Fire reaction for unplasticized poly (vinyl chloride) (pvc-u) structured-wall pipes for soil and waste discharge within the building structure.

in compliance with: UNE-EN 13501-1:2019 (EN 13501-1:2018)

AENOR contract: 001/001015
Trademark: ADEQUA AR PLUS
Euroclass: B-s1, d0

Production site: P.I. Alces - AV. de los Vinos, 24 13600 Alcázar de San Juan - Ciudad Real (España)

Certification scheme: In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 01.60.

This certificate supersedes 001/006424, dated 2020-07-20

First issued on: 2021-11-12
Validity date: 2025-07-20

Rafael GARCIA MEIRO
Chief Executive Officer

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.com

Original Electronic Certificate

- AENOR product fire reaction certificate for PVC injected accessories for the evacuation of rainwater and wastewater to the standard UNE-EN 13501-1 with fire classification B-s1,d0

AENOR

AENOR Product Certificate
Plastics

AENOR
Producto Certificado

001/007329

AENOR has issued this certificate to

MOLECOR CANALIZACIONES S.L.

registered office: CTRA M-206, S/N 28890 LOECHES (Madrid - España)

for the: Fire reaction for unplasticized poly (vinyl chloride) (pvc-u) fittings for soil and waste discharge within the building structure.

in compliance with: UNE-EN 13501-1:2019 (EN 13501-1:2018)

AENOR contract: 001/001016
Trademark: ADEQUA AR
Euroclass: B-s1,d0

Production site: CTRA. Nacional A-2, KM 47,500 19208 Alovera - Guadalajara (España)

Certification scheme: In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 01.60.

This certificate supersedes 001/006791, dated 2019-04-10

First issued on: 2021-11-12
Validity date: 2023-01-11

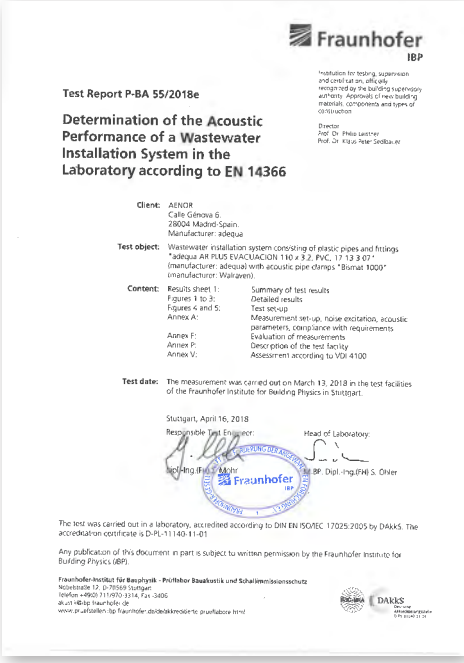
Rafael GARCIA MEIRO
Chief Executive Officer

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.com

Original Electronic Certificate

CERTIFICATION

- Acoustic performance test report to the Standard UNE-EN 14366 issued by the FRAUNHOFER INSTITUTE



Fraunhofer IBP

Test Report P-BA 55/2018e

Determination of the Acoustic Performance of a Wastewater Installation System in the Laboratory according to EN 14366

Client: AENOR
Calle Génova 6.
28004 Madrid-Spain.
Manufacturer: adequa

Test object: Wastewater installation system consisting of plastic pipes and fittings "adequa AR PLUS EVACUACION 110 x 3.2, PVC, 17 13 3 07" (manufacturer: adequa) with acoustic pipe clamps "Bismat 1000" (manufacturer: Wallraven)

Content: Results sheet 1: Summary of test results
Figures 1 to 3: Detailed results
Figures 4 and 5: Test set-up
Annex A: Measurement set-up, noise excitation, acoustic parameters, compliance with requirements
Annex F: Evaluation of measurements
Annex P: Description of the test facility
Annex V: Assessment according to VDI 4100

Test date: The measurement was carried out on March 13, 2018 in the test facilities of the Fraunhofer Institute for Building Physics in Stuttgart.

Stuttgart, April 16, 2018

Responsible Test Engineer: Dipl.-Ing.(FH) J. Mohr

Head of Laboratory: Dipl. Ing.(FH) S. Ohler

The test was carried out in a laboratory, accredited according to DIN EN ISO/IEC 17025:2005 by DAkkS. The accreditation certificate is D-PL-11140-11-01

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Fraunhofer-Institut für Bauphysik - Prüfstelle Bauakustik und Schallimmissionsschutz
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akust-HB@ibp.fraunhofer.de
www.prueflabor.ibp.fraunhofer.de/deutsch/akustik-pruefstelle.html

- French fire safety mark NFMe for PVC accessories and structured piping according to the regulation NF 513 issued by the LNE (French National Testing Laboratory)

LNE

NF

CERTIFICAT
NF 513 Sécurité Feu

NF 513 Fire Safety

Délivré à / granted to
MOLECOR CANALIZACIONES, S.L

Carretera M-206 S/N
SPAIN 28890 LOECHES Madrid

Pour les produits suivants / For the following products
TUBES PVC

PVC pipes

Fabriqués dans l'usine :
Manufactured in production plant :

ESP 13600 ALCAZAR DE SAN JUAN

Numéro d'identification :
55/03

Ce certificat est délivré par le LNE dans les conditions fixées par les règles de certification NF et en conformité avec la (les) norme(s) de référence ci-dessous :
Règles de certification NF 513 : 2019
En vertu de la présente décision notifiée par le LNE, AFNOR Certification accorde le droit d'usage de la marque NF à la société qui en est bénéficiaire pour les produits visés ci-dessus, dans les conditions définies par les règles générales de la marque NF et par le référentiel de certification NF mentionné ci-dessus.

Date de début de validité 25 novembre 2021
Date de fin de validité 28 février 2024

Pour le Directeur Général
Deputy General Director

Responsable du Pôle Certification Environnement, Sécurité et Performance
Head of the Environment, Safety and Performance Certification Department

Laboratoire national de métrologie et d'essais • Etablissement public à caractère industriel et commercial
Siège social : 1, rue Gaston Boissier - 75724 Paris Cedex 15 • Tél. : 01 40 43 37 00 - Fax : 01 40 43 37 37
infoagnes.fr • lne.fr • RCS Paris 313 320 244 - NAF : 7120B - TVA : FR 42 313 320 244

LNE

NF

CERTIFICAT
NF 513 Sécurité Feu

NF 513 Fire Safety

Délivré à / granted to
MOLECOR CANALIZACIONES, S.L

Carretera M-206 S/N
SPAIN 28890 LOECHES Madrid

Pour les produits suivants / For the following products
RACCORDS PVC

PVC fittings

Fabriqués dans l'usine :
Manufactured in production plant :

ESP ALOVERA - GUADALAJARA

Numéro d'identification :
43/01

Ce certificat est délivré par le LNE dans les conditions fixées par les règles de certification NF et en conformité avec la (les) norme(s) de référence ci-dessous :
Règles de certification NF 513 : 2019
En vertu de la présente décision notifiée par le LNE, AFNOR Certification accorde le droit d'usage de la marque NF à la société qui en est bénéficiaire pour les produits visés ci-dessus, dans les conditions définies par les règles générales de la marque NF et par le référentiel de certification NF mentionné ci-dessus.

Date de début de validité 25 novembre 2021
Date de fin de validité 28 février 2024

Pour le Directeur Général
Deputy General Director

Responsable du Pôle Certification Environnement, Sécurité et Performance
Head of the Environment, Safety and Performance Certification Department

Laboratoire national de métrologie et d'essais • Etablissement public à caractère industriel et commercial
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infoagnes.fr • lne.fr • RCS Paris 313 320 244 - NAF : 7120B - TVA : FR 42 313 320 244

(*) The Me test “Meringage or Expansion Rate” measures the swelling of the pipe and/or accessory in the case of fire, to slow down its propagation by blocking the channel.

3. The Building Code (CTE)

The evolution of construction processes, the ongoing research into new materials and the need to build more comfortable and safer buildings are requirements Molecor bears in mind when placing new solutions on the market. Thanks to this level of demand, the AR® soundproof evacuation system satisfies current regulations, meeting all the demands of the Building Code (CTE).

3.1. CTE DB SI Fire safety

The AR® soundproof evacuation system holds the fire reaction classification B-s1,d0, the highest a plastic material can obtain. This means that the system can be installed in all types of buildings, for any use whatever, meeting absolutely all of the demands of the CTE in relation to fire protection.

Not all plastics respond in the same way to fire: some react by propagating flames that reach them and thus contribute to its spread.

The Soundproof Evacuation System AR®, manufactured of PVC-U with fire-retardant additives, retards the flames and thus hinders the spread of the fire.

The fire class B-s1,d0, according to the standard UNE EN 13501, has the following meaning:

Reaction to fire of the material:

- A1= Non-combustible. Minimal contribution to fire
- A2 = Non-combustible. Very minor contribution to fire
- **B** = Combustible. Very limited contribution to fire
- C = Combustible. Limited contribution to fire
- D = Combustible. Medium contribution to fire
- E = Combustible. High contribution to fire
- F = Not classified

Smoke emission level:

This is the maximum value of the quotient of the smoke production speed to the time of combustion of the specimen.

- **s1** = 30 m^2/s^2 [minor and slow opacity]
- s2 = 30 m^2/s^2 [minor and slow opacity]
- s3 = no performance or not satisfying S1 and S2 [high and rapid opacity]

BUILDING CODE

CTE
CÓDIGO TÉCNICO DE LA EDIFICACIÓN

Flaming droplets/particles:

This measures the production of flaming droplets/particles.

- **d0** = No flaming droplets/particles are produced within a period of 600s
- d1 = No flaming droplets/particles are produced with persistence of 10s within a period of 600s
- d2 = No performance or neither d0 nor d1

Reaction to fire classes for building elements

Element situation	*Ceilings and walls*	*Coatings*
Occupiable	C-s2,d0	E_{FL}
Corridors and protected stairwells	B-s1,d0	C_{FL}-s1
Parking areas and those of special risk	B-s1,d0	B_{FL}-s1
Hidden spaces that are not airtight: Brackets, suspended ceilings (except for those existing within dwellings), etc., or ones which are airtight but contain elements that could initiate or propagate the fire	B-s3,d0	B_{FL}-s2

French quality mark NF Me for the AR® system : Another step forward for fire protection in buildings

The French quality mark NF Me is a certification by an accredited independent laboratory of a minimum expansion capacity of 800% for the wall of a tube or accessory as an effect of temperature. This property allows the conduit to be blocked in the case of fire and enables the wall or floor to continue to act as a fire screen. Conduits form natural points of passage for a fire through walls or floors.

It follows that both of these need to have their fire screening nature restored. Pipes and accessories holding this certification have the property that their thickness increases when exposed to strong heat. In the event of fire, this allows the certified product to swell inside and thus allow the wall or floor to continue to act as a fire screen.

Two conditions must be satisfied simultaneously for this mark to be awarded:

1. On the one hand, a minimum reaction to fire Euroclass according to the standard EN 13501 of B-s3,d0.
2. On the other, and as has been said, the initial thickness of the pipe or accessory wall must present an expansion rate of at least 800%.

CERTIFIÉ PAR LNE
NF
SECURITE FEU : NF Me
TUBES ET RACCORDS PVC

NF Me = Euroclase B-s3, d0
+
Expansion of 800%

PVC expansion test

5x5 cm specimens of PVC are placed in a furnace

They are subjected to the effect of heat there

These PVC specimens must increasetheir initial thickness by at least 800% to obtain the NF Me mark

BUILDING CODE

CTE
CÓDIGO TÉCNICO DE LA EDIFICACIÓN

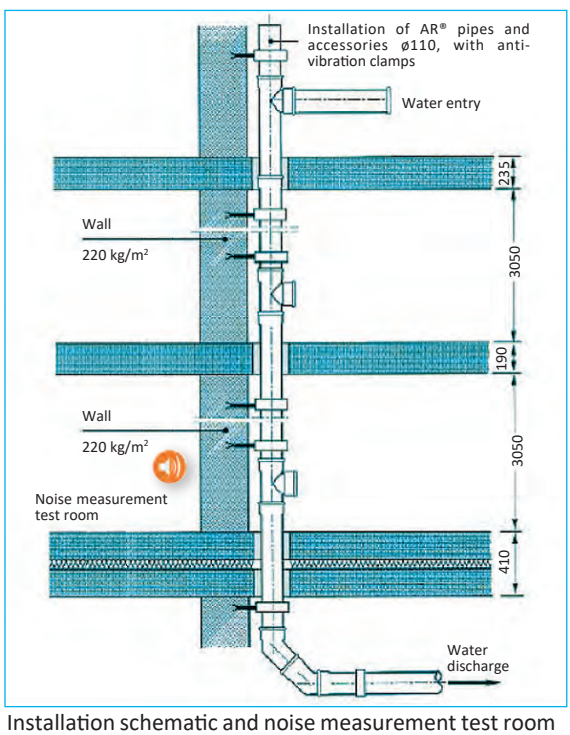
3.2. CTE DB HR Noise protection

Article 14 of the Basic Document HR (Noise protection) of the CTE advises us that to limit the risk of annoyance to users of dwellings, the elements of the installations shall reduce the emission of noise during operation, and this affects both new construction and rehabilitation and refurbishment work.

For a daytime noise level of 60 dB(A), the CTE Basic Document HR permits a maximum of 30 dB(A) inside the spaces, whether the building is for residential, hospital, teaching, cultural or administrative use. Comparing the figures given, the noise levels emitted by the AR® soundproof evacuation system are well below the maximum the CTE allows, ensuring great comfort in dwellings and a significant reduction in the noise caused by the drainage of fluids.

The sound level measurements conducted by Molecor satisfy the specifications of the standard UNE-EN 14366, which describes the test setup and noise measurement procedure.

The values given are those recorded inside the test room, on the other side of the wall supporting the installation.

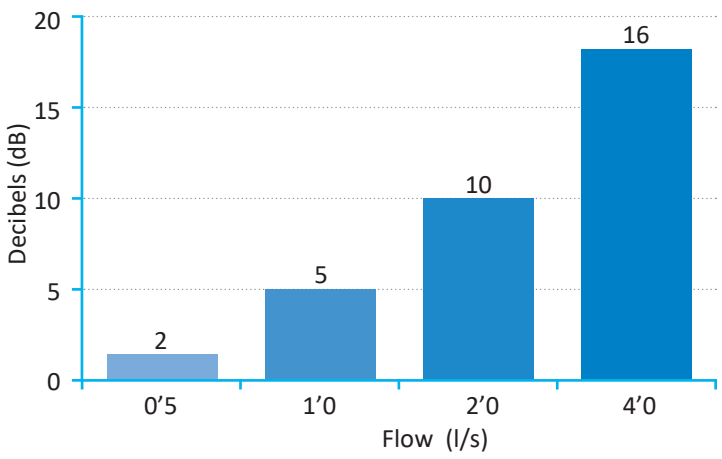


Installation schematic and noise measurement test room according to UNE EN 14366 standard.

MEASUREMENT OF SOUND LEVEL

Test carried out by the Fraunhofer Institut für Bauphysik in Stuttgart (Germany).

Wastewater system "AR®" (manufacturer: Molecor).



These values, for flows of 0.5, 1.0, 2.0 and 4.0 litres per second, are 2, 5, 10 and 16 dBA, respectively.

BUILDING CODE

CTE
CÓDIGO TÉCNICO DE LA EDIFICACIÓN

Royal Decree 1367/2007 (Noise Legislation)

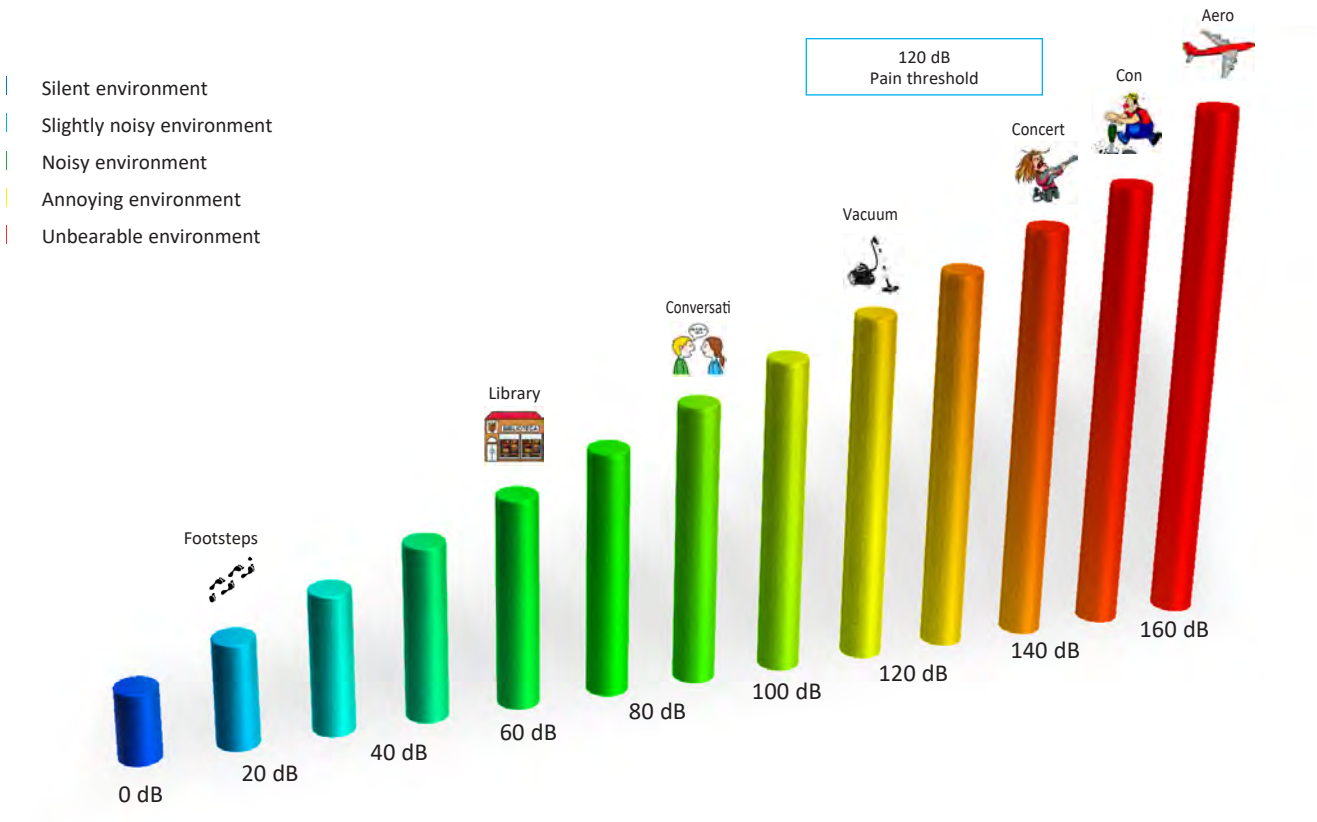
In accordance with the Royal Decree 1367/2007 of 19 October, which develops the Noise Act 37/2003 of 17 November, the table below shows the acoustic quality objectives applicable to the habitable indoor space of buildings for dwellings, or residential, hospital, educational or cultural use.

		Noise Index		
Building use	Type of space	L_d	L_e	L_n
Dwelling or residential use	Rooms	45	45	35
	Rooms	40	40	30
Hospital	Rooms	45	45	35
	Rooms	40	40	30
Educational or cultural use	Rooms	40	40	40
	Rooms	35	35	35

The values in the table refer to the immission from all the acoustic emitters detectable inside the space (installations of the building itself, activities carried out within it or alongside, environmental noise, interior transmission).

For comparison, the following table shows the noise emission levels we are most familiar with so they can be identified more easily.

Sound levels



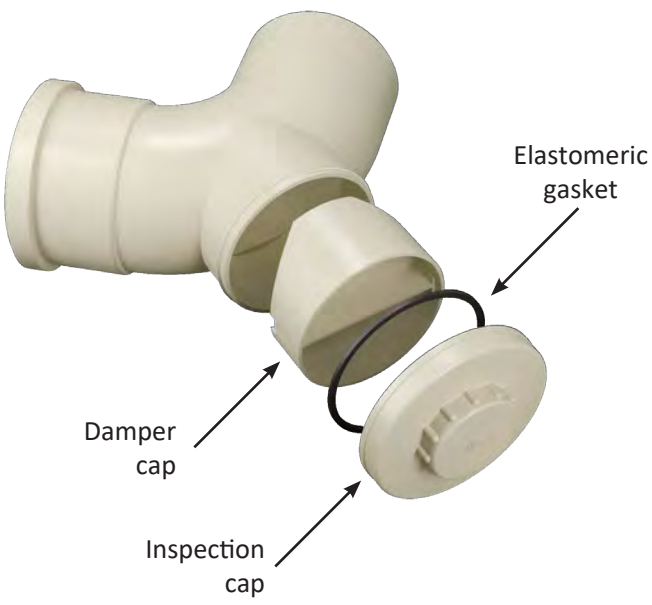
3.3. CTE DB HS5 Evacuation of water

Points where water passes from downpipes to collectors are places where impact noise is likely to be produced. Therefore, special attention needs to be paid to these, which often pass over suspended ceilings of spaces like living rooms, bedrooms, offices, meeting rooms, etc.

To limit these annoyances, in practice, two 45º elbows and a segment of pipe are used so as to temper the change of direction.

- **Inspectable acoustic elbow DN 110**

By using the inspectable acoustic elbow AR® from Molecor, its long radius will yield us better noise insulation than two elbows of 45º, and therefore we gain free space inside the ceiling. In addition, the elastomeric gasket at the bottom helps to absorb the blows and vibrations caused by the fall of water from the downpipe.



BUILDING CODE

CTE
CÓDIGO TÉCNICO DE LA EDIFICACIÓN

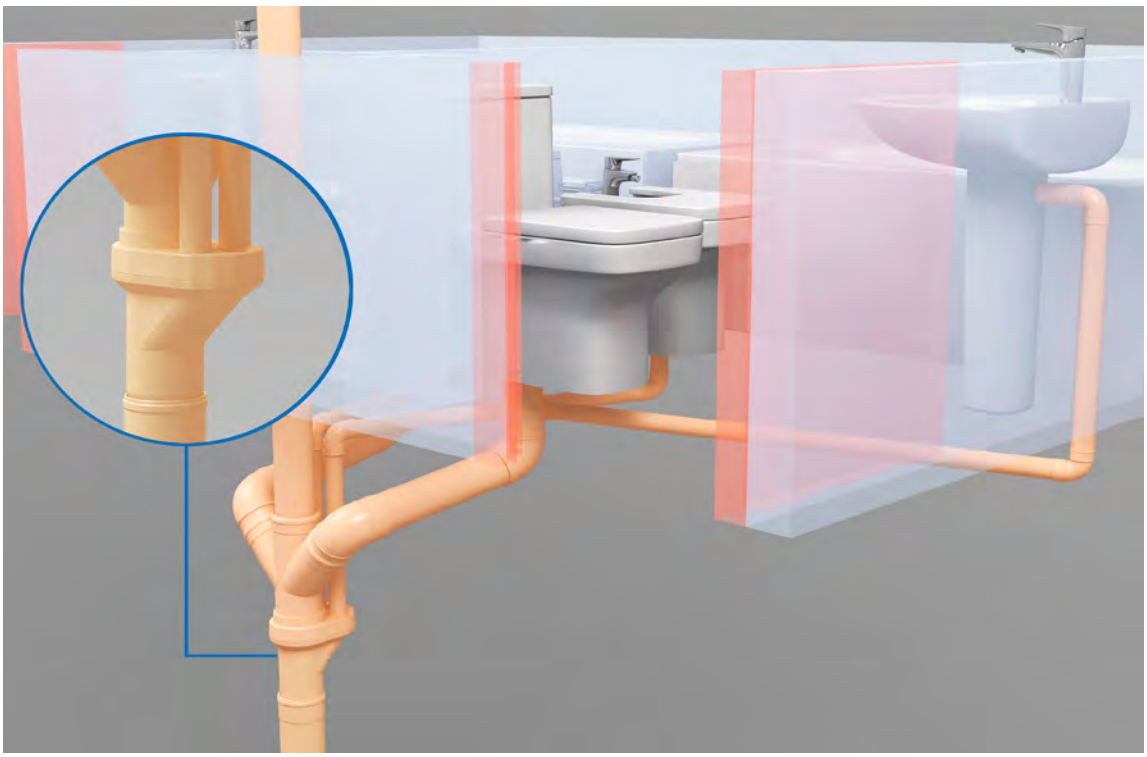
Multiconnector wye

This piece allows two adjacent wet installations to be connected (WCs, washbasins, showers, bathtubs, sinks, etc.)

The design of its decompression chamber impedes the loss of siphonage in sanitary appliances with no need to fit secondary ventilation, and irrespective of the height of the building.

Compact design enabling space to be saved inside the space when compared with the traditional solution (wye plus reducer cap).

Devised in accordance with the specifications of CTE HS 5, which recommends that connectors be fixed directly to the downpipe at an angle of 45º.



- **Inspectable 45º elbow** for change of direction in collectors DN 110

- **Inspectable male-female expansion sleeve** DN 110.

- **Inspectable 45º wye** for DN 110, DN 125 and DN 160
- **Offline inspection** (the inspection cap is on the branch)
- **Inline inspection** (the inspection cap is inline)

4. Technical information

PVC

PVC, or polyvinyl chloride, is a thermoplastic in the form of a white powder that is odourless and tasteless. It is manufactured by polymerising the monomer vinyl chloride which, in turn, is obtained from ordinary salt and petroleum.

The versatility of PVC, which is because many additives can be included, makes it possible to obtain different kinds of plastics for manufacturing an endless variety of products with different properties. As a stable and inert compound, it can be used where hygiene is a priority, such as in catheters, blood bags, drinking water pipes, etc.

It is a material which can be 100% recycled without altering its physical-chemical properties.

As it is also a highly durable plastic, products made from PVC have a very long useful life, perhaps exceeding 50 years.

Structured pipes

The pipes of the AR® soundproof evacuation system from Molecor are manufactured using the coextrusion process according to the standard UNE EN 1453. The multilayer pipes manufactured this way consist of three different layers: the inner and outer ones are made by mixing the powder of PVC resin and the additives. The middle layer is made by mixing chips made from PVC, additives and a mineral load that improves its acoustic performance.

Coextrusion consists of passing the raw material continuously for plastification through extruders, feed-block, head and nozzles.

Compared with the traditional compact tube, among the main advantages for this type is not just its lightness, making it easier to carry at the site, but it also costs less.

Specifications

The AR® Soundproof Evacuation System has been subjected to the most stringent strength tests to guarantee its reliability against.

- **Noise**: it dampens noise produced inside the installation.
- **Wear**: the walls of both pipes and accessories are prepared to withstand adverse conditions.
- **Corrosion**: surfaces require no post-installation treatment.
- **Mechanical action**: no additional protection is needed.
- **Abrasive materials**: strong abrasion resistance.
- **Temperature**: normal working temperature of 25ºC, while up to 40ºC can be withstood. Use at higher temperatures is limited, and allowed only for occasional evacuation and discontinuously.

TECHNICAL INFORMATION

- The pipe and accessory range of the AR® soundproof evacuation system meets all the needs of the project designer. Special pieces which meet the demands of the Building Code (CTE).
- The pipes are manufactured using the multilayer coextrusion process to the standard UNE EN 1453-1, and are of three layers: inner and outer layers of compact PVC and an intermediate layer of additivated PVC.
- The accessories are also manufactured from PVC according to the injection process based on the standard EN 1329-1.
- The pipes of diameters DN 32, DN 40 and DN 50 are coupled using flared accessories for gluing, using special solvent adhesives for PVC.
- Pipes and accessories from DN 75 on are joined by elastic gaskets.
- Possibility of combination with the traditional grey evacuation pipe from Molecor, ensuring a perfect coupling.
- Special additives which slow down spread in the event of fire by blocking the pipe and impeding propagation (NFMe certificate).
- Material 100% recyclable. Our production centre holds the company registration certificate UNE EN ISO 9001, for the Quality Assurance System and the Environmental Management System to UNE EN ISO 14001.
- Durability over 50 years.

5. Installation instructions

The flare has an inner seat for the lip gasket that seals the joint.

1 Verify that the gasket is correctly seated and that it is free of dust and impurities.

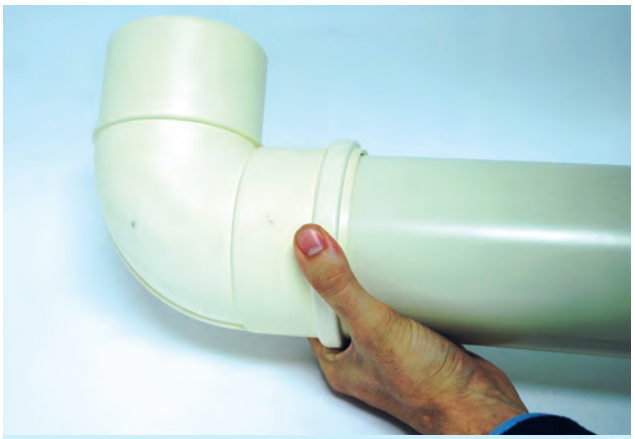
2 Ensure that the smooth end (no flare) of the pipe or accessory has a bevel of about 30º to facilitate introducing it without dislodging the gasket.

3 Make sure that the smooth ends, whether of pipes or accessories, are dry, clean, and free of contaminants or dust.

4 Lubricate the smooth end with special gasket lubricant.

INSTALLATION INSTRUCTIONS

5 The two ends must be aligned before pushing to accomplish the union.



6 While pushing, make sure the introduction is correct and that the stop is reached. For expansion sleeves which do not have an inner stop, mark the distance we are to introduce on the smooth end of the pipe. This needs to allow a run of some 12mm.

7 Mark the pipe.

8 Make sure there is at least 12 mm. If the piece has a stop mark, introduce it up to that.

6. Fitting

6.1. Fixing: isophonic clamps

For a safe and effective installation, the rules and recommendations extracted from the Building Code (CTE) document HS 5 “Evacuation of water” must be followed.

Downpipes shall be executed so as to be perfectly vertical and secured to the construction. They shall be fixed using clamps, with one close to the mouth of the pipe or accessory and another at intermediate points to permit expansion movements of the pipe.

Clamps shall not be placed in areas subject to impact or at the mouths of accessories or pipes.

For installing downpipes, the distance between clamps will depend on the pipe diameter, and the following table can be taken as reference for pipes 3 m long:

Pipe diameter in mm	40	50	63	75	110	125	160
Distance in m	0,4	0,8	1,0	1,1	1,5	1,5	1,5

For horizontal collectors, a clamp will be fitted every 1.5 m.

The clamps shall be fixed to sufficiently strong building elements, taking into account the weight of the installation itself (pipes and accessories) as well as the most unfavourable scenario of operation (peak flows with full section due to excessive demand or blockage).

To avert the transmission of noise and vibration from moving water, metallic clamps with a rubber inner (isophonic clamps) shall be used.

FITTING

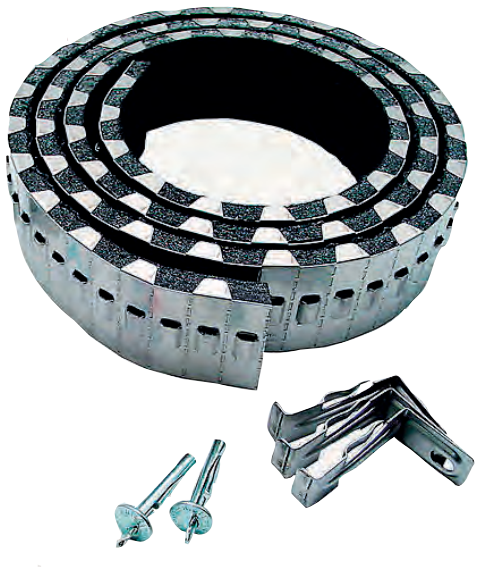
The passage of pipes through structural and manufactured elements shall be filled with elastic material so as to absorb the vibrations produced by the installation and prevent them being transmitted to the structure.

All changes of direction shall be accomplished using accessories to avert modification of the pipes by applying sources of heat.

6.2. Fire resistance: firestop

The firestop is a high-technology collar designed for the protection of thermoplastic pipes where they pass through building elements. This collar, which employs the phenomenon of graphite intumescence, expands as the temperature rises. thus sealing the pipe opening during a fire, preventing the passage of smoke and fire between compartments.

The firestops have been tested with different types of pipes, attaining fire resistances from EI 90 to EI 180, meaning that they can be used in practically all kinds of constructions.



Installation procedure

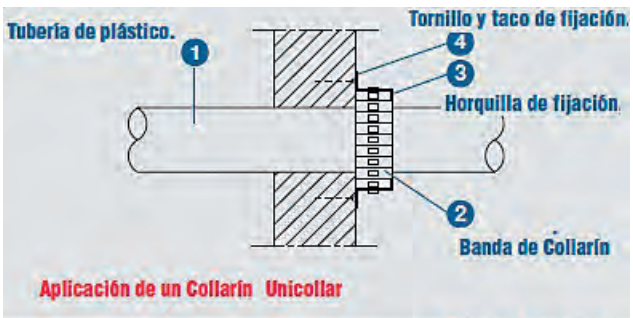
Measure the pipe diameter.

Measure the amount needed from the Unicollar strip or take it from the following table:

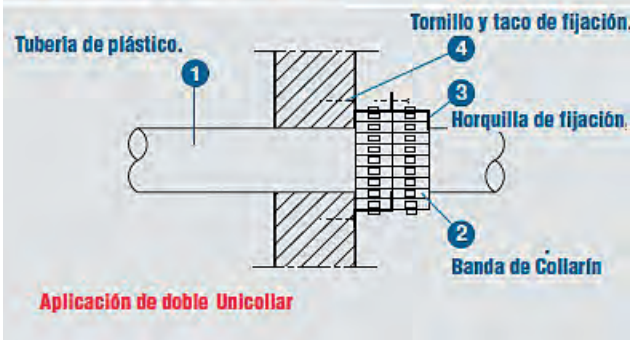
Fire resistance table / Pipe measurement:				
Pipe diameter	Collar length	Minimum number of collars		
		EI 90	EI 120	EI 180
Diameter 50	255 mm / 17 segments	1	1	1
Diameter 90	375 mm / 25 segments	1	1	1
Diameter 110	435 mm / 29 segments	1	1	1
Diameter 125	495 mm / 33 segments	1	1	2
Diameter 160	600 mm / 40 segments	1	1	2
Diameter 200	735 mm / 49 segments	2	2	-

FITTING

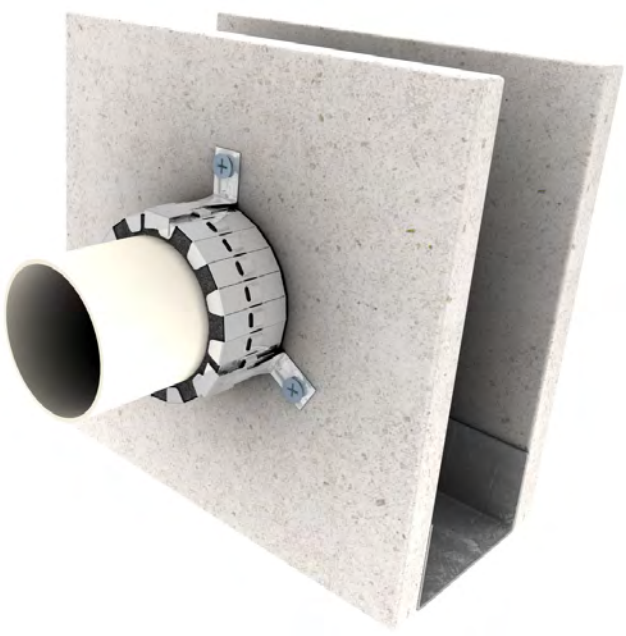
- Cut the intumescent part from the band with a knife.
- Bend it carefully until the punched metallic part comes off.
- Use the knife to mitre-cut the strip.
- Wrap the cut strip around the pipe.
- Close the strip using the first of the fixing pins.
- Push the collar against the structure (floor or wall).
- Fix the rest of the pins to a total of 2 (for collars of Ø50), or 3 (120º apart) for all other diameters.
- Use fixing elements appropriate to the substrate.
- For double collars, the first band should include 3 extra fixing pins fitted backwards, which will be secured to the 3 pins of the second collar. They shall be secured using steel screws and nuts as tightly as possible. Tested in walls and floors.



Aplicación de un Collarín Unicollar



Aplicación de doble Unicollar



7. Range

* The accessories marked offer passive fire resistance, with Euroclass rating B-s1,d0 under the standard UNE-EN 13501-1.
* The accessories marked N hold the AENOR reaction to fire product certificate (Euroclass B-s1,d0 under UNE-EN 13501-1).

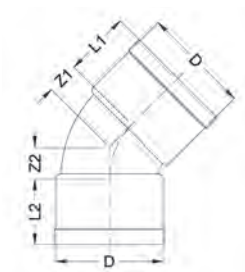
Pipes

DN (mm)	Length (m)	Thickness (mm)	Nº pipes/pallet	Code
32	5	3,0	96	2141155
40	5	3,0	80	1122180
50	5	3,0	65	1122181
75	3	3,0	96	2141129
90	3	3,0	29	1122185
110	3	3,2	34	1122182
125	3	3,2	30	1122183
160	3	3,2	17	1122186
200	3	3,9	9	1122187
250	3	4,9	7	2133984
110	1	3,2	29	1127359
110 - 2 bocas	1	3,2	26	2131833

• Pipes of diameter 32, 40 and 50 mm are supplied without flares.

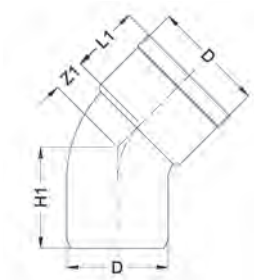
Female-female elbow 45º

Code	Reference	D	Z1	Z2	L1	L2
2141156	CF-44-AR	32	13	13	23	23
1122163	CH-44-AR	40	13	13	27	27
1122166	CJ-44-AR	50	18	18	32	32



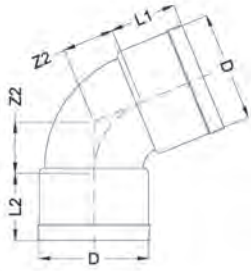
Male-female elbow 45º

Code	Reference	D	Z1	L1	H1
2141159	CF-4-AR	32	10	23	33
2136939	CH-4-AR	40	13	27	40
2136940	CJ-4-AR	50	18	32	50



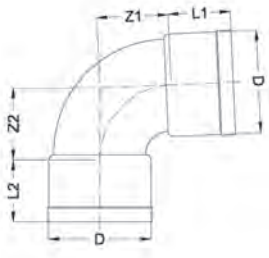
Female-female elbow 67º 30'

Code	Reference	D	Z1	Z2	L1	L2
2141157	CF-66-AR	32	17	17	24	24
1126194	CH-66-AR	40	21	21	27	27
1126195	CJ-66-AR	50	26	26	32	32



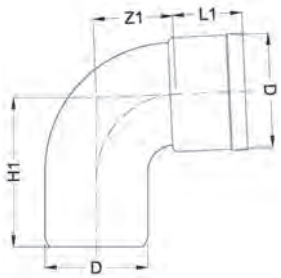
RANGE

Female-female elbow 87º 30'



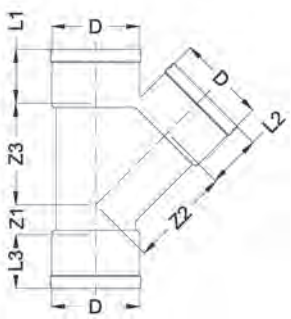
Code	Reference	D	Z1	Z2	L1	L2
2141158	CF-88-AR	32	24	24	23	23
1122164	CH-88-AR	40	31	31	27	27
1122165	CJ-88-AR	50	39	39	32	32

Male-female elbow 87º 30'



Code	Reference	D	Z1	L1	H1
2141160	CF-8-AR	32	24	23	47
2136941	CH-8-AR	40	31	27	58
2136942	CJ-8-AR	50	39	32	71

Simple female-female wye 45º



Code	Reference	D	Z1	Z2	Z3	L1	L2	L3
2141161	BF-144-AR	32	10,5	45	45	24	24	24
1122172	BH-144-AR	40	15	51	51	27	27	27
1122173	BJ-144-AR	50	16	63	63	32	32	32

Simple female-female wye 87º 30'

Code	Reference	D	Z1	Z2	Z3	L1	L2	L3
2141162	BCF-188-AR	32	25	17	25	24	24	24
1122155	BCH-188-AR	40	31	21	31	27	27	27
1122156	BCJ-188-AR	50	39	26	39	32	32	32

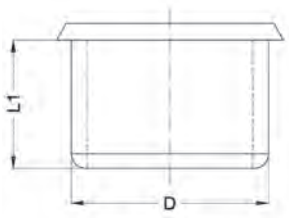
Female-female union sleeve

Code	Reference	D	l1
2141163	KF-AR	32	47
1122139	KH-AR	40	57
1122140	KJ-AR	50	65

Blind cap

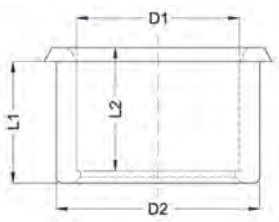
Code	Reference	D	L1
2141166*	FF-AR	32	14
1122138	TH-AR	40	26
2141167	TJ-AR	50	30

*Inspectable cap



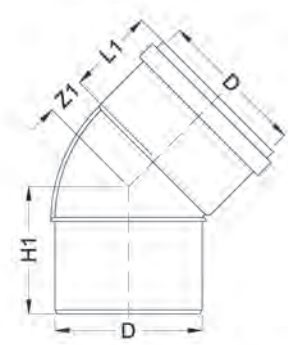
Reducer sleeve

Code	Reference	D1	D2	L1	L2
2141164	IH-AR	32	40	25	25
1122116	IJ-AR	40	50	30	30



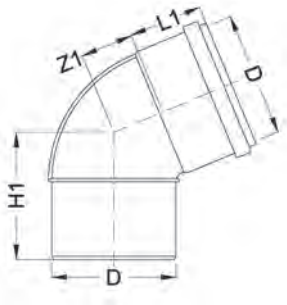
Male-female elbow 45º

Code	Reference	D	Z1	L1	H1
2141130	CP-4-K-AR	75	23,5	55	75,5
1126216	CS-4-K-AR	90	25	59,5	91
1122168	CV-4-K-AR	110	29	65,5	95
1122170	CX-4-K-AR	125	34	70,5	105
1126219	CZ-4-K-AR	160	39	81	131
1126222	CA-4-K-AR	200	55	93	151,5
2133981	CB-4-K-AR	250	69	126	183



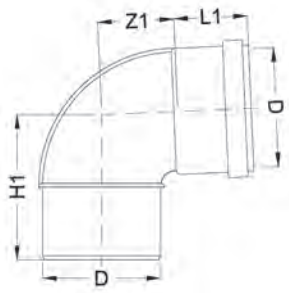
RANGE

Male-female elbow 67º 30’



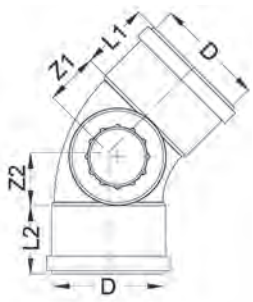
Code	Reference	D	Z1	L1	H1
2141141	CP-6-K-AR	75	38	54	86,5
1126215	CS-6-K-AR	90	37	66	96
1126217	CV-6-K-AR	110	47	65,5	113
1126218	CX-6-K-AR	125	53	70,5	123

Male-female elbow 87º 30’



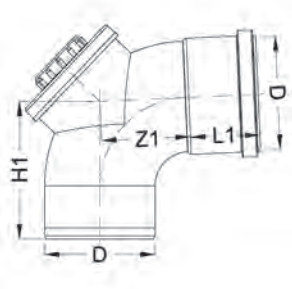
Code	Reference	D	Z1	L1	H1
2141142	CP-8-K-AR	75	53	53,5	100
1126196	CS-8-K-AR	90	58	56	110
1122167	CV-8-K-AR	110	63	65,5	130
1122169	CX-8-K-AR	125	74	70,5	145
1126220	CZ-8-K-AR	160	87	87	165
1126221	CA-8-K-AR	200	108,5	93	207
2133982	CB-8-K-AR	250	154	126	280

Inspectable female-female elbow 45º



Code	Reference	D	Z1	Z2	L1	L2
2135210	CV-45-K-AR	110	53,7	53,7	69	69

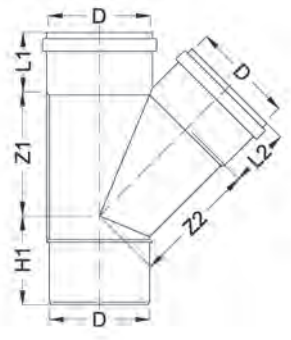
Inspectable acoustic elbow 87º 30’



Code	Reference	D	Z1	L1	H1
2135216	CV-8-BC-K-AR	110	89	69,4	137,3

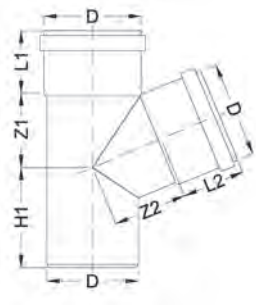
Simple male-female wye 45º

Code	Reference	D	Z1	Z2	L1	L2	H1
2141143	BP-14-K-AR	75	96	96	56	56	76
1126182	BS-14-K-AR	90	113	113	59,5	59,5	85
1122160	BV-14-K-AR	110	136	136	65,5	65,5	98
1122162	BX-14-K-AR	125	153	153	70,5	70,5	105
1126189	BZ-14-K-AR	160	197	197	69	69	108
1126191	BA-14-K-AR	200	258	258	94	94	147



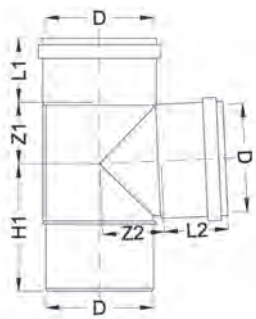
Simple male-female wye 67º 30’

Code	Reference	D	Z1	Z2	L1	L2	H1
2141144	BP-16-K-AR	75	69	68,5	42	42	76
1126181	BS-16-K-AR	90	73	73	62	62	99
1126185	BV-16-K-AR	110	89	89	65,5	65,5	113



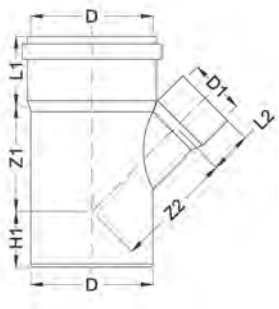
Simple male-female wye 87º 30’

Code	Reference	D	Z1	Z2	L1	L2	H1
2141145	BP-18-K-AR	75	69	68,5	42	42	76
1126180	BS-18-K-AR	90	51	51	59,5	59,5	110
1122159	BV-18-K-AR	110	63	63	65,5	65,5	130
1122161	BX-18-K-AR	125	70	70	70,5	70,5	139,5
1126188	BZ-18-K-AR	160	92	92	76	76	172
1126190	BA-18-K-AR	200	112	112	97	97	206



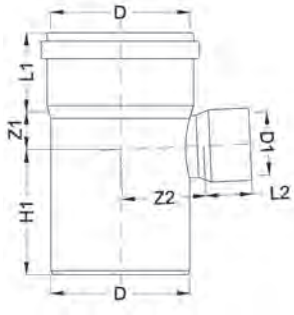
Male-female wye with reducer 45º

Code	Reference	D	D1	Z1	Z2	L1	L2	H1
2141146	BP-145-K-AR	75	50	78,5	81	46,5	37	47,5
1122158	BV-145-K-AR	110	50	95	107	63	37	50



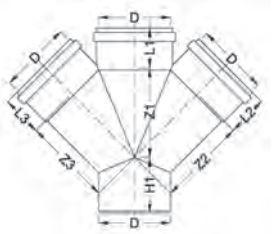
RANGE

Male-female wye with reducer 87º 30’



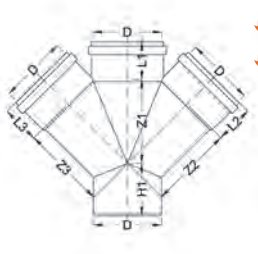
Code	Reference	D	D1	Z1	Z2	L1	L2	H1
2141147	BP-185-K-AR	75	50	28	49	46,5	37	81
1122157	BV-185-K-AR	110	50	30	66	63	37	99

Male-female double wye 45º



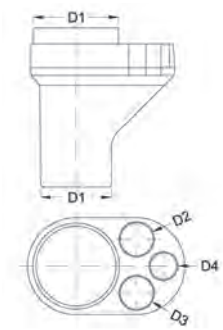
Code	Reference	D	Z1	Z2	Z3	L1	L2	L3	H1
2141153	RP-14-K-AR	75	96	96	96	56	56	56	76
1126183	RV-14-K-AR	110	136	136	136	61	61	61	85
1126187	RX-14-K-AR	125	153	153	153	65	65	65	90

Male-female double wye 87º 30’



Code	Reference	D	Z1	Z2	Z3	L1	L2	L3	H1
1126192	RV-18-K-AR	110	70	70	70	61	61	61	133
1126186	RX-18-K-AR	125	79	79	79	61	61	61	134,5

Multiconnector wye

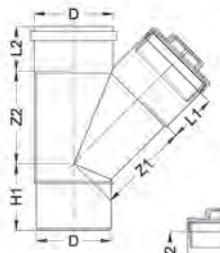


Code	Reference	D1	D2	D3	D4
2135283	IMV-554-AR	110	50	50	40

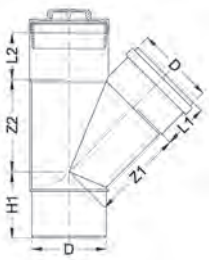
Inspectable wye 45º

Code	Reference	D	Z1	Z2	L1	L2	H1
2136945	VVA-4-K-AR (1)	110	136	136	69	65,5	98
2136946	VVL-4-K-AR (2)	110	136	136	65,5	69	98
2136948	VXA-4-K-AR (1)	125	153	153	70,5	74	105
2136949	VXL-4-K-AR (2)	125	153	153	74	70,5	105
2140254	VZA-4-K-AR (1)	160	197	197	75	69	107
2140255	VZL-4-K-AR (2)	160	197	197	69	75	107

OFFLINE
INSPECTION (1)

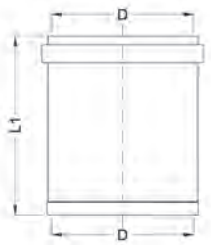


INLINE
INSPECTION (2)



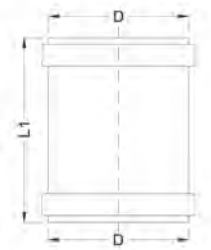
Female-female transition sleeve glued to elastic gasket

Code	Reference	D	L1
2136943	JV-K-AR	110	138,5
2136944	JX-K-AR	125	144,5



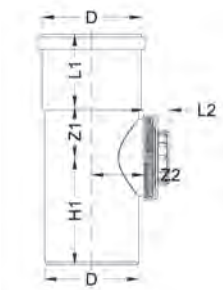
Expansion sleeve female-female

Code	Reference	D	L1
2141148	KP-2-K-AR	75	107
1126176	KS-2-K-AR	90	126
1122142	KV-2-K-AR	110	125
1122153	KX-2-K-AR	125	139
1126177	KZ-2-K-AR	160	157
1126178	KA-2-K-AR	200	190
2133983	KB-2-K-AR	250	252



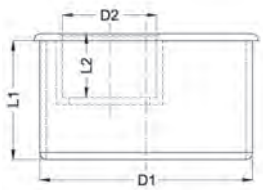
Inspectable expansion sleeve male-female

Code	Reference	D	Z1	Z2	L1	L2	H1
2135212	VV-9-K-AR	110	59,5	60,8	85,5	30,5	125



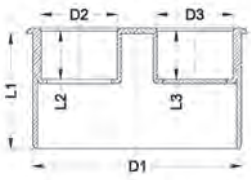
RANGE

Reducer cap



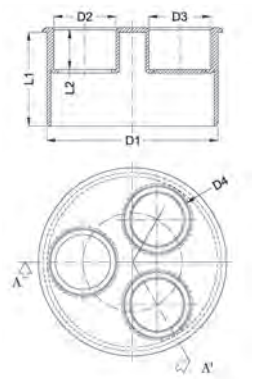
Code	Reference	D1	D2	L1	L2
2141150	P-4-AR	75	40	41	26
2141149	P-5-AR	75	50	45	31
1126171	S-4-AR	90	40	50	27
1126173	S-5-AR	90	50	50	31
1122119	V-4-AR	110	40	54	27
1122117	V-5-AR	110	50	50	34,4
2141154	V-7-AR	110	75	50	41,5
1122121	X-4-AR	125	40	60	37
1122120	X-5-AR	125	50	60	32

Double reducer cap



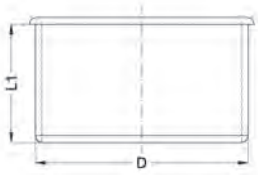
Code	Reference	D1	D2	D3	L1	L2	L3
2141165	V-43-AR	110	40	32	51	26	23,5
2131254	V-44-AR	110	40	40	50	25	25

Triple blind reducer cap



Code	Reference	D1	D2	D3	D4	L1	L2
2135208	TV-444-AR	110	40	40	40	60	27
2135206	TV-544-AR	110	50	40	40	60	32

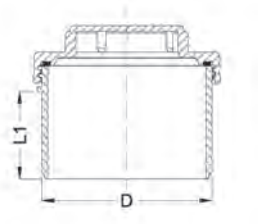
Blind cap



Code	Reference	D	L1
2141152	TP-AR	75	44
1126172	TS-AR	90	50
1122134	TV-AR	110	50
1122136	TX-AR	125	55
1126174	TZ-AR	160	60
1126175	TA-AR	200	67

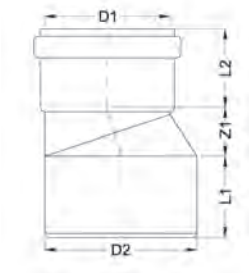
Inspectable cap

Code	Reference	D	L1
2141151	FP-AR	75	21
2135217	FS-AR	90	46
1126752	FV-AR	110	48
1126751	FX-AR	125	55



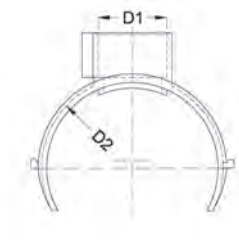
Eccentric increaser male-female

Code	Reference	D	Z1	Z2	L1	L2
1126224	IV-2-K-AR	90	110	35	59	57
1126223	IX-3-K-AR	90	125	19	70	58
1122171	IX-1-K-AR	110	125	15	77	68
1126225	IZ-3-K-AR	110	160	24	85	86
1126226	IZ-2-K-AR	125	160	27	82	68
1126227	IA-3-K-AR	125	200	11	100	57
1126229	IA-1-K-AR	160	200	29	107	84



Wye to pipe 90º

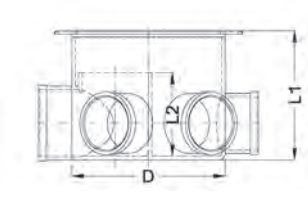
Code	Reference	D1	D2
1122174	ITTVX-4-AR	40	110/125
1122175	ITTVX-5-AR	50	110/125



Syphon trap

Code	Reference	D	L1	L2
1122177	B-S-AR	110	97,5	62

5 inlets Ø40
outlet Ø50



The trap is supplied with 2 reducer sleeves Ø40-32,
2 blind caps Ø40, and 1 reducer sleeve Ø50-40

RANGE

Isophonic clamp

Ø pipe exterior	Metric	Units/box	Code
32	M8	50	7043042
40	M8/M10	100	7039620
50	M8/M10	100	7039650
75	M8/M10	50	7043043
90	M8/M10	50	7025185
110	M8/M10	50	7004351
125	M8/M10	50	7039648
160	M8/M10	50	7004353
200**	M12	25	7026392
250**	M12	25	7041566

** Reinforced

- Range of isophonic clamps for use in the soundproof evacuation system AR®.
- Circular metal clamp with twin M8/M10 thread for vertical, horizontal and suspended installations.
- Lateral captive screws with plastic washer.
- Rubber for sound reduction of 18 dB (A) according to DIN 4109.
- Steel strap ST4 K/32.
- Ultimate load 6000 N.
- Maximum load 2000 N.
- Complies with the CTE, both the Basic Document HR (Noise Protection) and Basic Document HS (Sanitation).

Firestop sleeve*

Length (mm)	Reference	Units/box	Code
2190	–	1	7028109

*For pipes of diameter up to 200 mm. For other diameters, please consult us.

Fire resistance tests conducted according to the standard UNE EN 1366-3. Reports issued by AFITI-Licof.

Firestop collars DN110 and DN125 mm

Ø	Reference	Units/Box	Code
110	–	1	7042134
125	–	1	7042166

Compliant with the standard UNE-EN 13501-2: 2004, Rating Report No. 7666/08 (wall) and No. 7666/08-2 (floor). Both reports issued by AFITI-Licof.
CE mark conformity: Certificate of Conformity No. 1121-CPD-JA5002 (ETA12/0350).

8. Applications

The AR® soundproof evacuation system is especially designed for buildings of all types of uses (dwellings, hospitals, teaching centres, offices, commercial premises, etc):

- Wastewater and rainwater evacuation for domestic use.
- Ventilation shafts for water evacuation system.

9. Showcase

Hospital Central, Asturias

Palacio de Exposiciones y Congresos, Oviedo

Residencial Montenuño, Oviedo

Ciudad de la Justicia, Zaragoza

Hotel Cotton House, Barcelona

Edificio Helios, Madrid

SHOWCASE


Torre Romareda, Zaragoza


Residencial Itaca, Alicante


Residencial Villa Pepita, Almería


Edificio Aladas, Murcia


Residencial Les Arts, Valencia


Rehabilitación de Palacete en Plaza Manises, Valencia

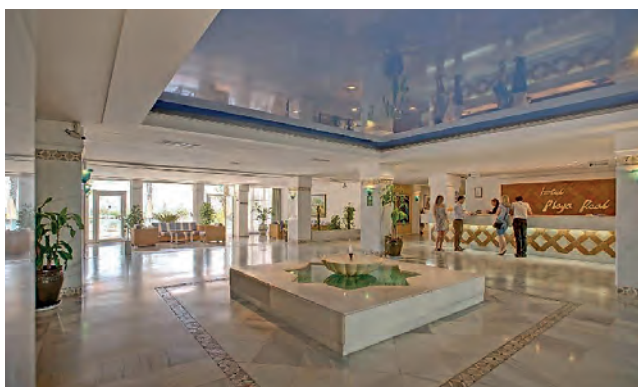

LLaut Palace Hotel, Palma de Mallorca

SHOWCASE

AEAT Head Office Castilla y León, Valladolid

Hotel Sir Joan, Palma de Mallorca

Hotel Balneario Las Caldas Villa Termal, Oviedo



Hotel Playa Real, Ibiza

Gran Hotel Inglés, Madrid

Other showcase work:

Hotel Es Baluard Des Príncep, Palma de Mallorca
Hotel Santa Cruz, A Coruña
Dwellings in Son Vida, Palma de Mallorca
Dwellings in Punta Prima, Palma de Mallorca
Area Building, Torrent
Sea Colors Building, Alicante
Residence La Térmica, Almería
Travalon Building, Alicante
Quevedo Building, Almería
Residence Jardinana, Málaga
Residence Paseo de los Tilos, Málaga
Residence Cuc de Seda, Valencia
Residence Ribera de Santo Domingo, Valladolid
Residence Río Segre, Valencia
Hotel Albarracín, Albarracín
Henkel Building, Barcelona
Hotel Artemi, Barcelona
Automobile Museum, Málaga
Vive Zorrozaurre development, Bilbao
Habitat development, Málaga
Helios Building, Gijón
Hotel Garbell, Seville
Hotel Córcega, Barcelona
Hotel Váleri, Sant Feliu de Guixols
Hotel Toc La Rambla, Barcelona
Hotel H10 Playas de Mallorca, Santa Ponça
Hotel Catalonia Giralda, Seville
Hotel Alexandra, Palma de Mallorca
Hotel Boutique, Gijón
Hotel Paradise Beach, Ibiza
Hotel Allsun Palmira, Palma de Mallorca
Hotel Gran Vía, Madrid
Hotel Drago, Seville
Hotel Catalonia Santa Justa, Seville
Hotel Vincci The Mint, Madrid
Urbana Noga, Málaga

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Quality

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Range

Technical and comercial support

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AENOR ACCESORIOS PLÁSTICOS 001/007328 UNE-EN 1329-1

AENOR REACCIÓN AL FUEGO 001/007318 001/007329 UNE-EN 13501-1

AENOR COMPORTAMIENTO AL RUIDO 001/007332 UNE-EN 14366

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