

INTRODUCING

ORI-PLAST Mute

For a world that is loud enough.

IM JUST MUTE IT



The Luxury of Silence

In a world that never stops talking,
silence has become a luxury.

The notifications.
The traffic.
The conversations.
The constant background hum
of everyday life.



We can't mute the world.



But we can design spaces that feel calmer.

ORI-PLAST MUTE

is engineered to reduce drainage noise,
bringing acoustic comfort to
homes, hotels, hospitals and commercial spaces.

Because true luxury isn't louder.

It's quieter.

A legacy of quality, a new

Standard of Quiet

At Ori-Plast Limited, innovation has always been driven by one purpose — to create piping solutions that deliver lasting performance, superior quality and greater value. With over five decades of experience in the piping industry, Ori-Plast has built a strong legacy of trust through advanced technology, quality-conscious manufacturing and a commitment to evolving with the needs of modern infrastructure.

50+
YEARS OF
EXCELLENCE
TRUSTED
ACROSS INDIA
& BEYOND

Introducing Ori-Plast Mute Pipes, a thoughtfully engineered piping solution designed to bring greater acoustic comfort to contemporary buildings. Developed to significantly reduce the transmission of noise generated by wastewater and drainage flow, the system combines reliable hydraulic performance with enhanced acoustic properties, making it particularly suited for residential, commercial, hospitality, healthcare and other noise-sensitive applications.

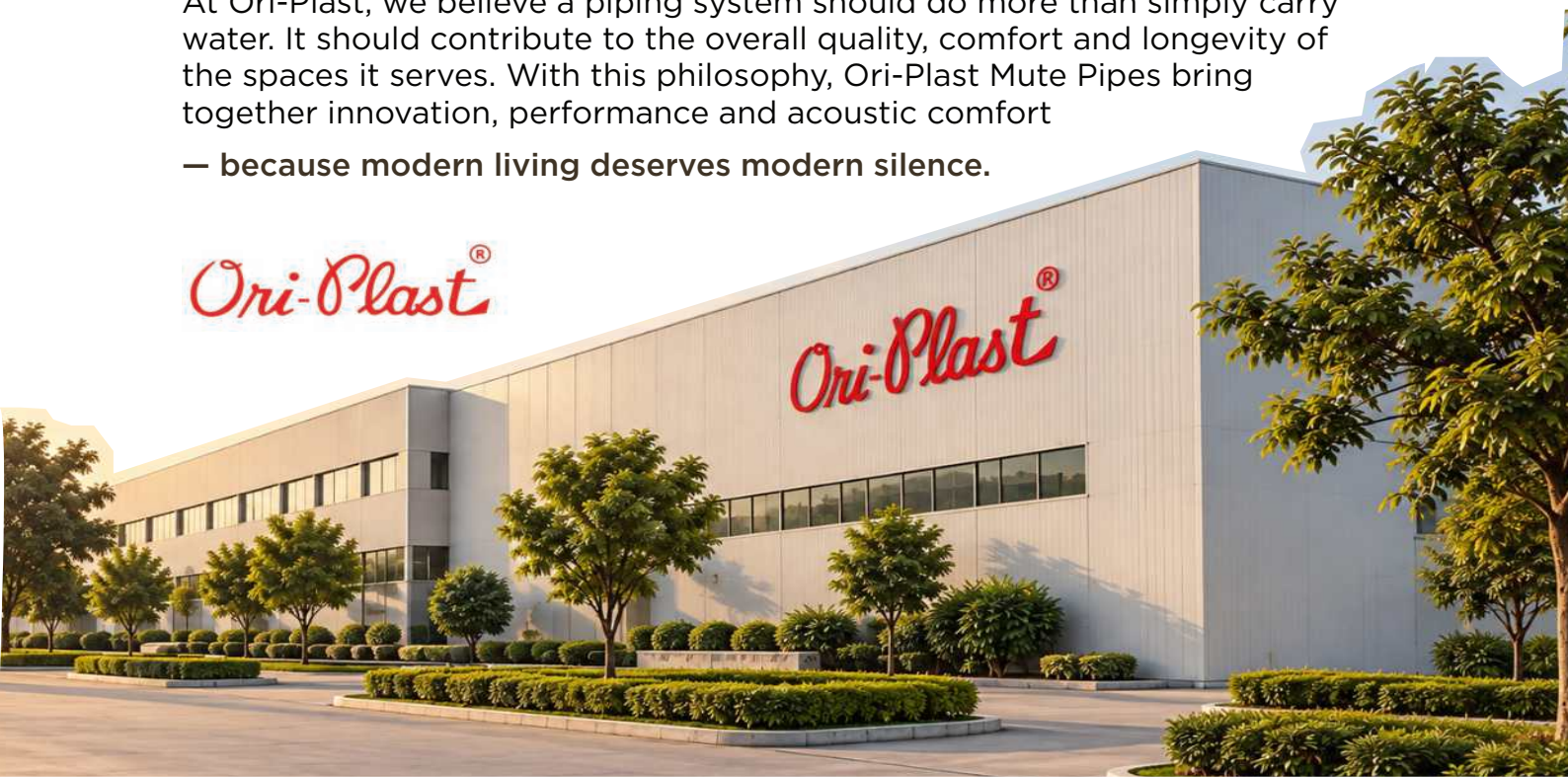
Designed with precision and manufactured with Ori-Plast's established focus on quality and performance, the Mute Pipe System offers an effective solution to one of the often-overlooked challenges in modern plumbing — unwanted drainage noise. Its robust construction, dependable performance and ease of installation make it a practical choice for architects, consultants, developers, plumbing professionals and end users seeking a quieter and more comfortable built environment.

At Ori-Plast, we believe a piping system should do more than simply carry water. It should contribute to the overall quality, comfort and longevity of the spaces it serves. With this philosophy, Ori-Plast Mute Pipes bring together innovation, performance and acoustic comfort

— **because modern living deserves modern silence.**

Ori-Plast®

Ori-Plast®





Listen.

Or Maybe Not.

Ori-Plast Mute is a low-noise, high-performance drainage and sewer piping system for both residential and commercial wastewater applications. Compatible with hot and cold effluents and built to meet the requirements of DIN EN 12056 and DIN 1986-100 for non-pressurized wastewater pipelines.

Built from a mineral-reinforced polypropylene compound with a density of 1.57 g/cm³ - among the highest in its category.

Rapid, hassle free
push fit installation.

1

Advanced noise-reducing
performance,
independently tested

2

Long-lasting,
maintenance
-free operation across a
40-200 mm size range

3

Lightweight
construction that speeds
up handling on site

4

Mute delivers acoustic damping and mechanical strength most drainage systems simply weren't designed for.

Drainage sounds engineered to

disappear

Mute's noise reduction isn't a coating or an add-on, it's built into the wall of the pipe itself, through a three-layer sandwich construction where each layer is engineered for a different job.



INNER LAYER - POLYPROPYLENE

Delivers superior flow performance with high thermal and chemical resistance (pH 2-12) and resistance against high water temperatures - keeping flow laminar and self-cleaning, reducing scale build-up and the turbulence that generates additional noise.



MIDDLE LAYER - MINERAL REINFORCED POLYPROPYLENE

The engineering heart of the system. A mineral-reinforced compound with very high ring stiffness and excellent acoustic properties. This is the layer doing the acoustic work, not a foam sleeve or external wrap added later. Material density of 2.1 g/cm^3 .



OUTER LAYER - POLYPROPYLENE

Ensures impact resistance, site durability and resilience across various temperatures. It is extremely tough and sturdy - built to protect the pipe during transport, handling and installation.



Together, the three layers do what a single-material pipe can't:
Absorb vibration at the source | Resist the conditions of a real job site | Keep moving wastewater efficiently for the life of the building.

Quieter than the tick of a

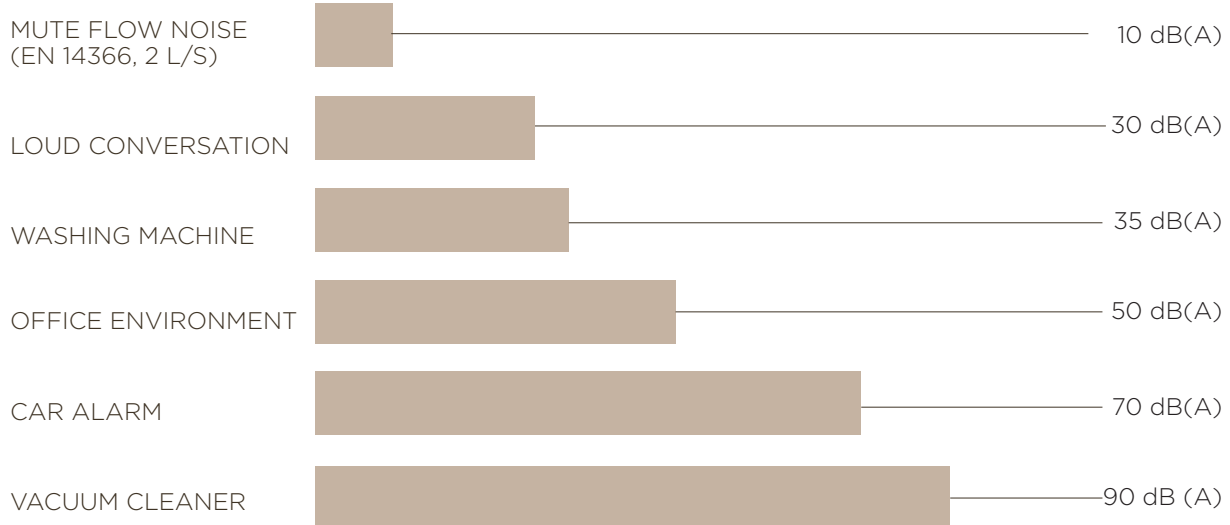
wristwatch.

Below 10 dB(A). Independently Tested.

Tested to EN 14366, Ori-Plast Mute achieves a sound insulation value below 10 dB(A) at a flow rate of 2 litres per second - verified by third-party laboratory testing, not a manufacturer's estimate.

Mute flow noise (EN 14366, 2 L/s): below 10 dB(A)

DIN 4109 baseline requirement for residential wastewater systems: 30



INDEPENDENT RESEARCH ALSO LINKS PROLONGED NOISE EXPOSURE TO REAL HEALTH EFFECTS

Sustained levels above roughly 35 dB(A) are associated with nervous system fatigue and disrupted sleep, and above roughly 80 dB(A) with measurable health effects.

Mute sits well below the range where any of that begins.

ACOUSTIC Performance

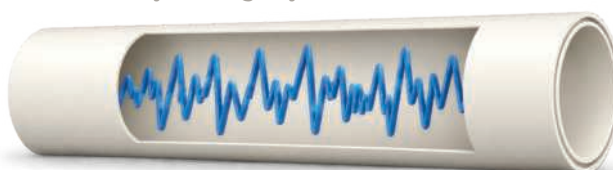
The Ori-Plast Mute drainage system is designed to reduce noise and vibration generated by wastewater flow. Its high-density, mineral-reinforced polypropylene construction helps absorb and dampen sound within the pipe wall, reducing the transmission of structure-borne noise.

Ori-Plast Mute System



When properly installed with suitable pipe supports, the system provides improved acoustic comfort in residential, commercial, and other noise-sensitive buildings.

Ordinary Drainage System



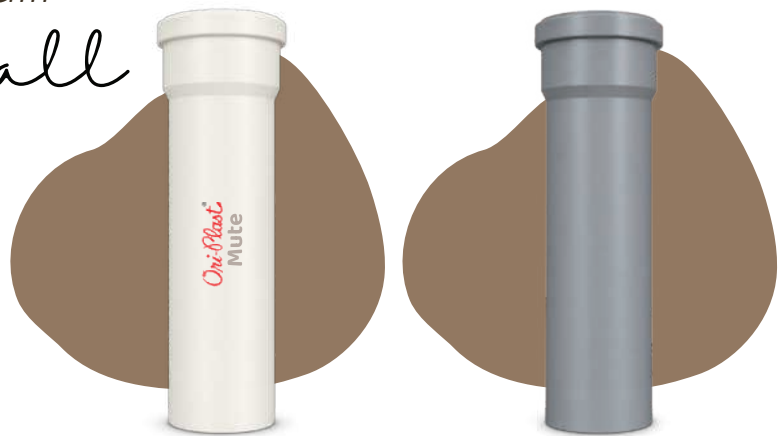
Structure-Borne Sound Performance

The following values represent the installation sound level at different wastewater flow rates:

Noise Measurement Metric	Room Location	0.5 l/s	1.0 l/s	2.0 l/s	4.0 l/s
Airborne sound pressure level [dB(A)] (DIN EN 14366)	GF Front	56dB	59dB	61dB	63dB
Structure-borne sound characteristic level [dB(A)] (DIN EN 14366)	GF Rear	<10dB	<10dB	<10dB	12dB
Installation sound level [dB(A)] (DIN 4109)	GF Front	56dB	58dB	61dB	64dB
Installation sound level [dB(A)] (DIN 4109)	GF Rear	<10dB	<10dB	<10dB	14dB
Installation sound level [dB(A)] (VDI 4100)	GF Front	53dB	55dB	58dB	62dB
Installation sound level [dB(A)] following VDI 4100	GF Rear	<10dB	<10dB	<10dB	12dB

*The difference is built
into the wall*

**A SMARTER
CHOICE
FOR QUIETER,
BETTER
SPACES.**



	Ori-Plast Mute	Ordinary PVC Pipes
PIPE CONSTRUCTION	3-Layer construction with mineral filled PP middle layer (PP - MD - ML)	Single layer uPVC
SOUND INSULATION	Excellent noise reduction due to high-density mineral layer	Poor sound insulation
MATERIAL CHARACTERISTICS	Flexible, tough and crack-resistant	Rigid & Brittle
IMPACT RESISTANCE	High impact resistance during handling & installation	Prone to cracking & damage
TEMPERATURE RESISTANCE	Up to 90°C continuous, 95°C short-term	Up to 60°C
CHEMICAL RESISTANCE	Excellent resistance to household and industrial chemicals	Limited chemical resistance
APPLICATIONS RANGE	Residential, commercial, hospitals, hotels, laboratories	Basic residential drainage only

Technical Specification

NOMINAL OD (DN)	Mm	50	63	75	110	125	160	200
PIPE OD TOLERANCE (mm)	Min	50	63	75	110	125	160.	200
	Max	50.3	63.30	75.4	110.4	125.4	160.5	200.6
WALL THICKNESS (mm)	Series 14	1.8-3.0	2.2-3.1	2.6-3.1	3.8-4.4	-	5.5-6.3	6.9-7.7
	Series 16	1.8-2.2	2.0-2.4	2.3-2.8	3.4-4.0	-	4.9-5.6	6.2-7.1
	Series 20	1.8-2.2	1.8-2.2	1.9-2.3	2.7-3.2	-	3.9-4.5	4.9-5.6

Pipe Material	Co-Polymer PP for the external and internal layers. Mineral reinforced PP compound (PP-MD) for the core lay
Fitting Material	PP-MD (One-layer fitting)
Rubber Seal	Plug connection with elastic inlay
Color	Uniform White (both internal and external surfaces)
Density	1.57 g/cm ³
Life expectancy	50 Years
Application	Designed for soil and waste discharge, suitable for in-building and underground drainage applications
Connection	Push-fit sockets with elastomer rubber seals
Coefficient of Linear Expansion	0.09 mm/m °C
Working temperature	Up to 90°C (continuous) Up to 95°C (discontinuous)
Chemical resistance	Discharge waste water between pH 2 and pH 12
Manufacturing standard	EN 1451:2017, BS EN 14366-1:2023, DIN EN 14366, and DOC NO.CED50 (2761) WC JANUARY 2025



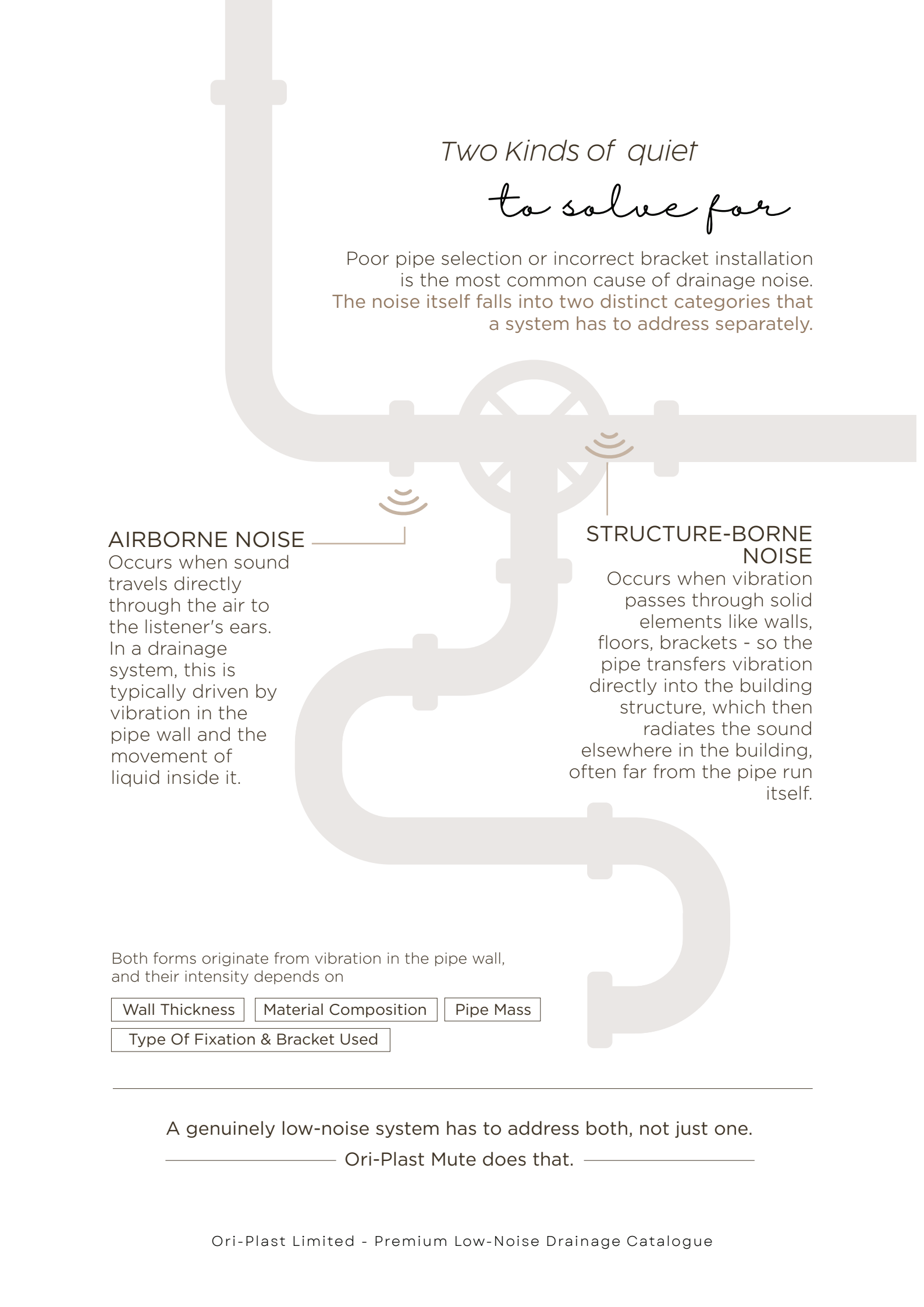
*Every building has a
sound
it never meant to make.*

A pipe in the wall.
A flush at midnight.
A rush of water
where there
should be quiet.

In modern high-rises,
the loudest thing in a home
after dark is often the
plumbing. Waste water
moving through a
standard drainage
stack doesn't just carry
sound, it broadcasts
it, through the pipe
wall and into
the structure itself.

This is no longer
acceptable
in premium properties.

Silence has become
a specification.



Two Kinds of quiet to solve for

Poor pipe selection or incorrect bracket installation is the most common cause of drainage noise. The noise itself falls into two distinct categories that a system has to address separately.

AIRBORNE NOISE

Occurs when sound travels directly through the air to the listener's ears. In a drainage system, this is typically driven by vibration in the pipe wall and the movement of liquid inside it.

STRUCTURE-BORNE NOISE

Occurs when vibration passes through solid elements like walls, floors, brackets - so the pipe transfers vibration directly into the building structure, which then radiates the sound elsewhere in the building, often far from the pipe run itself.

Both forms originate from vibration in the pipe wall, and their intensity depends on

Wall Thickness

Material Composition

Pipe Mass

Type Of Fixation & Bracket Used

A genuinely low-noise system has to address both, not just one.

———— Ori-Plast Mute does that. ————

*Engineered to
the standards
that matter.*

Two standards govern acoustic performance in wastewater systems:

DIN 4109 (Sound insulation in buildings - requirements and verification) sets an overall limit of 30 dB(A) for water supply and drainage pipe systems in spaces including bedrooms, living areas, classrooms and office spaces.

VDI Guideline 4100 goes further, defining three distinct sound insulation levels across building types.

Level	Multi-Storey Apartment Block	Semi-Detached/ Row Houses	Living Area
I	30 dB(A)	30 dB(A)	30 dB(A)
II	30 dB(A)	25 dB(A)	30 dB(A)
III	25 dB(A)	20 dB(A)	30 dB(A)



MUTE'S TESTED PERFORMANCE -

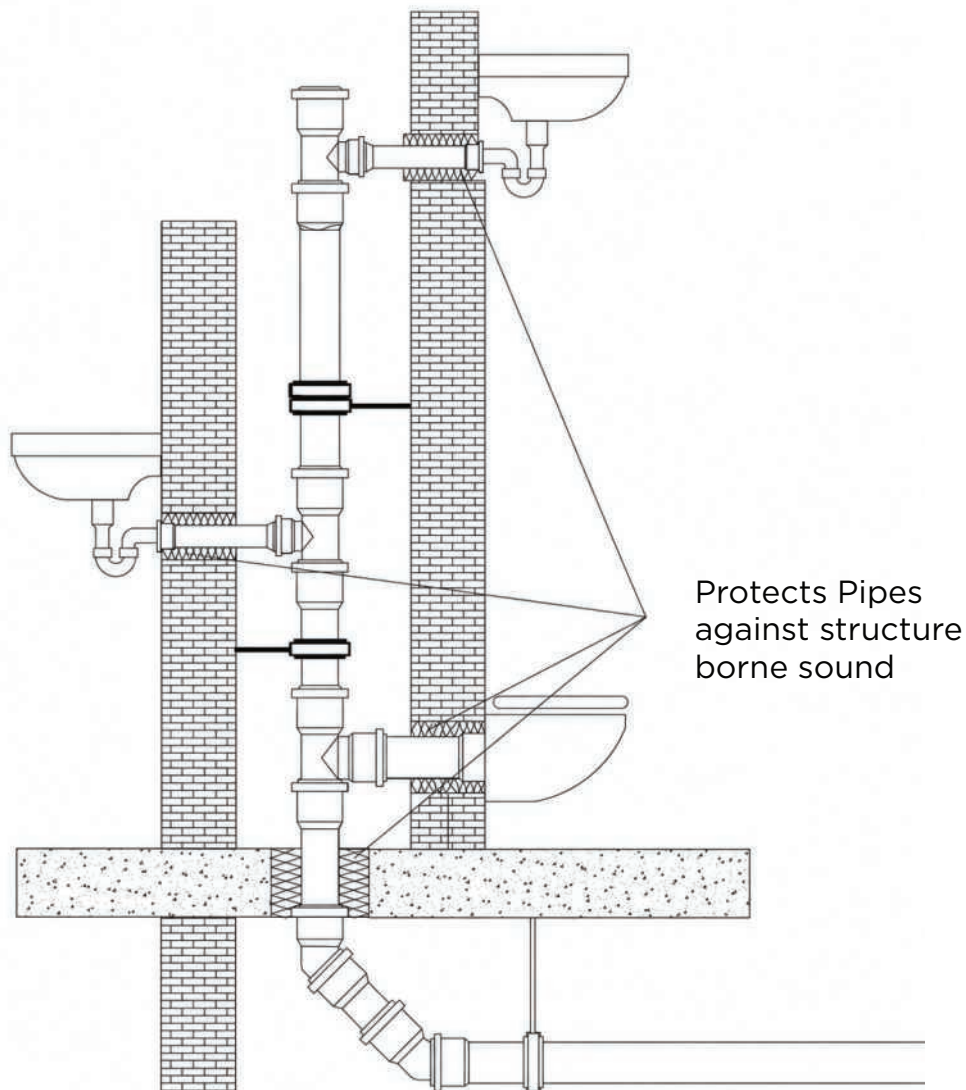
Below 10 dB(A) at
2 L/s - Sits well inside even in
the strictest of these thresholds,
giving specifiers headroom
rather than a system that
merely scrapes past
the minimum.



ACOUSTIC Plumbing Design

The Oriplast low-noise wastewater piping system provides advanced acoustic isolation, though proper structural decoupling remains essential for optimal performance. Sound insulation principles apply across the entire drainage setup, particularly at interface points such as wall and ceiling penetrations, mounting brackets, pipe support clamps, and structural masonry contact points.

When laying out the piping network, discharge lines must not be routed directly within partition walls that divide residential spaces. Securing drainage pipes to interior dividing walls requires dedicated acoustic damping solutions. In accordance with DIN 4109 guidelines for structural sound insulation, single-layer walls supporting or housing plumbing installations must maintain a surface mass density of no less than 220 kg/m^2 . Walls below this 220 kg/m^2 mass threshold are permissible only if acoustic testing verifies acceptable noise transmission control.



Technical specifications &

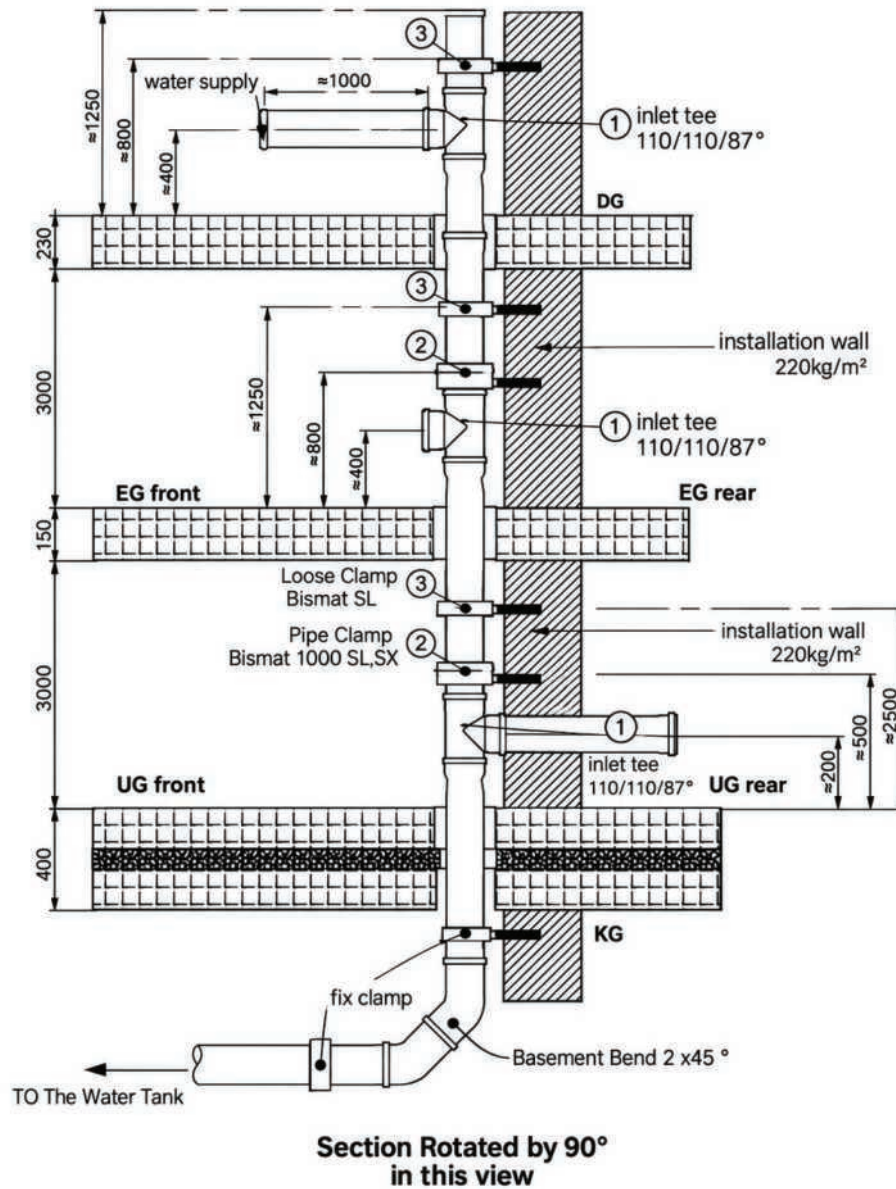
test setup

- ORI-PLAST LIMITED, BEHROR 301701
- **Test Specimen:** Wastewater system made of plastic, type: "ORI PLAST MUTE" consisting of straight pipes and fittings (OD 110) as well as acoustic pipe clamps with elastic inlay, see figure 1
- **Test Setup:**
 - The pipe system was mounted according to figure 1
 - The pipe system consisted of straight wastewater pipes (nominal size OD 110), TWO inlet tees ($\sim 88^\circ$, rounded), a $1 \times 45^\circ$ basement bend. Lids supplied by the manufacturer closed the inlet tee (No. 2) the ground floor.
 - Pipe system: type: "ORI PLAST MUTE", High Density Low Noise System; DN 110 x 3.8 mm*; three-layer pipes with shaped pipe sockets, material: PP/PP-MD/PP, wall thickness: 4 mm, weight: 2.0 kg/m, density: 1.57 g/cm^3 . One-layer fittings, material: PP-MD, wall thickness: 3.37mm, density: 1.46 g/cm^3 . Above-mentioned values measured by IPB; manufacturer information: density (pipe + fitting): (1.57 g/cm^3 - 1.57 g/cm^3), pipe wall thickness: min. 4.00 mm. Plug connection of the pipes and fittings (shaped pipe sockets).
- **Pipe clamps:**
- **Test Facility:** Installation rooms: Ground floor (GF) front and top floor. Measuring rooms: GF front, GF rear
- **Test Method:** The measurements were performed according to DIN EN 14366:2020-02; noise excitation by steady water flow with 4.0 l/s.



Test Specimen

Figure 1



Installation plan of the test set-up in the test facility

Test specimen Description

Test specimen: Wastewater installation system "ORI-PLAST", size OD 110, comprising straight plastic pipes "ORI-PLAST DN 110mm" (produced by Ori-plast Ltd), matching fittings "ORI-PLAST DN 110" (produced by Ori-plast Ltd), and elastic-inlay pipe support clamps "Bismat 1000".

DNV

Report No:
DNV/OPL/2026/PS/IR/01
Revision No:
00

SOURCE - INSPECTION REPORT

Particulars of project

DNV project name:

Poly propylene (PP) plastic piping system for soil & waste discharge within the building structure part-2 structure wall /multi layer

DNV customer name:

M/s.ORI PLAST LIMITED,BEHROR

Supplier:

M/s.ORI PLAST LIMITED,BEHROR

Manufacturer:

M/s.ORI PLAST LIMITED,BEHROR

DNV acts on behalf of:

M/s.ORI PLAST LIMITED,BEHROR

DNV project number:

PR-10576930

DNV assignment number:

NIL

DNV order/PO number:

NIL

Inspection details

Customer's PO number to Supplier:

NIL

Supplier's reference:

QAP NO.: OPL/BHR/PP/2026-27 Rev.00 DATE: 19.08.2026

Additional references:

EN 1451: 2017 & DOC NO.CED50 (2761) WC JANUARY 2025
BS EN 14366-1:2023

Inspection location:

M/S ORI-PLAST LIMITED, G-180(O & P K & Q), RIICO INDUSTRIAL AREA, PHASE-2, BEHROR(RAJASTHAN)-301701

Inspection start date:

(2026-08-24)

Inspection end date:

(2026-08-24)

Report frequency:

☐ Weekly ☒ Daily

This report contains

Rejected items	☐ NIL	Comments:
Areas of concern	☐ NIL	
Action items	☐ NIL	
NCR	☐ NIL	
HSE issues	☐ NIL	
Photographs	☒ Photograph attached	
Attachments	☒ Offer list , witnessed docs , reviewed docs & calibration summary sheet	

This report shall not be used as part of a verification or certification service.

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DNV

Report No:
DNV/OPL/2026/PS/IR/01
Revision No:
00

SOURCE - INSPECTION REPORT

PO item no.	Quantity	Description and serial no.
	Ordered Offered Inspected	
As per attached offer list		DN 110 CLASS -2 "PP-MD-ML" S-20 BATCH NO.: 202607020011
		DN 110 CLASS -2 "PP-MD-ML" S-14 BATCH NO.: 202607020011

Overall result

Satisfactory	☒	Inspection carried out at vendor location as per QAP and EN 1451: 2017 & DOC NO.CED50 (2761) WC JANUARY 2025 & BS EN 14366-1:2023 required stages covered with documentation and found satisfactory
Unsatisfactory	☐ NIL	
HSE issues	☐ NIL	

Details of visit

Persons present

Name	Company	Position	Phone no.	E-mail address
Mr. Prakash shukla	DNV	Surveyor	9602036599	dnvinspector@dnv.com
Mr. O.P. Shukla	OPL	QA HEAD	8094234515	opshukla@adventec.in

Reference documentation¹

Number/Reference	Rev/Date	Title/Approval status
QAP NO.: OPL/BHR/PP/2026-27	00/19.08.2026	-----/NIL
EN 1451: 2017 & DOC NO.CED50 (2761) WC JANUARY 2025		-----/Technical specification
BS EN 14366-1:2023		

Measuring/testing equipment and calibration status

Equipment description	Serial no.	Last cal date	Cal due date
PI TAPE	OPL/PT/02	19.09.2025	18.09.2026
Measuring Tape	OPL/M/01	19.09.2025	18.09.2026
Micro meter	MM-01	15.12.2025	14.12.2026
Vernier caliper	OPL/HD/V/01	18.10.2025	17.10.2026
Temp controller with sensor	OPL/HD/HO/01	18.10.2025	17.10.2026
Analytical weight Balance	OPL/WB/01	15.12.2025	14.12.2026
Tensile testing machine	OPL/HT/TM/01	19.09.2025	18.09.2026
Sound level meter	Mextech/SL-36	06.07.2026	05.07.2027
Impact strength	OPL/IM/01	18.10.2025	17.10.2026

¹ Quality plans, drawing numbers, test procedures. Include revision.

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Revision No:
00

SOURCE - INSPECTION REPORT

- As per QAP CL 2.4.: witnessed the Drop Weight Impact Testing of PP Pipes conducted on pipe samples with Striker Mass 1.0 kg Drop Height: 1600 mm and observed results was within the specified limit Max TIR ≤ 10% No cracking or shattering. hence results found satisfactory.
- As per QAP CL 2.5.: for S-14 witnessed the Ring Stiffness testing of PP Pipes conducted on pipe samples and the calculated Ring Stiffness of the sampled specimens was found to be 7.43 kn/m². and No physical wall cracking, buckling, or structural delamination was observed during loading. hence results found satisfactory
- As per QAP CL 2.6.: A random physical verification of the Pipe Identification and Marking parameters on PP Pipes and observed results was found satisfactory
- As per QAP CL 2.7.: witnessed the Acoustic Sound Insulation / Noise Level performance verification testing of Mineral-Filled Soundproof PP Pipes and observed results was No echoing, rattling, or resonance-induced whistling occurred. hence results found satisfactory.
- Test Results
Test specimen: Wastewater system made of plastic, type: "ORI PLAST MUTE" consisting of straight pipes and fittings (OD 110) as well as acoustic pipe clamps with elastic inlay.

Noise Measurement Metric

	Room Location	0.5 l/s	1.0 l/s	2.0 l/s	4.0 l/s
Airborne sound pressure level \L_{a(A)} [dB(A)] according to DIN EN 14366 for the Ground floor test-room	GF front	56	59	61	63
Structure-borne sound characteristic level \L_{sc(A)} [dB(A)] according to DIN EN 14366 for the Ground floor test- room	GF rear	<10	<10	<10	12
Installation sound level \L_{in} [dB(A)] following DIN 4109 in the Ground floor test-room	GF front	56	58	61	64
	GF rear	<10	<10	<10	14

- Installation sound level \L_{AFend} [dB(A)] following VDI 4100 in the Ground floor test-room
- GF front 53 55 58 62
- GF rear <10 <10 <10 12

Post inspection

NCRs issued during this visit³

NCR no.	Description of NCR
NIL	

³ Any NCR shall be issued on the same day after inspection and shall be attached to the report.

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DNV

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DNV/OPL/2026/PS/IR/01
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SOURCE - INSPECTION REPORT

Outstanding NCRs from previous inspection

NCR no.	Reason why still outstanding and when to be completed
NIL	

Action items⁴

Action no.	Description	Responsible party
NIL		

Punch list

Punch list issued:	☐ Yes ☒ No ☐ N/A
Punch list number/title:	NIL
Punch list attached to this report:	☐
Comments:	NIL

Additional visit forecast

Further inspection required?	☐ Yes, probably on (yyyy-mm-dd) ☒ No
Additional comments:	NIL

List of attachments

Attachment(s) and ID No(s)	Description
	Offer list , witnessed docs & reviewed docs & calibration summary

The goods/items specified have been inspected in accordance with the scope of inspection provided. The result is as stated on the inspection report front page.

This report (and its appendices) is not related to Classification by DNV.

Report issued on (2026-08-24)

DNV Performing office: DELHI for DNV

DNV Contracting office: MUMBAI

(PRAKASH SHUKLA)

Inspector

Stamp:

Photographs

Insert photographs to show progress of inspection, identification of parts or areas of concern. (Make sure the pictures are numbered and add any comments to assist with conclusions.)

⁴ Actions/Information needed to complete or clarify the process of inspection, by Customer, DNV, or the Equipment/Service provider.

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Inspection Report



GUS-Order No.: 101-091-6202-08-0804
Inspection Report
No. GUS/AHD/OPL/IR/2026/08/3101 Rev. 00

This is to certify that the components as described here under have been inspected.

Client:	M/s. Ori Plast Limited.
Client's P.O. No.:	—
Project:	—
Supplier:	M/s. Ori Plast Limited
Manufacturer / Vendor:	M/s. Ori Plast Limited
Place of Inspection:	M/s. Ori Plast Limited, G-180 (O&P) & F-188 (K&L, J-1), RIICO Industrial Area, Phase-II, Behror – 301701, Rajasthan, India.
Inspection Requested by:	M/s. Ori Plast Limited.
GUS W.O. No.:	As Per Mail Dated: 29.08.2026
Date(s) of Visit(s):	31.08.2026

1.0 Stage of Inspection:
☐ Pre-Inspection Meeting ☐ In Process Inspection ☒ Final Inspection ☐ Pre-Shipment Inspection

2.0 The following material was inspected:

Item No. (Acc. To PO) (Mat. Code)	Quantity (Nos. / Mtrs.) Ordered Qty. (Nos. / Mtrs.)	Quantity (Nos. / Mtrs.) Offered Qty. (Nos. / Mtrs.)	Quantity (Nos. / Mtrs.) Inspected Qty. (Nos. / Mtrs.)	Description of Item.
1	195 Mtrs. (65 Nos.)	195 Mtrs. (65 Nos.)	195 Mtrs. (65 Nos.)	PP Multi Layer Pipe: (Size: DN110 Class-2 "PP-MD-ML" S-20 Material: PP Multi Layer Pipe, Batch No.: 202607020011. Each Size: 3 Mtrs. X 65 Nos. Total = 195 Mtrs.)
2	219 Mtrs. (73 Nos.)	219 Mtrs. (73 Nos.)	219 Mtrs. (73 Nos.)	PP Multi Layer Pipe: (Size: DN110 Class-2 "PP-MD-ML" S-14 Material: PP Multi Layer Pipe, Batch No.: 202607020011. Each Size: 3 Mtrs. X 73 Nos. Total = 219 Mtrs.)

3.0 Applicable specification for Inspection:

Document Name	Drawing / Document Number	Rev.	Dated	Status (Approved / Not Approved)
Client PO / WO No.:	—	—	—	—
Drawing No.:	—	—	—	—
QAP / Tech Specification:	OPL/BHR/PP/2026-27	00	19.08.2026	—
Ref. Code/Standard & Specification No.:	EN1451-2017, CE0 50 (27261) WC-January-2025 & As per QAP	—	—	—

Inspection Time :	Day / Hour	01 Days	Travel Hours :	Lumsum	Distance (Km) :	Lumsum
Place: Ahmedabad	GLIS Inspector's Sign & Stamp		Reviewed By		Page 1 of 4	
Date: 31.08.2026	Name of Inspector : Vikram Singh		Name of Reviewer : C.V.Dabhi			

Head Office (India) : Gulf Lloyds Industrial Services (India) Pvt. Ltd. (الخليج لويذ للخدمات الصناعية الهند بركة العراق العمودية)
Address : 310, Gata Empire, Drive-In Road, Ahmedabad – 380052, Gujarat, India.
Telephone : (91) 79-48001126, (M)-91 9879001987
E-mail : contact@gulflloyd.com, gulflloyd.india@gmail.com
Website : www.gulflloyd.com (DOC. NO. : GLIS/004, Rev. 04 Dte: 01.08.2017)



GUS-Order No.: 101-091-6202-08-0804
Inspection Report
No. GLIS/AHD/OPL/IR/2026/08/3101 Rev. 00

4.0 Persons Present:

Sr. No.	Name of Representative	Designation	Name of Company
1.	Mr. Pankaj Kumar	Quality In-charge	M/s. Ori Plast Limited
2.	Mr. O.P. Shukla	QA/QC Manager	M/s. Ori Plast Limited
3.	Mr. Vikram Singh	Sr. Inspection Engineer	M/s. G.L.I.S. (I) Pvt. Ltd.

5.0 Inspection/Activity to be performed as per HRP/QAP/PO Specification:

HRP/QAP Cl. No.	Inspection Description	Scope of Inspection as per HRP/QAP
1	Dimension & Visual Properties	
1.1	Visual	Witness
1.2	Colour of Pipe	Witness
1.3	Mean Outer Diameter	Witness
1.4	Individual Thickness of Inner & Outer Layer	Witness
1.5	Wall Thickness	Witness
1.6	length	Witness
1.7	Ring Seal Socket	Witness
1.8	Wall Thickness Socket	Witness
2.0	Physical Properties	
2.1	Longitudinal Reversion Test	Witness
2.2	Density Base at 27°C	Witness
2.3	Melt Flow rate	Witness
2.4	Impact test	Witness
2.5	Ring Stiffness	Witness
2.6	Marking on Pipe	Witness
2.7	Noise Level	Witness
—	Calibration Certificates	Review
—	Identification & Marking	Witness

6.0 Inspection Carried out Details:

(Brief description of details of inspections, tests etc. carried out/reviewed/witnessed)

- Visual Inspection Carried out of Offered Pipe's samples per item wise (13 Nos) and Found Smooth Surface and Found Satisfactory as per EN-1451 and QAP.
- Visual Inspection Carried out of Offered Pipe's samples per item wise (13 Nos) and Verify Colour Shade is White and Found Satisfactory as per EN-1451 and QAP.
- Dimension Inspection carried out of Offered Pipe's samples per item wise (13 Nos) and Verify OD, Wall Thickness, Length, Individual Thickness, Ring Seal Socket, Wall Thickness of Socket Mean Inside Diameter and Found Satisfactory as per EN-1451 and QAP.
- 2 Nos of Samples drawn from both pipe items for lab testing and below testing witnessed:
- Witnessed Longitudinal Reversion Test at $\leq 2\%$ and found satisfactory as per EN-1451 and QAP.
- Witnessed Density Test of the Offered Sample of PP Pipe $> 1.1 \text{ kg/m}^3$ at 27°C and found satisfactory as per EN-1451 and QAP.

Place: Ahmedabad	GLIS Inspector's Sign & Stamp		Reviewed By		Page 2 of 4	
Date: 31.08.2026	Name of Inspector : Vikram Singh		Name of Reviewer : C.V.Dabhi			

Head Office (India) : Gulf Lloyds Industrial Services (India) Pvt. Ltd. (الخليج لويذ للخدمات الصناعية الهند بركة العراق العمودية)
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GUS-Order No.: 101-091-6202-08-0804
Inspection Report
No. GUS/AHD/OPL/IR/2026/08/3101 Rev. 00

- Witnessed Melt Flow Rate 0.67 & 0.68gm/10min and found satisfactory as per EN-1451 and QAP.
- Witnessed Impact test of Offered Sample @ $\leq 10\%$ and Found satisfactory EN-1451 and QAP.
- Witnessed Ring stiffness test of Offered Item @ 7.40 kN/m^3 and Found Satisfactory as per EN-1451 and QAP.
- Verified Marking on Offered Pipe's samples per item wise (13 Nos) Pipe (Ori-Plast MUTE DNxxx CLASS-x "PP-MD-ML" S-xx, Batch No. -xxxxxxxxxx) and found satisfactory as per EN-1451 and QAP.
- Witnessed Noise Level Test and Found as below.

Test Specimen: Wastewater System made of Plastic, type: "ORI PLAST MUTE" consisting of straight Pipes and fittings (OD 110) as well as Acoustic Pipe Clamps With Elastic Inlay

Noise Measurement Metric	Room Location	0.5 l/s	1.0 l/s	2.0 l/s	4.0 l/s
Airborne Sound Pressure level [L _{pA}] [dB(A)] according to DIN EN14366 for Ground floor test-room	GF Front	57	60	64	65
Structure-borne sound characteristic level [L _{scA}] [dB(A)] according to DIN EN 14366 for the Ground floor Test Room	GF Rear	<10	<10	<10	13
Installation sound level [L _{pA}] [dB(A)] Following DIN 4109 in the Ground floor Test-Room	GF Front	55	59	60	62
	GF Rear	<10	<10	<10	12
Installation Sound level [L _{pA}] [dB(A)] Following VDI 4100 in the Ground Floor Test-Room	GF Front	54	57	61	64
	GF Rear	<10	<10	<10	12

- Single Stickers Sticked of GLIS Logo " " on each coil on the end of the Coils for identification.
- Reviewed/Verified the Calibration Summary of the Testing Instruments and found satisfactory.

7.0 Calibration Details of Instrument Used:

Type of Equipment	Make / Id or Sr. Number	Date Last Calibrated	Current Calibration Expiry Date	NABL Accredited Calibration Agency (Yes / No)
As per Attached Calibration Summary				
Calibration Status Remark: NA.				

8.0 Result of Inspection: ☒ There were no reasons for objection
☒ With objection, see attachment
Status of Items (acc. to P.O.): ☒ complete ☐ not complete
☒ Released for export packing ☐ ready for further process
Purchase Order Status: ☒ complete ☐ not complete
Further Inspections: ☐ (Yes) Vender to notify ☒ No

9.0 Observation / Conclusion:

- Visited M/s. Ori Plast Limited, G-180 (O&P) & F-188 (K&L, J-1), RIICO Industrial Area, Phase-II, Behror – 301701, Rajasthan, India for Final Inspection/Testing of all offered Pipes and Found satisfactory as per EN-1451 and QAP, and result found Satisfactory & released for further operation.

Place: Ahmedabad	GLIS Inspector's Sign & Stamp		Reviewed By		Page 3 of 4	
Date: 31.08.2026	Name of Inspector : Vikram Singh		Name of Reviewer : C.V.Dabhi			

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GUS-Order No.: 101-091-6202-08-0804
Inspection Report
No. GLIS/AHD/OPL/IR/2026/08/3101 Rev. 00

10.0 Enclosures /Associated Documents:

- Offer List
- Dimension Report
- Performance Test
- Calibration certificate

11.0 Inspection Photographs:



----- End of the Report -----

Place: Ahmedabad	GLIS Inspector's Sign & Stamp		Reviewed By		Page 4 of 4	
Date: 31.08.2026	Name of Inspector : Vikram Singh		Name of Reviewer : C.V.Dabhi			

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*Perfect seal with one push,
everytime.*

Mute uses a push-fit socket with a factory-fitted lip seal, reinforced by external ribs at the socket for structural integrity and a proper set fit. With no solvent and no cure time, the joint is ready the moment it's assembled.

For runs that need to accommodate thermal movement, a compensator socket removes a step that traditional plastic drainage systems still require. With ordinary systems, installers must manually pull the pipe back after marking the required expansion allowance. Mute's compensator socket provides that space automatically, making the system faster to install and more reliable over time.



Built-in expansion space accommodates thermal movement without extra steps.



Depth gauge markings on every spigot, so the socket and spigot align correctly while preserving room for expansion and contraction.



Joint pressure rating: 0.5 bar (5m water column) with verified tightness.



Engineered joints that are quick to install, built to perform, and designed to stay quiet for the life of the building.

*Built for spaces where silence is
non - negotiable.*



RESIDENTIAL BUILDINGS

Single-family houses, residential towers and apartment buildings where noise reduction below 10 dB(A) at 2 L/s (validated by EN 14366) makes standard waste water discharge genuinely unobtrusive, well within DIN 4109 and VDI 4100 requirements.



COMMERCIAL BUILDINGS

Hotels and resorts, corporate offices, hospitals and clinics, educational institutions, libraries and community centres - anywhere VDI 4100's room-to-room sound separation standard applies and heavy foot traffic makes wastewater noise a daily, not occasional, concern.



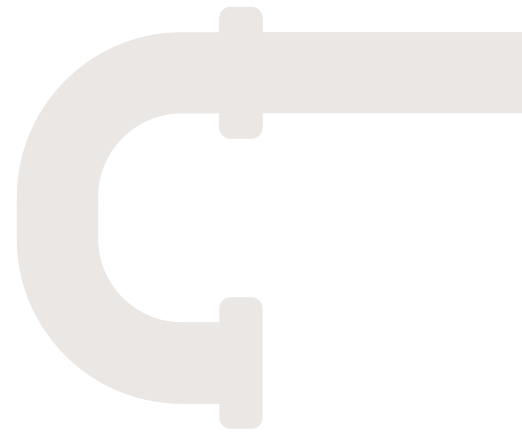
COMMERCIAL KITCHENS

Hotel and restaurant kitchens, food processing areas and industrial canteens routinely discharge hot wastewater carrying grease, food waste and cleaning chemicals. Mute's continuous 90°C, sporadic 95°C rating and pH 2-12 chemical resistance are significantly lower than that environment.



Simple to fit.

Everytime



Pipe Cutting

Cut pipes perpendicular to the axis using a proper pipe cutter or saw, deburring cuts and clearing residue. Chamfer the pipe end for a smooth push-fit into a fitting; leave it unchamfered when coupling with a compensator socket.



Push-Fit Joints (No Compensator)

- Confirm the lip seal is seated and intact within the coupling groove; clean fitting, gasket, and pipe end
 - Apply a thin, uniform layer of Ori-Plast-approved lubricant - never oil or grease
 - Insert the pipe fully into the coupler
 - Pull back roughly 10 mm to allow for thermal expansion; secure with the appropriate collar
-



Joints With a Compensator Socket

- Pull the expansion collar out from the compensator socket
- Slide the expansion collar over the pipe end
- Lubricate the compensator socket and collar surface — avoid grease or oil
- Align and slide the fitting onto the collar until fully inserted
- Confirm the collar is in its final position and both pipe ends are properly aligned at the gasket edge

Unlike traditional plastic systems, which require manually marking and pulling back the pipe to allow for expansion, Mute's compensator socket provides that space automatically — a faster, more reliable installation.

Pipe fixing and Support.

The Ori-Plast Mute soil and waste piping system must be installed in a manner that allows the pipe to accommodate thermal expansion and contraction without creating unnecessary stress in the system.

Pipes should be supported using suitable **rubber-lined pipe clamps**.

The rubber lining helps protect the pipe surface and provides a degree of flexibility within the support. Clamps should be securely anchored to the wall or supporting structure using appropriate screws and wall plugs suitable for the installation surface.

Where the piping system may be **subjected to internal pressure or additional mechanical loads**, the joints must be adequately preserved. Proper restraint prevents joint separation, unwanted movement, and misalignment of the pipe during service.

Additional joint-retaining clips suitable mechanical restraints may be provided at required locations. The positioning and spacing of the pipe supports should be selected according to the pipe size, installation orientation, system configuration, and expected operating conditions.

Care should be taken to ensure that the pipe is properly aligned and supported while still allowing the required movement for thermal compensation.



Vertical Support

Installation Guide & Fixation

FIXING BRACKET

A fixed bracket is used to establish a permanent support point within the piping system. Once the bracket is tightened, the pipe or fitting is held firmly in position and cannot move freely.

For vertical pipe installations, each individual pipe length should be secured at one suitable location using a fixed bracket to prevent the pipe from moving downwards. Fittings and assemblies consisting of multiple fittings should also be securely preserved at appropriate fixed points.

For horizontal pipe installations, at least one fixed bracket should be provided to maintain the position and alignment of the pipe.

All other supports used along the pipe run should be designated as sliding brackets. These allow the pipe to move longitudinally as required due to thermal expansion and contraction while maintaining adequate support.

The spacing between pipe brackets must be selected according to the applicable installation requirements and must not exceed the specified maximum support distance for the respective pipe size and installation condition.

SLIDING BRACKET

A sliding bracket supports the pipe while allowing it to move longitudinally along its axis. After the bracket is securely fixed at the bottom of the pipe, it becomes a permanent support as required.

This type of bracket is used to accommodate thermal expansion and contraction of the piping system and helps prevent excessive stress from developing in the pipe or joints.

Sliding brackets should be positioned appropriately along the pipe run to provide continuous support while maintaining the required freedom of movement.



Correct



Incorrect

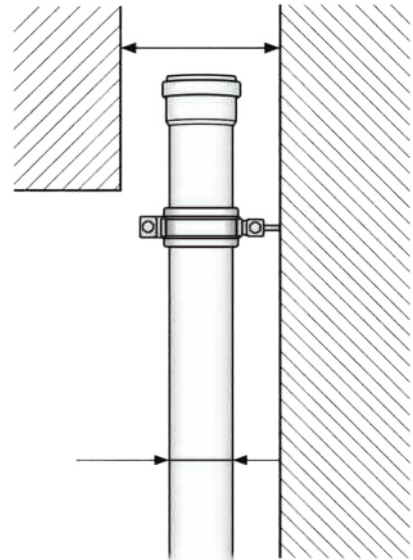
Protection against

External heat

The Ori-Plast Mute piping system should be protected from excessive external heat sources. Hot-water pipes, hot-water supply pipes, radiators, and other heat-generating services should be adequately insulated to prevent direct heat transfer to the drainage pipes.

Where drainage pipes are installed close to heat-producing services, sufficient separation or suitable thermal insulation should be provided to keep the pipe temperature within the recommended operating limits.

The required pipe and shaft dimensions should be selected according to the values specified in the following table.



Size mm (in)	OD Pipe Dia (mm)	OD Socket dm (mm)	Min. Required Spacing (mm)
40 (1¼)	40	54	125
50 (1½)	50	68	125
63 (2)	63	81	140
75 (2½)	75	95	155
110 (4)	110	130	190
125 (5)	125	147	210
160 (6)	160	184	244
200 (8)	200	228	288

*One system. Every connection a
building needs.*



PIPES

Single-socket & double-socket, straight lengths



BENDS

A range of angles for directional changes



BRANCHES & TEES

Single, double, & swept-angle junctions



COUPLERS & REDUCERS

Joining pipes of matching or differing diameters



TRAPS & ACCESS FITTINGS

Floor traps, inspection pipes, P-trap siphons



END CAPS, PLUGS & SAFETY CLIPS

Closures and joint security



FIXATION ACCESSORIES

Brackets, clamps, compensators, seals

Mute covers the full range a drainage stack requires, from straight pipe runs through every bend, branch, and access point.

All products share the same three-layer wall, the same push-fit jointing and the same acoustic performance.

How far apart, by size.

Maximum bracket distances differ for horizontal and vertical runs, and scale with pipe diameter.

A fixed bracket must sit directly below the socket in the lower floor slab on vertical stacks; a sliding bracket is fitted loosely on the straight section to allow thermal movement.



Pipe Size mm (in)	Max Horizontal Spacing	Max Vertical Spacing
40 (1¼)	0.7 (2.2')	1.30 (4.2')
50 (1½)	0.80 (2.6')	1.50 (4.9')
63 (2)	0.95 (3.1')	1.75 (5.7')
75 (2½)	1.10 (3.6')	2.00 (6.5')
110 (4)	2.00 (6.5')	2.00 (6.5')
125 (5)	2.00 (6.5')	2.00 (6.5')
160 (6)	2.00 (6.5')	2.00 (6.5')
200 (8)	2.40 (7.8')	2.00 (6.5')

*From truck to wall,
without damage*



Pipes should be positioned and moved fully supported along their length, one on top of the other, to prevent bending or sagging. It should never be dropped, dragged, or pulled over sharp edges.



Unstacked, horizontal stacks should not exceed 1.5 m in height and must be secured against rolling. Extra care is needed in cold weather, when materials are more prone to stress.



Polypropylene pipes carry an estimated service life of 50 years, in line with the average residential building lifespan and can be recycled through standard PP recycling streams at end of life, reducing the virgin material needed for future production; used pipes can also go to incineration or landfill if preferred.



Mute pipes and fittings are suitable for outdoor use, though prolonged direct sun exposure during storage may cause slight surface colour fade and could gradually affect some mechanical properties over time.





Ori-Plast Mute



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