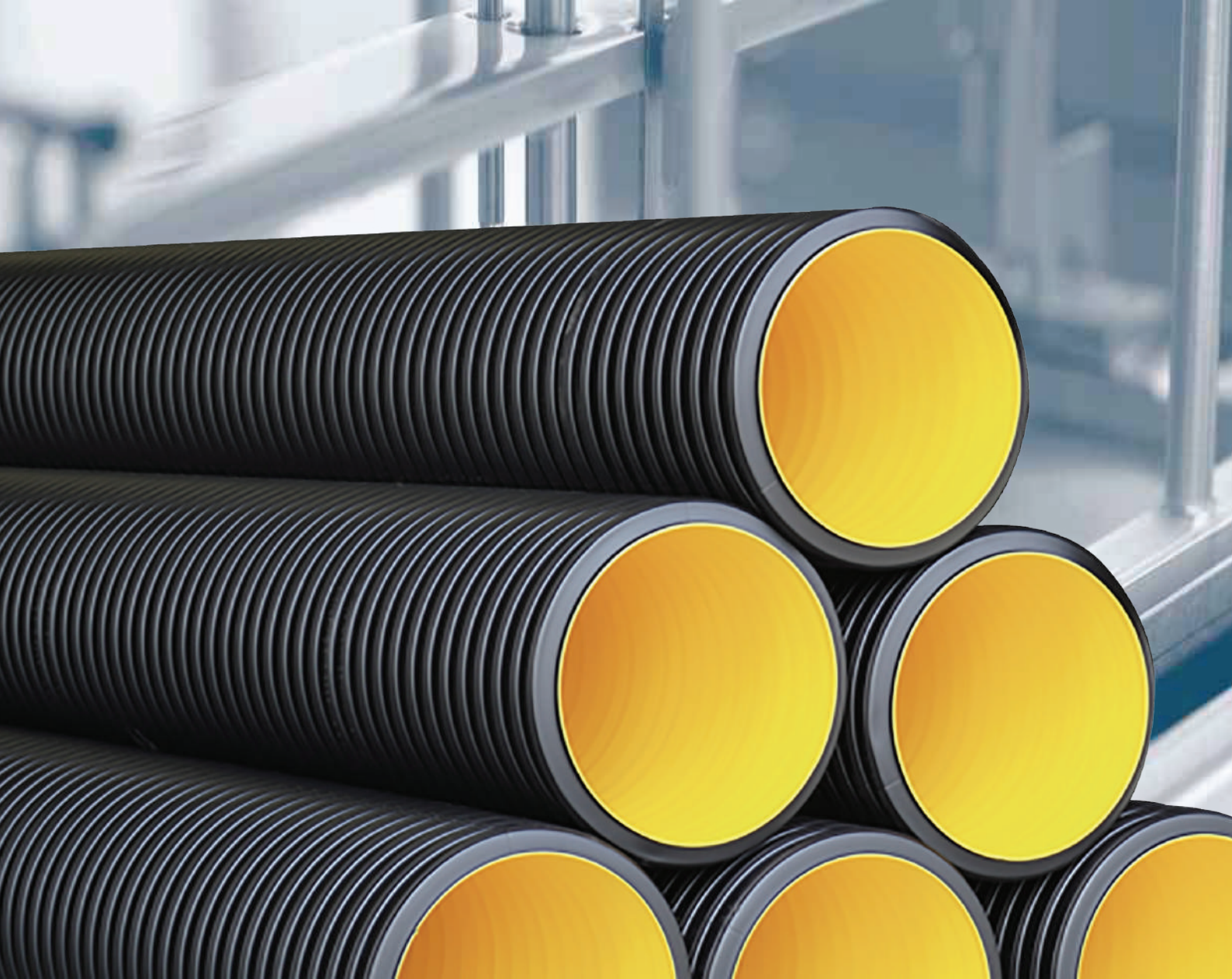


Hepworth

Q-CORE
CORRUGATED

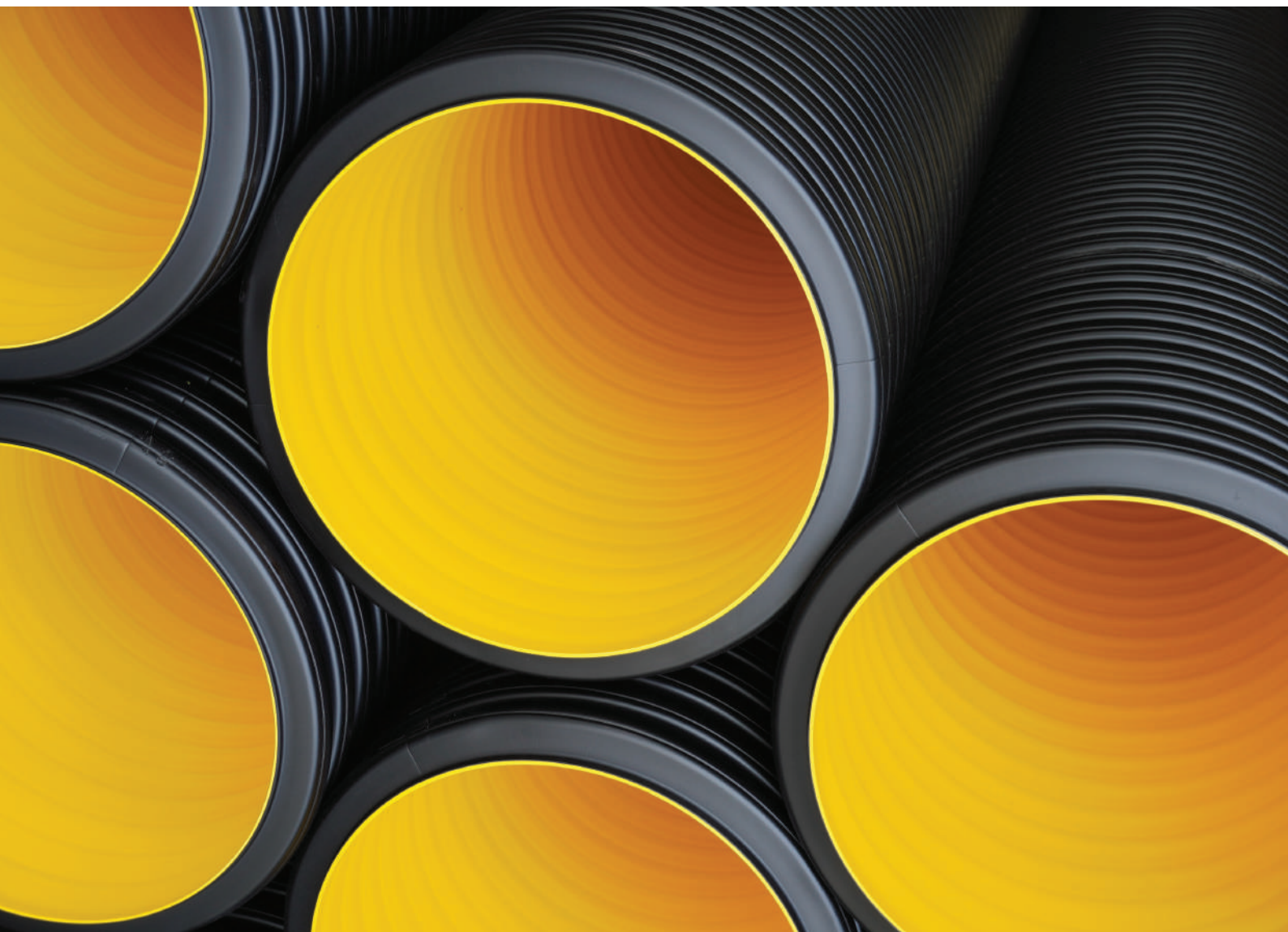


Q-CORE STRUCTURED WALL PIPING SYSTEM- HDPE

Product Technical Guide

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INTRODUCTION

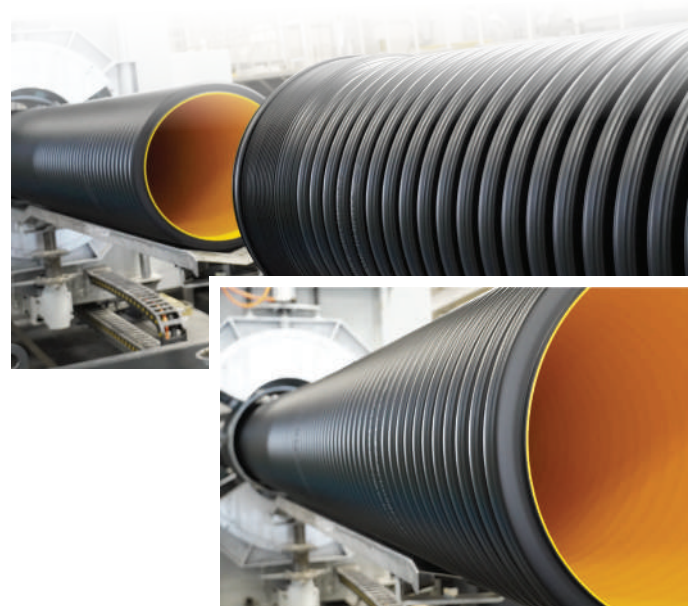
Hepworth PME (Qatar) WLL was established in 2003 and is the leading manufacturer and supplier in Qatar of quality thermoplastic piping systems to the building & construction, civil engineering and industrial market sectors.

Hepworth PME (Qatar) WLL operates a management system based on ISO 9001, ISO 14001 and ISO 45001. In 2009 Hepworth PME (Qatar) WLL became the first plastic pipe manufacturer in Qatar to achieve “kitemark” third party certification on its soil & waste and drainage products, clearly demonstrating the company’s commitment and dedication to supplying its customers with the highest quality piping systems.

Hepworth PME (Qatar) WLL products are manufactured to relevant British, European, ASTM and International Standards, quality, performance and reliability are the hallmarks synonymous with the Hepworth brand name and provide complete piping systems solutions incorporating pipes, fittings, manual and actuated valves, measurement and control systems and jointing equipment and accessories from a selected group of international manufacturers who further enhance the scope of supply to accommodate other aspects of water and gas flow management. Encompassing diverse fields such as irrigation to firefighting and district cooling to domestic water supply, complete systems and individual components can be sourced from one professional outlet.

Hepworth PME (Qatar) WLL has the following advantages:

- ✓ Quality of Products
- ✓ Excellent Training and Technical support
- ✓ Comprehensive range of pipes, fittings and accessories from a single source
- ✓ Stringent and Independent Quality Control Unit
- ✓ Substantial Stock
- ✓ Trustable Customer Service
- ✓ Direct Delivery to your Site/Shop
- ✓ Competitiveness
- ✓ Specified by Consultant
- ✓ Knowledge and Competence of Staff



Q-CORE STRUCTURED WALL PIPING SYSTEM - HDPE

GENERAL INFORMATION

Q-CORE Structured wall pipes are made from High Density Polyethylene (HDPE) for non- pressure underground drainage and sewerage structured-wall piping system manufactured and tested in accordance with BS EN 13476-3, covering size range from 200 to 800mm with nominal ring stiffness class SN8 (8 KN/m²).

Nominal Diameter DN	Inside Diameter (mm)	Outside Diameter (mm)	Pipe Ring (Stiffness (KN/m ²))	Standard Length
DN 200	200	228	8	6 m
DN 300	300	343	8	6 m
DN 400	400	460	8	6 m
DN 500	500	585	8	6 m
DN 600	600	702	8	6 m
DN 800	800	933	8	6 m

- Q-CORE Structured wall HDPE pipes are manufactured with smooth internal and profiled external surface (Type B) that consist of two layers.
Outer surface colour: Black
Inner surface colour: Yellow
- Q-CORE Structured wall HDPE pipes are suitable for acidic liquid mediums.
- Q-CORE Structured wall HDPE pipes are high performance at elevated temperatures.
- Q-CORE Structured wall HDPE pipes are guaranteed for minimum service life of +50 years without maintenance.
- Design Temperature is 60 Deg C.

BENEFITS

- Cost effective, competitive pricing and low installation cost.
- Leakage proof. (Leak free push- fit jointing system)
- Superior physical and mechanical properties.
- Excellent chemical resistance. (Corrosive chemicals in waste waters)
- Easy handling and installation. (Lightweight which makes the usage of crane onsite in most of the cases unnecessary)
- Excellent abrasion resistance. (High durability and long service life)
- Superior hydraulic flow capacity. (Smooth inner surface provides reduced friction)
- Environmentally friendly. (Can be recycled at the end of its service life)
- UV resistance
- Designed to optimum stiffness classification
- Superior performance in areas of differential settlement

Q-CORE STRUCTURED WALL PIPING SYSTEM - HDPE

USAGE APPLICATIONS

Q-CORE Structured wall HDPE pipes are suitable for highways, rail, airport, ports, harbours, commercial and public sector projects & can be used in wide range of non- pressure applications such as :

- Surface and ground water drainage
- Storm and rainwater system
- Sewage / Foul System
- Culverts
- Protection sleeves
- Cable ducts



Q-CORE STRUCTURED WALL PIPING SYSTEM - HDPE

MATERIAL PROPERTIES

Physical

Characteristic	PE Value	MU	Test Method
Density	≥ 940	Kg/m ³	ISO 1183-1
Melt mass-flow rate	≤ 1,6	g/10 min	ISO 1133-1
Thermal conductivity	≈ (0,36 to 0,50)	WK ⁻¹ m ⁻¹	BS EN 13476-1
Specific heat capacity	≈ (2 300 to 2 900)	Jkg ⁻¹ K ⁻¹	BS EN 13476-1
Average coefficient of linear thermal expansion	≈ 17 x 10 ⁻⁵	K ⁻¹	BS EN 13476-1
Modulus of elasticity, E short term value	≥ 800	MPa	BS EN 13476-1
Thermal stability, OIT	≥ 20	min	EN ISO 11357-6
Poisson ratio	0.45	-	-

Mechanical

Characteristic	PE Value	MU	Test Method
Angular stiffness SN	8	kN/m ²	ISO 9969
Impact resistance at 0°C	TIR ≤ 10	%	EN 744
Angular flexibility (strain 30%)	Without cracks		EN 1446



Testing the stiffening clamp



Flexibility of deformation clamp



Deformation testing and hydraulic properties of the system

Q-CORE STRUCTURED WALL PIPING SYSTEM - HDPE

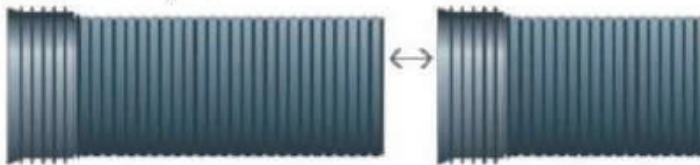
INSTALLATION INSTRUCTION

A. Connection Methods

Q-CORE Structured wall HDPE pipes can be connected by one of the following options:

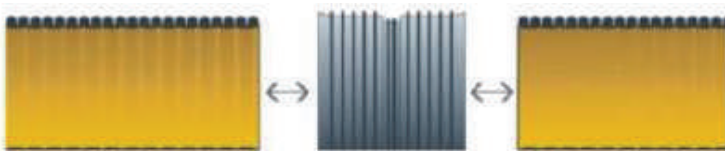
1. Pipe connection with integrated socketed pipe (only one seal needed)

Socketed Pipes

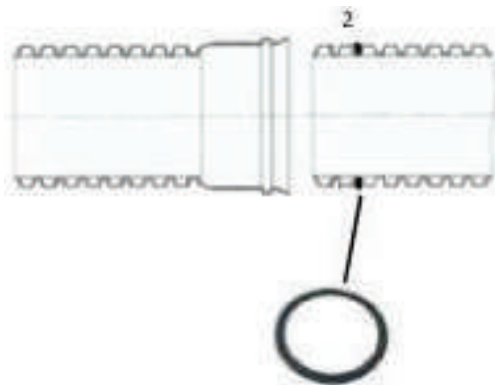


2. Pipe connection by using additional coupler (two seals needed)

Connection With Standard Coupler



Ring Seal Joint



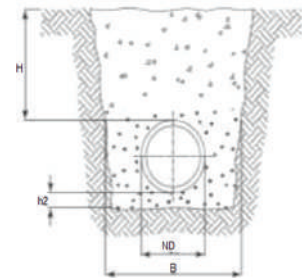
- The gasket to be inserted to second ring of the pipe's tail part.
- The gasket which is suitable for the pipes diameter is placed on the end part, the other side is stretched by hand (or by using a crowbar) and fitted on the second bulge of the pipe.
- The final form of the gasket after it is fitted should be so that domed part stays out.
- Before assembling, soap or water-based lubricants should be used at the parts with gasket or socket for convenience. Grease or mineral oil should not be used.
- Before assembling, make sure that pipes are on an even axis and angular differences should be corrected if any.
- Pipes should be at a flat angle, small diameter should be fitted by pushing with a crowbar, big diameters with the help of an effort.

Q-CORE STRUCTURED WALL PIPING SYSTEM - HDPE

B. Underground Installation Instructions

- Reference standard: BS EN-13476-3, ENV 1046:2002, EN 1610:2000
- Corrugated plastic pipe easily supports maximum highway loads (HS 25 traffic loads).
- Narrow trenches, correct laying.

ND (mm)	Minimum trench width
≤ 225	ND + 0,40 m
> 225 ≤ 350	ND + 0,50 m
> 350 ≤ 700	ND + 0,70 m
> 700 ≤ 1200	ND + 0,85 m



H= minimum 0.8m
h2 shall not be less than:
100mm in normal soil condition
150mm in hard and rock soil condition

H = minimum 0.8m

- Prepare the joining zone, so that the pipe will support on the entire length and not on the coupler.
- The maximum particle size of the filler: 22 mm for ND ≤ 200 mm and 40 mm for ND > 200 mm.
- After coupling compact the joining zone, ensuring a continuous support bed.
- Fill the space around the pipe in layers not exceeding 300 mm and compact each layer.
- Continue filling up to more than 150 mm (300 mm for the road surface) in the upper part of the pipe.
- The excavated material (native soil) can be used for filling the trench as long that can be compacted and shall be free from materials detrimental to the pipe (oversize particles, tree roots, organic materials, rubbish).

For a correct jointing, follow the instructions mentioned below:

- Check flatness, slope and compaction degree of the sand bed on which the pipe is layed.
- The trench width should allow compaction of the filler around the pipe.
- Place the pipe in the trench by hand, textile ropes or using the worksite machineries.
- Inspect the coupler and remove any foreign material.
- Use a clean cloth or brush to coat the coupler and seal with lubricant.
- Check correct alignment of pipes.
- Do not press directly on the coupler, use an end of the pipe and a wooden lever.

Q-CORE STRUCTURED WALL PIPING SYSTEM - HDPE

HANDLING AND STORAGE

A. Transportation of structured wall HDPE pipe to the workshop

Structured wall HDPE pipes and their components should be loaded and transported with suitable trucks and implements, so that no point pressure is exerted on the pipe and breakage, perforation, or deformation of the pipe is not formed in the pressure points. If there are sharp points on the vehicles, they should be covered by suitable materials such as long boards. Make sure that bolts and nails are not stuck in the wall and flat bed of the truck and that their weight is not loaded on the edge of the truck and the edges of the pipes. Otherwise, there is a possibility of serious damage to the pipes. Do not use uncoated metal cables or other hard objects to lift double-wall corrugated pipes. It is advisable to use two fabric bands between the two ends of the pipe or use a fabric band in the middle of the pipe. Use hands to control and direct pipes so that they do not collide around. Never use a belt to lift multiple pipes at the same time. Pipes are lightweight because of their specific structure and lightweight materials so that lower sizes are easy to move by one or two workers. Care must be taken that pipes are not rolled in the workshop or thrown down. Otherwise, serious damage will occur.

B. Storage and maintenance of double-wall corrugated pipe

The storage location of double-wall corrugated pipes depends on the type of land and the type of equipment available. Generally, the land used for storage should be flat. The ground can be artificial or covered with asphalt, sand or grass. Note that pipes are made of high-density polyethylene, and the presence of sharp stones underneath the pipes will cause a hole or deformation of the pipes at that point. In addition, the deposition of pipes in rugged areas will cause deformation of pipes in different points. It is advisable to put three plastic pallets under the pipes and avoid direct contact between pipes and the ground.

Size: Never place lower size pipes in larger size pipes in the deposition area, because it raises the weight and pressure on the lower pipes, which will make them deformed.

Double-wall pipe arrangement: Pipes are arranged in zigzag so that couplings are not deformed.

Height: The permissible height for assembling pipes in the workshop conditions is up to two meters for lower sizes. For sizes larger than 500 mm, the upper pipes should be placed on wooden sheets, in which the maximum allowable height is 2.5 meters. Pipes of a length of six meters should be placed on three wooden sheets and pipes less than four meters should be placed on two wooden sheets. In these conditions, the sheets are placed with equal distances between the two ends of the pipe. Note that manhole pipes should not be placed on each other.

Q-CORE STRUCTURED WALL PIPING SYSTEM - HDPE

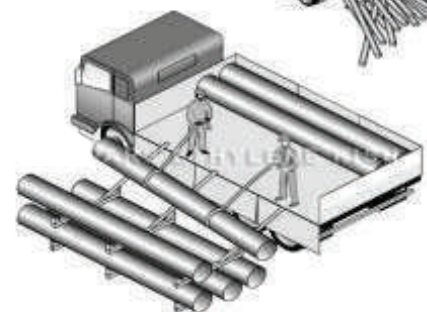
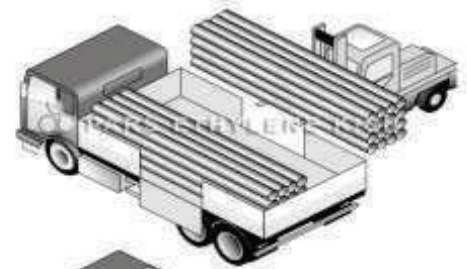
Sunlight: the pipes have ultraviolet stabilizers, yet sewage pipes are produced for underground applications. It is therefore better to not keep sewage pipes in open air for more than a year. They shall be placed under a canopy to be kept away from direct sunlight. In general, it is best to keep pipes in roofed space to protect them against sunlight, and if kept them in open space, pipes should be covered with anti-UV covers, and it is best to have the pipes vertically in front of the light.

Temperature: All plastics are subject to change in dimensions due to temperature rise. If temperature is more than 25°C, pipes will change in size. Therefore, in cases where air temperature is more than 25°C there is a need for additional care in the storage and keeping the pipes in better conditions than the maximum allowed standards.

Deformation: Care must be taken that excessive temperature and long-term storage of pipes in non-standard conditions might cause deformation in the dimensions of pipes, especially larger size pipes. If these conditions occur and the pipe is deformed, the inside diameter of the pipe must be measured in the horizontal and vertical directions, and if the diameter in a horizontal direction is more than the vertical direction, the pipe must be rotated 90° for the larger diameter be placed in the vertical direction. Care must be taken that this should be done at least six hours before the installation of the pipe in the trench. It is better to store manholes in a position resembling their installation in the trench, so that they will not be affected later due to their specific and asymmetric shape.



Off-loading on site may be made easier by using skid timbers and strap slings



PE U DN/ID500 SN8 EN13476/3

HEPWORTH MADE IN QATAR  

Q-CORE
CORRUGATED

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