

Skolan safe[®]

PREMIUM SILENT DRAINAGE SYSTEM

HOTELS 

HIGH RISE BUILDINGS 

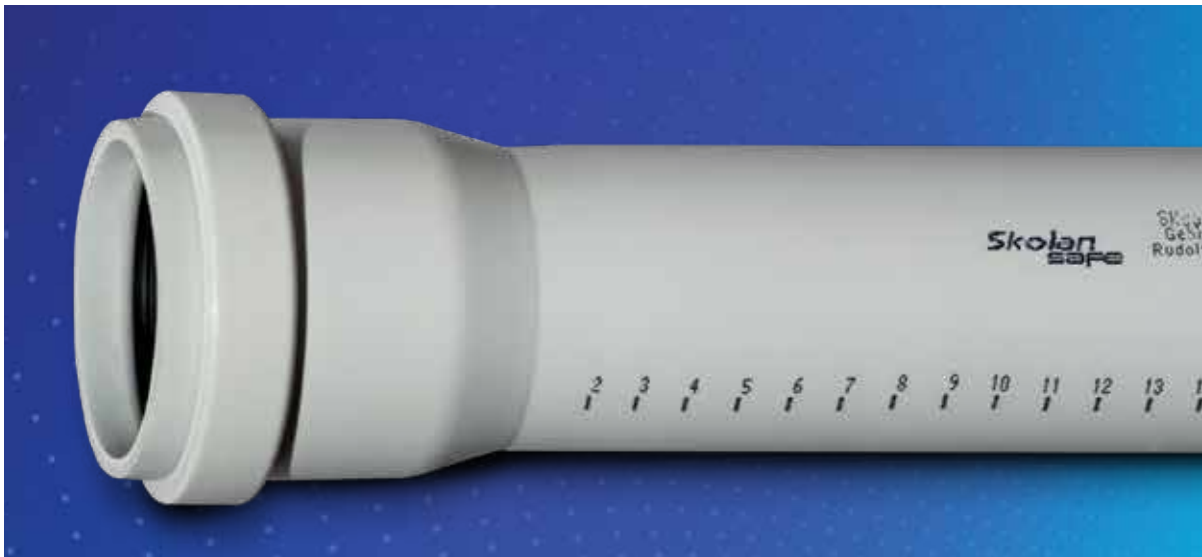
INDUSTRIES 

HOSPITALS 

VILLAS 



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Prince Pipes – Towards a better future with innovative solutions

Prince Pipes stands for transformation and setting new trends in the piping industry. We are committed to constant innovations in plumbing, irrigation, and drainage & sewerage technologies to meet the nation's ever-growing water and sanitation demands. We strive to pave the way for a future that provides clean water to every corner of India. Since our inception in 1987, our mission has been to usher in a revolution in the plastic piping industry through innovative solutions that generate profitable growth, benefit our customers and society as a whole.



Greener Better Together

At Prince Pipes, our aim is to create products that act as solutions and make a difference. From our zero-defect manufacturing process that involves using **recycled plastic** to designing and equipping our plants with solar panels and several other **energy-saving measures**, firm in our commitment to bring down emission levels. Our strong belief in the concept of “better lasts longer” has not only helped us deliver premium-quality products but also be consumption-conscious. Together with our channel partners and plumber associates, we sincerely pledge to leave behind a stronger and more sustainable legacy for generations to come.



SANGAREDDY EST. 2021



JAIPUR EST. 2019



KOLHAPUR EST. 2012



CHENNAI EST. 2012



HARIDWAR EST. 2008



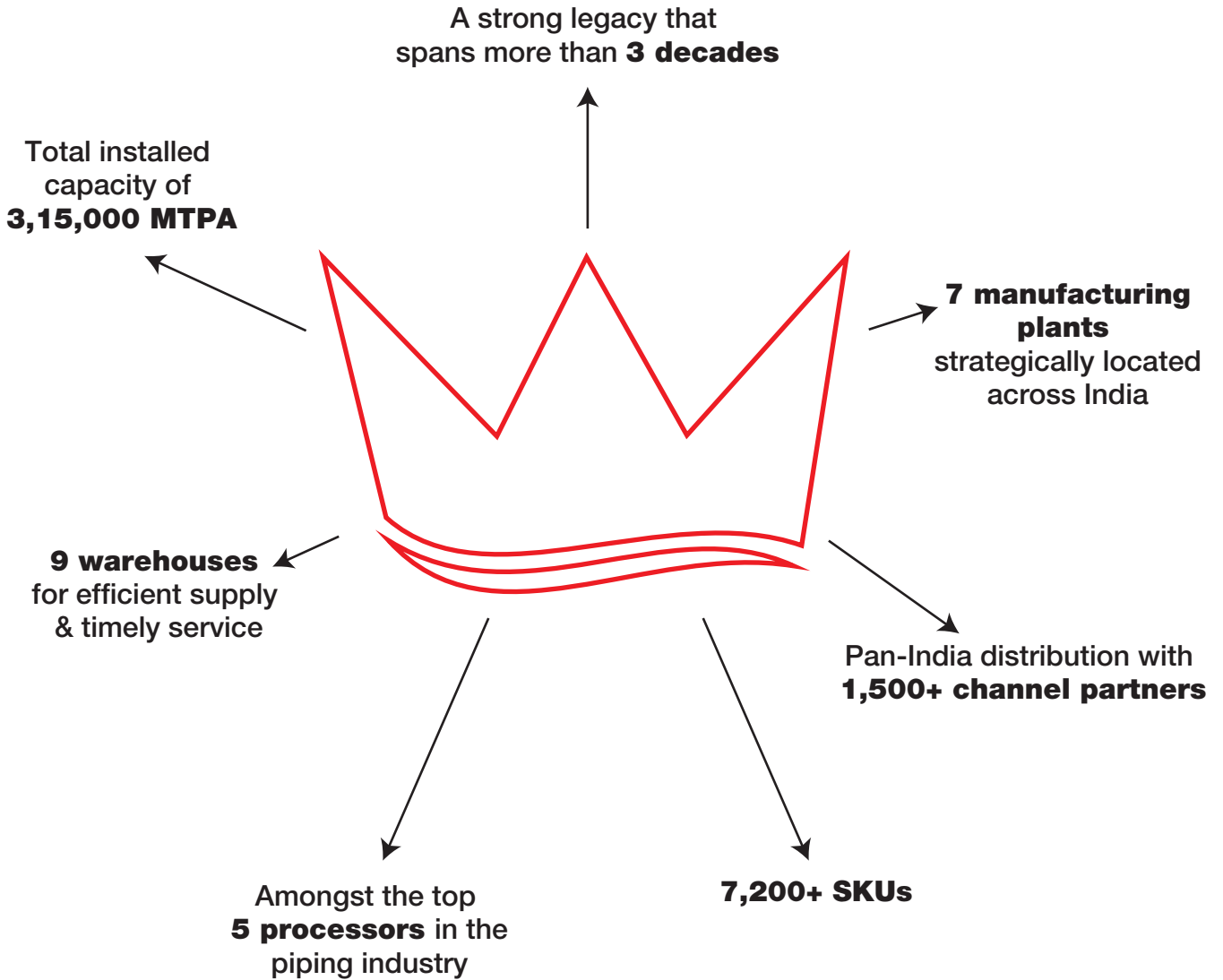
DADRA EST. 2000



ATHAL EST. 1995



Company at a glance



TECHNICAL COLLABORATION



PRODUCT COLLABORATION



A collaboration designed to bring you the best

We are passionate about honing our expertise in piping systems and bringing you the best through a collaborative culture and approach. With the launch of the Prince-Skolan Safe Silent Drainage System manufactured by Ostendorf Kunststoffe GmbH in Germany, we are once again underscoring this commitment by partnering with one of the world's leading suppliers of drainage solutions with unmatched core competencies in **quality, design, technology, and sustainability**.



With the benefit-laden properties of polypropylene, Prince-Skolan Safe works efficiently to create an atmosphere of calm and silence. Every pipe, clamp, fitting, and installation process comes together with scientific precision to eliminate any and every noise created by water flowing through the drainage system.

With Prince-Skolan Safe, we aim to deliver to you the absolute best – not only in terms of a high-performance product, but also with a promise of world-class manufacturing, technology, and service so that your space and project always stays a notch above the rest.

Prince-Skolan Safe - An overview

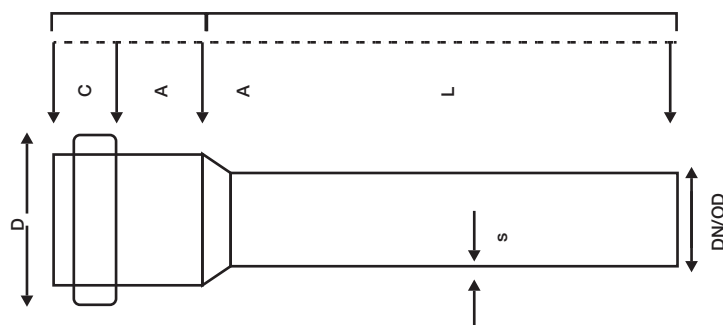
The **excellent acoustic** and **mechanical qualities, durability, and robustness** of Skolan Safe derive from the raw material polypropylene (PP) loaded with mineral fillers. This is due to the **special molecular structure and the high density of 1.6 gm/cm³**. This significantly lowers the amount of noise that is transferred to the outside through the pipe wall. It also has a smooth inner surface that prevents scaling and incrustation.

Applications: Villas, Residential condominiums, Industrial buildings, Commercial kitchens, Sports facilities, Hospitals, Hotels

Product range & dimensions

Pipes & Fittings: 58, 78, 90, 110, 135, 160, 200mm

DN/OD	S (mm)	D (mm)	A+C (mm)	L (mm)
58	4.0	78	60	150-3000
78	4.5	98	57	150-3000
90	4.5	111	57	150-3000
110	5.3	135	74	150-3000
135	5.3	161	70	150-3000
160	5.3	193	91	150-3000
200	6.2	239	112	150-3000



Prince-Skolan Safe – All about quality, technology, and innovation



Excellent sound proofing performance

Skolan Safe is sound rated at **12 dB (A) at 2 lps**, certified by Fraunhofer, Germany; produced after the requirements of **DIN 4109** in association with EN 14366. Production in accordance to Z-42.1-217 (Official National Technical Approval for Construction Products and Types of Construction in Germany).

- The reliable push-fit connection makes the system easy to install and fulfils all expectations.
- Suitable for all pressureless waste water pipes in accordance with **DIN EN 12056 and DIN 1986-100**.



High Impact Resistance

The system has shown high impact resistance at extremely harsh temperatures, even as **low as -20°C (-4°F)**



Fire protection

Skolan Safe is a normally combustible construction material and is listed as **B2 in accordance with DIN 4102-11** in nominal diameters DN 56 to DN 200.



Patented joints/lip seals

The SYSTEM BL lip seal ring is developed for plastic pipes and fittings made of PP in compliance with EN 1451-1 and meets the requirements of EN 681-1 WC. The BL seal is primarily used in sewage pipes, but it can also be used in building systems (high-temperature resistance drainage pipes). Special dimensions for non-standardized applications are available on request. The **new patented 3-way seal** makes processing faster than ever before and **guarantees absolutely secure sealing** even under the most adverse conditions.



Sound insulation that guarantees noise reduction

Skolan Safe's thick-walled soundproof pipe system reduces sound transmitted through the pipe wall. It achieves a maximum **sound insulation of 12 dB (A) at 2 lps** by the use of clamps with rubber lining that are fixed to the anchors in the wall. To ensure reliability, Skolan Safe was tested by the **Fraunhofer Institut für Bauphysik IBP**, where measurement and evaluation were performed in accordance with **DIN EN 14366**.



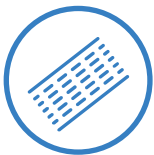
World-class design and quality

Skolan Safe pipes and fittings are quality labelled and subject to constant quality checks. They are provided with general construction supervision approval with **Approval No. Z-42.1-217 of DIBT** (German Institute of Construction Technology, Berlin).



Sustainable from the get-go

Polypropylene is an environment-friendly material. In fact, due to its method of production, it is **100% recyclable**. Skolan Safe is aligned to Environmental Management System that fulfils the requirements of the ISO 14001 Standard.



PP with mineral fillers

Skolan Safe's polypropylene mineral-filled compound has been carefully designed to provide both excellent acoustic and mechanical properties. Our compound offers **superior ring stiffness and impact resistance**, which are essential for a drainage and sewerage piping system.



For stress-free projects

Skolan Safe comes with a **25-year warranty**, consistent implementation advice, technical guidance from experts, and a well-trained team. It also provides a post-implementation review and frequent discussions to ensure the complete alignment of your project with world-class customer service.

Prince-Skolan Safe - A notch above the rest

Patented Triple Seal

A basic requirement in private and municipal property drainage is a permanently tight pipe connection. Skolan Safe's patented new triple seal makes processing faster than ever before and guarantees secure sealing even in the most adverse conditions. These decisive improvements result from the special design of the ring. This innovation is the result of several years of meticulous research, development, and industry knowledge.

1. Tensioning lip and retaining lip

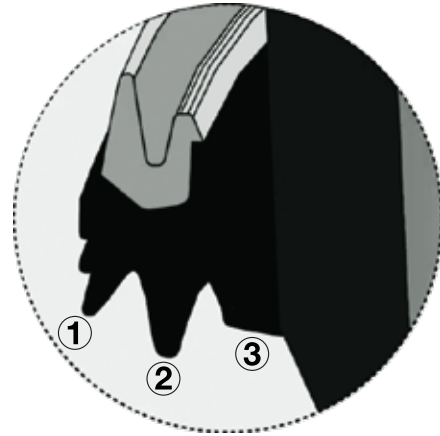
The tensioning lip prevents dirt from collecting between the pipe wall and the seal. The retaining lip causes the tensioning lip to be pressed against the foremost edge of the bead. This stops the sealing ring from being pressed out or rolling.

2. Wiping lip

The wiping lip serves to keep back any dirt on the pipe.

3. Sealing lip

The sealing lip assures a permanently tight pipe connection. Leakage test according to DIN EN 1610 with air and water from 0.05 to 0.5 bar, and under a vacuum (System test 3.0 bar MPA Darmstadt) has been performed.



Low Noise

Noise insulation
12db @ 2 lps flow rate



100% Recyclable Polypropylene

Polypropylene with mineral filled compounds



Hot Water Resistance

Short-term up to 95°C/203°F & long-term up to 90°C/194°F. It also has a low coefficient of linear expansion.



High Impact Resistance

The system has shown high impact resistance at extremely harsh temperatures, even as low as -20°C (-4°F)



High Chemical Resistance

Can handle waste liquids with pH value of 2 to 12. It also has a high resistance to the most common chemical substances.



Smooth Inner Surface

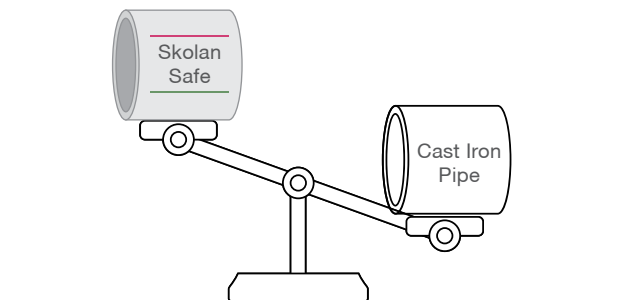
The smooth, abrasion-resistant inner layer ensures that the pipe remains free of deposits and scaling. It also improves the flow conditions of the pipe system to maintain a high drainage rate and fewer chances of blockage.

Prince-Skolan Safe V/s Multilayer PVC V/s HDPE

Material Property	Skolan Safe - PP	Multilayer PVC	HDPE
Impact Strength	2x compared to PVC	Very poor	Good impact resistance
Chemical Resistance	Exceptional chemical resistance; withstands wide range of chemicals ranging from pH 2 to pH 12	Limited chemical resistance	Good chemical resistance
Application Areas	Can be used in residential condominiums, high rises, hotels, commercial kitchens, hospitals, etc.	Can be used for only ordinary drainage applications	Can be used for only ordinary drainage applications
Suspended Application	Highly suitable	Limited suitability	Limited suitability
Acoustic Properties	Very good sound insulation	Poor sound insulation	Poor sound insulation
Installation	Easy installation with a push-fit system	Solvent-based installation	Requires a complex welding system

Issues with Cast Iron (CI) pipes

With the world rapidly moving away from CI being used in the building material industry, upgrading to Skolan Safe is an intelligent choice. Skolan Safe is **4 times lighter** than conventional cast iron pipes, saving up to **20% in transportation costs**. The lightweight material also dramatically improves safety during transportation and installation.



1. Corrosion

This is generally the first issue to take place, which is not easily visible.

2. Heavy

The massive weight can cause cracking and sinking and make pipe repair difficult.

3. Clogged and slow drains

This can lead to sewer backups, causing water damage, unsanitary conditions, pest infestations, and mould growth.

4. Expensive and messy repairs

The need to possibly remove slabs for pipe replacement makes for a costly and cumbersome process.

5. Installation challenges

It is an extremely difficult process.

Skolan Safe is the solution to all such problems. It is as sturdy as cast iron pipes but without any of the challenges that come with them!

Noises and their intensities

We are subjected to various types of sound all the time. Sound waves are the result of various compression waves that which cross the eardrum and are captured and transformed by the brain.

To propagate, a sound needs a medium: any means, whether solid, liquid or gas like air is able to transport sound, influencing its speed according to density. Sound is propagated through the exchange of air-solid vibrations.

Origin of noise in sewer piping

The fluid flowing inside sewer piping can reach a relatively high speed. Due to the flow and fluid impact on the pipe wall, air column resonance occurs especially in places like bends, branches, and vertical collecting pipes. The noise created by air column resonance has a tendency to penetrate the pipe wall and be transmitted to the building structure. The noise created by the pipe wall vibration has a similar propensity as well.

Application Area	Intensity (dB)
Watch	10 dB
Skolan Safe	12 dB
Silent environment	20 dB
Conference Halls	30 dB
Hospitals	35 dB
Class Rooms	45 dB
Living Rooms	60 dB
Average Water Pipes	55 - 60 dB
Streets	75 dB
Factories	80 dB
Motorcycle	110 dB
Motor Drill	120 dB
Ear Tolerance limit	120 - 140 dB

Upgrade to a noise-free life

Skolan Safe completely isolates airborne and structure-borne noise.

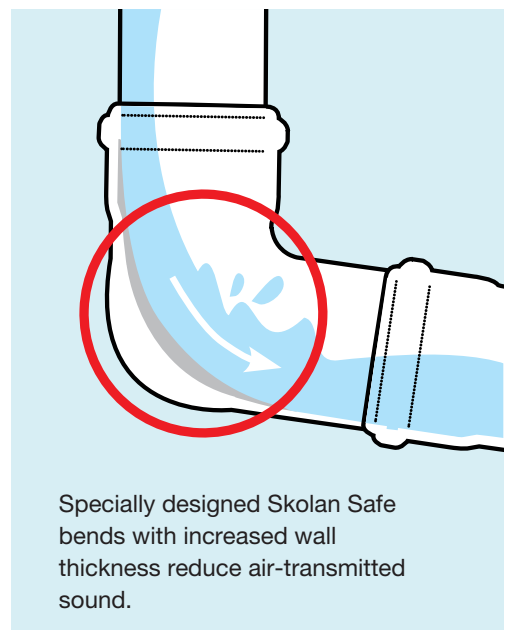
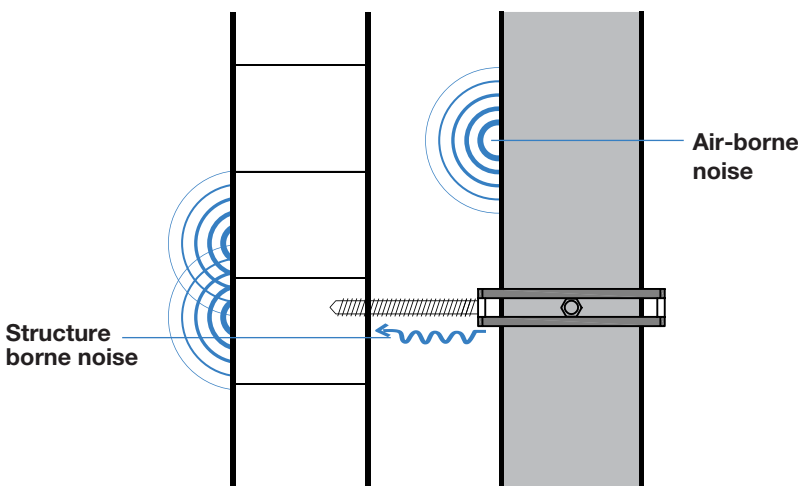
An unsuitable PVC drainage pipe system or ones using low-quality brackets generate airborne and structure-borne noise.

Airborne noise occurs if the noise of a sound source is transferred directly through the air to human ears, while structure-borne noise transfers sound through a solid body and passes the vibration to the human ears.

With Prince-Skolan Safe, experience true silence

Skolan Safe is able to effectively absorb noise right at the point of its origin – inside the pipes – and can prevent its transmission through the pipe wall, all thanks to the special molecular structure and high density of the used material.

Due to the near silent environment, it becomes possible to achieve noise values approaching the noise perception threshold. When tested, dramatically lower data were reached as required by DIN 4109, the standard regulating noise conditions on noise-protected premises in Germany. Now we bring, the same manufacturing excellence, technology, and know-how to India so that all your projects here achieve a similar level of noise insulation and quiet. With Skolan Safe, your ears will experience silence like never before!



*Origin of noise in the drainage system.

Acoustic performance

Skolan Safe has achieved Fraunhofer certification for excellent sound insulation properties attributed to its thick walls, molecular structure, and high density of 1.6 gm/cm³.

The measurements in this test were performed as per the Acoustic Performance of a Wastewater Installation System in the Laboratory according to EN 14366 and following DIN 4109.



Fraunhofer Institute for Building Physics IBP

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Your Ref.

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Our Ref.
Mo

Stuttgart, January 25, 2018

Determination of the Acoustic Performance of a Wastewater Installation System in the Laboratory according to EN 14366 and following DIN 4109. Extract from test report P-BA 2 21/2016

On October 25, 2016 the determination of the acoustic performance of a wastewater installation system was performed in the technical centre of the Fraunhofer Institute for Building Physics on a plastic wastewater installation system "Skolan Safe, SKEM DN/OD 110 x 5.3, PP" (manufacturer Ostendorf) with pipe clamps "BISMAT 1000" (manufacturer Walraven). Below measurement results are stated in extracts. Precise information about test object, test set-up and test method as well as detailed measurement results can be found in the test report P-BA 221/2016.

Result :

Test specimen: Plastic wastewater installation system " Skolan Safe, SKEM DN/OD 110 x 5.3, PP" (manufacturer Ostendorf) with pipe clamps "BISMAT 1000" (manufacturer Walraven). In each storey (EG and UG) two pipe clamps were mounted. At the upper wall area of the installation wall one "Bismat 1000" loose clamp was installed (supporting clamp SL, DN 100). At the lower wall area of the installation wall one "Bismat 1000" double clamp consisting of supporting clamp (SL, DN 100) and fixing clamp (SX, DN 100) was installed. To prevent contact to the pipe, the loose clamps and the supporting clamps were equipped with two spacers (2 x 7.5 mm, black) on each side.	Flow rate [l/s]				
	0,5	1,0	2,0	4,0	
Installation sound level $L_{A,eq,T}$ [dB(A)] following DIN 4109 in the basement test-room	UG rear	<10	<10	12	17

Fraunhofer Institute for Building Physics IBP

(Dipl.-Ing.(FH) J. Mohr)

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Fields of application



Residential Buildings

Due to its excellent sound insulating properties, which considerably reduce drain noise, Skolan Safe is an ideal choice for all kinds of residential buildings and brings a sense of great calm and comfort to living spaces.

Sound insulation level I*
≤ 30 dB (A) Family homes



Large Commercial Buildings

Skolan Safe can be installed in buildings that require great sound insulation, such as hotels, office buildings, hospitals, restaurants, libraries, educational institutions, etc.

Sound insulation level II*
≤ 27 dB (A) Apartment buildings



Commercial Kitchens

Due to its high temperature resistance, Skolan Safe is a great choice for commercial kitchens where wastewater with a high temperature is drained.

Sound insulation level III*
≤ 24 dB (A) Hotels, Hospitals, Residential Complexes

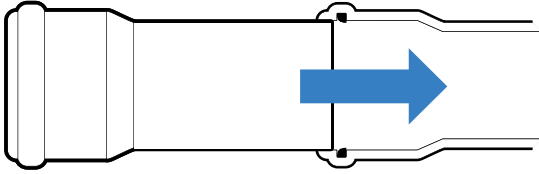


Industrial Applications

Skolan Safe is resistant to a wide variety of chemicals and can be used for the drainage of harsh chemicals, making it a great fit for the industrial building segment.

**Sound emission at 4 litre volume discharge according to measurements with Bismat 1000 (P-BA 221/2016) | As per VDI 4100 sound insulation in buildings.*

Ease of installation, efficient application

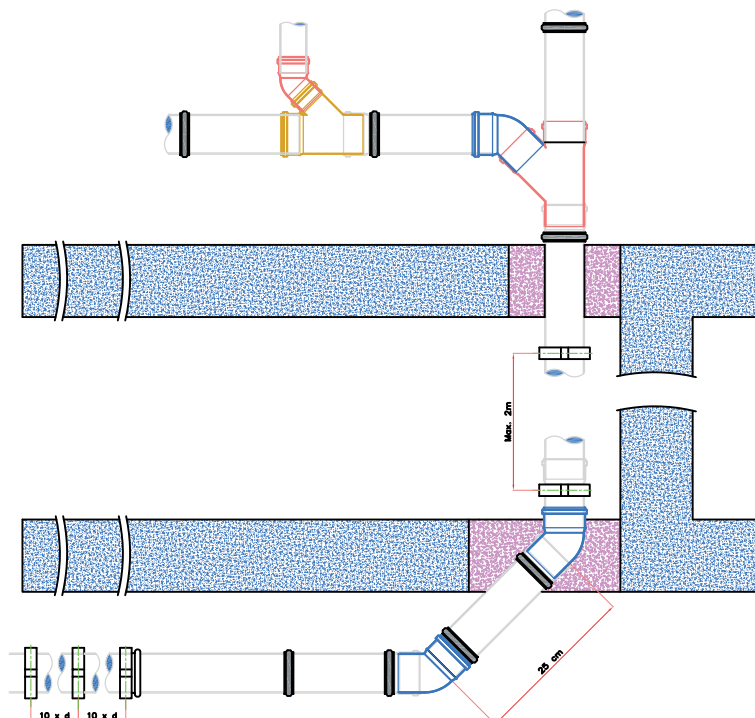


Skolan Safe uses a push-fit system with sockets and patented 3-lip seal which ensure a water tight system. The push-fit design confirm error-proof connections and considerable reduction in installation time.

Skolan Safe must be installed in such a manner that they are free of tension and that changes in length are not hindered. The product is installed using rubber-lined pipe clamps.

Pipe preparation and assembly

1. Pipes are produced in various lengths with one or two sockets and with plain, pre-beveled ends. Proper cutting tools should be used if cutting to length is needed (manual or mechanical). Bevel the cut pipe end with an angle of approximately 15° with a bevel length of about 5 mm.
2. Remove chips, shavings, and sawdust before installing.
3. Check the position and integrity of the lip seal in the socket gasket slot. Clean the seal and the socket, and apply a thin layer of lubricant around the plain pipe end.
4. Fittings should be inserted to maximum socket depth, whereas pipes, after being pushed completely into the socket, have to be pulled back approximately 10 mm.
5. For anchoring Skolan Safe to walls and ceilings, use steel brackets with rubber inserts, approved for acoustic insulation systems.
6. As a general rule, straight lengths of pipe must be anchored by means of fixed brackets (FB) under each socket, while the rest of the pipework and the fittings will be supported by sliding brackets (SB).
7. The distance between the pipe clamps in the case of horizontal piping is approximately 10 times the exterior pipe diameter.
8. In the case of vertical installation, the distance between clamps should be 1 to 2 metres, not exceeding 2 metres.
9. A fixed clamp and a loose clamp per pipe length (storey height of more than 2.50 m) are recommended for drop pipelines.



Arrangement of fixed clamps and loose clamps.

Arrangement of brackets and clamps

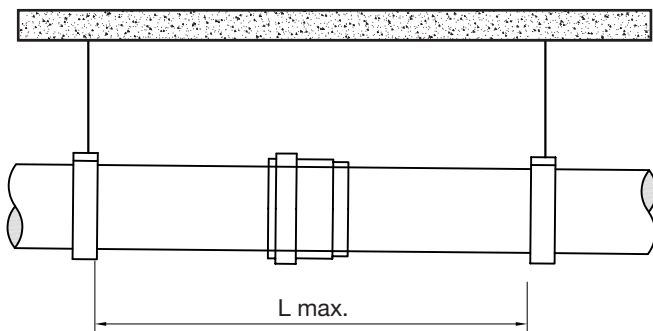
Prince-Skolan Safe can significantly reduce noise levels. However, when installing high-performance sound-insulating wastewater piping systems, it is still necessary to consider how effectively the system can be noise-isolated from all aspects of structure and airborne noise transmissions. Skolan Safe considers the wastewater discharge system as a whole, including several 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.)

- The sound dampening brackets reduce structure-borne noise transmission by decoupling the vibrations within the drainage line from the wall.
- The quick and easy push-fit installations add to the convenience. It guarantees hydraulic tightness and allows the normal movements of the pipe, including those caused by thermal expansion. It also repeats the performance of the sound dampening effect by centralizing the pipe securely and applying the exact fastening force.
- Skolan Safe, with superior, well-engineered pipes and fittings, improves the sound insulation performance through specially designed bends with optimal wall thickness that reduce the air transmitted sound even further.
- By combining these sound insulation techniques into one system, Skolan Safe is able to fulfil the best acoustic requirements and mechanical performance targets, making it the ideal solution for all types of large modern buildings.

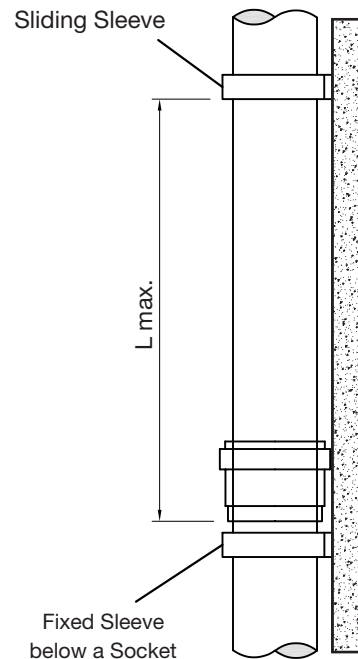
Nominal outer diameter DN/OD	Max distance between brackets	
	Horizontal (mm)	Vertical (mm)
58	750	1250
78	1125	1875
90	1350	2000
110	1500	2000
135	1625	2000
160	2000	2000
200	2150	2000

*Spacing of brackets based on diameters of pipes.

Spacing Distances



Horizontal Pipe Routing



Vertical Pipe Routing

Positioning of brackets and clamps

Any mechanical stress must be taken into account during design and assembly, so as not to affect the integrity of the system. Pipes must be fastened using brackets, placed under the socket, in order to prevent it from slipping (Fig. 1).

Skolan Safe should be installed tension-free and with free lateral allowance for temperature compensation. All fittings that involve a change in the direction of the system must be properly clamped to prevent the socket from slipping in the event of accidental excess pressure. The sound dampening brackets have a rubber-lined guiding and fixing clamp that work together effectively to decouple vibrations from the drainage stake to the fixing wall. 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 central structure.

Fixed Bracket (FB) - A fixed point (fixed bracket) that blocks that part of the system must be installed under the socket of each pipe, leaving the rest of the system free to expand. With fixed brackets, no longitudinal movement is possible and the pipe/fitting is firmly secured and cannot be moved.

Sliding Bracket (SB) - Sliding brackets allow longitudinal movement. Post installation, the pipe can be moved through the bracket, even when the clamp and screws are tightened.

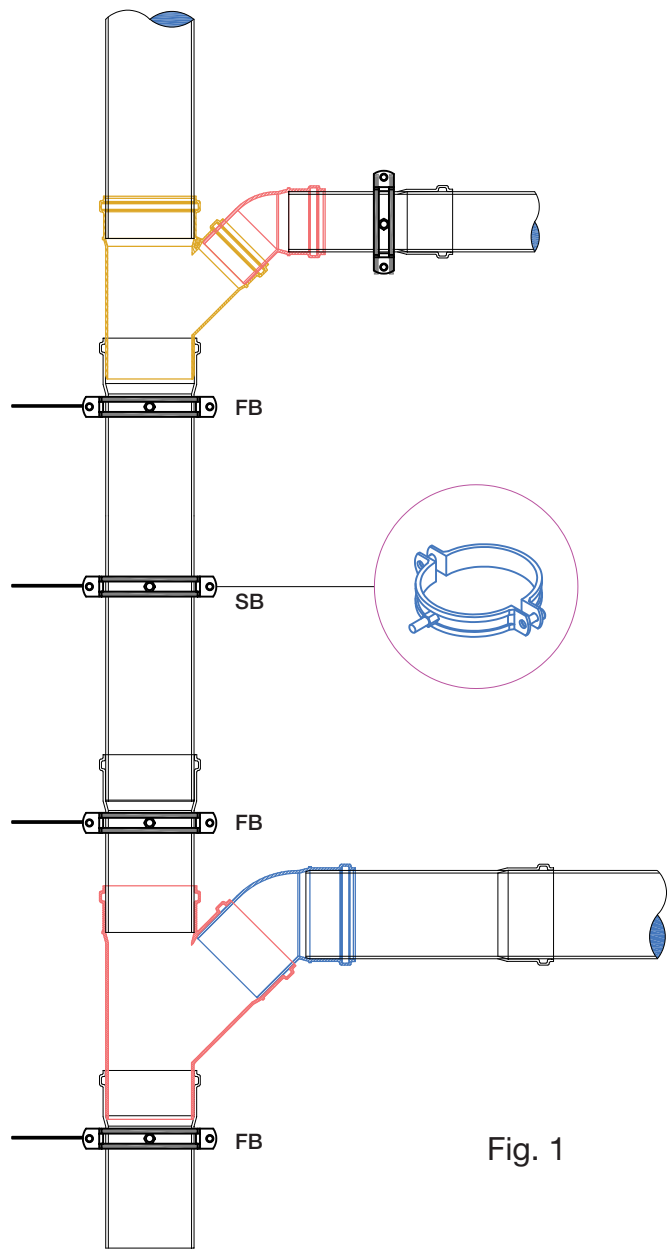


Fig. 1

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Toll Free: 1800 267 7555

Please Call between 10 am to 6 pm

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