

Structured for **Pressure**
Proven for **Performance**

APL APOLLO
**DWC
PIPES**

IS: 16098
(Part 2)



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ABOUT US

Apollo Pipes Limited (APL Apollo) has emerged as a leading name over the past 35 years, characterized by dynamism and a steadfast commitment to quality with an eye towards the future. Our vision is centered on delivering premium quality products at accessible prices, whether it's pipes and fittings, bathroom fixtures, or water tanks. APL Apollo consistently upholds this commitment, earning the trust of our customers.

We hold a significant presence across key sectors nationwide, including Plumbing, Sanitation, Water Supply, Infrastructure, Agriculture, Oil & Gas, and Construction. Our comprehensive range of piping systems and accessories caters to individuals aspiring to create elegant homes without compromising affordability, positioning us as a highly sought-after brand.

With Nine manufacturing plants strategically located in Dadri, Sikandrabad, Varanasi (UP), Ahmedabad, Silvassa (Gujarat), Bangalore (Karnataka), Mahagaon (Maharashtra), Dewas (MP) and Raipur (Chhattisgarh), boasting a production capacity of 2,16,000 MTPA, APL Apollo has established a Pan-India footprint.

Backed by over 1000+ channel partners and 40,000+ customer touch points, our extensive product range and substantial production capacity enable us to meet diverse needs, from individual consumers to retailers, traders, exporters, and distributors. Designed with Indian aesthetics in mind and built to withstand rough usage, our products cater to both urban and rural markets.

We adhere to international quality standards in manufacturing an extensive range of plumbing solutions. Our portfolio includes CPVC Pipes & Fittings, uPVC Plumbing Systems, uPVC SWR Piping Systems, uPVC Pressure Pipes & Fittings, PPR-C Plumbing Systems, uPVC Column Pipes, Well Casing Pipes, HDPE Pipes, HDPE Sprinkler Systems, PVC-O Pipes, PLB Duct Pipes, Gas Pipes, Adhesives, Water Tanks, and a wide selection of Bath Fittings. With over 2,600 SKUs, APL Apollo proudly offers the most comprehensive product range in the Indian market.

Expanding our horizons, APL Apollo has now ventured into the fenestration industry with the launch of our new product line—Doors and Windows. With this strategic move, we are set to make a significant impact and capture new market opportunities.

APL Apollo remains dedicated to addressing all consumer needs comprehensively. We offer an extensive range that is affordable, durable, and safe, ensuring customer satisfaction in every way possible.



Best Brand
Award-2021
By The Economic Times



Iconic Brands Award
of India-2022
By The Economic Times



Iconic Brands Award
of India-2024
By The Economic Times



Best Manufacturing
Award - 2024
By Industry Outlook

OUR PRESENCE ACROSS NATION



-  Corporate Office
-  Regional Office
-  Manufacturing Unit



Sudesh Group

35 Years of
excellence



ABOUT APL APOLLO DWC PIPES

APL APOLLO DWC Pipes are manufactured using high-density polyethylene (HDPE) polymer, offering excellent resistance to a wide range of gases and chemicals typically generated from the decomposition of materials within the sewer system.

These pipes are produced in accordance with IS 16098 (Part-2) standards and feature a smooth inner surface for efficient flow and a corrugated outer surface for enhanced strength and durability. The corrugated exterior provides superior stiffness, enabling the pipe to withstand soil movement and handle both static and dynamic loads effectively.

APL APOLLO DWC Pipes are available in SN4 and SN8 stiffness classes, with sizes ranging from 100mm to 300mm. Each pipe comes in a standard 6-meter length and is supplied with rubber ring jointing for secure and easy installation.

Technical details

SN Class refers to the Stiffness Class of a pipe, specifically used to describe the ring stiffness of thermoplastic pipes like DWC (Double Wall Corrugated) pipes used in drainage, sewerage, and storm water applications.

Specifications:

Double Wall Design:

- Outer Wall: Corrugated for structural strength and stiffness
- Inner Wall: Smooth for low friction and better hydraulic flow
- Shape: Circular cross-section



WHY CHOOSE?

01

Extensive product portfolio

APL APOLLO Offers a wide range of sizes, from 100mm to 300mm in diameter, available in SN4 and SN8 stiffness classes—designed to meet all modern drainage and sewerage system requirements.



02

State of art manufacturing

APL APOLLO is equipped with state-of-the-art manufacturing facilities dedicated to DWC Pipes at APL APOLLO plants. These facilities feature high-speed, precision extruders and injection moulding machines, along with advanced manufacturing techniques that ensure the production of ultra-modern, error-free. The entire manufacturing system is powered by cutting-edge Modern equipment and extrusion process technology, delivering exceptional quality and consistency.



03

Dimensions & Sizes

Mean Inside Diameter:

The mean inside diameter at any point, along with its permissible tolerances, shall conform to the specifications as per IS: 16098 (Part-2).

Wall Thickness:

The nominal wall thickness values (e4, e5) must comply with the requirements as per IS: 16098 (Part-2). Tolerances for inside diameters shall also align with IS: 16098 (Part-2).

Length of Pipe:

The effective length of pipes (excluding sockets) shall not be less than the minimum specified by APL APOLLO, when measured according to Figure 1 of IS: 16098 (Part-2). Pipe lengths may also be supplied based on mutual agreement between the purchaser and APL APOLLO.

04

Pipe End

Plain End and In- line socket End

KEY FEATURES AND ADVANTAGES



Superior Load-Bearing Capacity

Designed to withstand heavy loads, making it ideal for demanding applications.



Low Manning's Roughness Coefficient ($n = 0.009$)

Lower resistance to flow ensures higher hydraulic efficiency.



High Hazen-Williams Coefficient ($C = 150$)

Delivers excellent flow capacity due to reduced frictional losses.



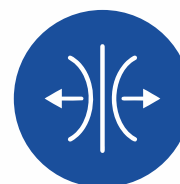
Chemically Inert

Resistant to a wide range of chemicals, ensuring long-term durability.



Excellent Abrasion Resistance

Built to withstand wear from solids in flow, extending service life.



Flexible and Fatigue-Resistant

Capable of handling ground movements and dynamic loads without damage.



Outstanding Anti-Corrosive Properties

Ideal for use in harsh and corrosive environments.



Suitable for Aggressive Climatic Conditions

Performs reliably across a wide range of temperatures and weather conditions.



Excellent Soil Bonding

Enhances installation stability and structural performance.

TECHNICAL HIGHLIGHTS



1 High Flexibility

Due to their lightweight and elastic properties, these pipes provide exceptional flexibility during installation, allowing them to easily conform to various terrain contours and layout patterns.



4 Value for Money

With 60–70% weight savings compared to solid wall plastic pipes and up to 95% lighter than concrete pipes, these pipes offer significant cost advantages, making them a highly economical choice.



2 Leak-Proof Joints

The joints are 100% watertight, preventing any infiltration, ex-filtration, or root penetration. This ensures that the surrounding environment remains unaffected, effectively eliminating the risk of soil or underground water contamination.



5 Exceptional Rigidity

Designed to withstand heavy overload pressures from soil and traffic loads, these pipes are built to endure various stresses encountered during installation and throughout their service life.



3 Zero Maintenance Needed

Due to their resistance to scaling, encrustation, and chemical reactions, these pipes require no regular maintenance. Periodic flushing with water helps maintain a smooth surface and enhances overall performance.



6 Durable and Long-Lasting

These pipes are highly durable, offering a service life of over 50 years due to their resistance to corrosion, chemical reactivity, and superior abrasion resistance.



7 Superior Resistance to Chemicals, Corrosion, and Abrasion

Made from high-quality PE/PP materials, these pipes are completely resistant to corrosion and provide excellent resistance against a wide range of chemicals. Their superior abrasion resistance offers a significant advantage over traditional metal and concrete pipes.



10 Environmentally Sustainable

These pipes are environmentally responsible, as both their processing and reprocessing have no harmful impact on the environment. Their watertight joints effectively prevent soil and groundwater contamination, ensuring long-term ecological safety.



8 Anti-Rodent Properties

Rodents exhibit a strong aversion to biting pipes treated with rodent-repellent additives, unlike pipes that do not contain these protective additives.



11 Quick and Hassle-Free Installation

The longer lengths and lightweight nature of these pipes make installation both quick and hassle-free. They are easily connected using slip-on techniques, with options for either integrally welded or separate couplers. Unlike conventional concrete or metal pipes, their light weight eliminates the need for heavy handling equipment during installation. Additionally, these pipes can be conveniently laid in tight or restricted spaces, helping to reduce extra costs.



9 Optimal Hydraulic Performance

The glass-smooth inner surface, with a Manning's coefficient of 0.009–0.010 that remains consistent throughout the pipe's lifespan, facilitates rapid waste disposal. This smooth surface significantly reduces the risk of blockages, enhances flow efficiency, and increases carrying capacity by up to 40% compared to concrete pipes.

FIELD APPLICATIONS



Sewerage and Drainage Systems



Sub-Surface Drainage Collectors



Culvert and Highway Drainage



Effluent / Wastewater Transport Networks



Rainwater Harvesting Systems



Stormwater Drainage Networks

TECHNICAL CHART

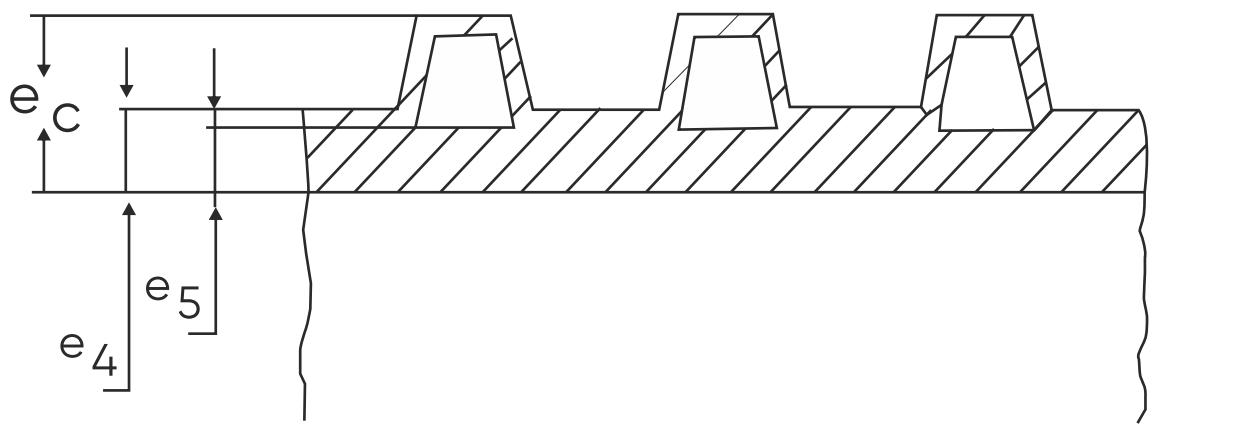
Nominal sizes, minimum inside diameters, thickness of inside layers and socket length.

(Clauses 6.3.1, 6.3.5.1.4, 6.3.5.1.5 and 6.3.5.2)

DN/ID Series		Minimum Wall Thickness		Socket Length
DN/ID	d_{in} Min (mm)	e_4 Min (mm)	e_5 Min (mm)	A_{min} (mm)
100	95	1.0	1.0	32
125	120	1.2	1.0	38
135	130	1.2	1.0	39
150	145	1.3	1.0	43
170	165	1.4	1.0	48
200	195	1.5	1.1	54
225	220	1.7	1.4	55
250	245	1.8	1.5	59
300	294	2.0	1.7	64

Pipe stiffness Classes SN4 and SN8.

For selection A_{min} requirements for socket, refer to the pipe material and construction. For pipes longer than 6 mtr it is recommended that one produce a larger A_{min} than is specified in this table.

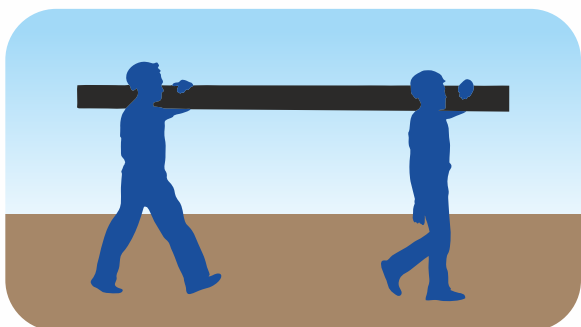


HANDLING RECOMMENDATIONS

1

To prevent damage during transportation and installation, please follow these pipe and fitting handling guidelines:

- Pipes from 100 mm to 400 mm in diameter can be safely handled manually by laborers.
- Always seek contractor support for safe and efficient unloading of pipes.
- Do not insert a loading boom or forklift tines directly into or against the pipe, as this may cause internal damage or deformation.



TRANSPORTATION GUIDELINES

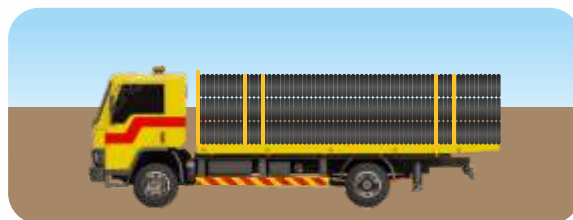
2

Do's

- Use a flat-bodied vehicle for stable transportation. Stack pipes with alternating sockets on opposite sides for balance.
- Place larger diameter pipes at the bottom to prevent damage. Use nylon slings or cushioned cables for lifting and lowering.
- Alternate bell ends in each layer for uniform support.
- Lift pipes by the center one-third using slings for proper balance.

Don'ts

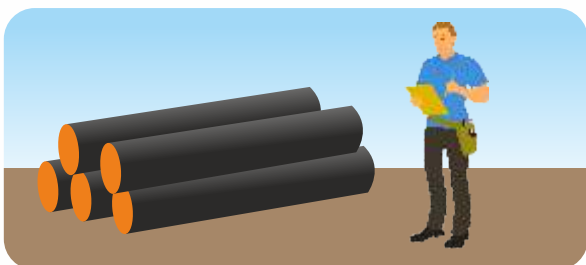
- Do not let pipes overhang outside the vehicle body.
- Do not stack pipes higher than 2.5 meters during transport.



RECEIVING RECOMMENDATIONS

3

- Before unloading, direct the driver to a smooth, flat area that is free from rocks, debris, or other obstructions.
- Immediately inspect the delivery upon unloading to verify quantity and quality of the items. Check for any visible damage to the pipes or fittings that may have occurred during transit.
- Document any damaged or missing items clearly on the delivery receipt at the time of receipt.
- Do not discard damaged items. Instead, check with the driver regarding the appropriate return procedure. If the driver is uncertain, please contact our sales team for assistance.

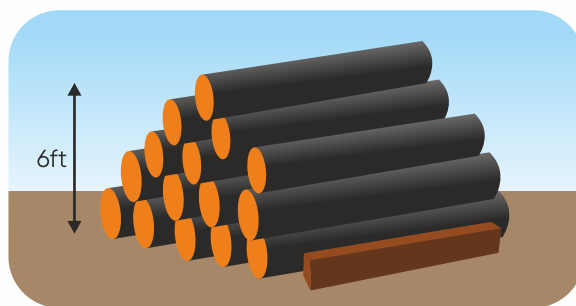


STORAGE RECOMMENDATIONS

4

To prevent damage during job site storage, please follow these essential guidelines:

- Store pipes on a flat, level, and debris-free surface.
- Use securing timbers or blocks at the base to prevent the stack from shifting or collapsing.
- Never store pipes without proper blocking, as this may lead to stack collapse, pipe damage, or even personal injury.
- Ensure that pipe stacks do not exceed 6 feet (1.8 meters) in height for safety and stability.

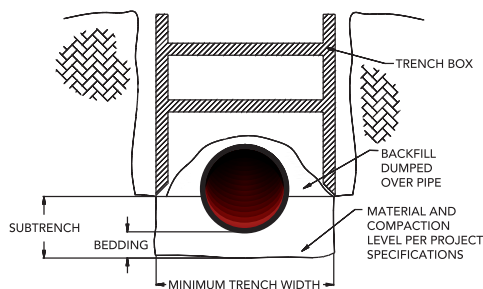


INSTALLATION OF DWC* PIPES

Trench Preparation

Sewer Trench width depends on the soil condition, type of side protection and the working space required at the bottom of the trench for smooth installations. Considering all the above factors, minimum trench width as per IS 16098 Part 2 is –

Sr. No	Pipe Diameter (mm)	Trench Width Mtr.
1	75 to 200	0.6
2	250	0.7
3	300	0.8
4	400	0.8



The trench depth should be minimum 1.5 mtr onwards

Bedding

Even under combined loads (wheel load + backfill), structural bedding using cement or concrete is not required.

To maintain sewer slopes, initial backfill should be done using sand or gravel (as determined by the structural design for flexible buried conduits), laid over a single layer of Brick Flat Soling (BFS).

Jointing Procedure

Construction of Backfill Envelope and Trench Backfilling

Initial backfill envelope material should align with the structural design of the flexible buried conduit.

- The envelope material may be reused excavated material or fine/coarse sand or gravel, depending on overburden and imposed load. Concrete should be avoided as it introduces unwanted rigidity.
- The remainder of the backfill should consist of clean excavated soil, free from large clods or stones over 75 mm, ashes, refuse, or any harmful substances.
- Final backfilling should only commence after successfully conducting a water-tightness test for the relevant sewer segments. Partial backfilling may be done while joints remain accessible.

Excavation

- Sewer trenches should be laid in straight lines wherever possible.
- In place of conventional manholes, APL Apollo DWC pipe fittings such as tees and bends should be used at transitions.
- Excavated spoils must not be deposited near the trench to prevent collapse of trench walls.
- Where necessary, trench sides should be supported with proper shoring to facilitate safe and efficient excavation, while also protecting adjacent structures.
- Dewatering: Trenches should be adequately dewatered during sewer installation to maintain the proper gradient and ensure correct placement of the pipe. The APL Apollo DWC pipes should be connected using socket and spigot joints to the previously laid section.

Laying

APL Apollo DWC pipes come with integrated socket/bell ends.

Clean the spigot and socket surfaces with a cloth. Insert the rubber ring on the spigot end, positioning it between the first corrugation valley.

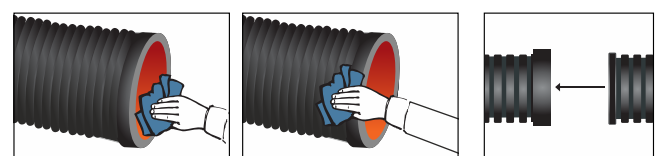
Carefully insert the spigot into the socket end using one of the following methods:

(a) Jointing Jack Method

- Position and securely connect the two halves of the jointing jack to the pipe corrugations on both socket and spigot ends.
- Insert the rubber ring-fitted spigot into the socket using the jack.
- This method allows for a quick and leak-proof joint in just a few minutes.

(b) Rope Method

- Tie a rope at an appropriate distance from the spigot end to apply adequate pulling force.
- Pull the rope tightly to smoothly insert the spigot into the socket.
- This method also ensures a leak-proof joint in a few minutes.



COMPARISON TABLE

RCC Pipes vs. DWC Pipes

Parameter	DWC Pipes (HDPE/PP)	RCC Pipes
Material	High-Density Polyethylene (HDPE) or Polypropylene (PP)	Reinforced Cement Concrete
Structure	Double wall – corrugated outside, smooth inside	Solid wall, heavy
Weight	Very lightweight (up to 95% lighter than RCC)	Very heavy
Ease of Handling	Can be handled manually or with light machinery	Requires cranes and heavy equipment
Jointing System	Push-fit/slip-on with coupler and rubber seal	Collar joint with cement mortar
Hydraulic Efficiency	Smooth inner wall; Manning's $n \approx 0.009 - 0.010$	Rough inner surface; Manning's $n \approx 0.013 - 0.015$
Corrosion Resistance	High – chemically inert, corrosion-resistant	Low – prone to chemical attack and corrosion
Abrasion Resistance	Excellent	Moderate
Installation Time	Fast – easy jointing and light handling	Slow – requires curing time and equipment
Bedding Requirement	Can be laid on moderate bedding	Heavy bedding/subgrade required
Leakage Risk	Low – rubber-sealed joints ensure watertightness	High if joints not sealed properly
Life Span	Upto 50 years	Upto 20 years
Environmental Resistance	Resistant to a wide range of chemicals and aggressive soils	Susceptible to sulfate/chloride attack
Maintenance Needs	Low – smooth surface reduces blockages	High – risk of root intrusion and joint failure
Cost (Material)	Higher per unit length	Lower per unit length
Cost (Overall Lifecycle)	Lower – savings in logistics, manpower, and maintenance	Higher – due to handling, transport, installation
Applications	Sewer, drainage, stormwater, highways, industrial effluents	Stormwater, sewer lines, culverts





APOLLO PIPES LIMITED

An ISO 9001-2015 Certified Company

Corporate Office: A-140, Sector 136, Noida-201301, Uttar Pradesh (India)

Toll Free No. 1800-121-3737  **8130098024**

www.apollopipes.com | wecare@apollopipes.com | Follow Us on:    

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