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CLIENT LIST

1st TO
INTRODUCE
foamed pv
drainage
pipes in in



ASTRAL, INDIA'S PROGRESSIVE BUILDING MATERIALS COMPANY

Established in 1996 with the aim to manufacture best-in-globe plastic piping systems, Astral Pipes fulfils emerging piping needs of millions of houses and adds extra mileage to India's developing real estate fraternity with the hallmark of unbeaten quality and innovative piping solutions. Keeping itself ahead of the technology curve, Astral has always been a front runner in the piping category by bringing innovation and getting rid of old, primitive and ineffective plumbing methods. Bringing CPVC in India, and pioneering in this technology, have set Astral apart and its highest quality enabled it to obtain NSF approval for its CPVC pipes and fittings. Astral went beyond the category codes by launching many industry firsts, like launching India's first lead-free uPVC pipes for plumbing as well as for stream water, just to name a few.

Astral Pipes offers the widest product range across this category when it comes to product applications. Astral Pipes is equipped with production facilities at Santej and Dholka in Gujarat, Hosur in Tamil Nadu, Ghiloth in Rajasthan, Sangli & Aurangabad in Maharashtra, Cuttack in Odisha and Sitarganj in Uttarakhand to manufacture plumbing systems, drainage systems, agriculture systems, fire sprinkler piping systems, industrial piping and electrical conduit pipes with all kinds of necessary fittings.

Astral Pipes' Infrastructure division offers a comprehensive product range including corrugated piping for drainage and cables, polyolefin cable channels, sewage treatment plants, plastic sheathing ducts, suction hoses, and sub-surface drainage systems. This range helps Astral to establish a strong foothold in infrastructure and agriculture sector in the constantly evolving business of piping.

In 2014, Astral forayed into the adhesives category by acquiring UK-based Seal It Services Ltd. and Kanpur based Resinova Chemie Ltd., which manufacture adhesives, sealants and construction chemicals. With five manufacturing facilities now in this business segment, Astral has strengthened its presence in the category and made rapid inroads.

In the year 2020, Astral has expanded its product portfolio and entered into the Water Tanks Segment. The water tank segment is an expanded domain of plumbing and water supply with a huge nationwide potential. Astral Pipes manufactures water tanks from its Santej, Aurangabad, Cuttack, Hosur & Ghiloth manufacturing facilities. A wide range of water storage tanks has helped Astral to become a versatile player in the industry.

Extending the product portfolio further, in the year 2022 Astral forayed into the categories of Faucets and Sanitaryware, followed by acquisition of Bangalore based Gem Paints to enter in the Paints category. This expansion will help Astral march firmly towards becoming a holistic building materials company.

ADHESIVES

EPOXY ADHESIVES & PUTTY
SILICONE SEALANTS
CONSTRUCTION CHEMICALS **PVA**
CYANOACRYLATE **SOLVENT CEMENTS**
TAPES **POLYMERIC FILLING COMPOUND**
ANAEROBIC ADHESIVES
INDUSTRIAL ADHESIVES
INSTANT HAND SANITIZER
SURFACE CLEANING PRODUCTS

WATER TANKS

PAINTS

PIPING

PLUMBING PIPES & FITTINGS
CPVC, PVC & PEX
SEWERAGE DRAINAGE PIPES & FITTINGS
AGRICULTURE PIPES & FITTINGS
INDUSTRIAL PIPES & FITTINGS
FIRE SPRINKLERS PIPES & FITTINGS
CONDUIT & CABLE PROTECTION
ANCILLARY PRODUCTS
URBAN INFRASTRUCTURE

DUCTING

FAUCETS

SANITARYWARE





INNOVATION & RECOGNITIONS

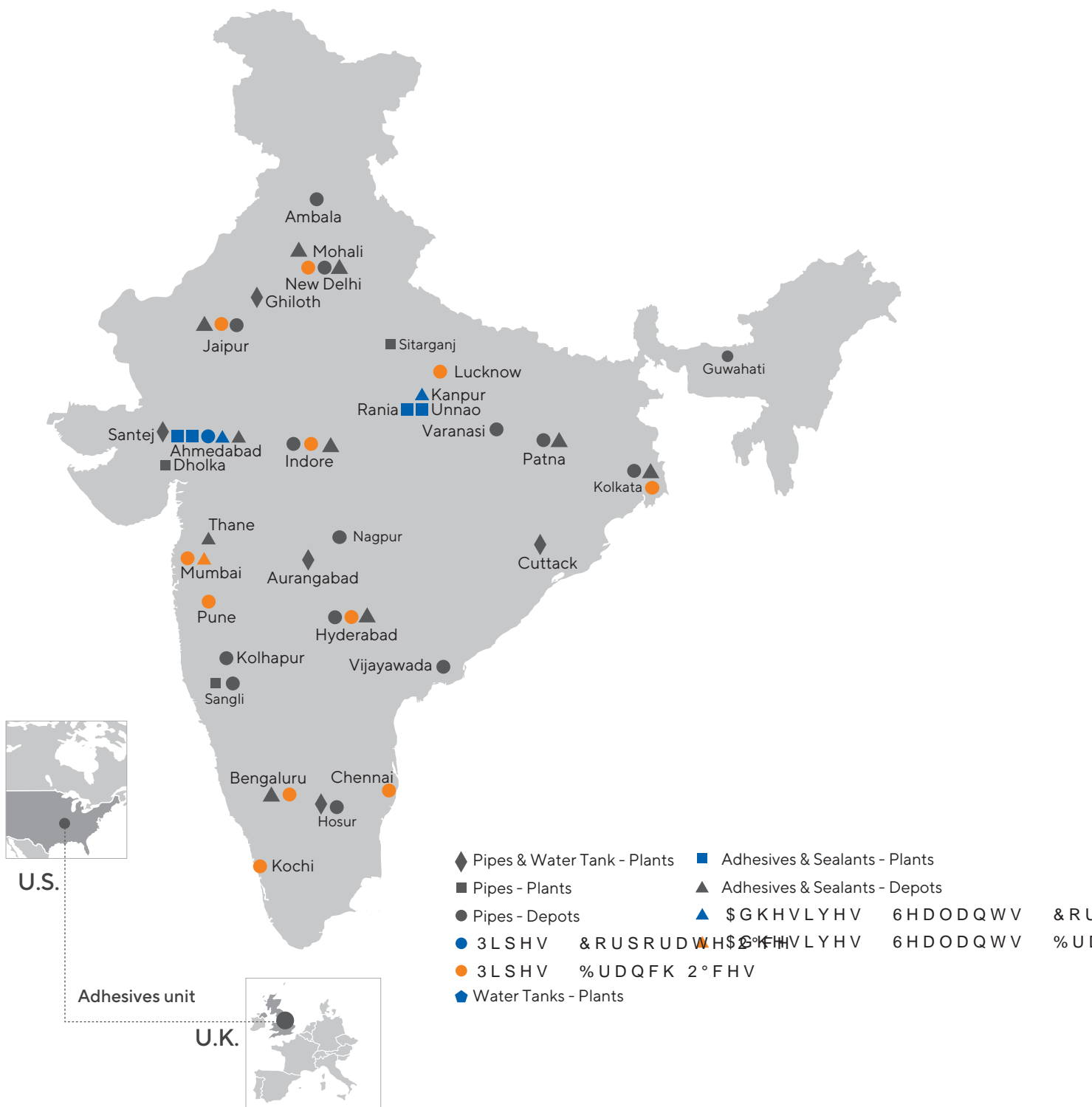
- First to introduce CPVC piping system in India (1999)
- First to launch lead free uPVC piping system in India (2004)
- Corp Excel- National SME Excellence Award (2006)
- First to launch lead-free uPVC column pipes in India (2012)
- Enterprising Entrepreneur of the year (2012-13)
- Business Standard Star SME of the year (2013)
- Inc. India Innovative 100 for Smart Innovation under category of 'Technology' (2013)
- India's Most Promising Brand Award (2014)
- India's Most Trusted Pipe Brand Award (2016, 2019 & 2020)
- ET Inspiring Business Leaders of India Award (2016)
- India's Most Attractive Pipe Brand Award (2016)
- Fortune India 500 Company (2016)
- Consumer Validated Superbrands India (2017, 2019 & 2021)
- India's Most Desired Brand based on TRA's Brand Trust Report (2021)



MARKETING NETWORK

\$VWUDO KDV D PDUNHWLQJ QHWZRUN RI PRUH WKDQ GLVWULEXWRUV DQG

at Mumbai, Pune, Delhi, Bengaluru, Chennai, Hyderabad, Jaipur, Lucknow and Kochi. Apart from that Astral has its own warehouses at Vijaywada, Hyderabad, Delhi, Kolhapur, Kolkata, Nagpur, Indore, Patna, Varanasi, Jaipur, Hosur & Guwahati to deliver the material as quick as possible. More than 400 techno marketing professionals and administrative personnel are on the board to coordinate with architects, plumbing contractors and plumbers to utilize the best plumbing techniques and to get the best from the products.



CERTIFICATION

07.02.2023

III 53-1.42.1-12/21

Z.42.1-595

7. Februar 2023
7. Februar 2028

ASTRAL LIMITED
"ASTRAL HOUSE" 207/1, Bh. Rajpath Club
AHMEDABAD
380059
INDIEN

Abwasserrohre und Formstücke mit der Bezeichnung "Silencio" aus mineralverstärktem PP in den Nennweiten DN 50 bis DN 200

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.
Dieser Bescheid umfasst neun Seiten und vier Anlagen.

ASTRAL LIMITED

REGISTERED & CORPORATE OFFICE: 207/1, "ASTRAL HOUSE", B/H. RAJPATH CLUB, OFF. S.G.HIGHWAY, AHMEDABAD – 380 059, GUJARAT, INDIA.
This is a multi-site certificate, additional site(s) are listed on the next page(s)

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above Organisation has been audited and found to be in accordance with the requirements of the Management System Standards detailed below.

Standards

ISO 14001:2015 & ISO 45001:2018

Scope of certification

MANUFACTURE, MANAGEMENT, MARKETING AND DESPATCH OF
1. CPVC PIPES AND FITTINGS FOR HOT/COLD WATER PLUMBING SYSTEMS (CPVC-PRO), AUTOMATIC FIRE SPRINKLER APPLICATIONS (FIRE-PRO), INDUSTRIAL PIPING SYSTEMS (CHEM-PRO) AND CPVC BALL VALVES
2. UPVC PIPES AND FITTINGS FOR PRESSURE, NON- PRESSURE, AGRICULTURAL AND WATER TRANSPORT SYSTEM (AQUASAFE), ELECTRICAL CONDUIT APPLICATIONS (WIREGUARD), INDUSTRIAL PIPING SYSTEMS (AQUARUSH), SWR (SOIL WASTE AND RAINWATER) SYSTEMS (DRAINMASTER) AND UPVC COLUMN PIPES, SCREEN AND CASING PIPES FOR BORE WELLS (BOREWELL, CASEWELL) AND UPVC BALL VALVES
3. UPVC FOAM CORE PIPES FOR DWW (DRAIN WASTE AND VENT) AND UNDERGROUND SYSTEMS (FOAMCORE, DWW AND UGD)
4. PP SILENCIO PIPES AND FITTINGS FOR APPLICATION ON BUILDING STRUCTURES AND UNDERGROUND NEAR THE BUILDING STRUCTURES (SILENCIO)
5. PE/PP UNDERGROUND INSPECTION CHAMBERS AND MAN-HOLES (DRAINHULK)
6. LEAD-FREE UPVC PIPES & FITTINGS FOR PLUMBING SYSTEMS (AQUARIUS)
7. MULTILAYER CPVC COMPOSITE PIPES (MULTI-PRO)
8. UPVC LEAD-FREE PLUMBING PIPES FOR TRANSFER OF COLD AND NON-POTABLE PRESSURIZED TREATED WATER (ECO-PRO)
9. PE ROTATIONAL MOULDED WATER STORAGE TANKS (2 LAYER-SYLO / 3 LAYER-VITO / 4 LAYER-CLEO / 2 & 3 LAYER-SARTAI)
10. PP DRAINPRO PIPES AND FITTINGS FOR APPLICATION ON BUILDING STRUCTURES AND UNDERGROUND NEAR THE BUILDING STRUCTURES (DRAINPRO)
11. PE BLOW MOULDED WATER STORAGE TANKS (3 LAYER – OPTA
Original cycle start date: 14 May 2020
Expiry date of previous cycle: 13 May 2023
Recertification Audit date: 13 April, 2023
Recertification cycle start date: 09 June 2023
Subject to the continued satisfactory operation of the Organisation's Management System, this certificate is valid until: 13 May 2026
Certificate No. IND.23.5572/IM/U Version: 1 Issue date: 09 June 2023
For certificate authenticity, click here
<https://certcheck.ukas.com>
Signed on behalf of BVCH SAS UK Branch
Jagdhesh N. MANIAN
Director – CERTIFICATION, South Asia
Commodities, Industry & Facilities Division
Certification body address: 5th Floor, 66 Prescott Street, London, E1 6HG, United Kingdom.
Local office: Bureau Veritas (India) Private Limited (Certification Business), 72 Business Park, Marol Industrial Area, MIDC Cross Road "C", Andheri (East), Mumbai – 400 093, India.
Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.
To check this certificate validity please call + 91 22 6274 2000.

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ASTRAL LIMITED

HEAD OFFICE: 207/1, "ASTRAL HOUSE", OPP. SATYAM CORPORATE SQUARE, B/H. RAJPATH CLUB, OFF. S.G.HIGHWAY, AHMEDABAD – 380 059, GUJARAT, INDIA.
This is a multi-site certificate, additional site(s) are listed on the next page(s)

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System Standard detailed below.

Standard

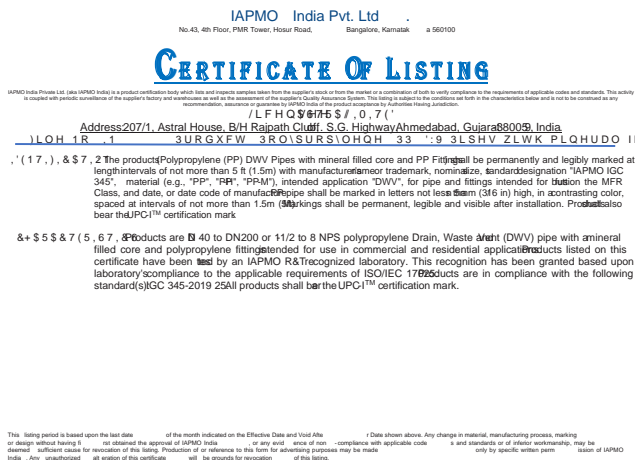
ISO 9001:2015

Scope of certification

MANAGEMENT & MARKETING OF
1. CPVC PIPES AND FITTINGS FOR HOT/COLD WATER PLUMBING SYSTEMS (CPVC-PRO), AUTOMATIC FIRE SPRINKLER APPLICATIONS (FIRE-PRO), INDUSTRIAL PIPING SYSTEMS (CHEM-PRO) AND CPVC BALL VALVES
2. UPVC PIPES AND FITTINGS FOR PRESSURE, NON- PRESSURE, AGRICULTURAL AND WATER TRANSPORT SYSTEM (AQUASAFE), ELECTRICAL CONDUIT APPLICATIONS (WIREGUARD), INDUSTRIAL PIPING SYSTEMS (AQUARUSH), SWR (SOIL WASTE AND RAIN WASTE) SYSTEMS (DRAINMASTER) AND UPVC COLUMN PIPES, SCREEN AND CASING PIPES FOR BORE WELLS (BOREWELL, CASEWELL) AND UPVC BALL VALVES
3. UPVC FOAM CORE PIPES FOR DWW (DRAIN WASTE AND VENT) AND UNDERGROUND DRAINAGE SYSTEMS (FOAMCORE, DWW & UGD)
4. PP SILENCIO PIPES AND FITTINGS FOR APPLICATION ON BUILDING STRUCTURES AND UNDERGROUND NEAR THE BUILDING STRUCTURES (SILENCIO)
5. PE/PP UNDERGROUND INSPECTION CHAMBERS AND MAN-HOLES (DRAINHULK)
6. LEAD-FREE UPVC PIPES FOR PLUMBING SYSTEMS (AQUARIUS)
7. PE/PP STRUCTURED WALL DWC (DOUBLE WALLED CORRUGATED) PIPING SYSTEM FOR NON-PRESSURE DRAINAGE AND SEWERAGE APPLICATIONS (D-WELX)
8. MULTILAYER CPVC COMPOSITE PIPES (MULTI-PRO)
9. UPVC LEAD-FREE PLUMBING PIPES FOR TRANSFER OF COLD AND NON-POTABLE PRESSURIZED TREATED WATER (ECO-PRO)
10. PE ROTATIONAL MOULDED WATER STORAGE TANKS (2 LAYER-SYLO / 3 LAYER-VITO / 4 LAYER-CLEO)
11. CONDUIT PIPES AND FITTINGS FOR UNDERGROUND CABLE MANAGEMENT SYSTEM (TELESEX)
12. PE PIPES FOR WATER SUPPLY (PE-PRO), STAFFERS & MANHOLES
13. UPVC SINGLE WALLED CORRUGATED PIPES AND FITTINGS FOR SUB-SURFACE DRAINAGE SYSTEM (VARADAN & GEOREX)
14. PVC FLEXIBLE PIPES FOR Suction and Delivery Lines of SURFILL PUMP, PUMP (POWER-FLEX)
15. PVC DRAINWELL AND DRAINPIPE FOR TUNNEL DRAINAGE, ROAD DRAINAGE AND SIMILAR APPLICATIONS (AQUAREX)
16. POLY-ETHYLENE CABLE CHANNELS FOR SIGNAL / COMMUNICATION / POWER CABLES (MULTI-TRAC)
17. PE / PP DUCTS AND FITTINGS FOR INTERNAL BONDED POST TENSIONING OF TENDONS IN PRE-STRESSED CONCRETE (PLUS-STREX & PRE-STREX)
Original cycle start date: 11 February 2023
Expiry date of previous cycle: 10 February 2021
Recertification Audit date: 26 December 2020
Recertification cycle start date: 16 January 2021
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: 10 February 2024
Certificate No. IND.21.6008/QM/U Version: 3 Revision date: 14 February 2022
Signed on behalf of BVCH SAS UK Branch
Jagdhesh N. MANIAN
Head – CERTIFICATION, South Asia
Commodities, Industry & Facilities Division
Certification body address: 5th Floor, 66 Prescott Street, London, E1 6HG, United Kingdom.
Local office: Bureau Veritas (India) Private Limited (Certification Business), 72 Business Park, Marol Industrial Area, MIDC Cross Road "C", Andheri (East), Mumbai – 400 093, India.
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To check this certificate validity please call + 91 22 6274 2000.

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06



ASTRAL LIMITED
SILENCIO PIPING DIVISION
9RLG SIWHU JHE
Santej, India

v4.1
OPERATIONS AND MAINTENANCE: EXISTING BUILDINGS

November 2021

IAPMO RESEARCH AND TESTING, INC.

5001 E. Philadelphia Street, Ontario, CA 91761 • Phone (909) 472-4100 • Fax (909) 472-4244 • www.iapmort.org



CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. (hereinafter referred to as "IAPMO R&T") is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Management System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO R&T of the product's performance or its compliance with applicable codes and standards.

Product: Polypropylene (PP) DWV Pipes with mineral filled core and PP Fittings

The product Polypropylene (PP) DWV Pipes with mineral filled core and PP Fittings shall be permanently and legibly marked at length intervals of not more than 5 ft (1.5m) with manufacturer's trademark, nominal size, standard designation "IAPMO IGC 345", material (e.g., "PP", "PPR", "PPM"), intended application "DWV", for pipe and fittings intended for use in the MFR Class, and date, or date code of manufacture. The marking shall be marked in letters not less than 3/16 in (4.8 mm) high, in contrasting color, spaced at intervals of not more than 1.5m. Markings shall be permanent, legible and visible after installation. Products shall bear the IAPMO certification mark.

Products are 1/2 to 8 NPS polypropylene Drain, Waste and Vent (DWV) pipe with mineral filled core and polypropylene fittings intended for use in commercial and residential applications. Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025. Products are in compliance with the following standard(s): IGC 345-2019. All products shall bear the IAPMO certification mark.

Issued To:

ASTRAL LIMITED

207/1 ASTRAL HOUSE B/H RAJPATH CLUB OFF. S.G. HIGHWAY AHMEDABAD 380059, GUJARAT INDIA

Product:

Polypropylene (PP) DWV Pipe with a Mineral Filled Core and PP Fittings

Products are in compliance with the following code(s):

N/A - CLASSIFIED

(This is not a listing for code compliance)

Products are certified to the following standard(s):

IGC 345-2020a

File Number: C-11533

(Effective Date) 11/01/2021

Void After: August 2024*

This listing period is based upon the last date of the month indicated on the Effective Date and Void After Date shown above. Any change in material, manufacturing process, marking or design without having been obtained the approval of IAPMO R&T, or any other source of non-compliance with applicable codes and standards or of inferior workmanship, may be deemed sufficient cause for revocation of this listing. Production or use for advertising purposes may be made only by specific written permission of IAPMO R&T. Any unauthorized alteration of this certificate will be grounds for revocation of this listing.



WARRANTY

VALID FOR THE FOLLOWING AREAS OF APPLICATION:

- Noise-insulated above-ground drainage
- Highly noise-insulated above-ground drainage

In addition to any legal warranty and damage claims, upon the agreement of Astral Pipes general terms of business, the company undertakes the following:

: \$ 5 5 \$ 1 7 <

Astral Ltd. hereby warrants the performance of its high-quality Silencio Piping system. The warranty period shall extend up to 10 years from the date of manufacture for all the standard elements mentioned in this catalogue.

THIS LIABILITY ENCOMPASSES:

1. Free delivery to the place of employment of the replacement parts required for the repair of the damage.
2. Necessary removal and installation costs, including the expenses incurred for the restoration of the object to its original condition, up to a sum of USD 25000.

Pursuant to this declaration Astral provides this Warranty when,

1. Laying was completed by trained personnel from a licensed sanitary plumbing company in connection with installation as contractually intended and all the technical regulations valid at the time of completion were observed.
 2. Only Astral original parts were employed and that these were not combined with products of any other origin.
 3. The cause of damage did not relate to parts subject to natural wear and tear, external mechanical damage, or other external influences on the product.
 4. It can be proven that at the time of laying all the current storage, laying, installation and application stipulations were observed in full.
 5. All the measures necessary for damage minimization were initiated immediately.
 6. The occurrence of damage was reported to Astral without delay and under all circumstances within 10 days of the
- L G H Q W L ® F D W L R Q R I W K H G D P D J H F R P S O H W H Z L W K L Q I R U P D W L R Q F R Q F H U Q L
7. Prior to repair work, Astral is given an opportunity to determine and appraise the damage itself or through a third party.
 8. All the parts relating to the claim are kept for the investigation of the damage occurrence and are provided to Astral upon request.
 9. The production and installation dates can be evidenced in the appropriate form.



SYSTEM DESCRIPTION

Astral Silencio is a top-quality sound-insulating low noise drainage and sewerage piping system suitable for drainage of requirements of non-pressurized wastewater piping as laid down in DIN EN 12056 and DIN 1986-100.

Astral Silencio is manufactured with Mineral Reinforced Polypropylene which helps to reduce the noise level of soil and waste discharge systems better than alternative materials. Apart from superior acoustic properties, Astral Silencio also discharge applications.

Astral Silencio sound-insulating piping system is designed to ensure a comfortable environment. The pipe dimensions are in accordance with EN 1451 (Plastic piping systems for soil and waste discharge - low and high temperature - within enables the trouble-free transition from other piping systems to Astral Silencio without the need of special transition adapters.

Astral Silencio is one of the most advanced plastic drain and waste piping systems and it is established as a superior

• Fast and easy installation • Enhanced acoustic properties • Trouble-free lifelong performance • Lower weight of the piping system

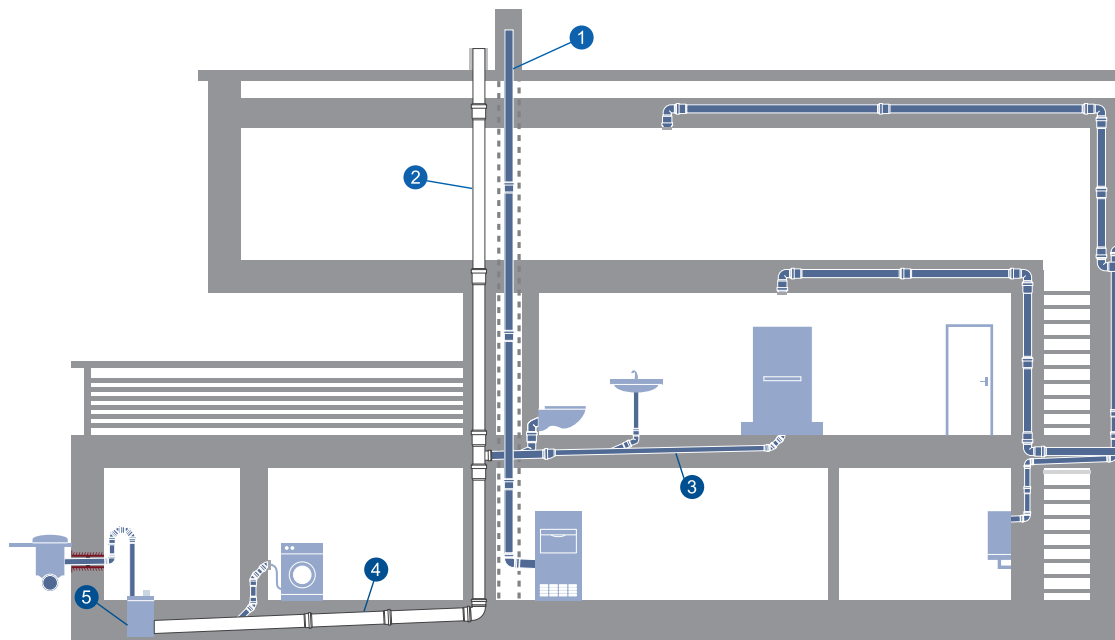
THE RAW MATERIAL

acoustic and mechanical properties. Astral Silencio has a molecular density of 1.9 gm/cm³ which is one of the highest in system. Apart from these unique properties, Astral Silencio is durable, corrosion-resistant and able to withstand the chemical aggression of various kinds of wastewater. The smooth inner surface of Astral Silencio prevents scaling and incrustation.

FIELDS OF APPLICATION

The sound-insulating Astral Silencio is suitable for gravity drainage system as laid down in DIN EN 12056 (Gravity Drainage Systems Inside Buildings-Sanitary Pipework, Layout and Calculation) and DIN 1986-100 (Drainage System on Private Ground). Local - national standards, code of practice and regulations must be followed during the design and installation

RI GUDLQDJH V\ VWHP XVLQJ \$ VWUDO 6LOHQFLR 7KH SLSHV ®WWLQJV DQG r& r) ,QWHUPLWWHQWO\ 7KH\ DUH VXLWDEOH IRU WKH GUDLQDJH RI FKH (acidic) to 12 (basic). Fire resistance of Astral Silencio corresponds to B2 normal combustibility according to DIN 4102 (Fire behaviour of Building Materials & Building Components-Building materials, concepts, requirements and tests) and D-s2, G DFFRUGLQJ WR (1)LUH FODVVL®FDWLRQ RI FRQVWUXFWLRQ SURGXFIURP UHDFWLRQ WR ®UH WHVWV 7KH SLSH FRQQHFWRQV DUH OHDN SURRI XS IHHW ZDWHU FROXPQ 7KH SRVLEOH XVDJH RI \$ VWUDO 6LOHQFLR LV VKRZQ L



1. RAIN STACK PIPE, 2. SOIL PIPE, 3. WASTE DRAIN PIPE, 4. UNDERGROUND PIPE TO INSPECTION CHAMBER, 5. INSPECTION CHAMBER

RESIDENTIAL BUILDINGS

Due to its excellent sound insulating properties (<10dB @2LPS as per EN 14366-Laboratory measurement of noise from wastewater installations), Astral Silencio is an ideal choice for all kinds of residential buildings where noise reduction is required as per DIN 4109 (Sound insulation in Buildings-Minimum requirements) / VDI 4100 (Sound insulation between rooms in buildings-Dwellings-Assessment and proposals for enhanced sound insulation between rooms). It can be used for standard drainage systems also. The typical examples of such occupancies are;

- Single Family House
- Condominiums
- Multi-storey Residential Apartments

Apart from the noise generated by external sources, internal sources are also responsible for noise generation. Astral Silencio reduces the drain noise considerably and enables the living spaces to be quiet and comfortable. The maximum detectable flow noise in this system is less than the noise generated by the ticking of a wristwatch.

LARGE COMMERCIAL BUILDINGS

Astral Silencio also can be installed in buildings with elevated sound insulation requirements as per VDI guideline 4100 (Sound insulation between rooms in buildings-Dwellings-Assessment and proposals for enhanced sound insulation between rooms). Thanks to its excellent sound insulation properties, Astral Silencio is the ideal choice for Community Centers and Educational Institutes.

COMMERCIAL KITCHENS

Astral Silencio is ideal for application such as an inlying collecting pipe for draining greasy wastewater from commercial kitchens to the grease separator. Due to its excellent properties, Astral Silencio is the ideal choice for draining wastewater with high temperature is drained. It has also accomplished the basic prerequisites of DIN EN 12056 (Gravity Drainage Systems Inside Buildings-Sanitary Pipework, Layout and Calculation) and the associated norms of DIN 1986-100 (Drainage System on Private Ground).

For grease separators at a great distance, the use of pipe trace heating may be necessary. This prevents premature grease accumulation. The ideal temperature of the pipe trace heating system can be used for other applications like Industrial

Environment, Laboratory Drainage and Chemical Industries. Please contact us for such applications.

CHEMICAL RESISTANCE

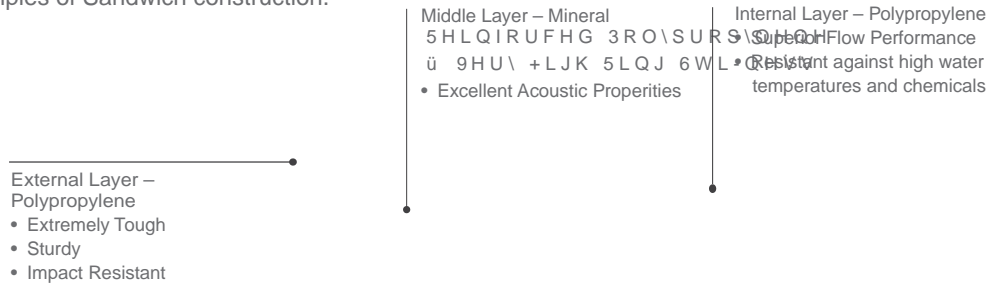
Astral Silencio is resistant to a wide variety of chemicals and can be used for drainage of such harsh chemicals. Please refer Chemical Resistance section of this catalogue to see the chemical resistance chart of Astral Silencio.

N. B. The data is used for the initial orientation of the chemical resistance of the material (not of the possible influence of the corrosive agent) and cannot simply be applied to all usage scenarios. Mechanical behavior can be impaired in cases where tension and the presence of chemicals occur simultaneously (tension-fracture corrosion).

For existing systems or have them checked in a laboratory. Contact us for such applications if necessary.

PIPE STRUCTURE

An outstanding feature of Astral Silencio is the 3 layer construction and adaption of each individual layer to its respective requirements. Technically desirable characteristics are optimized in a targeted way. This is achieved with modern design principles of Sandwich construction.



Three separate layers impart unique characteristics to the pipe. The abrasion-resistant low friction inner layer ensures the HDV\ WUDQVLW RI ZDVWH 7KH PLQHDO ®OOHG PLG OD\HU HQVXUHV HQKDQ LQFUHDVHG VWL-QHVV)LQDOO\ WKH UREXVW RXWHU OD\HU LV WRXJK HQRXJK. These ideal characteristics are achieved through the three-layer structure of the pipe and the specialized adaptation of each individual layer to its respective requirement:

- + LJK ULQJ VWL-QHVV
- Excellent impact strength of the outer layer at low temperature
- Increased UV-resistance
- Abrasion-resistant and smooth inner layer
- Highly rigid and sound-insulating middle layer made of mineral reinforced Polypropylene

FITTINGS & FEATURES

The pipe system would experience local vibrations at redirections due to critical drainage conditions. This can have a QHJDWLYH H-HFW RQ VRXQG UHODWHG SURSHUWLHV 7R PLQLPLJH WKLV H-HFW LPSRUWDQW WR KDYH SURSHU GHVLJQ DQG PDVV RI ®WWLQJV \$VWUDO 6LOHQF 7KH ®WWLQJV WRR KDYH WKH ³VDFH GSHQDQGRDUH DQG RI LGHQWLFDO 33 PL VSHFLDO ®WWLQJV DUH GHVLJQHG OLNH DFFHVV SLSHV &OHDQ RXW 7HHV DQG that ensures smooth flow as well as minimum sound generation.

DOOR FITTINGS

Under this system, the threaded door has an additional internal door cap that helps to maintain a constant flow, without any obstacles.

386+'), 7 62&.(7 :,7+ 63(&,\$/ 5,1*

The Ring allows free movement during hydraulic tightness and thermal expansion.

EXTERNAL RIBS

The External Ribs on the outer side of the socket provides extra strength to the socket.

DEPTH GAUGE

The spigot area has a stopper mark so WKDW SLSH ®WV LQWR WKH ®WWLQJ VRENHW properly which allows for thermal expansion and contraction.

SWEPT ANGLE

A Swept-Angle design is incorporated to ensure a smooth flow, without any barriers.

KEY PROPERTIES



NOISE INSULATION AT ITS BEST

The high molecular formula of middle layer enables the superior acoustic requirement and performance. ([FHOOHQW VRXQGSURR@QJ SHUIRUPDQFH LYWP HJDMXUJH GJKQLQJ VWL-QHVV W FDQ EH XVHG DV H-HFWLYH DOWHUQDWLYH]) Fraunhofer laboratory which complies with EN 14366 (Laboratory measurement of noise from wastewater installations), equal to <10dB with a flow rate of 2 lps.



AS STRONG AS METAL

Astral Silencio with its high molecular weight, imparts excellent physical and mechanical properties to the pipe. It has a high resistance to the most common chemical substances. The inner layer of the pipe is made of PP which has natural property to prevent the accumulation of deposits in the pipe.



EASY INSTALLATION

installation of Astral Silencio is simple, quick and leakproof. (LWKRXX XVH RI DQ\ VSHFLDO WRROV WKH SXVK @W MRLQLQJ H°FLHQW 1R VROYHQW FHPHQW LV QHHGHG \$OVR MRLQWV DUH)



CHEMICAL RESISTANCE

Astral Silencio can handle the waste liquid with pH value 2 to 12. It has a high resistance to the most common chemical substances. The inner layer of the pipe is made of PP which has natural property to prevent the accumulation of deposits in the pipe.



HIGH IMPACT RESISTANCE, EXTREMELY TOUGH

Both the external and internal layers of PP have excellent impact strength and abrasion-resistance with high impact resistance at extremely harsh temperature. (DV ORZ DV r& r)



RESISTANCE TO HOT WATER

\$VWUDO 6LOHQFLR LV KRW ZDWHU UHVLVLRQ WR DQG ORQJ WHUP r& r) \$OVR FR H°FLHQW RI OLQHDU H[SDQVLRQ (SDQVLRQ)



SMOOTH INNER SURFACE

The smooth inner surface does not allow the waste liquid to stick to the surface, enabling superior flow and fewer chances of blockage.

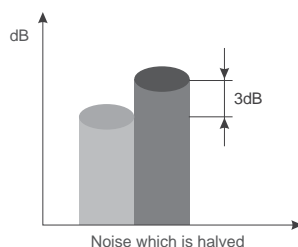
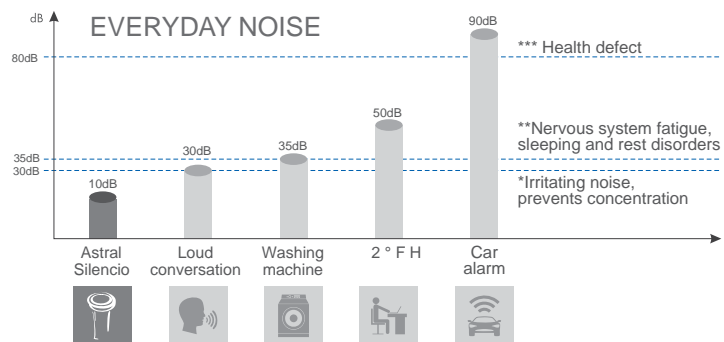


ECO FRIENDLY PRODUCT & PROCESS

Astral Silencio is designed with a strong eco-friendly focus, aiming to minimize its environmental impact throughout its life-cycle. From production to disposal, it uses less energy, water, and resources, while generating less waste.

WHAT IS NOISE?

Noise can be described as any unwanted sound. In relation to sound, noise is not necessarily random. The table given below shows the decibel levels of sounds of common phenomenon observed in day-to-day life.



It is noted that the human ear is sensitive to pressure intensity in a non-linear way, therefore twice the pressure does not correspond to twice the sensation. In other words, a decrease of 3 dB sound level results in a reduction of half of the noise.

In every area of building construction, especially the construction of multi-storey apartment blocks, hospitals and rehabilitation homes, sound sources of sound within buildings is the sanitation setup and the accompanying drainage water pipe system.

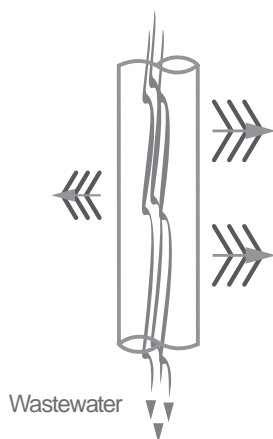
Typical sources of sound include:

Fitting noises • Filling noises • Draining noises • Inlet noises • Impact noises • Turbulence

Unsuitable drainage pipe system and types of brackets are major contributors to disturbing noises. Generally, two types

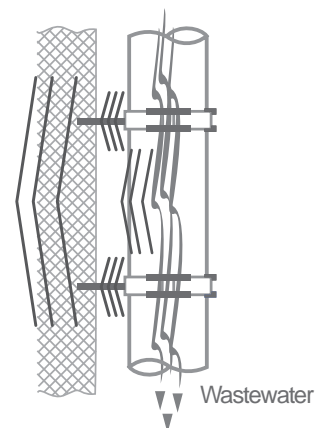
AIR BORNE NOISE

Airborne noise is present if the noises of a sound source are transferred directly through the air to human ears.

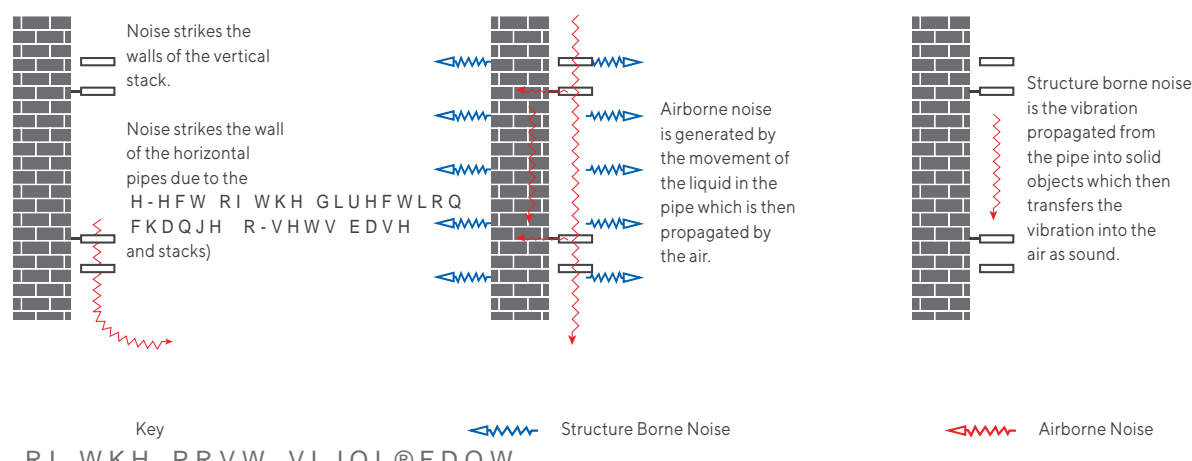


STRUCTURE BORNE NOISE

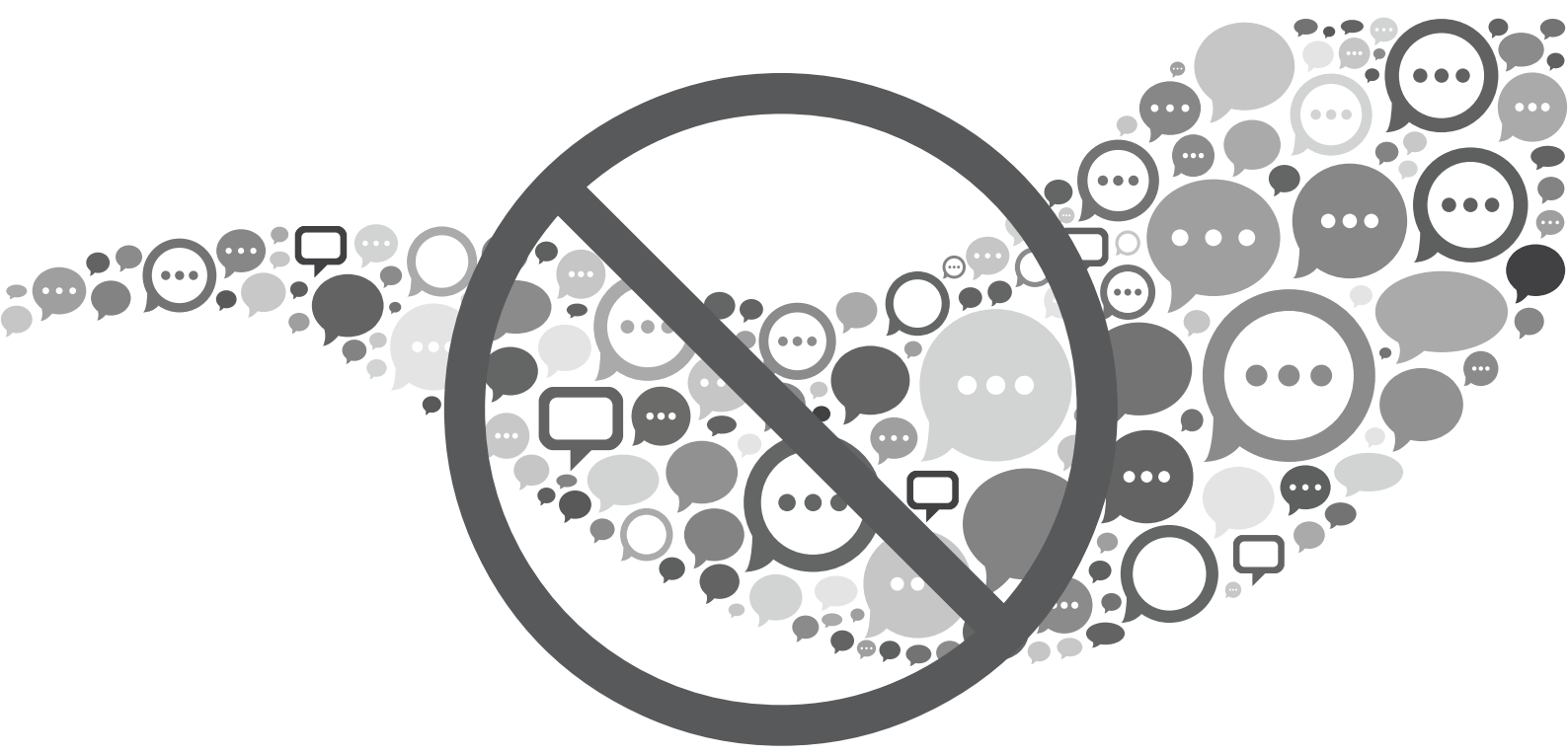
With structure borne noise, the sound transfers through a solid body. This body vibrates and passes the vibration to the human ears as airborne noise.



The impact and flow noises are responsible for airborne and structure-borne sounds which develop at the piping wall. The type and intensity of these pipe vibrations depend on a variety of factors, such as the mass of the pipe, the pipe material and its inner damping. The biggest problem with a building's plumbing drainage is with the transfer of structure-borne VRXQG DW WKH SRLQW RI SLSH ®[LQJ :KHQ GHYHORSLQJ D VRXQG LQVXODW distribution must be taken into account.



UROH 2QH RI WKH PRVW VLJQL®FDQW



6281'', 168/\$7,21 REQUIREMENTS

There are currently two important bodies of rules for sound insulation in residential buildings DIN 4109 (Sound insulation in residential buildings – Criteria for planning and assessment, issued September 1994)

DIN 4109

%XLOGLQJ GUDLQDJH V\ VWHPV DUH WR EH SODQQHG XQGHU REVHUYPDQFH RI ', rooms in unknown living areas which must be insulated. These include:

- Bedrooms
- Living areas
- Classrooms
- :RUNVSDFH R°FHV WUHDWPHQW URRPV FRQIHUHQFH URRPV HWF

If there are no requirements for your own living area, a maximum 30 dB(A) is stipulated for water installations (water supply and sewer pipe systems together). This standard contains requirements for sound insulation so that the people in living spaces can be protected from the stress caused by unwanted sound transmission. A sound-insulation level is required which must be maintained to protect against health risks caused by sound.

VDI GUIDELINE 4100

VDI guideline 4100 (Sound insulation between rooms in buildings- Dwellings- Assessment and proposals for enhanced sound insulation between rooms) represents more stringent VRXQG LQVXODWLRQ UHTXLHUHPHQWV VRXQG LQVXODWLRQ OHYHOV among apartments, multi-storey apartment blocks, semi-detached houses and row houses. These guidelines, in contrast to DIN 4109 (Sound insulation in Buildings-Minimum requirements), also take living spaces into consideration that include water supply and sewer pipe systems together.

Sound Insulation Level	Apartments In Multi-storey \$SDUWPHQWV	Apartments In 6HPLGHWDFKHGFRXVHV	Your Own Living Area
I	30 dB (A) (purs. to DIN 4109)	30 dB (A) (purs. to DIN 4109)	30 dB (A)
II	30 dB (A)	25 dB (A)	30 dB (A)
III	25 dB (A)	20 dB (A)	30 dB (A)

6281'', 168/\$7,21 5(48,5(0(176

PURSUANT TO VDI GUIDELINE 4100

SOUND INSULATION BY ASTRAL SILENCIO

The excellent sound insulation properties of Astral Silencio are primarily attributed to its thick-walled design as well as the special double wall structure and the high density of 1980 kg/m³. This property enables Astral Silencio to absorb air-borne sound as well as mechanical vibrations.

The measurements in this test were performed following German standard DIN EN14366 (Laboratory measurement of noise from waste-water installations) and DIN 4109 (Sound insulation in Buildings-Minimum requirements); noise excitation by stationary water flow with 0.5 l/s, 1.0 l/s, 2.0 l/s, 3.0 l/s and 4.0 l/s.

In order to precisely determine real noise emission of the pipe system in a room, it requires a more dynamic test setup.

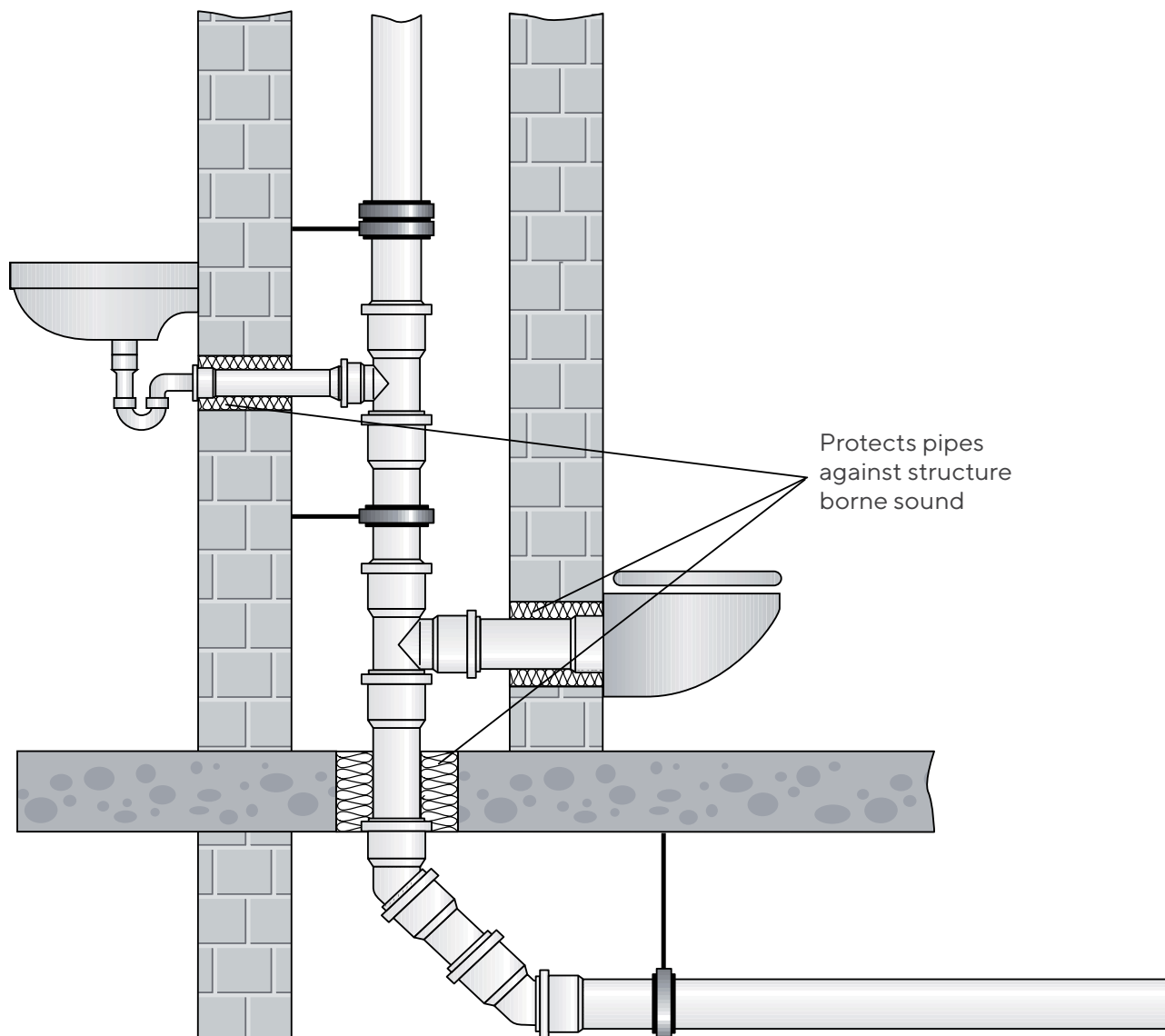
<div style="position: relative;"> <div style="position: absolute; top: 100px; left: 100px;">_____</div> <div style="position: absolute; top: 150px; left: 100px;">_____</div> </div>			

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ACOUSTIC PLUMBING DESIGN

Astral Silencio is high-performance sound-insulating waste-water piping system, however it is still necessary to consider its points of contact with the building structure (pipe brackets and clamps, the running of pipework through walls and ceilings, mortar droppings between pipes and wall surfaces, etc.)

When planning pipe installation, waste-water discharge pipes should not be allowed to run inside the walls separating living areas. The attachment of waste-water discharge pipes to the partition walls in living areas should only be carried out under application of special noise protection measures. DIN 4109 (Sound insulation in Buildings-Minimum requirements) requires that single-skin walls to which, or in which, water installations or equipment (i.e. waste-water pipes) are to be attached must have an area-related mass of at least 220 kg/m^2 . Walls having an area-related mass of less than 220 kg/m^2 may only be used where prior testing has demonstrated that the walls exhibit acceptable properties with respect to the transmission of noise.



FIRE BEHAVIOUR CLASSIFICATION

FLUH EHKDYLRXU RI FRQVWUXFWLRQ PDWHULDOV H J SLSLQJ FODVVLFDWLRQ classes as per DIN 4102-1 (Fire behaviour of Building Materials & Building Components-Building materials, concepts, requirements and tests). & RQVWUXFWLRQ PDWHULDOV DUH FODVVLHG DV FRPEXVWLEO Silencio is listed as B2 as per DIN 4102-1 (Fire behaviour of Building Materials & Building Components-Building materials, concepts, requirements and tests).

Criteria	2 OG & ODVVL®FDWLRQ as per DIN 4102-1	1 HZ (XURSHDQ FODVVL®FDWLRQ DFFRUGLQJ WR \$GGLWLRQDO FULWHULD		
Non-combustible	A1	A1		
	A2	A2	s1	d0
Non-readily ignitable (low flame spread)	B1	B	s1	d0
		C	s1	d0
		A2	s2/s3	d0
		B	s2/s3	d0
		C	s2/s3	d0
		A2	s1	d1/d2
		B	s1	d1/d2
		C	s1	d1/d2
		A2	s3	d2
		B	s3	d2
		C	s3	d2
Normally ignitable (Q RUPDO ®UH behaviour)	B2	D	s1/s2/s3	d0
		E	-	d0
		D	s1/s2/s3	d2
		E	-	d2
Readily ignitable	B3	F	-	-

)LUH EHKDYLRXU FODVVL®FDWLRQ DFFRUGLQJ WR ',1)LUH EHKDYLRXU I %XLOGLQJ PDWHULDOV FRQFHSWV UHTXLUHPHQWV DQG WHVWV DQG ',1 (1 EXLOGLQJ HOHPHQWV & ODVVL®FDWLRQ XVLQJ GDWD IURP UHDFWLRQ WR ®UH W ,Q OLQH ZLWK (XURSHDQ VWDQGDUGL]DWLRQ WKH ®UH FODVVL®FDWLRQ FODV & Building Components-Building materials, concepts, requirements and tests) are translated into the European DIN EN)LUH FODVVL®FDWLRQ RI FRQVWUXFWLRQ SURGXFWV DQG EXLOGLQJ HOH tests). The accreditation is based on the standardized Single-Burning-Item-Test (SBI) in conformity with DIN EN 13823 5HDFWLRQ WR ®UH WHVWV IRU EXLOGLQJ SURGXFWV EXLOGLQJ SURGXFWV H[F burning item).

FIRE RESISTANCE CLASSIFICATION

Fire resistance classification	Fire resistance duration in minutes
F30	I
F60	I
F90	I
F120	I
F180	I

FIRE RESISTANCE CLASSIFICATION

3RVVLEOH DGGLWLRQV WR WKHVH ®UH UHVLVWDQFH FODVVHV H J] %) \$ R

A made of non-combustible materials

B made of combustible materials

AB in principle made of non-combustible materials

FUNCTION OF FIRE PROTECTION COLLAR

:KHQ H[SRVHG WR ®UH DQG KHDW WKH SODVWLF SLSH EHFRPHV PDOOHDEOH VHDV WKH ZDOO RU FHLQLQJ FRUULGRU DQG KHOSV LQ FDVH RI ®UH 'XH WR LQFUHDVH LQ WHPSHUDWXUH WKH ®UH FROODU SURYLGHV ®UH UHVLVWDQW acoustic insulation systems and to other selected soil and waste systems.

GENERAL RECOMMENDATIONS

(1) Positioning of the collars:

On both sides of a wall; on one side under/in a ceiling.

(2) Wall & ceiling types:

At least 10 cm / 4 inches thick solid concrete, aerated concrete and sand-lime brick walls as well as light dividing walls (stud walls: both sides clad with 12.5 mm / 0.5 inches plasterboard) and solid concrete and aerated concrete ceilings at least 15 cm / 6 inches thick.

(3) Structural acoustic insulation:

The acoustic insulation mat provided must be wrapped around the pipe where it passes through the wall or ceiling.

(4) Joint sealing between pipe and wall/ceiling:

To be packed to the full thickness of the wall or ceiling using mineral materials such as concrete, cement or plaster.

PHQWV &ODVVL®FDWLRQ XVLQJ GDWD IURP UHDFWLRQ WR ®UH

OXGLQJ IORRULQJ H[SRVHG WR WKH WKHUPDO DWWDFN E\ D VLQJOH

TYPES OF INSTALLATION

CEILING INSTALLATION

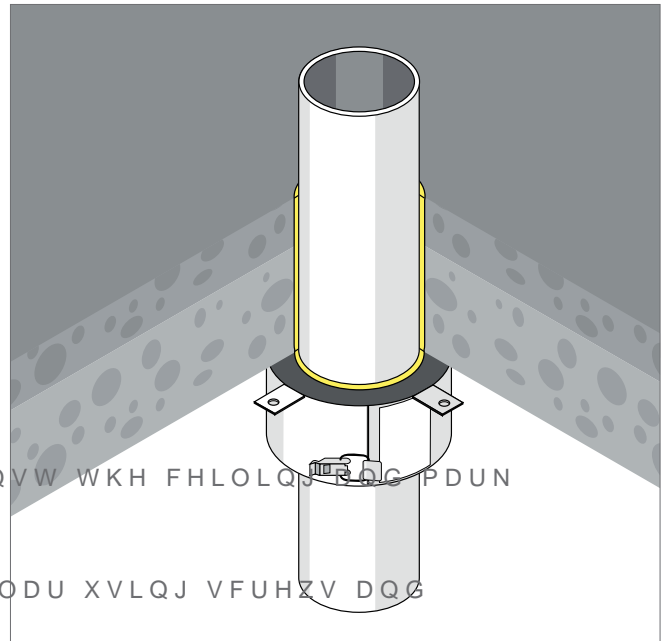
Minimum requirements of the ceiling: min. 15.0 cm / 6 inches thick concrete ceiling.

FLUSH/STRAIGHT CEILING INSTALLATION

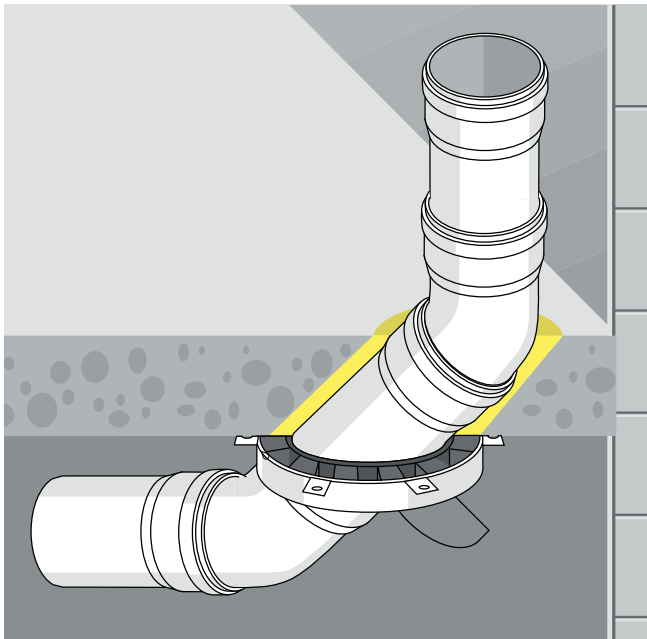
- Wrap insulating mat around the pipe
- Open the collar and position it around the pipe, whilst hooking in the push-in fastening
- Bend or angle the collar mounting tabs
- Install the collar flush with the ceiling
- Fill the remaining ceiling gap with cement or concrete

ü +ROG WKH FROODU ®UPO\ DJDLQVW WKH FHLQLQJ RQG PDUN
the positions of the mounting holes

- Rotate the collar and drill the holes
ü ,QVHUW SOXJV DQG ®[WKH FROODU XVLQJ VFUHZV DQG
washers. (Mounting the collar using the washers, plugs and screws provided)



INSTALLATION OF FIREPROOFING
COLLAR ON CEILING



INSTALLATION OF FIREPROOFING
COLLAR IN ANGLED CEILING

ANGLED CEILING INSTALLATION

- Wrap insulating mat around the pipe
- Open the collar and position it around the pipe, whilst hooking in the push-in fastening
- Fill the remaining gap with cement or concrete

ü +ROG WKH FROODU ®UPO\ DJDLQVW WKH FHLQLQJ RQG PDUN
the positions of the mounting holes

- Rotate the collar and drill the holes

ü ,QVHUW SOXJV DQG ®[WKH FROODU XVLQJ VFUHZV DQG
washers. (Mounting the collar using the washers, plugs and screws provided)

INSTALLATION DISTANCES BETWEEN FIRE PROTECTION COLLARS E.G. TO EXTERNAL SYSTEMS

The distance to external, tested systems (inspected and approved) must be at least 50 mm / 2 inches between partitioned sections. If two Astral feedthroughs are installed next to each other, the distance between the pipes must be at least 100 mm / 4 inches in the case of special partitioned sections (sloping pipes, partition via sleeve/socket or for ceiling installations). In the case of straight pipes without sleeve/ socket in the partition area, the collar casings can adjoin each other (distance 0 mm).

WALL INSTALLATION

0LQLPXP ZDOO VSHFL®FDWLRQV ZDOO PXVW EH DW OHDVW PP LQFKHV V
sandstone or lightweight partition walls (two-layer panelling on both sides with 12.5 mm / 0.5 inches plasterboard panels
DQG PLQHUDO ZRRO LQ®OO 7KH SLSH PXVW EH FODPSHG RQ ERWK VLGHV DW
D FROODU VKRXOG DOZD\ EH ®WWHG RQ ERWK VLGHV RI WKH ZDOO

NOTE

The presented data, especially recommendations for the processing and use of our products are based on our knowledge

DQG H[SHULHQFH 'XH WR GL-HUHQFHV LQ PDWHULDO DQG ZRUNLQJ FRQGLWLRQV
UHFRPPHQG WKDW VX°FLHQW LQWHUQDO WULDOV VKRXOG EH FRQGXFWHG LQ H
intended method and processing purposes. No liability will be accepted either on the basis of these instructions or from an
oral advice, unless we are accused of gross negligence or deliberate malice.

Overview of possible installation situations:

KH FHLOLQJ DQG PDUN

VLQJ VFUHZV DQG

TECHNICAL SPECIFICATION

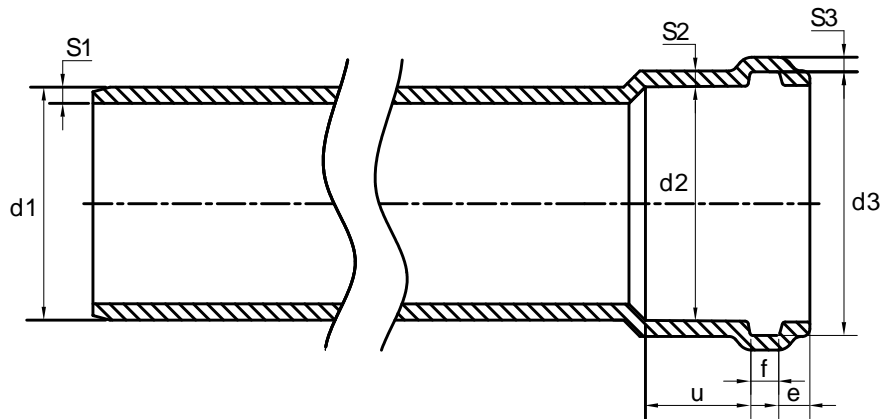
TECHNICAL DATA

PROPERTY	UNIT	VALUE
Material	3 LSH 33 33 PLQHUDO ®OOHG 33	
)LWWLQJ 33 PLQHUDO ®OOHG	
	Rubber Seal: SBR	
Colour	Light grey, RAL 7035	
Area of application	Drainage pipes in building and above ground installation	
Density	g/cm ³	1.9
Elongation@break	%	50
Tensile strength	MPa	20
Modulus of elasticity Single (1) Layer Triple (3) Layer	MPa	3800N 1500N
&RH°FLHQW RI OLQHDU H[SDQMh/RhQ	0.09	
5 LQJ VWL-QHV V	KN/M ²	21
Fire resistance	-	EN 13501-1:D-s2, d0 DIN 4102:B2 Normally ignitable QRUPDO ®UH EHKDYLRXU
MFR	gm/10 min	2.1
Connections	Push Fit sockets with factory-inserted lip seals special rubber ring	
Application Environment	Wastewater with pH 2-12	
Operating Temperature	:DWHU 7HPS XSWR r& r) ,QWHUPLWWHQW RU	
Pipe marking	Astral Silencio, nominal diameter, production year, quality PDUN DSSURYDO PDWHULDO FRQWURO PDU	
Life Expectancy	50 years	

PIPE DIMENSION

Nominal Outside Diameter Size mm (inches)	Mean Outside Diameter (mm)		Wall Thickness (min.) (mm)
	Min.	Max.	
40 (1¼)	40.0	40.3	2.2
50 (1½)	50.0	50.3	4.0
63 (2)	63.0	63.3	4.0
75 (2½)	75.0	75.3	4.5
110 (4)	110.0	110.4	5.3
125 (5)	125.0	125.4	5.3
160 (6)	160.0	160.5	5.3
200 (8)	200.0	200.6	6.2

SOCKET DIMENSION



Nominal Outside Diameter Size mm (inches)	Wall Thickness of Pipe S1 min. (mm)	Wall Thickness of Socket S2 min. (mm)	Wall Thickness of Ring Groove S3 min. (mm)	Outside Diameter of Soc. d1 with tolerance (mm)	Inside Diameter of Soc. d2 min. (mm)	Inside Diameter at Ring Groove d3 with tolerance (mm)	Length of Soc. Neck e min. (mm)	Length of Ring Groove f max. (mm)	Length Beyond Ring Groove u min. (mm)
40 (1¼)	2.2	2.0	1.6	40.0 + 0.3	40.3	50.0 ± 0.8	5	12.0	26
50 (1½)	4.0	3.6	2.9	50.0 + 0.3	50.3	60.0 ± 1.0	5	12.0	28
63 (2)	4.0	3.6	2.9	63.0 + 0.3	63.3	73.0 ± 1.0	5	12.0	31
75 (2½)	4.5	4.1	3.2	75.0 + 0.3	75.3	85.0 ± 1.0	5	12.0	33
110 (4)	5.3	4.8	3.8	110.0 + 0.4	110.4	121.5 ± 1.0	6	14.0	34
125 (5)	5.3	4.8	3.8	125.0 + 0.4	125.4	138.0 ± 1.0	7	15.0	38
160 (6)	5.3	4.8	3.8	160.0 + 0.5	160.5	175.0 ± 1.2	9	15.0	41
200 (8)	6.2	5.6	4.5	200.0 + 0.6	200.6	217.0 ± 1.5	11.5	17.0	45

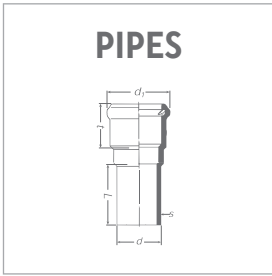
PRODUCT



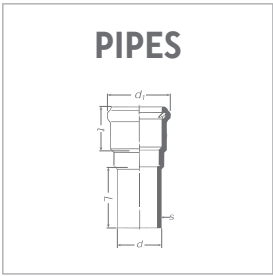
RANGE

SILENCIO

PRODUCT RANGE



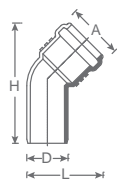
Size (cm)	Length & Type	Product Code	d (mm) (min.)	d1 (mm) (min.)	s (mm) (min.)	t (mm)	Std. Pkg. (Nos.)
4.0	3 M S/S	M241270304	40	53.0	2.2	43.0	52
4.0	3 M D/S	M241280304	40	53.0	2.2	43.0	52
4.0	1 RFT S/S	M241271104	40	53.0	2.2	43.0	01
4.0	2 RFT D/S	M241282204	40	53.0	2.2	43.0	01
4.0	3 RFT D/S	M241283304	40	53.0	2.2	43.0	01
4.0	4 RFT D/S	M241284404	40	53.0	2.2	43.0	01
4.0	6 RFT S/S	M241276604	40	53.0	2.2	43.0	01
4.0	6 RFT D/S	M241286604	40	53.0	2.2	43.0	01
5.0	3 M S/S	M241270305	50	65.2	4.0	45.0	52
5.0	3 M D/S	M241280305	50	65.2	4.0	45.0	52
5.0	1 RFT S/S	M241271105	50	65.2	4.0	45.0	01
5.0	2 RFT D/S	M241282205	50	65.2	4.0	45.0	01
5.0	3 RFT D/S	M241283305	50	65.2	4.0	45.0	01
5.0	4 RFT D/S	M241284405	50	65.2	4.0	45.0	01
5.0	6 RFT S/S	M241276605	50	65.2	4.0	45.0	01
5.0	6 RFT D/S	M241286605	50	65.2	4.0	45.0	01
6.3	3 M S/S	M241270306	63	78.2	4.0	48.0	30
6.3	3 M D/S	M241280306	63	78.2	4.0	48.0	30
6.3	1 RFT S/S	M241271106	63	78.2	4.0	48.0	01
6.3	2 RFT D/S	M241282206	63	78.2	4.0	48.0	01
6.3	3 RFT D/S	M241283306	63	78.2	4.0	48.0	01
6.3	4 RFT D/S	M241284406	63	78.2	4.0	48.0	01
6.3	6 RFT S/S	M241276606	63	78.2	4.0	48.0	01
6.3	6 RFT D/S	M241286606	63	78.2	4.0	48.0	01
7.5	3 M S/S	M241270307	75	91.0	4.5	50.0	36
7.5	3 M D/S	M241280307	75	91.0	4.5	50.0	36
7.5	1 RFT S/S	M241271107	75	91.0	4.5	50.0	01
7.5	2 RFT D/S	M241282207	75	91.0	4.5	50.0	01
7.5	3 RFT D/S	M241283307	75	91.0	4.5	50.0	01
7.5	4 RFT D/S	M241284407	75	91.0	4.5	50.0	01
7.5	6 RFT S/S	M241276607	75	91.0	4.5	50.0	01
7.5	6 RFT D/S	M241286607	75	91.0	4.5	50.0	01



Size (cm)	Length & Type	Product Code	d (mm) (min.)	d1 (mm) (min.)	s (mm) (min.)	t (mm)	Std. Pkg. (Nos.)
11.0	3 M S/S	M241270309	110	128.5	5.3	54.0	18
11.0	3 M D/S	M241280309	110	128.5	5.3	54.0	18
11.0	1 RFT S/S	M241271109	110	128.5	5.3	54.0	01
11.0	2 RFT D/S	M241282209	110	128.5	5.3	54.0	01
11.0	3 RFT D/S	M241283309	110	128.5	5.3	54.0	01
11.0	4 RFT D/S	M241284409	110	128.5	5.3	54.0	01
11.0	6 RFT S/S	M241276609	110	128.5	5.3	54.0	01
11.0	6 RFT D/S	M241286609	110	128.5	5.3	54.0	01
12.5	3 M S/S	M241270310	125	145.0	5.3	60.0	15
12.5	3 M D/S	M241280310	125	145.0	5.3	60.0	15
12.5	1 RFT S/S	M241271110	125	145.0	5.3	60.0	01
12.5	2 RFT D/S	M241282210	125	145.0	5.3	60.0	01
12.5	3 RFT D/S	M241283310	125	145.0	5.3	60.0	01
12.5	4 RFT D/S	M241284410	125	145.0	5.3	60.0	01
12.5	6 RFT S/S	M241276610	125	145.0	5.3	60.0	01
12.5	6 RFT D/S	M241286610	125	145.0	5.3	60.0	01
16.0	3 M S/S	M241270312	160	182.0	5.3	65.0	12
16.0	3 M D/S	M241280312	160	182.0	5.3	65.0	12
16.0	1 RFT S/S	M241271112	160	182.0	5.3	65.0	01
16.0	2 RFT D/S	M241282212	160	182.0	5.3	65.0	01
16.0	3 RFT D/S	M241283312	160	182.0	5.3	65.0	01
16.0	4 RFT D/S	M241284412	160	182.0	5.3	65.0	01
16.0	6 RFT S/S	M241276612	160	182.0	5.3	65.0	01
16.0	6 RFT D/S	M241286612	160	182.0	5.3	65.0	01
20.0	3 M S/S	M241270314	200	227.0	6.2	73.5	06
20.0	3 M D/S	M241280314	200	227.0	6.2	73.5	06
20.0	1 RFT S/S	M241271114	200	227.0	6.2	73.5	01
20.0	2 RFT D/S	M241282214	200	227.0	6.2	73.5	01
20.0	3 RFT D/S	M241283314	200	227.0	6.2	73.5	01
20.0	4 RFT D/S	M241284414	200	227.0	6.2	73.5	01
20.0	6 RFT S/S	M241276614	200	227.0	6.2	73.5	01
20.0	6 RFT D/S	M241286614	200	227.0	6.2	73.5	01

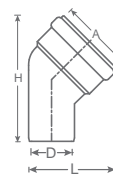
* Trading Item, # Shortly Introducing

BEND 45°



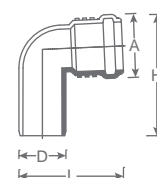
Size (cm)	3 U R G X F W Code	A (mm)	H (mm)	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
4.0	M242001104	54	135	84	40	2.0	120	
5.0	M242001105	68	146	91	50	4.2	56	
6.3	M242001106	81	159	107	63	4.2	70	
7.5	M242001107	94	173	119	75	5.2	42	
11.0	M242001109	130	209	158	110	5.5	20	
12.5	M242001110	147	229	177	125	5.5	10	
16.0	M242001112	184	263	214	160	5.6	10	
20.0	M242001114	227	307	262	200	6.2	04	

REDUCER BEND 45°



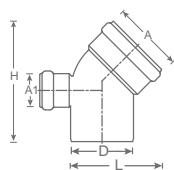
Size (cm)	3 U R G X F W A & R G H H	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J	
11.0 x 7.5	M242001129	130	205	145	75	5.5	35

BEND 87.5°



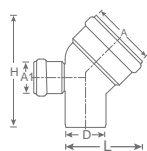
Size (cm)	3 U R G X F W A	H (mm)	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
4.0	M242001204	54	102	98	40	2.0	100
5.0	M242001205	68	129	111	50	4.2	72
6.3	M242001206	81	114	123	63	4.2	60
7.5	M242001207	94	161	136	75	5.2	36
11.0	M242001209	130	205	176	110	5.5	12
12.5	M242001210	147	226	195	125	5.5	10
16.0	M242001212	184	273	230	160	5.6	09
20.0	M242001214	227	323	283	200	6.2	03

BEND 45° WITH 50 MM VENT



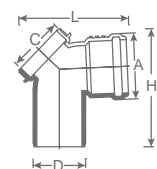
Size (cm)	3 U R G X F W A & R G H H (mm)	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
11.0	M2420014209	130x68	209	220	110	5.5 20

REDUCER BEND 45° WITH 50 MM VENT



Size (cm)	3 U R G X F W A & R G H H (mm)	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J	
11.0x7.5	M2420014229	130x68	205	200	75	5.5	28

DOOR 87.5° BEND

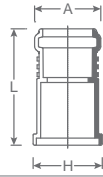


Size (cm)	3 U R G X F W A	H (mm)	L (mm)	C (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
7.5	M242001307	94	168	156	95	75	5.2	27
11.0	M242001309	130	213	199	130	110	5.5	10
12.5	M242001310	147	226	213	130	125	5.5	12
16.0	M242001312	184	273	230	130	160	5.6	07

SILENCIO

PRODUCT RANGE

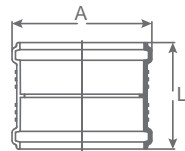
COMPENSATOR COUPLER



Size (cm)	Product Code	A (mm)	H (mm)	L (mm)	W.T. (mm)	Std. Pkg. (Nos.)
5.0	M242004105	68	71	119	4.2	68
6.3	M242004106	81	121	84	4.2	40
7.5	M242004107	94	95	123	5.2	54
11.0	M242004109	130	132	127	5.5	24
12.5	M242004110	147	136	139	5.5	22
16.0	M242004112	184	185	152	5.6	08

All compensator sockets are pre-assembled with collars and sealing rings.

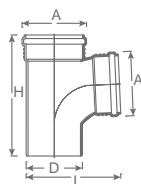
COUPLER



Size (cm)	Product Code	A (mm)	L (mm)	W.T. (mm)	Std. Pkg. (Nos.)
4.0	M242001604	54	95	2.0	125
20.0	M242001614	227	173	6.2	08

&RQQHFWLQJ HOHPHQW EHWZHHQ SLSHV DV ZHOOD

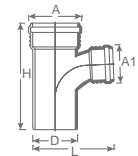
TEE (SWEPT)



Size (cm)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
#4.0	M242000104	54	145	102	40	2.0	55
#5.0	M242000105	68	175	115	50	4.2	35
#6.3	M242000106	81	191	130	63	4.2	27
7.5	M242000907	94	222	161	75	5.2	17
11.0	M242000909	130	270	210	110	5.5	10
12.5	M242000910	147	304	238	125	5.5	09
16.0	M242000912	184	345	281	160	5.6	04
20.0	M242000914	227	417	353	200	6.2	02

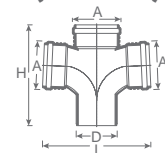
without swept

REDUCER TEE (SWEPT)



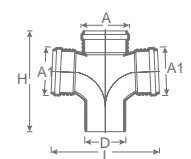
Size (cm)	Product Code	A x A1 (mm)	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x5.0	M242004244	130x68	262	176	110	5.5	12
11.0x6.3	M242000332	130x81	262	186	110	5.5	12
11.0x7.5	M242004229	130x94	262	209	110	5.5	10
12.5x11.0	M242004234	147x130	280	230	125	5.5	10
16.0x7.5	M242004235	184x94	311	261	160	5.6	06
16.0x11.0	M242004231	184x130	311	271	160	5.6	05

DOUBLE TEE (SWEPT)



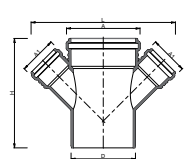
Size (cm)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0	M242005409	130	270	290	110	5.5	06

REDUCER DOUBLE TEE



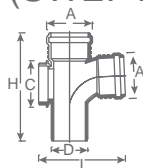
Size (cm)	Product Code	A x A1 (mm)	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
16.0 X 11.0	M242005431	184x130	283	312	160	5.6	04

REDUCER DOUBLE "Y"



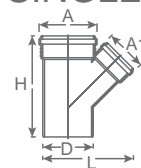
Size (cm)	Product Code	A x A1 (mm)	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
16.0 X 7.5	M242002335	184x94	272	359	160	5.6	05
16.0 X 11.0	M242002331	184x130	321	416	160	5.6	04

DOOR TEE (SWEPT)



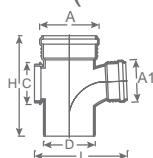
Size (cm)	3 U R G X F W A Code	H (mm)	L (mm)	C (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
7.5	M242001007	94	222	178	95	75	5.2	15
11.0	M242001009	130	270	230	130	110	5.5	07
12.5	M242001010	147	304	255	130	125	5.5	08
16.0	M242001012	184	345	297	130	160	5.6	04

REDUCER SINGLE 'Y'



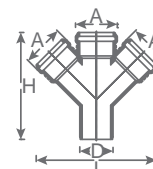
Size (mm)	3 U R G X F W A Code	H (mm)	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
11.0x7.5	M242002129	130x94	255	218	110	5.5	15
12.5x11.0	M242002134	147x130	309	261	125	5.5	08
16.0x11.0	M242002131	184x130	321	299	160	5.6	05

REDUCER DOOR TEE (SWEPT)



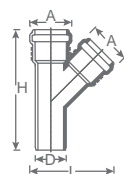
Size (cm)	3 U R G X F W A Code	H (mm)	L (mm)	C (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
11.0x5.0	M242004344	130x68	262	196	130	110	5.5	09
11.0x6.3	M242004332	130x81	262	206	130	110	5.5	08
11.0x7.5	M242004329	130x94	257	229	130	110	5.5	08
12.5x11.0	M242004334	147x130	280	248	130	125	5.5	08
16.0x7.5	M242004335	184x94	311	277	130	160	5.6	05
16.0x11.0	M242004331	184x130	311	287	130	160	5.6	04

DOUBLE 'Y'



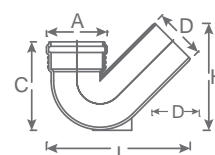
Size (cm)	3 U R G X F W A Code	H (mm)	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
7.5	M242002307	94	241	270	75	5.2	12
11.0	M242002309	130	301	358	110	5.5	08
12.5	M242002310	147	331	401	125	5.5	04
16.0	M242002312	184	392	494	160	5.6	03

SINGLE 'Y'



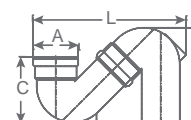
Size (cm)	3 U R G X F W A Code	H (mm)	L (mm)	C (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
4.0	M242001904	54	161	115	40	1.9	30	
5.0	M242001905	68	195	135	50	4.2	29	
6.3	M242001906	81	217	160	63	4.2	25	
7.5	M242001907	94	241	182	75	5.2	18	
11.0	M242001909	130	301	244	110	5.5	08	
12.5	M242001910	147	331	274	125	5.5	06	
16.0	M242001912	184	392	338	160	5.6	04	
20.0	M242001914	227	461	419	200	6.2	02	

P TRAP BODY



Size (cm)	3 U R G X F W A Code	H (mm)	L (mm)	C (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
7.5x7.5	M242003507	94	164	219	150	75	5.2	25
11.0x11.0	M242003509	130	229	308	190	110	5.5	12

S TRAP

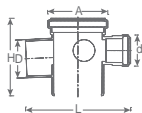


Size (cm)	3 U R G X F W A Code	H (mm)	L (mm)	C (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
11.0x11.0	M242003709	130	230	400	190	110	5.5	06

SILENCIO

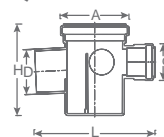
PRODUCT RANGE

MULTI FLOOR TRAP HIGH RISER (SPIGOT TYPE) 50 mm OPEN



Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x7.5x(3)5.0	6	M242005709	127	165	230	75	66	3.0	12

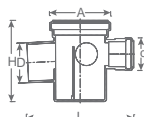
MULTI FLOOR TRAP 75mm W.S.#(SPIGOT TYPE)50mm CLOSE



Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x7.5x(3)5.0	7	M242006209	127	190	230	75	66	3.5	12

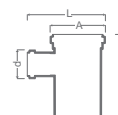
W.S# - Water Seal

MULTI FLOOR TRAP (SPIGOT TYPE) 50 mm OPEN



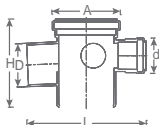
Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x7.5x(3)5.0	6	M242005609	127	165	230	75	66	3.0	12

MULTI FLOOR TRAP HIGH RISER 50 mm OPEN



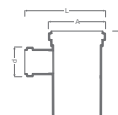
Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x(3)5.0	7	M242005909	127	190	180	66	3.5	12

MULTI FLOOR TRAP SPIGOT TYPE 50mm CLOSE



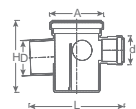
Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x7.5x5.0	6	M242006309	127	165	230	75	66	3.0	12

MULTI FLOOR TRAP HIGH RISER 50 mm CLOSE



Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x(3)5.0	7	M242006009	127	190	180	66	3.5	12

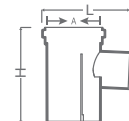
MULTI FLOOR TRAP (75mm W.S#) (SPIGOT TYPE) 50 mm OPEN



Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x7.5x(3)5.0	7	M242005809	127	190	230	75	66	3.5	12

W.S# - Water Seal

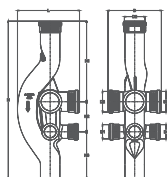
PLAIN FLOOR TRAP (SPIGOT TYPE)



Size (cm)	Height (inch)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0x7.5	6	M242006409	127	165	175	75	3.5	12
11.0x7.5	7	M242006909	127	190	175	75	3.5	12

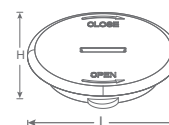
W.S. WATER SEAL, 7" W.S. - 75 mm, 6" W.S. - 50 mm

SOVENT



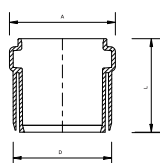
6 L] H (cm)	3 U R G X F W (mm)	A (mm)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	L (mm)	B (mm)	Std. Pkg. (Nos.)
11.0	M2420015409	75	110	890	470	165	265	350	01

KNOB WITH RUBBER GASKAT FOR MFT PARTITION



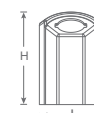
6 L] H (cm)	Height (inch)	3 U R G X F W (mm)	A (mm)	H (mm)	L (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
11.0	6&7	M242005100	10	53	2.6		01	

REDUCER COUPLER



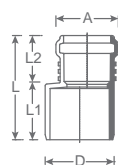
6 L] H (cm)	3 U R G X F W Code	A (mm)	L (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
5.0x4.0	M242004841	48	54	50	4.3	200	

PARTITION WITH KNOB FOR MFT



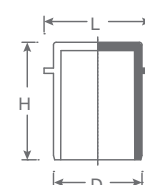
6 L] H (cm)	Height (inch)	3 U R G X F W (mm)	A (mm)	H (mm)	L (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
11.0	6	M242005000R	113	95	2.6		100	
11.0	7	M242006100R	138	95	2.6		75	

REDUCER COUPLER



6 L] H (cm)	3 U R G X F W Code	A (mm)	L (mm)	L1 (mm)	L2 (mm)	D (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
5.8x5.0	F242004836	65	137	41	68	58	3.5	60	
6.3x5.0	M242004839	68	113	60	52	63	4.2	72	
7.5x5.0	M242004837	68	113	63	50	75	5.2	55	
7.5x6.3	M242004836	81	115	60	54	75	4.2	50	
7.8x7.5	F242004835	91	187	61	73	78	4.0	20	
11.0x5.0	M242004844	68	138	88	50	110	5.5	40	
11.0x6.3	M242004832	81	140	825	57	110	4.2	36	
11.0x7.5	M242004829	94	139	84	55	125	5.5	36	
12.5x7.5	M242004893	91	146	88	58	125	5.5	27	
12.5x11.0	M242004834	130	166	88	77	125	5.5	27	
16.0x11.0	M242004831	130	196	136	60	160	5.6	15	
16.0x12.5	M242004833	147	196	94	102	160	5.5	21	
20.0x11.0	M242004846	130	198	138	60	200	6.2	12	
20.0x16.0	M242004847	184	202	131	71	200	6.2	12	

END PLUG

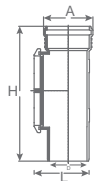


6 L] H (cm)	3 U R G X F W Code	H (mm)	L (mm)	L (mm)	: 7 (mm)	6 W G (Nos.)	3 N J
5.0	M242002905	66	60	50	4.2	144	
6.3	M242002906	79	134	63	4.2	100	
7.5	M242002907	69	84	75	5.2	80	
11.0	M242002909	74	119	110	5.5	46	
12.5	M242002910	67	73	125	5.5	30	
16.0	M242002912	52	175	160	5.6	22	
20.0	M242002914	60	216	200	6.2	12	

SILENCIO

PRODUCT RANGE

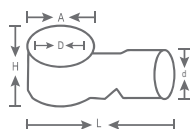
ACCESS PIPE



Size (cm)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0	M242005309	130	356	148	110	5.5	06
12.5	M242005310	147	370	145	125	5.5	04
16.0	M242005312	184	400	200	160	5.6	04
20.0	M242005314	227	480	240	200	6.2	02

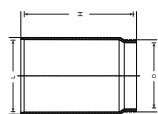
With rectangular access lid.

NAHANI TRAP



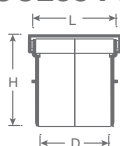
Size (cm)	Product Code	A (mm)	H (mm)	L (mm)	D (mm)	d (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0X7.5	M242003129	126	85	250	110	75	3.2	30
11.0X9.0	M242003143#126	100	250	110	90	90	3.0	Shrt. Intr.
11.0X11.0	M242003109#126	120	260	110	110	110	2.8	Shrt. Intr.

EXT.PIECE FOR NAHANI TRAP



Size (cm)	Product Code	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0	M2420014409#	176	117	110	3.5	Shrt. Intr.

CLEAN OUT (ACCESS PLUG)

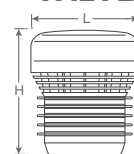


Size (cm)	Product Code	H (mm)	L (mm)	D (mm)	W.T. (mm)	Std. Pkg. (Nos.)
11.0	M2420010109	122	130	110	5.5	27

COMPENSATOR RUBBER RING

Size (cm)	Product Code	Std. Pkg. (Nos.)
5.0	RM06510050	01
6.3	RM06510063	01
7.5	RM06510075	01
11.0	RM06510110	01
12.5	RM06510125	01
16.0	RM06510160	01

AIR ADMITTANCE VALVE



Size (cm)	Item Type	Product Code	H (mm)	L (mm)	Std. Pkg. (Nos.)
3.2-6.3	Mini	HYPERAIR-32.63	78	70	140
7.5-11.0	Maxi	HYPERAIR-70.110	106	125	12

RUBBER SEALING RING

Size (cm)	Product Code	Std. Pkg. (Nos.)
4.0	RM06311040	01
5.0	RM06311050	01
6.3	RM06311063	01
7.5	RM06311075	01
11.0	RM06311110	01
12.5	RM06311125	01
16.0	RM06311160	01
20.0	RM06311200	01

RUBBER O RING
FOR ACCESS INNER
DOOR

6 L] H (cm)	3 U R G X F W & R G H 6 W G	3 N J
7.5	RM06590010 #	Shrt. Intr.
11.0	RM06590011 #	Shrt. Intr.

RUBBER GASKET
FOR ACCESS INNER
DOOR

6 L] H (cm)	3 U R G X F W & R G H 6 W G	3 N J
7.5	RM06590002 #	Shrt. Intr.
11.0	RM06590004	01

RUBBER GASKET
FOR ACCESS PIPE

6 L] H (cm)	3 U R G X F W & R G H 6 W G	3 N J
11.0	RM06590006	01
16.0	RM06590007	01
20.0	RM06590008 #	Shrt. Intr.

SAFETY CLIP
FOR COUPLER
CLAMP

6 L] H (cm)	3 U R G X F W & R G H	3 N J	1 R V
		Std. Mast.	
7.5	SC-075-CC	10	100
11.0	SC-110-CC	10	100
12.5	SC-125-CC#	-	-
16.0	SC-160-CC	06	60
20.0	SC-200-CC	05	50

SAFETY CLIP FOR
SOCKET PLUG
(END CAP)

(Nos.)	6 L] H (cm)	3 U R G X F W Code	3 N J	1 R V
			Std. Mast.	
	7.5	SC-075-EC	10	100
	11.0	SC-110-EC	20	80
	12.5	SC-125-EC#	-	-
	16.0	SC-160-EC	06	60
	20.0	SC-200-EC	06	60

Shortly Introducing

HEAVY DUTY SADDLE
WITH RUBBER

(Nos.)	6 L] H (cm)	3 U R G X F W Code	3 N J	1 R V
			Std. Mast.	
	4.0	T105-012R#	-	-
	5.0	T105-015R#	-	-
	6.3	T105-020R	20	200
	7.5	T105-025R	32	320
	11.0	T105-040R	24	240
	16.0	T105-060R	12	120
	20.0	T105-080R	03	30

SOUND
DAMPENING
CLAMP

	6 L] H (cm)	3 U R G X F W Code	3 N J	1 R V
			Std. Mast.	
	7.5	T108-025HR #	-	-
	11.0	T108-040HR	05	25
	16.0	T108-060HR	04	20
	20.0	T108-080HR #	-	-

SILENCIO

PRODUCT RANGE

SPLIT CLAMPS

Size (cm)	Product Code	Pkg.(Nos.) Std. Mast.	
4.0	T101-012R*	25	250
5.0	T101-015R*	25	250
6.3	T101-020R*	25	250
7.5	T101-025R*	25	200
7.5	T101-025HR**	06	60
11.0	T101-040R*	10	100
11.0	T101-040HR**	09	90
16.0	T101-060R*	10	100
16.0	T101-060HR**	06	60
20.0	T101-080R*	01	50
20.0	T101-080HR***	-	01

**Bracket/ Clamp with heavy duty rubber insert.
 *Bracket / Clamp with ruber insert

HANGING CLAMP

Qty. (cm)	Product Code	Pkg.(Nos.) Std. Mast.	
11.0	T107-040	05	05

PIPE JOINT LUBRICANT

Qty. (gm)	Product Code	Std. Pkg. (Nos.)
100	STINS-100	100
250	STINS-250	40
500	STINS-500	86

RESCUE TAPE

Size (ft.)	Product Code	Std. Pkg. (Nos.)
5	M005601010	120
5	M005601015	120
5	M005601005	120
10	M005601025	120
10	M005601030	120
10	M005601020	120
15	M005601040	120
15	M005601045	120
15	M005601035	120

BONDSET FAST SETTING

Qty. (gm)	Product Code	Std. Pkg. (Nos.)
50	M000702051	01
100	M000702050	01

PTFE TAPE

Size (metre)	Product Code	Std. Pkg. (Nos.)
4	M003302004	01
8	M003302007	01
8	M003302017	01

INSTALLATION PROCEDURE

PIPE CUTTING

Astral Silencio can be cut simply with a professional pipe cutter or a saw. Make sure that the

FXW LV DW D r DQJOH RQ WKH SLSH D[LV 5HPRYH DQ\ EXUUV FXWWLQJ UHVN
clean the pipe end.

For making a connection to the compensator or end of the compensator, pipe ends may not

EH FKDPIHUHG)RU PDNLQJ D FRQQHFWLRQ WR RWKHU ®WWLQJV WKH SLSH UHVN

P 86+'), 7 -2, 176 : , 7+287 COMPENSATOR SOCKET

7R FRSH ZLWK YDULDWLRQV LQ OHQJWK GXH WR WKHUPDO IDFWRUV LQ SLSH
metre / 9.5 feet, a maximum 10 mm / 0.4 inches slid out of the sleeve has to be considered.

)RU SXVK ®W FRQQHFWLRQV EHWZHHQ ®WWLQJV QR YDULDWLRQV LQ OHQJWK
WKHUH SRVVLEOH WR VORW WKH ®WWLQJV FRPSOHWHO\

7KH SXVK ®W FRXSOLQJ LV GRQH DV IROORZV

Check the position and the condition of the lip

seal in the coupler channel. If necessary, clean

WKH ®WWLQJ DQG WKH JDVNHW &OHDQ WKH SXVK ®W
HQG RI WKH SLSH DQG WKH ®WWLQJ

Apply a thin uniform layer of Astral

lubricant on the end of the coupling.

Do not use oil or grease.

Place the end into the

coupler and push in

®UPO\

6OLGH WKH SLSH DQG QRW WKH ®WWLQJ MXVW PP LQ
of the coupling. When pipes are positioned vertically, leave

space of 10 mm / 0.4 inches to avoid slipping and for

HOLPLQDWLRQ RI WKH GLODWDWLRQ 7KHQ ®[WKH LQGLYLGX
collars immediately after assembly.

JOINTS WITH THE COMPENSATOR SOCKET

7KH \$VWUDO 6LOHQFLR FRPSHQVDWRU VRFNHW LV XVHG WR FRQQHFW WZR compensation for axial movement is required. For conventional plastic soil and waste pipe systems, the expansion margin is created by marking and withdrawing the pipe to the expansion length. This is not required in case of Astral Silencio, as the compensator socket adapts to temperature changes in the system. This doesn't only save working time, but also gives additional technical security to the system.

STEPS FOR JOINING COMPENSATOR SOCKET

When making the connection with the compensator socket the following instructions should be adhered to:

Pull the expansion collar
from the compensator
socket.

Push the expansion collar
over the pipe end.

Apply lubricant inside
compensator socket of
WKH ®WWLQJ 1HYHU XVH RLO RU
grease.

Apply and distribute
lubricant evenly on
outside of elastomeric
compensator collar. Push
WKH ®WWLQJ RYHU
compensator collar to full
insertion depth.

&KHFN ®QDO SRVLWLRQ RI
compensator collar.
Ensure pipe end is
flushed with gasket tip.

FIXATION

In principle, Astral Silencio soil and waste system should be installed tension-free and with free lateral allowance for temperature compensation. Use rubber-line brackets. The pipe screws and plastic plugs. For pipe systems in which inner-pressures can arise, the joints have to be secured to prevent them from sliding apart and deviating from the center axis. The

VERTICAL SUPPORT

FIXING BRACKET

the bracket after the screws are tightened (no longitudinal movement is possible). In order to prevent sliding down of the

All remaining pipe brackets – in the vertical as well as in the horizontal installation, must be sliding brackets. The prescribed bracket distances should not be exceeded.

SLIDING BRACKET

By using sliding brackets, the pipe still can be moved through the bracket after the screws are tightened (longitudinal movement is possible once installed).



CORRECT



INCORRECT

External heating of Astral Silencio Pipes should be limited by heat insulating the source; e.g. central heating pipes as well as hot tap water pipes. Pipe and shaft dimensions are to be taken from the table below.

Size PP LQFKHV	OD of Pipe da (mm)	2' RI 6RFNHW GLPQ (mm)	5HTXLUHG 6SDFLQJ (mm)
40 (1¼)	40	54	125
50 (1½)	50	68	125
63 (2)	63	81	140
75 (2½)	75	95	155
110 (4)	110	130	190
125 (5)	125	147	210
160 (6)	160	184	244
200 (8)	200	228	288

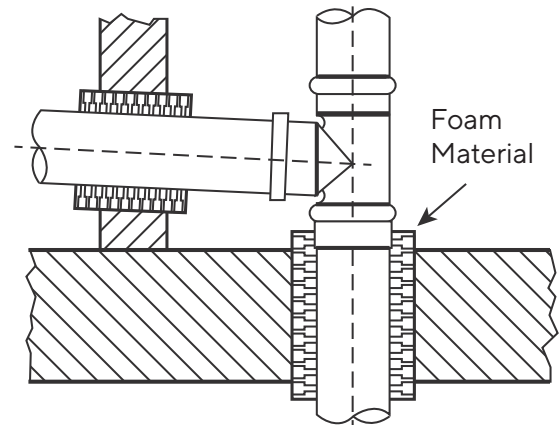
* The stated depths are not including pipe crossings

Space requirements for Astral Silencio pipes Size 40 – Size 200 mm.

INSTALLATION IN CONCRETE

\$VWUDO 6LOHQFLR SLSHV DQG ®WWLQJV FDQ EH FDVW LQ FRQFUHWH 7KHUPD to the instructions.

- Attach pipe component in such a way that a change in position during concrete application is prevented.
- Seal the sleeve gap with adhesive strips to prevent the penetration of concrete.
- Seal the pipe opening before concrete application.



WALL AND CEILING INSTALLATIONS

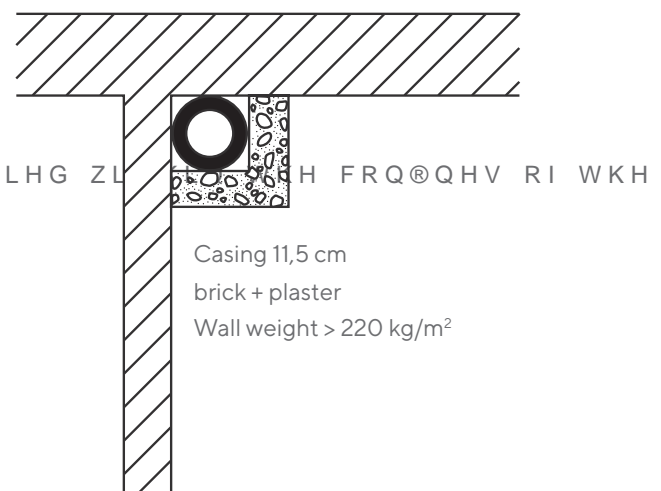
Wall and ceiling installations are to be made moisture tight and should also be sound-absorbing and leakproof. If a flooring substitute is to be applied, then the exposed pipe components are to be secured in protecting tubes or encased in soft materials (e. g. glass wool or foam material).

ROOF DRAINAGE PIPES

Roof drainage pipes projected through living, sleeping and working rooms can be installed as shown in the diagram. The VSHFL®F DUHD ZHLJKW RI WKH FDVWLQJ VKRXOG EH DW OHDVW 1.1% DW WR WKH the formation of condensation on the outside of Astral Silencio pipes is less than that of metallic pipes, it is recommended WR LQVXODWH WKH SLSHV DQG ®WWLQJV

BELOW-GROUND PIPING AND COLLECTOR PIPES

Below-ground piping is normally connected to downpipes or directly into wastewater facilities located at basement level. Such SLSLQJ LV QRUPDOO\ WR EH IRXQG EXULHG ZL H FRQ®QH RI WKH building or below the foundation. Collecting pipes are installed above-ground and are used to collect wastewater from downpipes or other connecting pipework.



ARRANGEMENTS OF THE BRACKETS

During installation of Astral Silencio pipes, the following should be considered:

- In case of horizontal installation, the pipe bracket distances are 10 x the outside diameter of the pipe. This becomes, in case of vertical pipe installation, depending on outside diameter, 1-2 metre (3 to 6 feet)
- Generally pipe brackets should not be installed in impact areas (e.g. diameter reductions and changes of directions in the system)

ü 3LSH EUDFNHWV DUH WR EH ®[HG WR EXLOGLQJ PDWHULDOV ZLWK KLJK VSHF

- For stacking pipes in open mounting shafts and high rooms (storey height over 2.5 metre / 8 feet), It is advised to

XVH RQH ®[HG EUDFNHW DQG RQH VOLGLQJ EUDFNHW SHU SLSH OHQJWK

ü 7KH ®[HG EUDFNHW PXVW EH LQVWDOOHG GLUHFWO\ DERYH WKH ®WWLQJ DW

PXVW EH LQVWDOOHG DW D GLVWDQFH RI PD[LPXP RI PHWUH IHHW DERY

- In multiple storey buildings (from 3 storeys and more) the stack pipes of Size 100 or bigger must be secured by

DGGLWLRQDO ®[LQJ VWDFN SLSH VXSSRUW DJDLQVW VOLGLQJ ,Q WKLV FDU

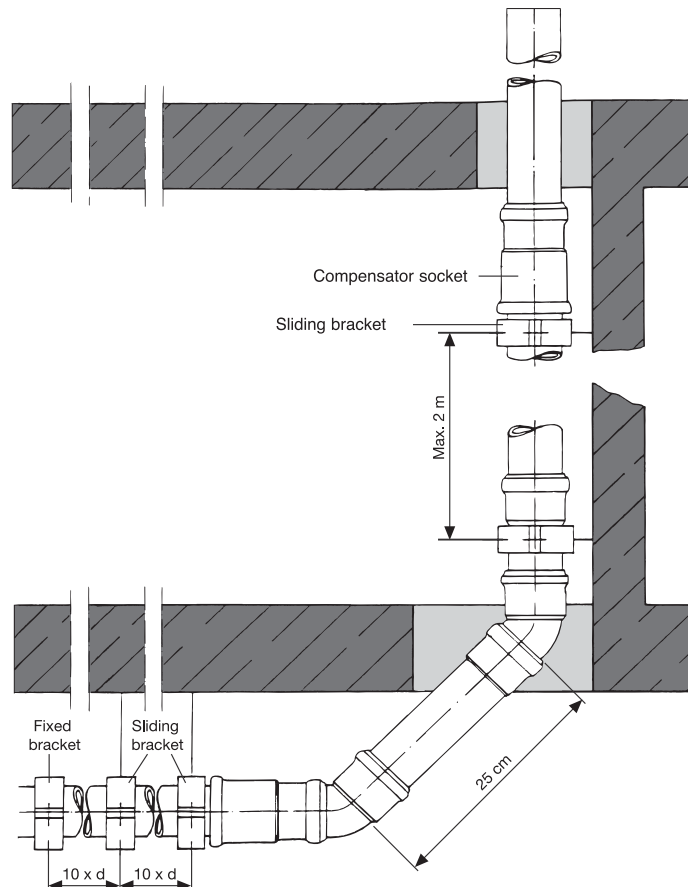
VKRUW OHQJWK ZLWK D ®[HG EUDFNHW 6WDFN VHJPHQWV ZLWK ®WWLQJV RU

distances with pipe brackets, so that they cannot slide apart

In exceptional cases, where connecting elements other than the compensator socket are used (e.g. double socketed

VOHHYH SHU PD[LPXP DOORZDEOH SLSH OHQJWK PHWUH IHHW RQH ®[

LQVWDOOHG LQ OLQH DV SHU WKH LOOXVWUDWLRQV VKRZQ RQ WKLV SDJH 7KH



SUPPORT SPACING DISTANCES

VERTICAL PIPE ROUTING

When installing the sliding bracket on the lower floor level, the sliding bracket is attached loosely to the plain pipe to allow the linear expansion of the pipe run.

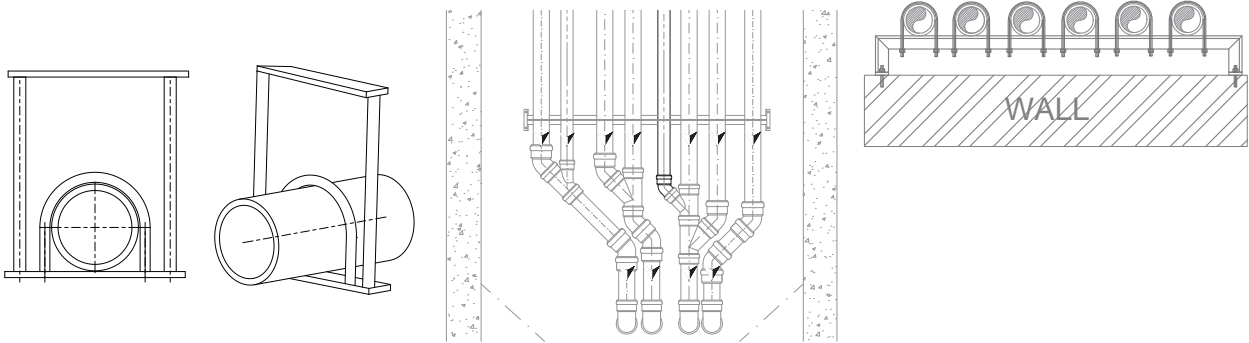
HORIZONTAL PIPE ROUTING

The pipe run must be secured against lateral shifting or axial movement in the proximity of all points of directional changes.

MAXIMUM DISTANCES BETWEEN THE BRACKETS FOR HORIZONTAL AND VERTICAL INSTALLATION

Pipe Size (external diameter) mm (inches)	Max. brackets distance for Horizontal installing - L Max Metre (feet)	Max. brackets distance for Vertical installing - L Max Metre (feet)
40 (1¼)	0.7 (2.2')	1.30 (4.2')
50 (1½)	0.80 (2.6')	1.50 (4.9')
63 (2)	0.95 (3.1')	1.75 (5.7')
75 (2½)	1.10 (3.6')	2.00 (6.5')
110 (4)	2.00 (6.5')	2.00 (6.5')
125 (5)	2.00 (6.5')	2.00 (6.5')
160 (6)	2.00 (6.5')	2.00 (6.5')
200 (8)	2.40 (7.8')	2.00 (6.5')

In case of the possibility of flooding of the system, it is advisable to use the rigid support system as mentioned in the below drawing. It is also advisable to use the safety clip for the coupler/socket joint. Safety clips can be used at the bottom diversion of a high-rise stack. It can provide extra protection to the joint against flow coming at high velocity from the top floors of a high-rise stack.



LOADING AND TRANSPORTATION

X

:KHQ ORDGLQJ SLSHV DQG ®WWLQJV VKRXOG EH KDQGOHG LQ VXFK D ZD\ WKD\
possible, during transportation the pipes should rest in their entire length on top of each other, so that sagging can be
DYRLGHG \$YRLG VXGGHQ DQG DEUXSW VWUHVHV RQ SLSHV DQG ®WWLQJV H

UNLOADING AND STORAGE

Max 1.5 m /4.9'

X

Unloading is to be carried out with appropriate care. Do not drop pipes or drag them over the ground. Furthermore, make sure that the pipes are not pulled over sharp edges (e.g. tailgate). Unpalletized pipes should not be stacked higher than 1.5 m. (4.9') pipe stacks must be secured against rolling apart.
)LWWLQJV DUH SDFNHG LQ FDUWRQV 3URWHFW FDUWRQ SDFNHG ®WWLQJV DJD

NOTE

The Polypropylene pipe has a service life of 50 years which is similar to the average age of an apartment. The polypropylene pipe after its service life can be recycled as per the general process of pipe recycling. The recycled pipes can be used in PP production thereby reduces the demand of virgin material.

7KH SLSH FDQ DOVR EH VHQW WR WKH LQFLQHUDWLRQ SODQW RU ODQG®OOV D

OUTDOOR EXPOSURE

\$ VWUDO 6LOHQFLR SLSHV DQG ®WWLQJV DUH GHVLJQHG WR ZLWKVWDQG RXWG

Longer outdoor storage periods and intense exposure to direct sunlight might lead to discolouration of the surface and to a slight deterioration of the mechanical material properties.

CLEANING AND MAINTENANCE

CLEANING THE WASTE PIPE SYSTEM

, QVWDOOLQJ DFFHVV SLSHV HQDEOHV PHFKDQLFDO FOHDQLQJ RI the ability to access the cleaning at any point in the system.

P TRAP SIPHON

Astral Silencio P trap Siphon provides 50 mm / 0.2 inches water seal to prevent foul odour coming

W QR GDPDJH RFFXUV RXW RI WKH GUDLQDJH OLOH 7KH 3 WUDS 6LSKRQ LV WR EH XVHG

While installing the P trap, it is important to install the pipe support properly to ensure the safe operation of drainage system.

VSHFLDOO\ ZLWK WHP SHUDWXUH V LQ WKH IURVW UDQJH

SOCKET PLUG / SAFETY CLIP

7KH VRFNHW SOXJ FDQ EH XVHG WR SOXJ R- WKH SLSH HQGV LI W used together with the securing clip to ensure a safe and tight jointing.

END PLUG

These blind plugs are easy to mount to the inlets of the Floor Trap and secure a leakage-free sealing of unused connections to the Floor Trap.

FLOOR TRAP

The highly functional Floor Trap design by Astral complies with low noise system.

Seal Construction The proven seal construction gives not only the top inlet but inlets and outlets on all branches to perform with the reliability and maintain functionality.

LQVW PRLVWXUH

% D - OH 3 DW LQFLQHUDWLRQ V WUXFWLRQ LV DLU WLJKW DW DOO ZRUNLQJ I LQVSHFWLRQ SOXJ HQDEOHV WR DFFHVV WKH DUHD XQGHU WKH E

CHEMICAL RESISTANCE CHART

PIPE AND FITTING

The chemical resistance of pipe and fitting is influenced by the influence of the corrosive agent) and cannot simply be applied to all usage scenarios. Mechanical behaviour can be impaired in cases where tension and the presence of chemicals occur simultaneously (tension-fracture corrosion).

RUBBER SEALING RING

The types of rubber used generally exhibit quite good chemical resistance, but components of esters, ketones and aromatic and chlorinated hydrocarbons in sewer water expand heavily, which can lead to damage of the connection.

For detailed information on the chemical resistance of the different types of rubber, please refer to the technical data sheet. If in doubt, please check in a laboratory. Contact our applications department if necessary.

TABLE LEGEND

U UHVLVWDQW
FU FRQGLWLRQDOO\ UHVLVWDQW
QU QRW UHVLVWDQW
 QRW WHVWHG



CHEMICAL RESISTANCE CHART

CHEMICAL	Concentr. %	Temp. °C	Silencio PP
2-Propen-1-ol	96	20	r
	96	60	r
Acetaldehyde + acetic acid	90/10	20	-
Acetaldehyde, aqueous	40	40	r
Acetaldehyde, concentrated	100	20	-
Acetate ether	100	20	-
Acetic acid, aqueous	up to 25	40	r
	up to 25	60	r
	25-60	60	r
	80	40	r
Acetic acid, concentrated	95	40	-
Acetic anhydride	100	20	r
	100	40	cr
	100	60	cr
Acetone	100	20	r
	100	60	r
Acetone, aqueous	traces	20	r
Acronal dispersions	com. avail.	20	-
Acronal solutions	com. avail.	20	-
Acrylic acid ethyl ester	100	20	-
Adipic acid, aqueous	saturated	20	r
	saturated	60	-
Aluminium chloride	diluted	40	r
	diluted	60	r
	saturated	60	r
Aluminium sulfate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Alums, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Ammonia, gas	100	60	r
Ammonia, liquid	100	20	r
Ammonium chloride, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Ammonium Fluoride, aqueous	up to 20	20	r
	up to 20	60	r
Ammonium hydroxide	warm sat.	40	r
	warm sat.	60	r
Ammonium nitrate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Ammonium sulfate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Ammonium sulfide, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r

CHEMICAL	Concentr. %	Temp. °C	Silencio PP
Aniline hydrochloride, aqueous	saturated	20	r
	saturated	60	r
Aniline, aqueous	saturated	20	r
	saturated	60	r
Aniline, pure	100	20	r
	100	60	r
Animal glue	custom. co	20	r
	custom. co	60	r
Anthraquinonesulfonic acid, aqueous suspension 30			r
Antiformin, aqueous	2	20	-
Antimony chloride, aqueous	90	20	r
Arsenic acid, aqueous	diluted	40	r
	diluted	60	r
	80	40 r	
	80	60 r	
Beef tallow emulsion, sulphonated	com. avail.	20	-
Beer	com. avail.	20	r
Beer colourinzzg agent	com. avail.	60	r
Benzaldehyde, aqueous	0,1	60	-
Benzene	100	20	cr
Benzoic acid, aqueous	any	20	r
	any	40	r
	any	60	r
Bisulphite solution, w/ SO	warm sat.	50	r
Bleaching liquour, containing 12.5 % active chlorine	usage conc.	40	-
	usage conc.	60	cr
Borax, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Boric acid, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Brandy	com. avail.	20	r
Bromine fumes	minimal	20	nr
Bromine, liquid	100	20	nr
Butadiene	100	60	-
Butane, gaseous	50	20	r
Butanediol	up to 100	20	-
Butanediol, aqueous	up to 10	20	r
	up to 10	40	r
	up to 10	60	r
Butanol	up to 100	20	r
	up to 100	40	r
	up to 100	60	cr
Butylacetate	100	20	cr
Cider	com. avail.	20	r

TABLE LEGEND r = resistant | cr = conditionally resistant | nr = not resistant | - = not tested

CHEMICAL RESISTANCE CHART

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
Citric acid, aqueous	up to 10	40	r
	up to 10	60	r
	saturated	60	r
Clophen	com. avail.	20	—
	com. avail.	60	—
Coconut fat alcohol	100	20	r
	100	60	cr
Copper Fluoride, aqueous	2	50	r
Copper sulfate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Cresol, aqueous	up to 90	45	—
Crotonaldehyde	100	20	r
Cyclohexanol	100	20	r
Cyclohexanone	100	20	r
Cyclohexanone	100	20	r
Densodrin W	com. avail.	60	—
Dextrin, aqueous	saturated	20	r
	18	60	r
Diethylether	100	20	cr
Diglycol acid, aqueous	30	60	r
	saturated	20	r
Dimethyl sulfate, aqueous	up to 50	20	r
	up to 50	40	r
	100	40	—
	100	60	—
Dimethylamine, liquid	100	30	—
Disulfuric acid	10	20	nr
Ethanol (fermentation mash)	common	40	r
	common	60	—
Ethanol, aqueous	any	20	r
	96	60	r
Ethanol, denatured (with 2 % toluene)	96	20	cr
	common	20	r
Ethanol+ acetic acid (fermentation mash)	96	20	cr
	common	20	r
Ethyl acetate	100	20	cr
	100	60	nr
Ethylene chloride	100	20	nr
Ethylene oxide, liquid	100	20	—
Exhaust gas, w/COH	any	60	r
Exhaust gas, w/ HF	traces	60	r
Exhaust gas, w/ NOX	traces	60	r
	higher	60	—
Exhaust gases, w/S O7H	lower	20	—
	higher	20	nr
Exhaust gases, w/SOH, moist	any	60	r
Exhaust gases, w/ HCl	any	60	r
Exhaust gases, w/ SO	lower	60	r

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
	50	50	—
Fatty acids	100	60	cr
Ferric chloride, aqueous	up to 10	40	r
	up to 10	60	r
	saturated	60	r
Fertilizer salts, aqueous	up to 10	40	r
	up to 10	60	r
	saturated	60	r
Fluorsilicic acid, aqueous	up to 32	60	—
Formaldehyde, aqueous	diluted	40	r
	diluted	60	r
	40	30	r
Formic acid	100	20	r
	100	60	cr
Formic acid, aqueous	up to 50	40	r
	50	60	r
Frigen	100	20	cr
Fruit pulp	custom. conc	20	r
Glucose, aqueous	saturated	20	r
	saturated	60	r
Glycerine, aqueous	any	60	r
Glycine, aqueous	10	40	r
Glycol, aqueous	com. avail.	60	r
Glycolic acid, aqueous	37	20	r
Hexantriol	com. avail.	60	r
Hydrobromic acid, aqueous	up to 10	40	r
	up to 10	60	r
	48	60	r
Hydrochloric acid, aqueous	up to 30	40	r
	up to 30	60	r
	over 30	20	r
	over 30	60	r
Hydrofluoric acid, aqueous	up to 40	20	r
	40	60	r
	60	20	r
	70	20	r
Hydrogen	100	60	r
Hydrogen peroxide, aqueous	up to 30	20	r
	up to 20	50	r
Hydrogen phosphide	100	20	—
+ \GURJHQ V XO@GH	GU \		U
+ \GURJHQ V XO@GH	DTXHRXV		ZDUP
	warm sat.	60	r
+ \GURVXO@WH	DTXHRXSVWR		U
	up to 10	60	r
Hydroxylamine sulfate, aqueous	up to 12	35	r
Lactic acid, aqueous	up to 10	40	r
	up to 10	60	r
	90	60	r

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CHEMICAL RESISTANCE CHART

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
Lead acetate, aqueous	warm sat.	50	r
Butylene, liquid	100	20	–
Butylphenol	100	20	r
Butynediol	up to 100	40	–
Butyric acid, aqueous	20	20	r
	concentr.	20	r
Calcium chloride, aqueous	diluted	40	r
	diluted	60	r
	saturated	60 r	
Calcium nitrate, aqueous	50	40	r
Carbolineum, aqueous	usage conc.	20	–
Carbon dioxide, aqueous under 8 atmospheric pressures	saturated	20	–
Carbon dioxide, dry	100	60	r
Carbon dioxide, moist	any	40	r
	any	60	r
&DUERQ GLVXO®GH			F U
Carbon tetrachloride, technical	100	20	nr
Caustic potash solution, aqueous			
	up to 40	40	r
	up to 40	60	r
	50/60	60	r
Caustic soda, aqueous	up to 40	40	r
	up to 40	60	r
	50/60	60	r
Chloramine, aqueous	diluted	20	–
Chloric acid, aqueous	1	40	–
	1	60	–
	10	40	–
	10	60	–
	20	40	–
	20	60	–
Chlorine water	saturated	20	cr
Chlorine, gaseous, dry	100	20	nr
Chlorine, gaseous, moist	0,5	20	nr
	1	20	nr
	5	20	nr
Chlormethyl	100	20	–
Chloroacetic acid (mono)	100	40	r
	100	60	–
Chloroacetic acid (mono) aqueous	85	20	r
Chlorosulfonic acid	100	20	nr
Chromic acid, aqueous	up to 50	40	–
	up to 50	60	cr
Chromic acid/Sulphuric acid/ Water	50/15/35	40	nr
	50/15/35	60	nr
	diluted	40	r

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
	diluted	60	r
	saturated	60	r
Lead tetraethyl	100	20	r
Magnesium chloride, aqueous	diluted	40	r
	diluted	60	r
	saturated	60 r	
Magnesium sulfate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Maleic acid, aqueous	saturated	40	r
	saturated	60	r
	35	40 r	
Malic acid, aqueous	1	20	r
Mersol D	custom. conc.	40.	–
Methanol	100	40	r
	100	60	r
Methyl amine	32	20	r
Methylene chloride	100	20	nr
Milk	com. avail.	20	r
Mixed acid	48/49/3	20	nr
(Sulfuric acid/Nitric acid/Water)	48/49/3	40	nr
	50/50/0	20	nr
	50/50/0	40	nr
	10/20/70	50	cr
	10/87/3	20	nr
	50/31/19	30	nr
Molasses	custom. conc.	20	r
	custom. conc.	60	r
Molasses wort	custom. conc.	60	r
Mowilith D	com. avail.	20	–
Nekal, BX, aqueous	diluted	40	–
	diluted	60	–
Nickel sulfate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60 r	
Nicotine compounds, aqueous	usage conc.	20	–
Nicotine, aqueous	usage conc.	20	–
Nitric acid, aqueous	up to 30	50	r
	30/50	50	nr
	98	20	nr
	98	60	nr
Nitrous gasses	concentr.	20	r
	concentr.	60	–
Oils and greases	com. avail.	60	cr
Oleic acid	com. avail.	60	cr
Oleum vapour	lower	20	cr
	higher	20	nr
Oxalic acid, aqueous	diluted	40	r
	diluted	60	r

CHEMICAL RESISTANCE CHART

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
	saturated	60	r
Oxygen	any	60	—
Ozone	100	20	cr
	10	30	r
Palm kernel oil acid	100	60	—
3 DUD°Q HPXOVLRQV FRP DYDLO	com. avail.	40	—
Perchloric acid, aqueous	up to 10	40	r
	up to 10	60	r
	saturated	60	—
Petrol	100	60	nr
Petrol-benzene mixture	80/20	20	cr
Phenol, aqueous	up to 90	45	r
	1	20	-
Phenylhydrazine	100	20	cr
	100	60	—
Phenylhydrazine hydrochloride, aqueous	saturated	20	—
	saturated	60	—
Phosgene, aqueous	100	20	nr
Phosgene, gaseous	100	20	cr
	100	60	cr
Phosphoric acid, aqueous	up to 30	40	r
	up to 30	60	r
	40	60	r
	80	20 r	
	80	60 r	
Phosphorous pentoxide	100	20	r
Phosphorous trichloride	100	20	r
Photographic developers	com. avail.	40	r
Photographic emulsions	any	40	—
3 KRWRJUDSKLF ®[H UFRP DYDLO			
Picric acid, aqueous	1	20	r
Potash, aqueous	saturated	40	—
Potassium borate, aqueous	1	40	r
	1	60	r
Potassium bromate, aqueous	up to 10	40	r
	up to 10	60	r
Potassium bromide, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Potassium chlorate, aqueous	1	40	r
	1	60	r
Potassium chloride, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Potassium chromate, aqueous	40	20	r
Potassium cyanide, aqueous	up to 10	40	r
	up to 10	60	r

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
	saturated	60	r
Potassium dichromate, aqueous	40	20	r
Potassium ferrocyanide	diluted	40	r
Potassium ferrocyanide, aqueous	diluted	60	r
	saturated	60	r
Potassium nitrate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Potassium permanganate, aqueous	up to 6	20	r
	up to 6	40	r
	up to 6	60	r
	up to 18	40	—
Potassium persulfate, aqueous	diluted	40	r
	diluted	60	r
	saturated	40 r	
	saturated	60 r	
Propane, gaseous	100	20	—
Propane, liquid	100	20	—
Propargyl alcohol, aqueous	7	60	r
Pure acetic acid	100	20	r
	100	40	r
Ramasite	com. avail.	20	—
	com. avail.	40	—
Roaster gases, dry	any	60	r
Seawater	—	40	r
	—	60	r
Silicic acid, aqueous	any	60	r
Silver nitrate, aqueous	up to 8	40	r
	up to 8	60	r
U Soap solution, aqueous	concentrated	20	r
	concentrated	60	r
Soda, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Sodium benzoate, aqueous	up to 10	40	r
	up to 10	60	r
	36	60	r
Sodium chlorate, aqueous	up to 10	40	r
	up to 10	60	r
	saturated	60	r
Sodium chlorite, aqueous	50	20	r
	diluted	60	nr
Sodium hydrosulfate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Sodium hypochlorite, aqueous	diluted	20	r
6 RGLXP VXO®GH DTXHRXV			GLOXWHG

CHEMICAL RESISTANCE CHART

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
	diluted	60	r
	saturated	60	r
Spirits	com. avail.	20	r
Starch syrup	custom. conc	60	r
Starch, aqueous	any	40	r
	any	60	r
Stearic acid	100	60	cr
Sulphur dioxide, aqueous under 8 atmospheric pressures	saturated	20	-
Sulphur dioxide, liquid	100	-10	-
	100	20	r
	100	60	r
Sulphur dioxide, moist and aqueous any	40	r	
	50	50	r
	any	60	r
Sulphur dioxide, dry	any	60	r
Sulphuric acid, aqueous	up to 40	40	r
	up to 40	60	r
	70	20	r
	70	60	cr
	80-90	40	cr
	96	20	r
	96	60	nr
Table salt, aqueous	diluted	40	r
	diluted	60	r
	saturated	60 r	
Tallow	100	20	r
	100	60	r
Tanigan extra A, aqueous	any	20	-
Tanigan extra B, aqueous	any	20	-
Tanigan extra D, aqueous	saturated	40	-
	saturated	60	-
Tanigan F, aqueous	saturated	60	-
Tanigan U, aqueous	saturated	40	-
	saturated	60	-
Tanning extracts, cellul.	common	20	r

CHEMICAL	Concentr, %	Temp. °C	Silencio PP
Tanning extracts, natural	common	20	r
Tartaric acid, aqueous	up to 10	40	r
	up to 10	60	r
	saturated	60	r
Thionyl chloride	100	20	nr
Tin (II) chloride, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Toluene	100	20	nr
Trichloroethylene	100	20	nr
Triethanolamine	100	20	r
Trilone	com. avail.	60	-
Trimethylolpropane, aqueous	up to 10	40	-
	up to 10	60	-
	com. avail.	40	r
	com. avail.	60	r
Urea, aqueous	up to 10	40	r
	up to 10	60	r
	33	60	r
Urine	normal	40	r
	normal	60	r
Vinegar (wine vinegar)	com. avail.	40	r
	com. avail.	50	r
	com. avail.	60	r
Vinyl acetate	100	20	r
Water	100		r
	100		r
Wax alcohol	100	60	cr
Wine, red and white	com. avail.	20	r
Xylene	100	20	nr
Yeast wort	custom. con	40	r
	custom. con	60	r
Zinc chloride, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r
Zinc sulphate, aqueous	diluted	40	r
	diluted	60	r
	saturated	60	r

CLIENT LIST

HOSPITALS

- Aim's Hospital
 - Ahmedabad
- Cancer Hospital
 - Ahmedabad
- STAR Hospital
 - Baroda
- Alexis Multi-Speciality Hospital
 - Nagpur
- Chandigarh Health Care
 - Sector 69, Mohali, Punjab
- Kulshan Hospital
 - Srinagar
- Yashodha Hospital
 - Hyderabad
- Christian Medical College
 - Vellore
- Zydus Hospital
 - Ahmedabad
- Kokilaben Hospital
 - Mumbai
- Lilavati Hospital
 - Mumbai
- Super Speciality Hospital For Govt. Medical College
 - Indore
- Amrita Hospital
 - Faridabad
- AIIMS
 - Bhatinda
- Midland Hospital
 - Lucknow
- Globe Medicare
 - Lucknow
- Welsun Medicity Hospital
 - Lucknow
- Naruvi Hospital
 - Vellore
- MVR Cancer Centre
 - Calicut
- District General Hospital
 - Cochine



HOTELS

- Fame Hotels
 - Berhampur, West Bengal
- Hotel Tip Top International
 - Pune
- Palm Grove Beach Hotels Pvt. Ltd.
 - Pune
- Hotel Fidalgo
 - Pune
- Ritz Resort
 - Lucknow
- BGR Hotel
 - Banjerahills, Hyderabad
- Hotel Rama International
 - Aurangabad
- Hotel Royal Park
 - Delhi
- Hotel Bramhani
 - Jajpur Road, Jajpur
- Hotel World
 - Janpath, Bhubaneswar
- Hotel Hyatt
 - Lucknow
- Hotel Hyatt
 - Kochi
- The Leela Gandhinagar
 - Gandhinagar
- Cama Hotel
 - Ahmedabad
- Radisson Blue MIDC
 - Mumbai
- Golconda resorts
 - Hyderabad
- Sheraton
 - Kathmandu
- Best Western Hotel
 - Mohali
- West Inn
 - Rishikesh
- The Fern
 - Jaipur
- Hotel Total Fresh Food
 - Lucknow
- Ramada Hotel & Resorts
 - Trivandrum
- Fogg Resorts
 - Munnar
- Foushia Resorts
 - Munnar
- Paraizo The Club
 - Surat



OFFICE BUILDINGS

- AB Jewelers
 - Ahmedabad
- Airport Authority
 - Delhi
- Laboratory Building of Odisha State Pollution Board
 - Bhuvneshwar (Orissa)
- BE Chemical & Pharmaceuticals
 - Hyderabad
- ü & R U S R U D W H 2 ° F H
 - Nyati - Pune
- Dhunseri I.T. Park
 - Kolkatta
- Gymkhana Club
 - Ahmedabad
- World Trade Center
 - Greater Noida
- Amway
 - Madurai
- Mercedes Benz
 - Pune
- S&P Infocity
 - Perungudi, Chennai
- ü 6 X U D W ' L D P R Q G + M a s u D a y Products
 - Surat
- Bombay House
 - Mumbai
- Facebook Inc
 - Bangalore
- Pallacia
 - Jaipur
- Jaipur Airport
 - Jaipur
- Masum Day Products
 - Solahpur
- Lulu Conventional Centre
 - Cochin
- Cochin International Airport
 - Cochin



RESIDENTIAL PROJECTS

- Manhattan
 - Pune
- Sri Avani
 - Kolkatta
- Lodha Primero
 - Mumbai
- Vini Elegant
 - Borivali(W), Mumbai
- Bay View Project
 - Mumbai
- 24K Allura, Margosa
 - Pune
- My Homes
 - Hyderabad
- Akriti Shantiniketan
 - Noida
- Pride Group
 - Pune
- Viva Swaraj
 - Pune
- Urbana
 - Kolkata
- Omkar Alta Monte
 - Mumbai
- Price Town Kumar B1 Properties
 - Bangalore
- Siddha Group
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- Kukreja Builders
 - Mumbai
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 - Noida
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 - Pune
- South India Shelters
 - Chennai
- One 49
 - Ahmedabad
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 - Ahmedabad
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 - Ahmedabad
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 - Ahmedabad
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 - Mumbai
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 - Mumbai
- Daria Mahal Society
 - Mumbai
- Panchratna Heights
 - Ranchi
- Exotica
 - Ranchi
- Iscon Temple
 - Visakhapatnam
- Urbana
 - Kolkata
- RSH Signature
 - Kolkata
- Rare Earth
 - Kolkata
- P S Aurus
 - Kolkata
- The Reserve
 - Kolkata
- PS Anassa
 - Kolkata
- PS Srijan Ozone PH-II
 - Kolkata
- Radha Swami Santsang Beas
 - Jaipur



EDUCATIONAL INSTITUTES

- Rajasthan Vidyalay
 - Andheri (W), Mumbai
- Holy angel School
 - Rajpura, Punjab
- Delhi Public School
 - Bangalore
- Sereum Institute
 - Pune
- Nri Hostel
 - Pune
- Laboratory Building of State Pollution Control Board
 - Bhubaneswar
- Akshaya Patra Foundation
 - Phul Nakhra, Cuttack



SHOPPING MALLS

- E Square Mall
 - Mumbai
- Hemadurga Multiplex
 - Hyderabad
- Casa Imperia
 - Pune
- Sairanga Theatre
 - Miyapur, Hyderabad
- Central Mall
 - Ranchi
- City Centre Patna
 - Patna



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LOW NOISE DRAINAGE SYSTEM, REDEFINED

PRODUCT CATALOGUE

