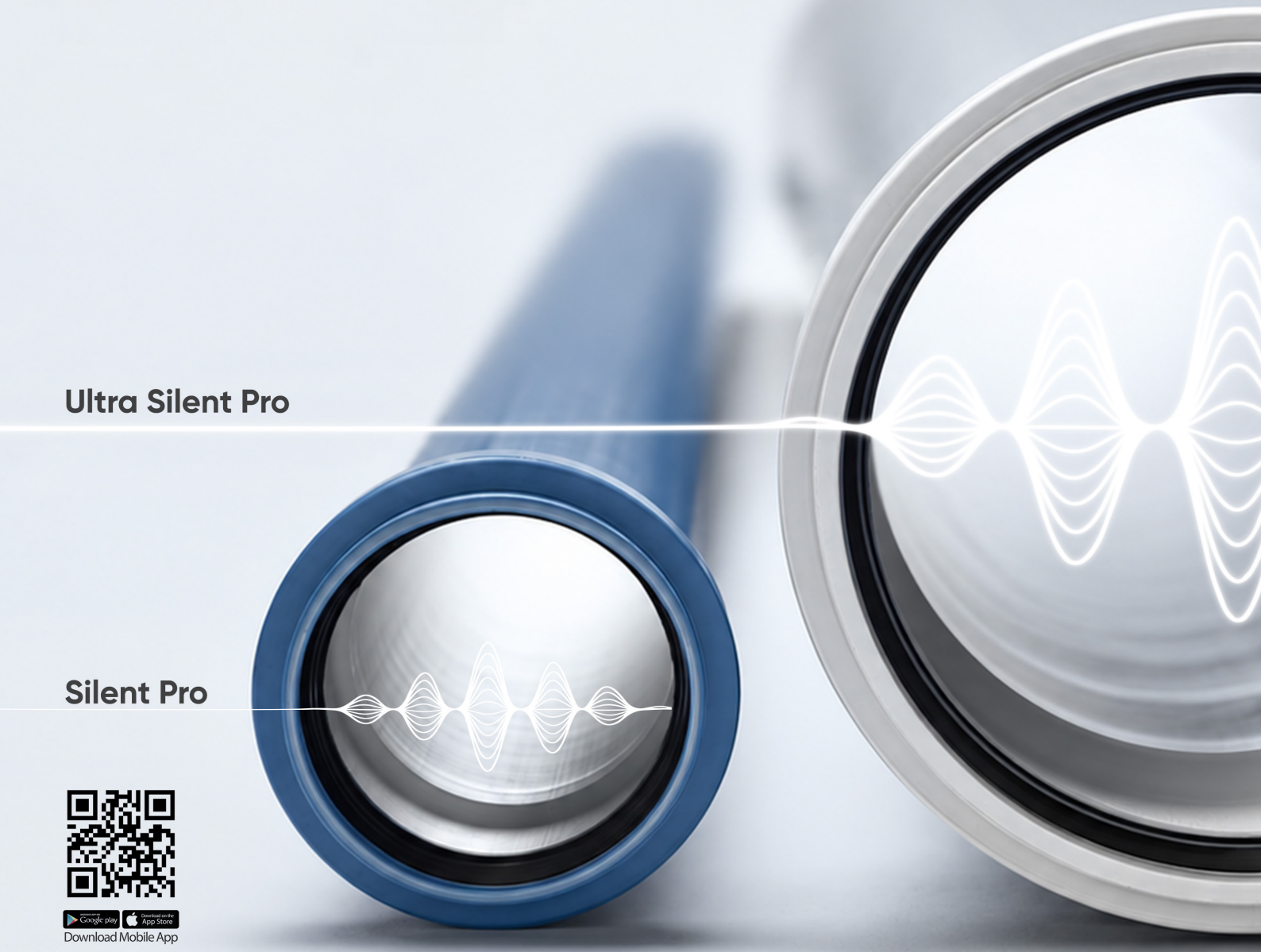
RAKtherm® GLOBAL

www.raktherm.com

Silent PRO & ULTRA Silent Pro System



Download Mobile App

Innovation is The LIFELINE The FUTURE of CONSTRUCTION

With more than six decades of experience, RAKtherm Global combines engineering, technology, and innovation to redefine piping performance.

Because tomorrow demands better solutions.

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Welcome to

RAKtherm® GLOBAL

60 YEARS OF EXCELLENCE

CHAIRMAN'S MESSAGE

For over 60 years, we have remained committed to a clear purpose: delivering innovative, reliable, and high-quality piping solutions that respond to the evolving needs of the global construction industry. Our journey has been shaped by engineering excellence, continuous innovation, and an unwavering commitment to quality, integrity, and customer trust.

At RAKtherm®, we believe that lasting success is built not only through the products we manufacture, but through the relationships and partnerships we strengthen along the way. Every solution we deliver reflects our commitment to dependable performance, long-term value, and the confidence our customers place in us.

As we look to the future, we remain focused on advancing sustainable engineering solutions, embracing new technologies, and continuously raising the standards we set for ourselves. Our ambition is not simply to grow, but to evolve responsibly while continuing to serve our customers and partners with the quality and reliability they have come to expect from RAKtherm.

On behalf of everyone at RAKtherm, I extend my sincere appreciation to our customers, partners, and stakeholders for their continued trust and support. Together, we look forward to strengthening our partnerships and building a more sustainable and connected future.

Mr. Ali Hashim

Ali Hashim

Hashim Industry Group
President



About us

RAKtherm Global, manufactured by Gulf Plastic and Converting Industries, is the flagship piping division of the renowned Hashim Industry Group, a diversified industrial conglomerate established in 1963.

With over 60 years of manufacturing excellence, RAKtherm delivers one of the industry's most comprehensive integrated piping solution portfolios. Our product range includes PP-R, PVC, PE-X, Gas piping systems, plumbing accessories, silicone sealants, solvent cements, sanitary ware systems, and RAKduct electrical wiring systems. Operating from a 40,000 m^2 state-of-the-art manufacturing complex in Ras Al Khaimah, UAE, we supply customers through an extensive network across more than 45 countries.

Manufactured using advanced production technologies and stringent quality control, RAKtherm products are certified by internationally recognized certification bodies in Germany, France, United Kingdom, and Saudi Arabia ensuring compliance with global quality and performance standards.

For more information, visit:

www.raktherm.com





Why

Low Noise Matters?



Engineered for Quiet Living

RAKtherm Silent Pro and Ultra Silent Pro drainage systems combine advanced material technology with engineered pipe and fitting design to reduce wastewater noise and vibration while maintaining efficient hydraulic performance.

Designed for residential, commercial, hospitality, healthcare, and other noise-sensitive buildings, the systems help create quieter and more comfortable indoor environments.

Understanding Drainage Noise

Noise is generally defined as any unwanted sound that affects comfort, concentration, communication, or well-being.

Wastewater drainage systems can be a significant source of indoor noise. As wastewater flows through pipes and fittings, hydraulic forces generate sound and vibration that may be transmitted into occupied spaces.

RAKtherm Silent Pro and Ultra Silent Pro has been specifically developed to minimize these unwanted sounds, providing a quieter and more comfortable indoor environment.

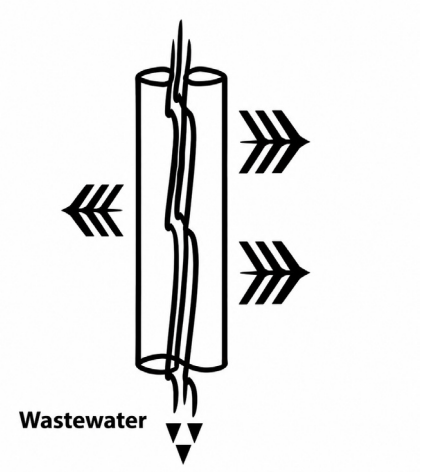
Effective acoustic drainage therefore requires control of two primary forms of noise transmission:

Airborne Noise

Sound generated by wastewater flow, turbulence,

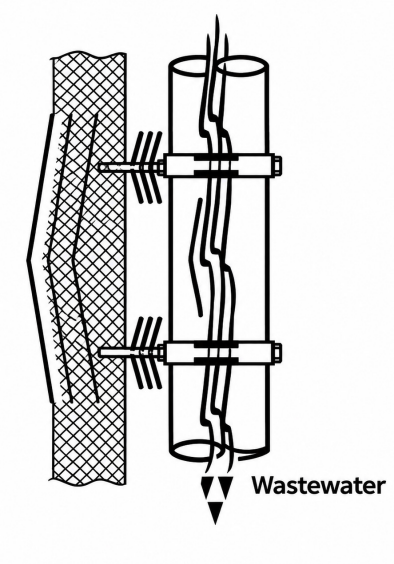
splashing, and impact within the piping system

that travels through the surrounding air.

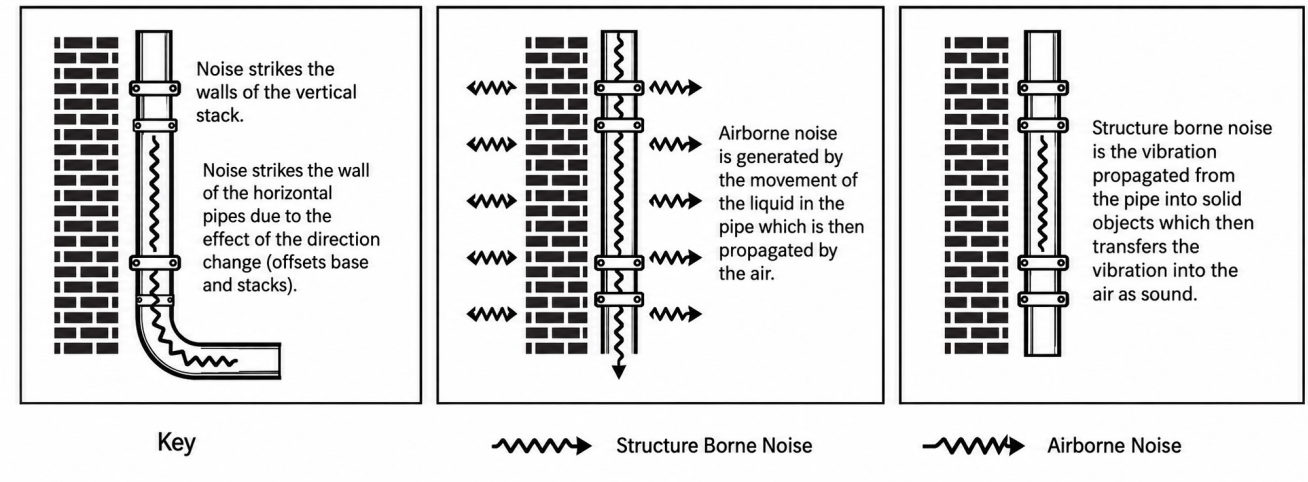


Structure-Borne Noise

Vibration transmitted from the piping system through brackets, walls, floors, ceilings, and other structural elements, where it may be re-radiated as audible sound.



Noise generated by wastewater impact and flow can travel through a drainage installation in two forms: airborne sound and structure-borne sound. Acoustic behaviour is influenced by the pipe's mass, material composition, and internal damping characteristics. Of particular importance in building drainage is the connection between the piping and the building structure, as fixing points can transmit pipe vibrations directly into structural elements. Effective sound-insulating drainage design must therefore provide for the control of both forms of noise transmission.



Sources of Drainage Noise

Noise generation and transmission are influenced by:

- Wastewater flow and velocity
- Turbulence and changes in flow direction
- Water impact within fittings
- Pipe material, mass, and density
- Internal damping characteristics
- Pipe vibration
- Fitting geometry
- Installation and support systems

Sound Levels in Everyday Life

Sound is measured on a logarithmic decibel (dB) scale. A reduction of 3 dB represents approximately a 50% reduction in sound energy, while a 10 dB reduction is generally perceived as approximately half as loud.

Typical sound levels:

Sound Source	Approximate Sound Level
RAKtherm Ultra Silent Pro drainage system*	12 dB(A), 17dB(A)
Quiet room	30 dB(A)
Normal conversation	35–40 dB(A)
Washing machine	50 dB(A)
Busy office	60 dB(A)
Car alarm	90 dB(A)

*Measured under laboratory conditions in accordance with EN 14366, depending on installation method and flow rate.

A Complete Acoustic Solution

Effective sound insulation depends on the complete drainage system—not the pipe alone. RAKtherm Silent Pro and Ultra Silent Pro combine high-density mineral-reinforced material, three-layer pipe construction, optimized fittings, and appropriate support systems to reduce both airborne and structure-borne noise.

Correct installation and acoustic pipe support are essential to achieving optimum system performance.



Acoustic Performance

Acoustic Performance Requirements

Acoustic comfort is an important consideration in modern building design. Building standards establish permissible sound levels for building services, including sanitary drainage systems, particularly in noise-sensitive spaces.

DIN 4109 Sound Insulation in Buildings

Defines minimum sound insulation requirements for building services, including sanitary drainage systems.

It applies to noise-sensitive areas such as:

- Bedrooms and living rooms
- Hotel guest rooms
- Classrooms
- Offices and meeting rooms
- Healthcare treatment rooms
- Other occupied spaces requiring acoustic comfort

VDI 4100 Enhanced Acoustic Comfort

VDI 4100 provides recommendations for enhanced acoustic comfort in residential buildings beyond the minimum requirements of DIN 4109.

The guideline defines three acoustic comfort classes, allowing designers to select the appropriate sound insulation level according to the building type and required acoustic comfort.

Acoustic Performance Levels

Acoustic Comfort Level	Multi-Storey Residential Buildings	Semi-Detached & Row Houses
Level I (Minimum Requirement)	≤ 30 dB(A)	≤ 30 dB(A)
Level II (Enhanced Comfort)	≤ 27 dB(A)	≤ 25 dB(A)
Level III (Premium Acoustic Comfort)	≤ 24 dB(A)	≤ 22 dB(A)

The values shown represent the recommended maximum sound pressure levels for building service installations, including water supply and drainage systems, between separate dwellings, in accordance with VDI 4100:2012-10 (SSt I, SSt II and SSt III).

The RAKtherm Silent Pro and Ultra Silent Pro Advantage

RAKtherm Silent Pro and Ultra Silent Pro combine advanced material technology and engineered system design to achieve superior acoustic performance through:

- Three-layer pipe construction
- High-density mineral-reinforced polypropylene (PP-MD)
- Increased pipe wall mass and vibration damping
- Optimized hydraulic fitting geometry
- Reduction of airborne and structure-borne noise

Together, these features provide effective sound insulation while maintaining hydraulic efficiency, mechanical strength, and installation reliability.

Sound Insulation Performance of RAKtherm Silent Pro and Ultra Silent Pro

Silent Pro and Ultra Silent Pro achieve its acoustic performance through the combined effect of:

- Three-layer pipe construction
- High-density mineral-reinforced polypropylene (PP-MD)
- Increased pipe wall mass
- Internal vibration damping
- Optimized fitting geometry
- Appropriate acoustic support and installation

Together, these features reduce airborne and structure-borne noise generated

during wastewater discharge.

Acoustic Testing

Acoustic performance is evaluated according to recognized standards, including:

EN 14366 – Laboratory measurement of noise from wastewater installations

DIN 4109 – Sound insulation in buildings – Minimum requirements

Laboratory measurements are conducted under controlled conditions at different wastewater flow rates:

- 0.5 l/s
- 1.0 l/s
- 2.0 l/s
- 3.0 l/s
- 4.0 l/s

These measurements determine the acoustic behaviour of the drainage system under varying flow conditions.

Real Building Performance

Actual acoustic performance depends not only on the piping system but also on installation conditions, including:

- Pipe fixing method
- Support brackets
- Building structure
- Wall and floor construction
- Installation quality
- Surrounding materials

Correct installation and appropriate acoustic supports are therefore essential to achieving optimum sound insulation performance.

Types of Noise Transmission

Airborne Noise

Airborne noise is generated when sound waves produced by flowing wastewater travel directly through the surrounding air and are heard within occupied spaces.

Typical sources include:

- Flowing wastewater
- Splashing
- Turbulence
- Water impact within fittings

Structure-Borne Noise

Structure-borne noise occurs when vibrations generated by wastewater flow are transmitted through the piping system into building elements such as walls, floors, ceilings, and structural supports. These vibrations are then re-radiated as audible sound in adjacent rooms.

Proper pipe design, optimized fittings, and suitable support brackets are essential to minimize this type of noise.

Noise Generation in Drainage Systems

As wastewater flows through a drainage system, it generates impact noise and flow noise. These hydraulic forces create vibrations within the pipe wall, which are transmitted as both airborne noise and structure-borne noise.

The level of noise generated depends on several factors, including:

- Pipe material
- Pipe mass and density
- Internal damping characteristics
- Flow velocity
- Pipe geometry and fitting design
- Installation method and support system

One of the most critical sources of noise transmission is the pipe fixing point, where vibrations can be transferred from the piping system into the building structure. If not properly controlled, these vibrations may travel through walls, floors, and ceilings before being re-emitted as audible sound in occupied spaces.

For this reason, an effective acoustic drainage system must be designed to minimize both airborne and structure-borne noise.



Technically **MANUFACTURED** for **Reliable** Performance

High Ring Stiffness

Engineered to resist deformation under external loads, maintaining dimensional stability, structural integrity, and reliable drainage performance.

Superior Acoustic Insulation

Designed to reduce airborne and structure-borne noise generated by wastewater flow for enhanced indoor acoustic comfort.

Smooth Internal Surface

A smooth internal bore minimizes friction and sediment accumulation, supporting efficient wastewater flow and reduced maintenance.

Optimized Hydraulic Performance

Engineered pipe and fitting geometry promotes efficient flow while reducing hydraulic resistance and turbulence.

High Chemical Resistance

Resistant to domestic wastewater chemicals, detergents, diluted acids, and alkalis for dependable long-term performance.

Thermal Stability

Designed to withstand elevated wastewater temperatures while maintaining dimensional stability and mechanical performance.

Leak-Tight Joint Integrity

Precision-engineered push-fit socket connections with elastomeric sealing rings provide secure, leak-tight joints while accommodating thermal movement.

Simplified Installation

Lightweight components and precision-fit joints enable efficient handling and faster installation.

Mineral-Reinforced Polypropylene (PP-MD)

High-density mineral reinforcement enhances acoustic damping, mechanical strength, and dimensional stability.

What Makes Barium Sulphate Effective for Acoustic Performance in Sound-Insulating Drainage?

The acoustic performance of a drainage pipe is strongly influenced by the mass and density of its material structure. Barium sulphate is a high-density mineral with a density of approximately 4.5 g/cm^3, compared with approximately 2.7 g/cm^3 for calcium carbonate. Its higher density allows greater mineral mass to be incorporated within the same material volume, increasing the mass of the PP-MD compound and helping to reduce the transmission of sound generated by wastewater flow.

Beyond its high density, barium sulphate is chemically inert and thermally stable under normal polypropylene processing conditions, making it well suited for mineral-reinforced PP formulations. It also has relatively low hardness compared with many other high-density mineral fillers, supporting efficient material processing. Actual tool wear may vary depending on factors such as mineral grade, particle characteristics, dispersion quality, filler concentration, and processing conditions.

When integrated into the mineral-reinforced polypropylene (PP-MD) formulation of RAKtherm Silent Pro and Ultra Silent Pro, barium sulphate contributes to the material density and acoustic damping characteristics that support effective control of airborne and structure-borne noise. Its performance forms part of the system's overall acoustic design, working together with the three-layer pipe construction, engineered fittings, and appropriate installation and support systems to achieve enhanced acoustic comfort.

ULTRA Acoustic Comfort with **RELIABLE PERFORMANCE**

SILENT PRO
ULTRA SILENT PRO



Material
Technology



Raw Materials

RAKtherm Silent Pro and Ultra Silent Pro are manufactured from a specially developed high-density mineral-reinforced polypropylene (PP-MD) compound, engineered to deliver superior acoustic performance while maintaining excellent mechanical strength and long-term durability.

The optimized mineral-filled formulation increases material density, reducing vibration and sound transmission while enhancing ring stiffness, dimensional stability, and impact resistance.

PP-MD also provide excellent resistance to corrosion, abrasion, and a wide range of chemicals commonly found in domestic and commercial wastewater. Its smooth internal surface minimize friction, scaling, and deposit build-up, ensuring efficient hydraulic flow and reduced maintenance throughout the system's service life.

Material Properties

Material: High-Density Mineral-Reinforced Polypropylene (PP-MD)

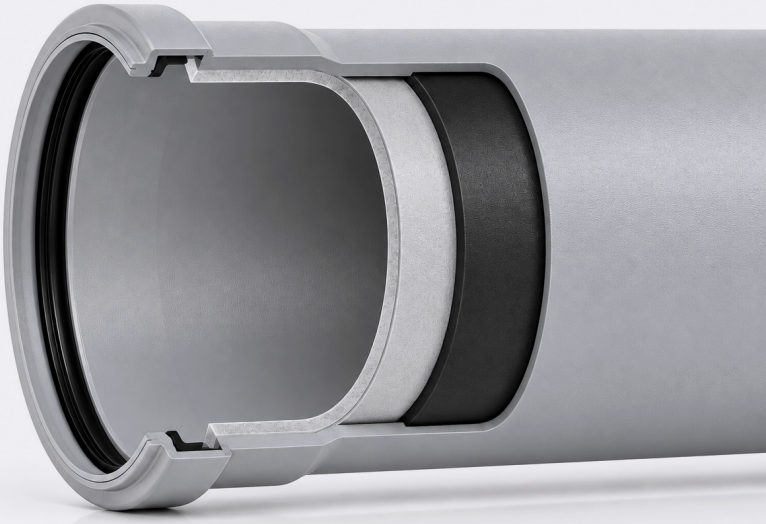
Application: Non-pressure soil, waste, and vent (SWV) drainage systems

Operating Temperature: Suitable for continuous hot and cold wastewater discharge

Key Material Characteristics:

- Superior acoustic insulation, high mechanical strength
- Excellent ring stiffness, and impact resistance
- Outstanding chemical and corrosion resistance
- Smooth internal bore for optimum hydraulic flow
- Lightweight construction
- Fully recyclable
- Long design service life

Three-Layer co-Extrusion TECHNOLOGY



Three-Layer Co-Extrusion Technology, Performance in Every Layer

RAKtherm Silent Pro and Ultra Silent Pro pipes are manufactured using advanced three-layer co-extrusion technology, where each layer is specifically engineered to deliver optimum acoustic performance, mechanical strength, and long-term durability.

The multi-layer "sandwich" construction combines carefully selected polypropylene materials with a high-density mineral-reinforced core, enabling the system to achieve outstanding noise reduction while maintaining excellent structural performance.

Both RAKtherm Silent Pro and Ultra Silent Pro feature the same three-layer wall construction, while differences in acoustic core density define their respective performance levels.

Three-Layer Pipe Construction

Outer Layer: High-Performance Polypropylene (PP) Provides mechanical protection and long-term durability.

Features

- Excellent impact resistance, High toughness
- Resistance to installation damage
- Improved UV resistance during storage, Excellent surface finish

Middle Layer: High-Density Mineral-Reinforced Polypropylene (PP-MD) Forms the structural core of the pipe, providing superior acoustic and mechanical performance.

Features

- High-density mineral-reinforced compound
- Excellent sound insulation, High ring stiffness

- Excellent dimensional stability, Superior vibration damping
- Increased structural strength

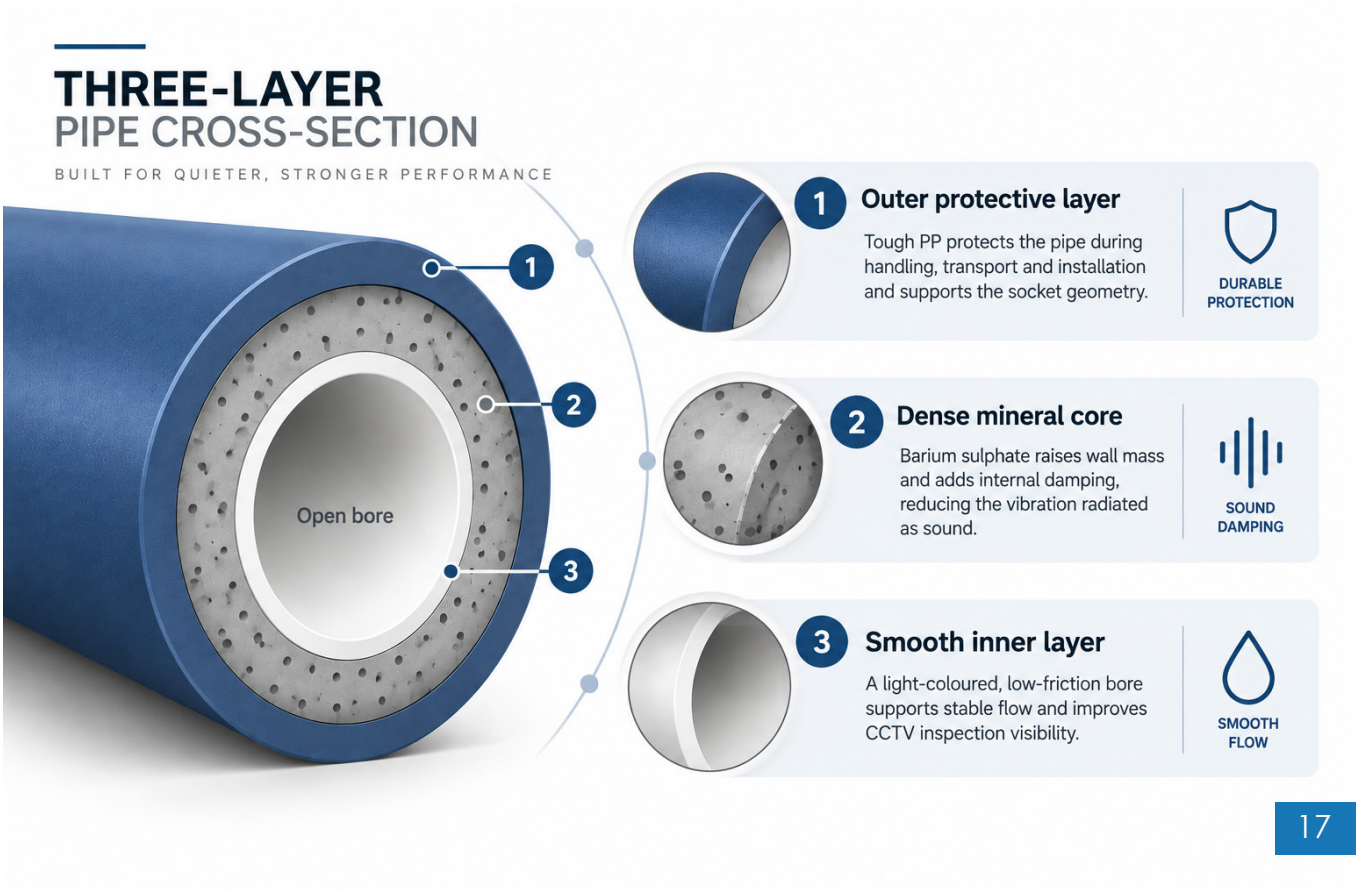
Inner Layer: Smooth Polypropylene (PP) Provides efficient hydraulic performance and long service life.

Features

- Smooth internal surface for optimum flow, Low friction coefficient
- Excellent abrasion resistance, Resistant to high wastewater temperatures
- Excellent chemical resistance
- Reduces scaling and deposit formation

Advantages of the Three-Layer Construction

- Outstanding acoustic insulation
- High mechanical strength and ring stiffness
- Superior impact resistance, Excellent dimensional stability
- Smooth, efficient wastewater flow
- Resistance to corrosion, chemicals, and abrasion
- Lightweight construction, Long service life

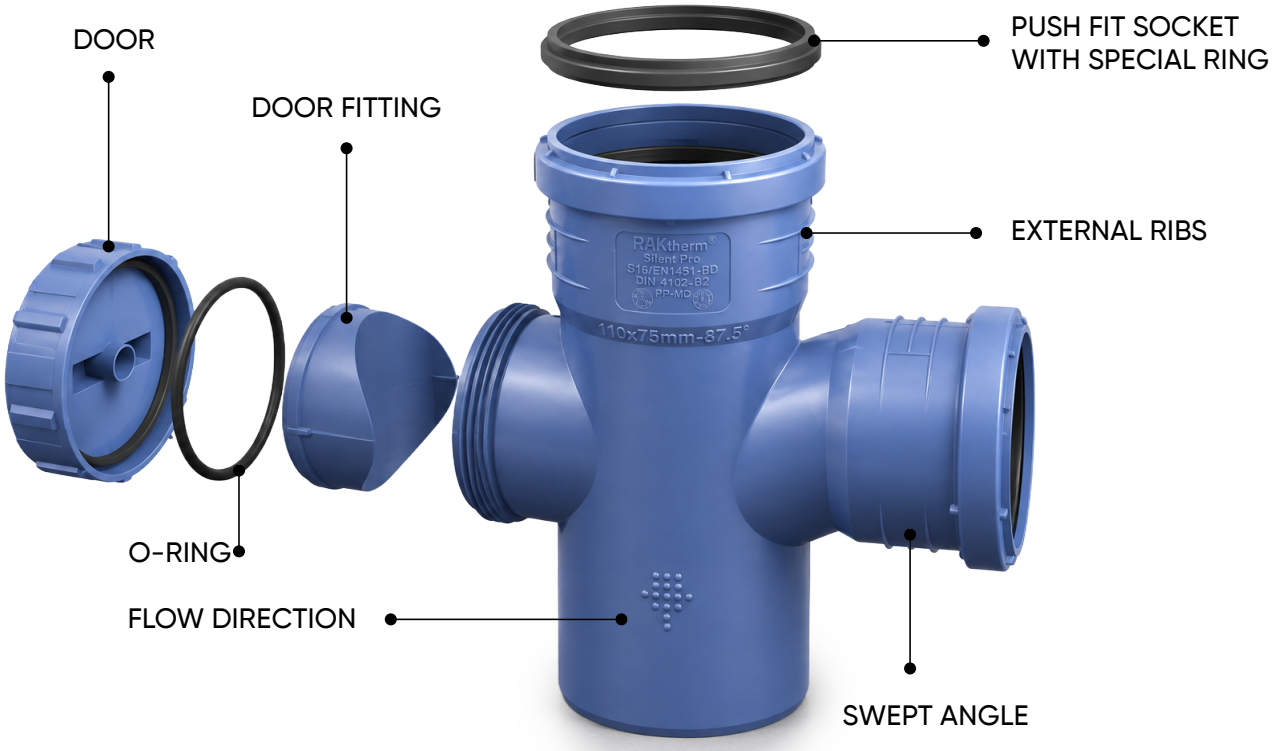




Fittings
STRUCTURE & DESIGN

RAKtherm Silent Pro and Ultra Silent Pro fittings are manufactured from high-density mineral-reinforced polypropylene (PP-MD) to provide consistent acoustic performance, mechanical strength, and dimensional compatibility throughout the drainage system.

Optimized fitting geometry minimizes turbulence and vibration at changes in flow direction, supporting efficient hydraulic performance and reduced wastewater noise.



Design Features:

Push-Fit Socket Joint

Precision-engineered push-fit sockets with elastomeric sealing rings provide fast, leak-tight assembly while accommodating thermal expansion and contraction.

Benefits

- Fast and reliable installation
- Leak-tight sealing
- Accommodation of thermal movement
- Long-term joint integrity

Socket Reinforcement Ribs

Integrated reinforcement ribs increase socket rigidity and joint stability, improving resistance to installation loads and supporting long-term mechanical performance.

Pipe Insertion Depth Mark

Insertion depth markings support correct joint assembly and help maintain the required expansion allowance for controlled thermal movement.

Access Fittings (Door Tee & Door Bend)

Door tees and door bends provide convenient access for inspection and maintenance. Their engineered internal geometry maintains a smooth flow path to minimize turbulence and associated flow noise.

Optimized Swept-Angle Design

Directional fittings incorporate smooth-radius flow paths to reduce turbulence and flow resistance, improving drainage efficiency while minimizing wastewater noise and the risk of blockage.

Complete System Solution

RAKtherm Silent Pro and Ultra Silent Pro provides an integrated drainage system comprising:

- Three-layer sound-insulating pipes
- Bends, branches, and tees
- Reducers and couplers
- Access fittings and expansion fittings
- Rubber sealing rings, Pipe clamps and support systems
- Installation accessories



Engineered **PERFORMANCE** Across Every System Component

Outstanding Acoustic Performance

The high-density mineral-reinforced polypropylene (PP-MD) core and three-layer construction reduce airborne and structure-borne noise generated by wastewater flow, providing enhanced acoustic comfort in noise-sensitive buildings.

- Tested in accordance with EN 14366
- Reduced wastewater flow noise
- Enhanced occupant comfort

Fast & Easy Installation

The precision-engineered push-fit jointing system enables fast, reliable installation without adhesives, solvent cement, or specialized tools.

- Leak-tight elastomeric sealing
- Reduced installation time
- Easy maintenance and system modification

Superior Impact Resistance

Specially formulated polypropylene layers provide excellent resistance to impact and handling damage, including under low-temperature installation conditions.

- High toughness and durability
- Increased resistance during transportation and installation
- Long service life

High Mechanical Strength

The mineral-reinforced core provides high ring stiffness and dimensional stability while maintaining lightweight construction.

- Excellent structural integrity
- High load-bearing capability
- Reliable long-term performance

Excellent Chemical Resistance

Resistant to a wide range of chemicals commonly found in domestic, commercial, and industrial wastewater.

- Resistant to acids and alkalis
- Suitable for wastewater within a pH range of 2–12
- Resistant to detergents, cleaning agents, oils, and fats
- Corrosion-free

Hot Water Resistance

Designed for hot and cold wastewater discharge while maintaining dimensional stability and mechanical performance.

- Continuous operating temperature: up to 90°C
- Intermittent discharge temperature: up to 95°C
- Low coefficient of linear thermal expansion

Environmentally Responsible

The polypropylene-based system combines recyclability with lightweight construction and long service life to support reduced material and maintenance requirements.

- Fully recyclable polypropylene material
- Lightweight construction reduces transportation requirements
- Long service life minimizes replacement
- Corrosion-free and low maintenance

Long-Term Reliability

Engineered for demanding building applications, Silent Pro and Ultra Silent Pro combine durable materials, leak-tight joints, and corrosion and abrasion resistance to maintain consistent hydraulic and acoustic performance throughout its service life.

Optimized Hydraulic Performance

The smooth internal pipe surface promotes efficient wastewater discharge by minimizing flow resistance and reducing the accumulation of deposits and sediment.

- Smooth internal surface supports efficient wastewater flow
- Reduced flow resistance and pressure losses
- Minimizes sediment and deposit accumulation
- Supports consistent drainage performance



Silent Pro & Ultra Silent Pro



The Next Level in Acoustic Drainage with Superior Sound Control

Silent Pro and Ultra Silent Pro is RAKtherm's premium sound-insulating drainage system, engineered for modern residential, commercial, healthcare, hospitality, educational, and public buildings where acoustic comfort is essential.

Manufactured from high-density mineral-reinforced polypropylene (PP-MD), the system minimizes airborne and structure-borne noise while delivering excellent mechanical strength, impact resistance, and long-term durability.

Designed for gravity drainage applications, Silent Pro and Ultra Silent Pro conveys both hot and cold wastewater in accordance with EN 12056. Pipes and fittings are manufactured to EN 1451, ensuring dimensional compatibility with standard polypropylene drainage systems.

The system includes pipes, fittings, rubber sealing rings, brackets, and installation accessories in nominal diameters from 32 mm to 200 mm, providing a complete solution for soil, waste, and vent (SWV) systems.

A precision-engineered push-fit socket joint with an elastomeric sealing ring provides fast installation, leak-tight performance, and accommodation for thermal expansion. The system is fully compatible with standard PP, PVC, and PE drainage systems, making it suitable for both new construction and refurbishment projects.

RAKtherm Silent Pro and Ultra Silent Pro is an ideal alternative to traditional cast iron drainage systems, combining excellent acoustic performance with lightweight installation and long-term durability.

Performance That Sets the Standard

- Premium acoustic performance for ultra-low noise drainage
- High-density mineral-reinforced polypropylene (PP-MD)
- Excellent airborne and structure-borne sound insulation
- High ring stiffness and mechanical strength
- Excellent impact resistance, including at low temperatures

- Lightweight for faster installation
- Leak-tight push-fit socket joint with elastomeric sealing ring
- Excellent resistance to chemicals, corrosion, and abrasion
- Smooth internal surface for optimum hydraulic flow
- Suitable for continuous hot and cold wastewater discharge
- Long service life with minimal maintenance
- Compatible with standard PP, uPVC, and PE drainage systems
- Fully recyclable





Distinct **PERFORMANCE** for Every **ACOUSTIC REQUIREMENT**

ACOUSTIC PERFORMANCE MEASURABLE COMFORT



RAKtherm Silent Pro

Balanced Acoustic Performance for Everyday Drainage

RAKtherm Silent Pro is a sound-insulating drainage system developed to provide reliable acoustic performance for everyday building applications. Its three-layer construction combines a mineral-reinforced core with durable inner and outer layers, delivering an effective balance of sound control, mechanical performance, and dependable drainage functionality.

Designed for residential and commercial environments, Silent Pro provides a practical acoustic drainage solution for apartment risers, offices, schools, retail spaces, branch connections, and other areas requiring effective everyday noise control.

The Distinct Performance Behind RAKtherm Silent Pro

Reliable acoustic performance for everyday building applications.



1. Balanced Acoustic Performance

Designed for residential and commercial drainage applications requiring effective everyday noise control.



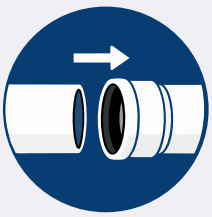
2. Three-Layer Pipe Construction

Combines a durable outer layer, mineral-reinforced core, and smooth inner layer for reliable system performance.



3. Smooth, Inspectable Bore

The light-coloured, low-friction inner surface promotes efficient flow and provides clear visibility during CCTV inspection.



4. Easy Push-Fit Jointing

Captive EPDM ring seals provide secure push-fit connections across matched pipes and fittings from DN 32 to DN 200.

Ideal Applications:

Well suited for apartment risers, offices, schools, retail spaces, branch connections, and back-of-house drainage applications.

Silent Pro

Three-Layer Co-Extrusion Technology
Performance in Every Layer



Product Range Silent Pro

PPH SILENT PRO MULTI-LAYER PIPES (Blue)



Item Code	Dimension (mm)	Thick (mm)	Weight(kg/m)
PRF-SP-32x2.0x3	32	2.0	0.350
PRF-SP-50x1.8x3	50	1.8	0.450
PRF-SP-75x1.9x3	75	1.9	0.650
PRF-SP-110x2.7x3	110	2.7	1.250
PRF-SP-160x3.9x3	160	3.9	2.650
PRF-SP-200x4.9x3	200	4.9	4.150



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO Elbow 45°	E3-SP-32	32	320
	E3-SP-50	50	60
	E3-SP-75	75	60
	E3-SP-110	110	37
	E3-SP-160	160	10
	E3-SP-200	200	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO ELBOW 87.5°	E1-SP-32	32	240
	E1-SP-50	50	60
	E1-SP-75	75	48
	E1-SP-110	110	28
	E1-SP-160	160	9
	E1-SP-200	200	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO Yee 45°	Y1-SP-32	32	120
	Y1-SP-50	50	30
	Y1-SP-75	75	24
	Y1-SP-110	110	14
	Y1-SP-160	160	4
	Y1-SP-200	200	2



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO DOOR ELBOW 87.5°	E2D-SP-75	75	40
	E2D-SP-110	110	22
	E2D-SP-160	160	8



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO Door TEE SWEPT 87.5°	T2D-SP-75	75	25
	T2D-SP-110	110	14
	T2D-SP-160	160	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO TEE SWEPT Reducer 87.50°	TR1-SP-11050	110x50	27
	TR1-SP-11075	110x75	18
	TR1-SP-160110	160x110	7
	TR1-SP-200110	200x110	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO TEE SWEPT 87.50°	T1-SP-32	32	120
	T1-SP-50	50	35
	T1-SP-75	75	24
	T1-SP-110	110	14
	T1-SP-160	160	5
	T1-SP-200	200	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO Door TEE SWEPT Reducer 87.50°	T2DR-SP-11050	110X50	14
	T2DR-SP-11075	110X75	14
	T2DR-SP-160110	160X110	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO Yee reducer 45°	YR1-SP-11050	110X50	27
	YR1-SP-11075	110X75	22
	YR1-SP-160110	160X110	8
	YR1-SP-200110	200X110	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO Yee Tree reducer 45°	YTR1-SP-160110	160X110	7



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO SOCKET	S1-SP-32	32	360
	S1-SP-50	50	120
	S1-SP-75	75	90
	S1-SP-110	110	60
	S1-SP-160	160	20
	S1-SP-200	200	10



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO REDUCER	R1-SP-5032	50X32	360
	R1-SP-7550	75X50	160
	R1-SP-11050	110X50	54
	R1-SP-11075	110X75	54
	R1-SP-160110	160X110	21
	R1-SP-200110	200X110	10
	R1-SP-200160	200X160	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO SYPHON	SY-SP-50	50	70
	SY-SP-75	75	40
	SY-SP-110	110	16



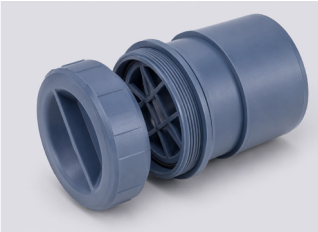
Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO ELBOW 30°	E5-SP-110	110	37



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO ELBOW 15°	E4-SP-110	110	37



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO INSPECTION SOCKET	IS2-SP-110	110	20



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO CLEAN OUT	CO-SP-50	50	120
	CO-SP-75	75	80
	CO-SP-110	110	40



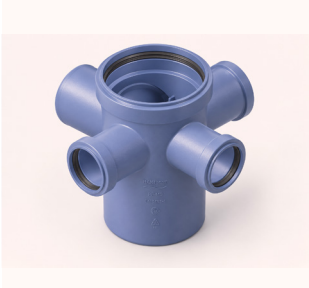
Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO TEE CROSS SWEPT	TX-SP-110	110	13
	TX-SP-160	160	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO YEE TREE	YT1-SP-110	110	8
	YT1-SP-160	160	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO CORNER TEE	CT1-SP-110	110	10



Fitting Item de-scription	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO FLOOR TRAP	FT2-SP-1107550H	110X75X50(3X) H190	18
PPH SILENT PRO FLOOR TRAP	FT2-SP-1107550S	110X75X50(3X) H165	18



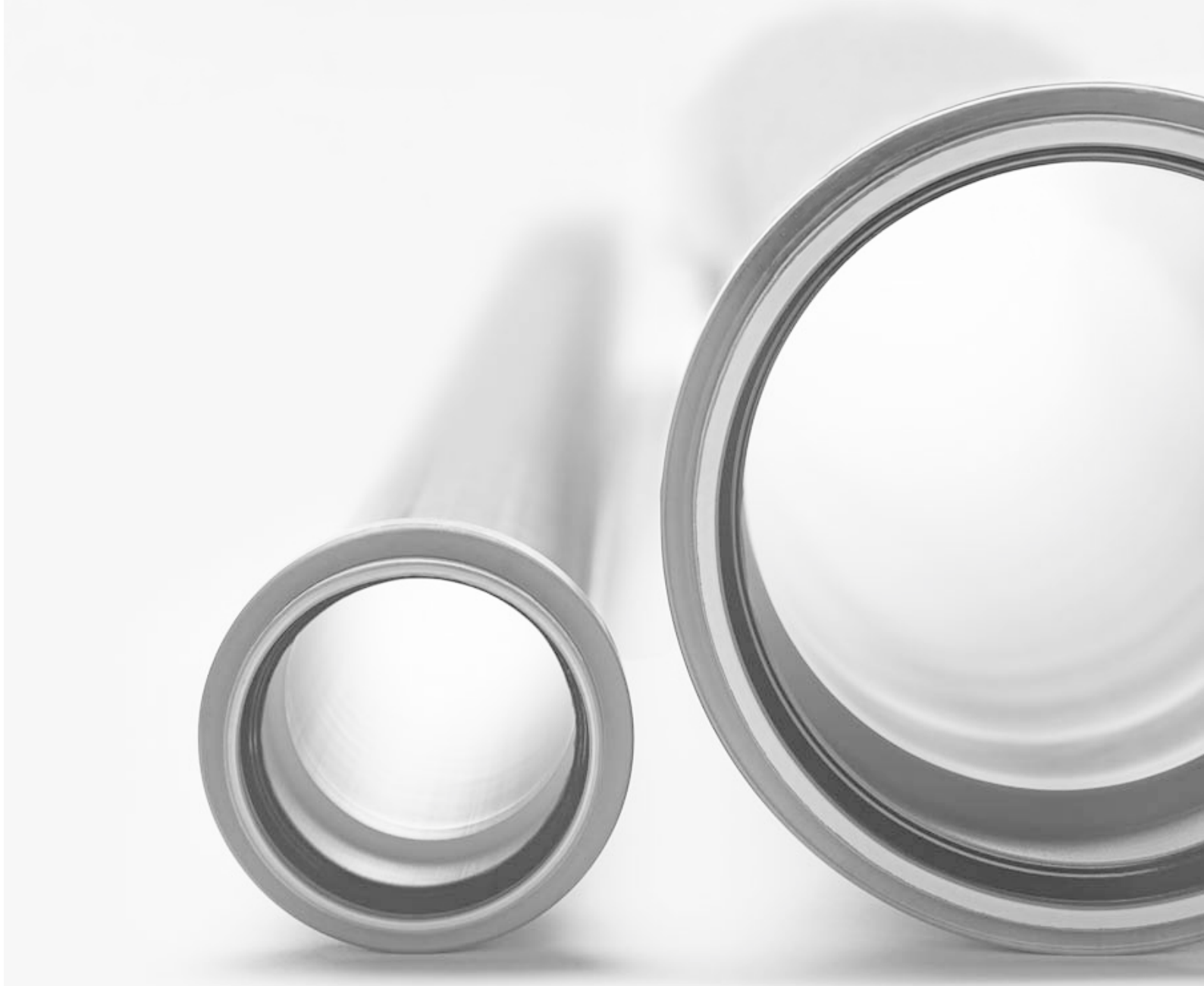
Fitting Item de-scription	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO FLOOR TRAP HIGH RISER	FT3-SP-11050H	110X50(3X)H165	20
PPH SILENT PRO FLOOR TRAP	FT3-SP-1107550S	110X75x50(3X) H165	20



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH SILENT PRO END PLUG	C1-SP-32	32	1000
	C1-SP-50	50	240
	C1-SP-75	75	200
	C1-SP-110	110	80
	C1-SP-160	160	40
	C1-SP-200	200	20

Ultra Silent Pro

Mineral-Reinforced Acoustic Core Technology
Density-Driven Sound Attenuation





Ultra Silent Pro

Enhanced Acoustic Performance for Noise-Sensitive Environments

RAKtherm Ultra Silent Pro is a high-performance sound-insulating drainage system developed for applications where enhanced acoustic control is required. Its three-layer construction incorporates a higher-density, mineral-reinforced acoustic core, increasing pipe wall mass and supporting improved control of noise generated by wastewater discharge.

Designed for acoustically sensitive environments, Ultra Silent Pro is particularly suited for hotels, hospitals, luxury residential developments, bedroom-adjacent drainage stacks, and other areas where a higher level of acoustic comfort is required.

The Distinct Performance Behind RAKtherm Ultra Silent Pro

Higher-density acoustic performance for enhanced sound control in noise-sensitive spaces.



1. **High-Density Acoustic Core**

   The 60% $BaSO_4$ core increases pipe wall mass, supporting enhanced acoustic performance.



2. **Tested Acoustic Performance**

   Laboratory sound levels of 12dB(A) and 17dB(A) under the specified test configuration.



3. **Developed for Noise-Sensitive Areas**

   Well suited for drainage stacks located near bedrooms and other spaces requiring enhanced acoustic comfort.



4. **Complete System Solution**

   Matched pipes, fittings, EPDM sealing rings, and acoustic fixing accessories provide an integrated drainage solution.

Ideal Applications:

Particularly suited for hotels, hospitals, luxury residential developments, bedroom-adjacent drainage stacks, and the base of vertical stacks.

Product Range Ultra Silent Pro

PPH ULTRA SILENT PRO MULTI-LAYER PIPES (Grey)



Item Code	Dimension (mm)	Thick (mm)	Weight(kg/m)
PRF-USP-50x4.0x3	50	4.0	1.100
PRF-USP-75x4.5x3	75	4.5	1.850
PRF-USP-110x5.3x3	110	5.3	3.150
PRF-USP-160x5.3x3	160	5.3	4.650
PRF-USP-200x6.2x3	200	6.2	6.750
PRF-USP-200x7.1x3	200	7.1	7.750



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO ELBOW 45°	E3-USP-50	50	60
	E3-USP-75	75	60
	E3-USP-110	110	37
	E3-USP-160	160	10
	E3-USP-200	200	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO ELBOW 87.5°	E1-USP-50	50	60
	E1-USP-75	75	48
	E1-USP-110	110	28
	E1-USP-160	160	9
	E1-USP-200	200	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO Yee 45°	Y1-USP-50	50	30
	Y1-USP-75	75	24
	Y1-USP-110	110	14
	Y1-USP-160	160	4
	Y1-USP-200	200	2



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO DOOR ELBOW 87.5°	E2D-USP-75	75	40
	E2D-USP-110	110	22
	E2D-USP-160	160	8



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO TEE SWEPT 87.5°	T1-USP-50	50	35
	T1-USP-75	75	24
	T1-USP-110	110	14
	T1-USP-160	160	5
	T1-USP-200	200	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO DOOR TEE SWEPT 87.5°	T2D-USP-75	75	25
	T2D-USP-110	110	14
	T2D-USP-160	160	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO TEE SWEPT Reducer 87.5°	TR1-USP-11050	110x50	27
	TR1-USP-11075	110x75	18
	TR1-USP-160110	160x110	7
	TR1-USP-200110	200x110	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO TEE SWEPT 87.5°	T2DR-USP-11050	110x50	14
	T2DR-USP-11075	110x75	14
	T2DR-USP-160110	160x110	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO YEE REDUCER 45°	YR1-USP-11050	110X50	27
	YR1-USP-11075	110X75	22
	YR1-USP-160110	160X110	8
	YR1-USP-200110	200X110	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO YEE TREE REDUCER 45°	YTR1-USP-160110	160X110	7



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO SOCKET	CS-USP-50	50	120
	CS-USP-75	75	90
	CS-USP-110	110	60
	CS-USP-160	160	20
	CS-USP-200	200	10



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO REDUCER	R1-USP-7550	75X50	160
	R1-USP-11050	110X50	54
	R1-USP-11075	110X75	54
	R1-USP-160110	160X110	21
	R1-USP-200110	200X110	10
	R1-USP-200160	200X160	5



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO SYPHON	SY-USP-50	50	70
	SY-USP-75	75	40
	SY-USP-110	110	16



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO ELBOW 30°	E5-USP-110	110	37



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO ELBOW 15°	E4-USP-110	110	37



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO INSPECTION SOCKET	IS2-USP-110	110	20



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO CLEAN OUT	CO-USP-50	50	120
	CO-USP-75	75	80
	CO-USP-110	110	40



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO TEE CROSS SWEPT	TX-USP-110	110	13
	TX-USP-160	160	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO Tee cross Reducer	TXR-USP-160110	160x110	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO YEE TREE	YT1-USP-110	110	8
	YT1-USP-160	160	4



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO CORNER TEE	CT1-USP-110	110	10



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO FLOOR TRAP	FT2-USP-1107550H	110X75X50(3X) H190	18
PPH ULTRA SILENT PRO FLOOR TRAP	FT2-USP-1107550S	110X75X50(3X) H165	18



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO FLOOR TRAP HIGH RISER	FT3-USP-11050H	110X50(3X) H190	20



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO FLOOR TRAP HIGH RISER	FT3-USP-1107550S	110X75X50(3X) H165	20



Fitting Item description	Item Code	Size (mm)	Std.Qty/ Carton (pcs)
PPH ULTRA SILENT PRO END PLUG	C1-USP-50	50	240
	C1-USP-75	75	200
	C1-USP-110	110	80
	C1-USP-160	160	40
	C1-USP-200	200	20



Two Acoustic **SOLUTIONS,** Engineered for **DIFFERENT PERFORMANCE** Requirements

RAKtherm Silent Pro and Ultra Silent Pro are engineered around the same reliable drainage-system principles, while offering two distinct levels of acoustic performance. This allows designers and specifiers to select the appropriate system according to the acoustic requirements, building type, and application conditions of each project.

	SILENT PRO	ULTRA SILENT PRO
POSITIONING	Standard acoustic - balanced choice	Maximum acoustic - premium choice
CORE COMPOUND	PP reinforced with 40% barium sulphate	PP reinforced with 60% barium sulphate
COMPOUND DENSITY	1.35-1.40 g/cm^3	1.75-1.80 g/cm^3
RELATIVE WALL MASS	Reference system	Higher; final value depends on wall geometry
DECLARED SOUND LEVEL	Refer to current test report	12 dB(A) and 17 dB(A)
WALL CONSTRUCTION	Three-layer PP with mineral-reinforced core and light-coloured smooth bore	Three-layer PP with mineral-reinforced core and light-coloured smooth bore
SIZE RANGE	DN 32-200	DN 50-200
JOINTING	Push-fit socket with captive EPDM seal ring to EN 681-1	Push-fit socket with captive EPDM seal ring to EN 681-1
TYPICAL APPLICATION	Apartments, offices, retail and general commercial projects	Hotels, hospitals, laboratories, studios, luxury residential and high-risk stack locations

Enhanced Acoustic Performance Where It Matters

The heavier core of RAKtherm Ultra Silent Pro supports enhanced acoustic performance, making it particularly suitable for noise-sensitive spaces and applications requiring a higher level of drainage noise control.

Technical Note:

Acoustic performance is determined through laboratory testing in accordance with EN 14366 under the conditions specified in the applicable test report. Actual installed sound levels may vary depending on wastewater flow rate, wall construction, pipe fixing and support systems, and installation conditions.



The **RIGHT SYSTEM** for the **RIGHT APPLICATION**

Both Silent Pro and Ultra Silent Pro can be specified within the same project. Ultra Silent Pro is suited to areas with greater acoustic demands, while Silent Pro can be used for standard acoustic requirements, subject to the project's specified performance criteria.

BUILDING TYPE / LOCATION	RECOMMENDED	REASON
Hotels and serviced apartments	ULTRA SILENT PRO	Guest rooms often adjoin risers; complaints carry direct commercial cost
Hospitals, clinics and laboratories	ULTRA SILENT PRO	Enhanced targets and night-time occupancy
Stacks adjacent to bedrooms	ULTRA SILENT PRO	Highest-risk location in many residential layouts
Base of stack and first horizontal run	ULTRA SILENT PRO	Typically the loudest hydraulic zone
Luxury and branded residential	ULTRA SILENT PRO	Acoustic comfort is part of the product promise
Apartment buildings - general risers	SILENT PRO	Balanced performance and installed cost
Offices and commercial fit-out	SILENT PRO	Daytime occupancy and higher background noise
Schools and universities	SILENT PRO	Confirm against the project room criteria
Retail, warehousing and back-of-house	SILENT PRO	Lower acoustic exposure; cost efficiency governs
Branch and waste connections	SILENT PRO	Short runs, lower flow and limited radiating area

Combining Both Systems

Where socket geometry, sealing design, and installation requirements are confirmed to be compatible, Ultra Silent Pro may be specified for the riser and stack base, while Silent Pro can be used for branch connections and areas with lower acoustic requirements. The project submittal should clearly define all system transition points and the performance criteria on which the system selection is based.



The Value Behind the Systems

Performance That Benefits Every Stakeholder

For Consultants: Confidence in Every Specification

- Aligned with the EN 1451-1 product framework and EN 14366 acoustic testing methodology
- Complete system range covering DN 32–200
- Two acoustic performance tiers within a unified specification approach
- Coordinated pipes, fittings, sealing components, and acoustic fixing systems
- Clear technical submittal documentation supported by installation guidance

For Developers: Acoustic Performance with Project Value

- Acoustic comfort integrated into the drainage system design
- Reduced potential for noise-related concerns after project handover
- Supports the acoustic requirements of premium and branded developments
- Reliable installation from the outset, helping minimize remedial work
- Supported by regional manufacturing and dedicated technical expertise

For Contractors: Installation Efficiency with System Reliability

- Lightweight construction enables easier handling compared with cast iron
- Push-fit jointing eliminates the need for solvent cement or hot-work installation
- Simple cutting, chamfering, and assembly using standard site tools
- Consistent jointing method across both Silent Pro and Ultra Silent Pro systems
- Supported by technical training, site guidance, and installation instructions

For Distributors: Complete System Range with Supply Confidence

- Two clearly defined acoustic performance levels to address different project requirements
- Common size range supports simpler and more efficient stock planning
- Supports acoustic requirements specified in GCC project tenders
- Backed by UAE-based manufacturing and technical support
- Complete system supply covering pipes, fittings, clamps, and sealing components

ULTRA Acoustic Comfort with **RELIABLE PERFORMANCE**

ULTRA SILENT PRO
SILENT PRO





Built-In **RESISTANCE** to **CHEMICAL EXPOSURE**

RAKtherm Silent Pro and Ultra Silent Pro are manufactured from mineral-reinforced polypropylene (PP-MD), providing excellent resistance to a broad range of substances commonly encountered in domestic, commercial, and industrial wastewater.

The material is resistant to:

- Domestic and industrial wastewater
- Acids and alkalis
- Salts
- Detergents and cleaning agents
- Oils and fats
- Most chemicals within a pH range of 2–12

Chemical resistance contributes to long-term system integrity by protecting the piping material against corrosion and chemical degradation.

Important Notice

Chemical resistance depends on operating conditions, including chemical concentration, temperature, exposure duration, internal pressure, and mechanical loading.

Simultaneous chemical exposure and mechanical stress may affect the long-term performance of thermoplastic materials. For aggressive chemicals, unusual combinations, or critical operating conditions, material compatibility shall be verified through application-specific testing or consultation with the RAKtherm Technical Department before installation.

Chemical Resistance Chart

RAKtherm Silent Pro & Ultra Silent Pro Pipes and Fittings

The following chart provide general guidance on the chemical compatibility of

RAKtherm polypropylene (PPH) pipes and fittings under the specified concentration and temperature conditions.

The values are intended as a reference only. Actual performance may vary depending on chemical concentration, temperature, exposure conditions, chemical combinations, mechanical stresses, and installation conditions.

For critical applications, material suitability should be verified through practical testing or consultation with the RAKtherm Technical Department.

Chemical	Concentration (%)	Temperature (°C)	Resistance Classification
2-Propen-1-ol	96	20	r
2-Propen-1-ol	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
Acetic Acid, Aqueous	Up to 25	60	r
Acetic Acid, Aqueous	25–60	60	r
Acetic Acid, Aqueous	80	40	r
Acetic Acid, Concentrated	95	40	–
Acetic Anhydride	100	20	r
Acetic Anhydride	100	40	cr
Acetic Anhydride	100	60	cr
Acetone	100	20	r
Acetone	100	60	r
Acetone, Aqueous Traces	–	20	r
Acronal Dispersions	Commercially Available	20	–
Acronal Solutions	Commercially Available	20	–

Acrylic Acid Ethyl Ester	100	20	–
Adipic Acid, Aqueous	Saturated	20	r
Adipic Acid, Aqueous	Saturated	60	–
Aluminium Chloride	Diluted	40	r
Aluminium Chloride	Diluted	60	r
Aluminium Chloride	Saturated	60	r

Table Legend

Symbol	Meaning
r	Resistant
cr	Conditionally resistant
nr	Not resistant
–	Not tested

Material: Polypropylene Homopolymer / Mineral Filled Polypropylene (PPH)

Chemical Resistance Chart

RAKtherm Silent Pro & Ultra Silent Pro – PPH Pipes and Fittings

Chemical	Concentration (%)	Temp (°C)	Resistance Classification
Citric Acid, Aqueous	Up to 10	40	r
Citric Acid, Aqueous	Up to 10	60	r
Citric Acid, Aqueous	Saturated	60	r
Clophene	Commercially available	20	–
Clophene	Commercially available	60	–
Coconut Fat Alcohol	100	20	r
Coconut Fat Alcohol	100	60	cr
Copper Fluoride, Aqueous	2	50	r
Copper Sulfate, Aqueous	Diluted	40	r
Copper Sulfate, Aqueous	Diluted	60	r
Copper Sulfate, Aqueous	Saturated	60	r
Cresol, Aqueous	Up to 90	45	–
Crotonaldehyde	100	20	r
Cyclohexanol	100	20	r
Cyclohexanone	100	20	r

Densodrin W	Commercially available	60	–
Dextrin, Aqueous	Saturated	20	r
Dextrin, Aqueous	18	60	r
Diethyl Ether	100	20	cr
Diglycolic Acid, Aqueous	30	60	r
Diglycolic Acid, Aqueous	Saturated	20	r
Dimethyl Sulfate, Aqueous	Up to 50	20	r
Dimethyl Sulfate, Aqueous	Up to 50	40	r
Dimethyl Sulfate	100	40	–
Dimethyl Sulfate	100	60	–
Dimethylamine, Liquid	100	30	–
Disulfuric Acid	10	20	nr
Ethanol (Fermentation Mash)	Common	40	r
Ethanol (Fermentation Mash)	Common	60	–
Ethanol, Aqueous	Any	20	r
Ethanol, Aqueous	96	60	r
Ethanol, Denatured (with 2% Toluene)	96	20	cr
Ethanol + Acetic Acid (Fermentation Mash)	Common	20	r
Ethyl Acetate	100	20	cr
Ethyl Acetate	100	60	nr
Ethylene Chloride	100	20	nr
Ethylene Oxide, Liquid	100	20	–
Exhaust Gas with COH	Any	60	r
Exhaust Gas with HF Traces	Any	60	r
Exhaust Gas with NOx Traces	Any	60	r
Exhaust Gas with Higher NOx	Higher	60	–
Exhaust Gas with HCl	Any	60	r
Exhaust Gas with SO_2	Lower	60	r
Fatty Acids	100	60	cr
Ferric Chloride, Aqueous	Up to 10	40	r
Ferric Chloride, Aqueous	Up to 10	60	r
Ferric Chloride, Aqueous	Saturated	60	r
Fertilizer Salts, Aqueous	Up to 10	40	r
Fertilizer Salts, Aqueous	Up to 10	60	r
Fertilizer Salts, Aqueous	Saturated	60	r
Fluorosilicic Acid, Aqueous	Up to 32	60	–
Formaldehyde, Aqueous	Diluted	40	r
Formaldehyde, Aqueous	Diluted	60	r
Formaldehyde	40	30	r

Formic Acid	100	20	r
Formic Acid	100	60	cr
Formic Acid, Aqueous	Up to 50	40	r
Formic Acid, Aqueous	50	60	r
Frigen	100	20	cr
Fruit Pulp	Commercial Concentration	20	r
Glucose, Aqueous	Saturated	20	r
Glucose, Aqueous	Saturated	60	r
Glycerine, Aqueous	Any	60	r
Glycine, Aqueous	10	40	r
Glycol, Aqueous	Commercially available	60	r
Glycolic Acid, Aqueous	37	20	r
Hexanetriol	Commercially available	60	r
Hydrobromic Acid, Aqueous	Up to 10	40	r
Hydrobromic Acid, Aqueous	Up to 10	60	r
Hydrobromic Acid, Aqueous	48	60	r
Hydrochloric Acid, Aqueous	Up to 30	40	r
Hydrochloric Acid, Aqueous	Up to 30	60	r
Hydrochloric Acid, Aqueous	Over 30	20	r
Hydrochloric Acid, Aqueous	Over 30	60	r
Hydrofluoric Acid, Aqueous	Up to 40	20	r
Hydrofluoric Acid, Aqueous	40	60	r
Hydrofluoric Acid, Aqueous	60	20	r
Hydrofluoric Acid, Aqueous	70	20	r
Hydrogen	100	60	r
Hydrogen Peroxide, Aqueous	Up to 30	20	r
Hydrogen Peroxide, Aqueous	Up to 20	50	r
Hydrogen Phosphide	100	20	–
Hydrogen Sulfide, Dry	100	60	r
Hydrogen Sulfide, Aqueous	Saturated	40	r
Hydrogen Sulfide, Aqueous	Saturated	60	r
Hydrosulfite, Aqueous	Up to 10	40	r
Hydrosulfite, Aqueous	Up to 10	60	r
Hydroxylamine Sulfate, Aqueous	Up to 12	35	r
Lactic Acid, Aqueous	Up to 10	40	r
Lactic Acid, Aqueous	Up to 10	60	r
Lactic Acid	90	60	r

Table Legend

Symbol	Meaning
r	Resistant
cr	Conditionally resistant
nr	Not resistant
–	Not tested

Material: Polypropylene Homopolymer / Mineral Filled Polypropylene (PPH)

Rubber Sealing Rings

The sealing rings used in RAKtherm Silent Pro & Ultra Silent Pro systems generally provide good chemical resistance. However, certain substances may cause swelling or deterioration of the sealing material, including:

❖ Esters	❖ Aromatic hydrocarbons
❖ Ketones	❖ Chlorinated hydrocarbons

Where chemical exposure is uncertain, compatibility of the pipe, fittings, and sealing ring material should be verified through system testing or laboratory evaluation.

Technical Specifications

Technical Data

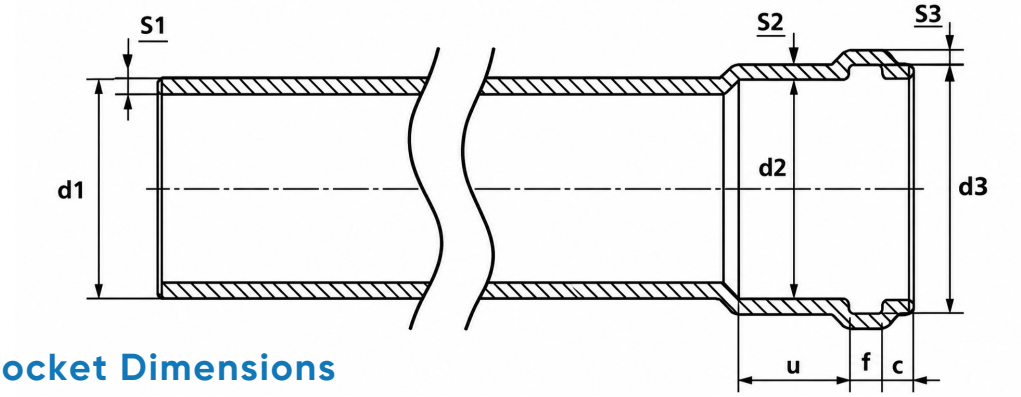
Property	Unit	Value
Material	–	Pipe: PP / PP Mineral Filled / PP (Triple-Layer)
		Fittings: Mineral Filled PP
		EPDM ring seal
Colour	–	Silent Pro: Blue; Ultra Silent Pro: Light Grey
Area of Application	–	Above-ground building drainage systems
Connections	–	Push-fit sockets with factory-installed special rubber ring seals
Density	g/cm³	Silent Pro 1.35–1.40 g/cm³ , Ultra Silent Pro 1.75–1.80 g/cm³
Elongation at Break	%	50
Tensile Strength	MPa	20
Modulus of Elasticity (Single-Layer)	MPa	3,800

Modulus of Elasticity (Triple-Layer)	MPa	1,500
Coefficient of Linear Thermal Expansion	mm/m•K	0.09
Ring Stiffness	kN/m²	Refer to system-specific and pipe-size-specific test
Fire Classification	–	EN 13501-1: Class D-s2, d0
		DIN 4102: Class B2 (Normally Ignitable / Normal Fire Behaviour)
Melt Flow Rate (MFR)	g/10 min	2.1
Application Environment	–	Wastewater with pH 2–12
Operating Temperature	–	Up to 95°C (203°F) intermittent or 90°C (194°F) continuous operation
Pipe Marking	–	Product name, nominal diameter, production year, quality mark, approval, material designation, control mark, and fire classification
Service Life	–	50 years

Note: Ring Stiffness: Ring stiffness values vary according to the piping system, nominal diameter, and pipe wall thickness. The applicable values for RAKtherm Silent Pro and Ultra Silent Pro shall be specified separately based on verified product test data.

Pipe & Socket Dimensions

Nominal Size DN	System	Outside Diameter d_1 (mm)	Pipe Wall Thickness e (mm)
50	Ultra Silent Pro	50	4
75	Ultra Silent Pro	75	4.5
110	Ultra Silent Pro	110	5.3
160	Ultra Silent Pro	160	5.3
200	Ultra Silent Pro	200	6.2
200	Ultra Silent Pro (Heavy Duty)	200	7.1
32	Silent Pro	32	2
50	Silent Pro	50	1.8
75	Silent Pro	75	1.9
110	Silent Pro	110	2.7
160	Silent Pro	160	3.9
200	Silent Pro	200	4.9



Pipe & Socket Dimensions

Nominal Size DN (mm)	System	Pipe Outside Diameter d1 (mm)	Pipe Wall Thickness e (mm)	Socket Wall Thickness s2 (min.)	Ring Groove Thickness s3 (min.)	Socket Inside Diameter d2 (min.)	Ring Groove Diameter d3	Socket Neck Length	Ring Groove Length f (max.)	Length Beyond Ring Groove u (min.)
32	Silent Pro	32.0 ± 0.3	2	1.6	1	32.3	38.8	7	6.8	30
50	Silent Pro	50.0 ± 0.3	1.8	1.6	1	50.3	59.6	8	7.8	33
75	Silent Pro	75.0 ± 0.3	1.9	1.7	1.1	75.4	84.5	8	7.8	36
110	Silent Pro	110.0 ± 0.4	2.7	2.4	1.5	110.4	120.6	9	9.1	43
160	Silent Pro	160.0 ± 0.5	3.9	3.5	2.2	160.5	174.3	12	11.7	48
200	Silent Pro	200.0 ± 0.6	4.9	4.4	2.7	200.6	216.2	16	13	56

Nominal Size DN (mm)	System	Pipe Outside Diameter d1 (mm)	Pipe Wall Thickness e (mm)	Socket Wall Thickness s2 (min.)	Ring Groove Thickness s3 (min.)	Socket Inside Diameter d2 (min.)	Ring Groove Diameter d3	Socket Neck Length	Ring Groove Length f (max.)	Length Beyond Ring Groove u (min.)
50	Ultra Silent Pro	50.0 ± 0.3	4	3.7	2.4	50.3	59.6	9	7.8	33
75	Ultra Silent Pro	75.0 ± 0.3	4.5	4.1	3.5	75.4	84.5	10	7.8	36
110	Ultra Silent Pro	110.0 ± 0.4	5.3	5	4.5	110.4	120.6	11	9.1	43
160	Ultra Silent Pro	160.0 ± 0.5	5.3	5.1	4.6	160.5	174.3	14	11.7	48
200	Ultra Silent Pro	200.0 ± 0.6	6.2	5.6	4.7	200.6	216.2	17.5	13	56
200	Ultra Silent Pro (Heavy Duty)	200.0 ± 0.6	7.1	6.3	5.4	200.6	216.2	18	13	56

Notes

- All dimensions are in millimetres (mm).
- d_1 = Nominal outside diameter
- e = Nominal wall thickness
- Socket dimensions, tolerances, and rubber seal groove dimensions shall conform to approved RAKtherm manufacturing drawings and applicable product standards.



System
Applications

Fields of Application

RAKtherm Silent Pro and Ultra Silent Pro are designed for non-pressure (gravity) soil, waste, and vent (SWV) drainage systems within residential, commercial, healthcare, hospitality, educational, industrial, and public buildings.

The system is suitable for above-ground sanitary drainage applications, manufactured in accordance with EN 1451 and intended for installation in accordance with EN 12056 – Gravity Drainage Systems Inside Buildings. Installations shall comply with applicable local regulations, national standards, and codes of practice.

RAKtherm Silent Pro and Ultra Silent Pro is suitable for continuous hot and cold wastewater discharge, with its mineral-reinforced polypropylene (PP-MD) construction providing resistance to thermal loads, mechanical stress, and chemical exposure.

Operating Characteristics

- Gravity drainage and wastewater discharge systems
- Continuous operating temperature up to 90°C
- Intermittent discharge temperature up to 95°C
- Wastewater resistance within pH 2–12
- Resistance to domestic detergents, cleaning chemicals, and common industrial wastewater
- Leak-tight push-fit socket joints with elastomeric sealing rings
- Joint sealing performance up to 0.5 bar (5 m water column) under internal hydrostatic pressure
- High impact resistance and dimensional stability
- Suitable for concealed or exposed installations within buildings

Typical Applications

RAKtherm Silent Pro and Ultra Silent Pro are particularly suited to applications requiring reliable drainage and enhanced acoustic performance, including:

- Residential buildings, apartments, villas, and high-rise towers
- Hotels and resorts
- Hospitals and healthcare facilities
- Commercial and office buildings
- Shopping malls
- Educational institutions
- Airports and transportation terminals
- Public and mixed-use developments
- Industrial and utility buildings
- Renovation and refurbishment projects

Residential Buildings

In residential applications, Silent Pro and Ultra Silent Pro minimize airborne and structure-borne noise generated by wastewater discharge, supporting enhanced acoustic comfort while providing reliable hydraulic performance.

Its lightweight construction, mechanical strength, corrosion resistance, and compatibility with standard polypropylene drainage systems make it suitable for houses, villas, apartments, and multi-storey residential developments.

Large Commercial & Public Buildings

Silent Pro and Ultra Silent Pro provide reliable low-noise drainage for large buildings where acoustic performance, durability, and occupant comfort are important design considerations.

Typical applications include hotels, offices, hospitals, shopping centres, educational facilities, libraries, community buildings, airports, and mixed-use developments.

Commercial Kitchens

Silent Pro and Ultra Silent Pro is suitable for commercial kitchens, restaurants, hotels, catering facilities, and food preparation areas where wastewater may be discharged at elevated temperatures.

Operating Capabilities

- Continuous wastewater temperature up to 90°C

- Intermittent discharge up to 95°C
- Resistance to grease, detergents, and common kitchen chemicals
- Smooth internal surface to reduce grease accumulation and support hydraulic flow
- High abrasion and corrosion resistance

For long drainage lines connected to grease separators, pipe heating systems may be considered where required by the project design to reduce grease solidification. Heating systems shall be selected in accordance with the manufacturer's recommendations and applicable installation standards.

Specialized Applications

RAKtherm Silent Pro and Ultra Silent Pro may also be used in:

- Industrial buildings
- Laboratories
- Food processing facilities
- Chemical processing facilities
- Pharmaceutical facilities
- Research and testing laboratories

For aggressive chemicals or unusual operating conditions, consult the RAKtherm Technical Department to verify material compatibility.



Acoustic **INSTALLATION GUIDELINES**

Acoustic Plumbing Design

Optimum acoustic performance depends on the complete drainage installation, including the interaction between the piping system and the building structure.

Noise transmission is influenced by:

- Pipe support brackets and clamps
- Connections with walls and ceilings
- Pipe penetrations through structural elements
- Direct contact between pipes and building materials
- Installation workmanship

Proper acoustic design is essential to control both airborne and structure-borne noise.



Recommended Installation Practices

To achieve optimum sound insulation:

- Avoid installing wastewater pipes directly within walls separating noise-sensitive areas.
- Use acoustically optimized pipe clamps and supports to minimize vibration transmission.
- Isolate pipe penetrations through walls and floors.
- Prevent direct contact between pipes and rigid building materials.
- Follow applicable installation standards, local regulations, and project requirements.

Wall Construction Requirements

According to DIN 4109 – Sound Insulation in Buildings – Minimum Requirements, walls supporting or containing sanitary installations should provide sufficient mass to limit sound transmission.

For single-layer walls carrying wastewater pipes or sanitary installations, a surface-related mass of approximately 220 kg/m² is recommended. Walls with lower mass should only be used where their acoustic performance has been verified through appropriate testing.

Protection Against Structure-Borne Sound

RAKtherm Silent Pro and Ultra Silent Pro should be installed with suitable acoustic support systems to minimize vibration transmission into the building structure.

Effective structure-borne sound control is achieved through the combination of:

- High-density mineral-reinforced polypropylene (PP-MD)
- Three-layer pipe construction
- Acoustic pipe clamps
- Correct installation practices

Proper system design and installation are essential to achieving optimum acoustic performance.

Installation Procedure

Pipe Cutting

RAKtherm Silent Pro and Ultra Silent Pro pipes may be cut using a professional pipe cutter or fine-toothed handsaw.

For correct preparation:

- Cut the pipe square to the pipe axis (90°).
- Remove burrs, sharp edges, and cutting debris.
- Clean the pipe end before assembly.

Important:

For standard push-fit socket connections, chamfer the pipe end to protect the sealing ring and facilitate insertion. Do not chamfer pipe ends connected to a compensator or expansion socket.

Push-Fit Joint Assembly

RAKtherm Silent Pro and Ultra Silent Pro use a push-fit socket with a factory-installed EPDM ring seal, providing a watertight and flexible joint without solvent cement or welding.

Step 1 – Inspect

Check that the sealing ring is correctly positioned in the socket groove. Clean the socket and pipe end.

Step 2 – Lubricate

Apply a thin, uniform layer of RAKtherm-approved lubricant to the pipe spigot only. Do not use oil, grease, or petroleum-based lubricants, as these may damage the sealing ring.

Step 3 – Insert

Push the pipe fully into the socket until it reaches the internal stop.

Step 4 – Allow for Thermal Expansion

Withdraw the pipe by approximately 10 mm to provide the required expansion allowance.

For vertical installations, maintain the 10 mm expansion gap before securing the pipe.

Pipe Support

Secure the pipeline immediately after installation using suitable support clamps to:

- Maintain correct alignment
- Prevent excessive deflection
- Allow controlled thermal movement
- Minimize vibration and structure-borne noise

Support spacing shall comply with the recommended installation requirements.

Good Installation Practice

- Use clean, undamaged pipes and fittings.
- Ensure sealing rings are correctly seated.
- Never force pipes into sockets.
- Do not use damaged seals or fittings.
- Use only RAKtherm-approved accessories and lubricant.
- Verify pipeline alignment before permanently securing support clamps.

Joints with Compensator Socket

RAKtherm Silent Pro and Ultra Silent Pro systems shall be installed without mechanical stress and with sufficient allowance for thermal expansion and contraction.

Pipelines shall be supported using rubber-lined pipe brackets securely fixed to the supporting structure.

Where internal pressure or axial forces may occur, joints shall be restrained against separation or axial displacement using RAKtherm safety clips or correctly positioned fixed brackets.

The RAKtherm compensator socket accommodates axial movement caused by thermal expansion without requiring the conventional withdrawal of the pipe after insertion, simplifying assembly while maintaining controlled thermal movement.

Compensator Socket Installation

Step 1: Pull the expansion collar from the compensator socket.

Step 2: Slide the expansion collar over the pipe end.

Step 3: Apply a thin, even layer of RAKtherm-approved lubricant inside the compensator socket. Do not use oil, grease, or petroleum-based lubricants.

Step 4: Apply lubricant evenly around the outer surface of the elastomeric expansion collar.

Step 5: Push the fitting over the expansion collar to the required insertion depth.

Step 6 – Verify

Ensure that:

- The pipe end is flush with the sealing gasket.

- The compensator collar is correctly positioned.
- The joint moves freely to accommodate thermal expansion.

Pipe Support & Fixation

Correct pipe support is essential to maintain system alignment, accommodate thermal movement, minimize mechanical stress, and reduce structure-borne noise.

Fixed Brackets

Fixed brackets establish secure points within the piping system and prevent longitudinal movement.

- Provide at least one fixed bracket for each vertical pipe length.
- Install fittings and groups of fittings as fixed points.
- Provide at least one fixed bracket in each horizontal pipeline.

Sliding Brackets

Sliding brackets support the pipeline while allowing controlled longitudinal movement caused by thermal expansion and contraction.

- Pipes shall move freely through sliding brackets.
- All supports other than designated fixed points shall function as sliding brackets.
- Maximum recommended bracket spacing shall not be exceeded.

Pipe Fixation

Install RAKtherm Silent Pro and Ultra Silent Pro piping systems without mechanical stress and with sufficient allowance for thermal movement.

Use rubber-lined pipe brackets with suitable inserts to prevent direct pipe-to-support contact, reduce vibration transmission, and protect the pipe surface.

Where internal forces or pressure loads may occur, joints shall be secured against separation, axial movement, or misalignment using RAKtherm safety clips or correctly positioned fixed brackets.

Vertical Support

Correct Installation

- Pipe weight is properly supported.
- Fixed and sliding brackets are positioned according to installation requirements.

- Required thermal expansion movement is maintained.

Incorrect Installation

- Incorrect bracket positioning may cause pipe stress, joint movement, or system damage.

Bracket Arrangement

During the installation of RAKtherm Silent Pro and Ultra Silent Pro piping systems, the following requirements shall be considered:

- For horizontal pipe installations, the maximum distance between pipe brackets shall be approximately 10 × the outside diameter of the pipe, as indicated in the bracket spacing table.
- For vertical pipe installations, the bracket spacing shall depend on the pipe diameter and shall generally maximum 2 metres.
- Pipe brackets shall be securely fixed to building structures with sufficient mechanical strength and load-bearing capacity.
- At every change of direction (for example, bends at the bottom of vertical stacks), install one bracket directly before and one bracket directly after the change of direction.

Vertical Stack Installation

For vertical stacks in open shafts or where floor-to-floor height exceeds 2.5 m, provide:

- One fixed bracket for each pipe length
- One sliding bracket for each pipe length

Install the fixed bracket directly above the fitting at the bottom of the pipe section. Position the sliding bracket no more than 2 m above the fixed bracket.

Provide additional support where necessary to prevent pipe loads from being transferred to individual joints or clamps.

Multi-Storey Building Installation

In buildings with three or more floors, vertical stack pipes Ø110 mm and above shall be secured against sliding using additional stack supports.

Use fixed brackets and additional supports at fittings, short pipe sections, and other locations where increased restraint is required to prevent joint separation.

Alternative Connections

Where connections other than the RAKtherm compensator socket are used, such as double-socket couplings, provide for each pipe length up to 3 m:

- One fixed bracket
- One sliding bracket

Double-socket couplings shall be securely fixed to maintain alignment and prevent movement.

Maximum Distance Between Pipe Brackets

Pipe Outside Diameter	Horizontal Installation	Vertical Installation
	Maximum Bracket Distance L (m)	Maximum Bracket Distance L (m)
Ø 32 mm	0.32 m	2.0 m
Ø 50 mm	0.50 m	2.0 m
Ø 75 mm	0.75 m	2.0 m
Ø 110 mm	1.10 m	2.0 m
Ø 160 mm	1.60 m	2.0 m
Ø 200 mm	2.00 m	2.0 m

Note: For horizontal installations, the maximum bracket spacing is calculated as 10 times the pipe outside diameter (10 x OD). Vertical bracket spacing shall follow the specified installation requirements.

Important Installation Notes

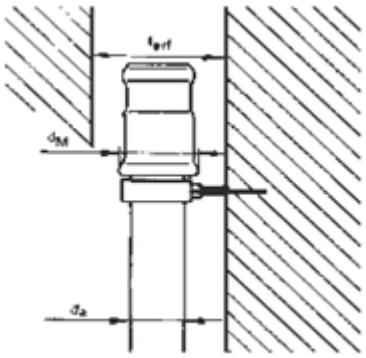
- Never support a pipe using only one bracket.
- Maintain the specified support spacing.
- Do not allow pipe joints to carry excessive mechanical loads.
- Allow controlled thermal expansion while maintaining system stability.
- Correct bracket positioning is essential for acoustic performance and long-term system reliability.

Protection Against External Heat Sources

Protect Silent Pro and Ultra Silent Pro pipes from nearby heat sources, including central heating and hot-water pipes, using suitable thermal insulation and adequate clearance.

Space Requirements for RAKtherm Silent Pro & Ultra Silent Pro Pipes

Nominal Size	Pipe Outside Diameter d (mm)	Socket Outside Diameter d (mm)	Minimum Required Spacing (mm) *
32 mm	32	42	16
50 mm	50	63.6	16
75 mm	75	89.2	16
110 mm	110	127	20
160 mm	160	184	20
200 mm	200	228	20



Note: The stated spacing requirements do not include additional clearance required for pipe crossings or special installation conditions.

Flooding Protection & Joint Security

Where system flooding or high flow velocities may occur, use an appropriately rigid support arrangement.

RAKtherm safety clips are recommended for coupler and socket joints, particularly:

- At bottom diversion points of high-rise vertical stacks
- Where high flow velocities occur from upper floors
- Where additional joint restraint is required

These measures help prevent joint separation and unwanted axial movement.



Special Installation Applications

Ceiling Installation

Minimum Ceiling Requirement:

The ceiling shall be constructed of reinforced concrete with a minimum thickness of 150 mm (6 inches).

Flush (Straight) Ceiling Installation

- Fit the insulating mat completely around the pipe.
- Release the fireproofing collar, place it around the pipe, and secure the fastening mechanism.
- Adjust the mounting tabs to the required position.
- Bring the collar into direct contact with the underside of the ceiling.
- Seal the space around the pipe penetration using cement mortar or concrete.
- Using the collar as a guide, identify and mark the required fixing points.
- Move the collar aside and drill holes at the marked locations.
- Install the supplied wall plugs, then fasten the collar securely with the provided screws and washers.



Angled Ceiling Installation

- Fit the insulating mat securely around the pipe.
- Open the fireproofing collar, place it around the pipe, and secure the fastening mechanism.
- Fill the remaining annular gap with cement mortar or concrete.
- Hold the collar in position and mark the fixing holes.
- Move the collar aside or rotate the collar and drill the marked holes.
- Insert the supplied wall plugs and securely fix the collar using the provided screws and washers.



Installation in Concrete

RAKtherm Silent Pro and Ultra Silent Pro pipes and fittings may be embedded in concrete, provided thermal movement is considered in accordance with the installation requirements.

During concrete casting:

- Secure pipes and fittings against movement or displacement.
- Seal socket gaps and openings to prevent concrete ingress.
- Protect and seal all open pipe ends before pouring.

Wall & Ceiling Installations

Wall and ceiling installations shall provide:

- Moisture-tight installation

- Effective sound insulation
- Leak-free operation

Where pipe sections require additional protection, use suitable protective sleeves or soft insulating materials, such as glass wool or foam insulation, to minimize noise transmission and protect against mechanical damage.

Roof Drainage Pipes

Roof drainage pipes passing through living rooms, bedrooms, or working areas shall follow the recommended acoustic construction details.

The surrounding wall construction should provide a minimum surface-related mass of 220 kg/m².

Additional thermal insulation of pipes and fittings is recommended where required to minimize condensation on external surfaces.

Below-Ground Piping & Collector Pipes

Below-ground piping may connect vertical drainage stacks to wastewater collection systems at basement or underground level and may be installed within the building structure, beneath foundations, or in protected underground areas.

Collector pipes installed above ground collect wastewater from vertical stacks, branch connections, and other drainage networks.

All underground installations shall comply with applicable construction requirements and provide adequate protection against external loads and ground movement.



Loading, **TRANSPORTATION & STORAGE**



Loading & Transportation

RAKtherm Silent Pro and Ultra Silent Pro pipes and fittings shall be handled carefully during loading and transportation to prevent impact, deformation, and surface damage.

- Support pipes along their full length and stack evenly to prevent sagging.
- Avoid dropping, sudden impact, or excessive mechanical stress.
- Exercise additional care at low temperatures, when impact resistance may be reduced.

Unloading & Handling

- Use suitable handling methods during unloading.
- Do not drop pipes from vehicles.
- Do not drag pipes along the ground.
- Avoid pulling pipes over sharp edges or surfaces.

Pipe Storage

- Store pipes on a flat, stable surface to prevent deformation.
- Secure stacks against rolling or shifting.
- Unpalletized pipe stacks shall not exceed 1.5 m in height.

Fitting Storage

- Store fittings in their original cartons whenever possible.
- Protect cartons from moisture, direct sunlight, and mechanical damage.

Outdoor Storage

Silent Pro and Ultra Silent Pro pipes and fittings can withstand normal outdoor storage conditions. However, prolonged exposure to direct sunlight and extreme weather may cause surface colour changes and a slight reduction in mechanical properties.

For optimum storage:

- Keep pipes and fittings under cover where possible.
- Protect from prolonged direct sunlight.
- Avoid extended exposure to extreme weather conditions.

Cleaning & Maintenance



Cleaning of the Waste Pipe System

Suitable access fittings and inspection openings provide convenient access to the drainage system for mechanical cleaning, inspection, and maintenance.

Regular inspection and cleaning help maintain reliable long-term performance of the RAKtherm Silent Pro & Ultra Silent Pro systems.

Environmental Information & Recycling

RAKtherm polypropylene (PPH) pipes are designed for a service life of approximately 50 years under normal operating conditions.

At the end of their service life, polypropylene pipes can be recycled through standard plastic recycling processes. Recycled polypropylene can be reused in PP production, reducing the demand for virgin raw materials.

Where recycling is unavailable, pipes may be handled through approved waste management methods, including energy recovery or controlled disposal in accordance with local regulations.