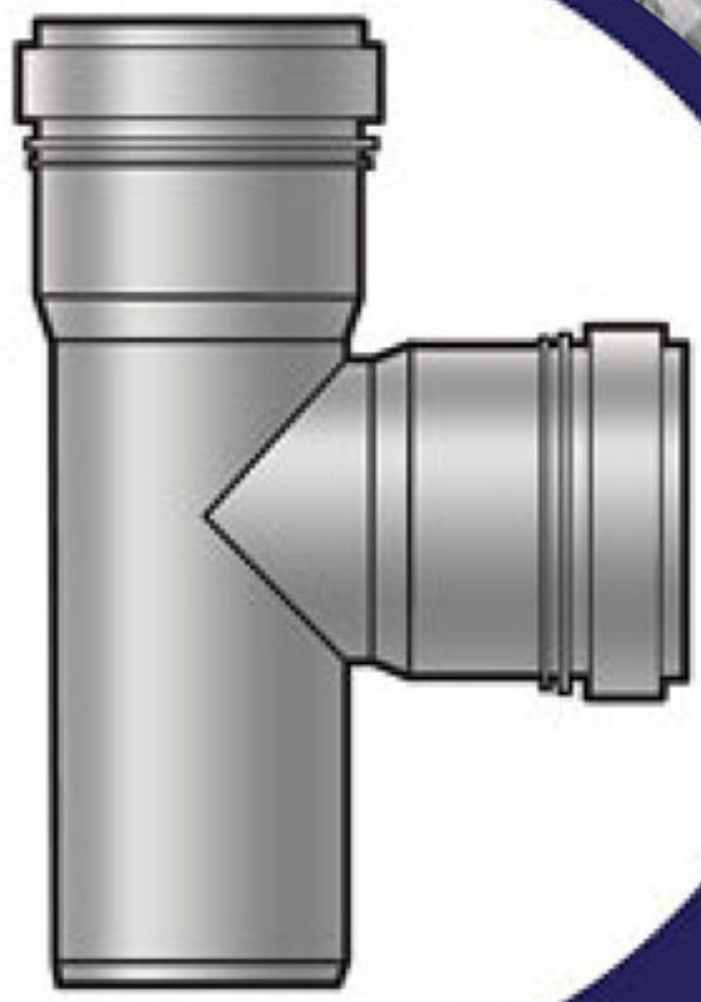
AL-AMAL Company for Plastic Pipes and Fittings

(AL-SHARIF)



PP-H/B

Pipes System

Drainge and Sewage Discharge

Introduction

AL-AMAL Company for plastic pipes and fittings (AL-SHARIF) was formed in 1995 with the aim of developing a professional UPVC/CPVC/HDPE/PP-R/PP-H/B Pipes and fitting industry. Since the company has bought AL-AMAL's plastic pipes factories with their well known and trusted brand name and sign, AL-AMAL Co. is considered one of the largest leading companies in the plastic pipes and fittings field in the Middle East.

Since its foundation, AL-AMAL has a steady growth with high quality standards to fulfill the requirements of its customers especially for UPVC/CPVC/HDPE/PP-R/PP-H/B Pipes with more than 42000 tons per year, fittings with more than 8000 tons per year, and it already started in 1st. September 2008 production of PP-R with capacity more than 6000 tons pipes per year and 1200 tons of fittings per year, AL-AMAL's pipes and fittings are produced according to DIN,BS,ASTM,ISO and Egyptian standards demand.

There is also the facility of manufacturing products with special specifications according to customer requirements.

As AL-AMAL's target is to become the major producer in the field of plastic pipes and fittings, a strategic program has been carried out to improve the quality standards and increase the quality and variation of production by having its plant in the 10th of Ramadan City, equipped with new injection molding machines and new molds with advanced automated tooling and up-to date know how which permit high capacity of pipes and fittings with exceptionally high consistency in terms of dimensional accuracy, mechanical strength and surface finish.

AL-AMAL UPVC/CPVC/HDPE/PP-R/PP-H/B Pipes (AL-SHARIF) are well accepted any widely used in domestic water system, warming, cooling, and all types of industrial process pipe works, water distribution and water treatment as well as irrigation systems.

A new range for the production of all systems required for AL-AMAL's customers has been taken into consideration in its near expanding plans.

The most highly advantage is the well equipped laboratory which is established according to the best international standards to control raw materials, final products and also for the researches which is one of the important targets of AL-AMAL to update and develop its products.

Customers can depends completely on AL-AMAL and consider it their partner in the business.

Manufacturing Standards

AL-SHARIF PP-H / B pipes and fittings are manufactured according to the standard specification as follows:

1- DIN 1451-1 plastic piping systems for draining of waste water (low and high temperatures) within the buildings structure – polypropylene (PP) : requirements concerning pipes, fittings.

2- DIN 4102 part 1 fire behavior of building materials and elements.

3- DIN 4102 part 2 fire behavior of building materials and elements - building component - concepts, requirements & tests.

4- DIN 19560-10 pipes and fittings made of polypropylene (PP) for waste water pipes resistance to hot water within buildings fire behavior quality control and instructions for installation.

5- EN 681-2 Elastomeric seals – Materials requirements for pipe joint seals used in water and drainage applications.

6- DIN 4109 Sound insulation in buildings.

And we can produce according to any standard required from the client.

Marking of Pipes:

1. AL AMAL ( ) ALSHARIF
2. ISO 9001-2008
3. Type of Material (PP-H / B)
4. EN 1451-1
5. Dimension of the pipe (OD x Thickness)
6. Pipe grade (s14) or (s16) or (s20)
7. Pipe class (BD or B)
8. Machine Name
9. Date and time of production
10. Made in Egypt

Marking of Fittings:

1. AL AMAL ( ) ALSHARIF
2. Nominal diameter of fittings
3. Type of fitting
4. DIN 4102 B1
5. PP-H / B
6. DIN/EN 1451
7. (BD or B)
8. (S16)

Quality

This is reflected in national and international certificates ,but above all in the satisfaction of ALAMAL-clients, installers and planners the following laws, decrease, guidelines and standards have to be considered on planning and designing ALAMAL for potable water and heating installations, Cables, Drainage sewage and well pipe systems.

System specific standards:

General quality requirements, dimensions according to:

DIN ,ISO ,EN ,ASTM ,BS ,ES standard for all products **UPVC , CPVC , PP-R , PP-H/B** and **HDPE.**

System control:

The production of a quality controlled pipe systems demands the supervision, regulation and control of all work operations. All results and processes have to be documented.
This requires

- √ Test and acceptance of incoming goods
- √ Process control
- √ In-process inspection and test
- √ Final inspection and test

Relevant regulations for the quality assurance of all pipes systems are:

ISO- guidelines
ISO 9001/2008
ISO 14001/2004
OHSAS 18001/2007

These standards and guidelines detail the minimum requirements for internal control.
Conformance to the standards is verified by independent institutes in form of internal audits and laboratory tests.

ALAMAL has many years of experience in extrusion and injection molding and is the market leader and pioneer in the manufacturing of **UPVC, CPVC, PP-R, PP-H/B** and **HDPE** pipe systems.
This experience is reflected in internal quality standards and laid down procedures, which are taken strongest note of and are documented by the constant quality of our products.

Internal control

Trained and qualified employees and a modern equipped laboratory ensure that all tests are carried out and regulations are complied with in accordance with the quality control policy, which includes

- √ Control of inspection, measuring and test equipment
- √ Process and production control
- √ receiving inspection test
- √ In-process inspection
- √ Final inspection

All internal quality controls are documented and recorded in according to the quality control policy.

Process control

AL-AMAL quality control team has supervision of all machines. They inspect all finish products (systemized sampling) all over the day and at the storage too.
They have high experience and training at the quality measurements of the material and finished products.
In-process inspection and test the quality plan requires that tests and inspections are carried out before and during production. At the start of production all quality relevant data are checked by the quality assurance department. Preproduction samples are tested by the laboratory technicians for

- √ Surface finish
- √ Dimensional accuracy of the test samples
- √ Data from extrusion and injection molding machines

The goods will be released for production only if optimal test results are achieved. These tests are carried out at the beginning of each production series to ensure perfect system quality.

Final inspection and test

The quality plan requires that inspections and tests are carried out on all finished products. The results are documented in test reports. Finished products are only released to stock when all tests and inspections conform to the prescribed procedures and specifications.
The final inspection and test includes time lapse test procedures. This enables statements regarding the usability of the products in their later field of application.
These tests are the method for quality assurance during production and for design tests. This is to discover and remove production weaknesses. The results document the system quality and optimize the manufacturing processes.
The final inspection and test covers a lot of test explaining in detail.

Laboratory

ALAMAL laboratory: testing of raw materials and final product, with most modern laboratory equipment (made in Germany) built in a huge area.

AL-AMAL laboratory team is about 50 clever, qualified and trained technicians.

Measurement equipment

1- Digital Caliper device
2- Circumference
3- Micrometer
4- Meter
5- Gauges for GO and NO GO
6- Thread Gauges for Brass
7- Gauges for Rubber

Laboratory equipment's for the Granular and Powder materials

1- Melt flow Tester (ISO 1133)
Measurement of the melt flow index

2- Sieve analysis test (ES 1992-4)
Measurement of the particle size of the powder

3- Flow test (ES 1991)
Measurement of the flow of material in the feeder of the machine

4- Heat stability test (ES 1991)
Measurement of the heat stability of the material

5- Bulk density (ES 1991)
Measurement the density of the powder

6- K-value (ES 1991)
Measurement the K-value of the resins

Laboratory equipment for the Pipes, Fittings and Gaskets

1. **Falling Impact Test**
   According to (ES 848 – ISO 4422 – ISO 15877 – ASTM D1785 – ASTM D2241)
   These depend on the diameter of the pipe at which we fall a certain mass in the pipe from 2 meter height at room temperature according to standard
2. **Pendulum Impact Test**
   According to (ES 848 – ES 5232 – DIN 8061 – DIN 8080)
   That tests according to DIN and ES standard that measure notched charpy impact strength of the pipe
3. **VST Test**
   According to (ES 848 – ES 5232 – DIN 8061 – DIN 8080 – ISO 4422)
   That measures the softening temperature of the product (Pipes or Fittings)
4. **Chemicals Effect Test**
   According to (ES 848 – ES 5232 – DIN 8061 – DIN 8080)
   That measures the effect of the solvent as Acetone and Methylene chloride
5. **Hydrostatic Pressure Test**
   According to (ES 848 – ISO 4422 – ISO 15877 – ASTM D1785 – ASTM D2241 – DIN 8061 – DIN 8074 – DIN 8075 – DIN 8080)
   Measurement of the Internal Hydrostatic pressure of the pipes and fittings
6. **Burst Pressure Test**
   According to (ASTM D1785 – ASTM D2241 – ASTM F441 – ASTM F439)
   Measurement of the Burst pressure of the pipes and the fittings
7. **Oven (Heat reversion) Test**
   According to (ES 848 – ES 5232 – DIN 8061 – DIN 8080 – DIN 8075)
   Measurement the effect of the high temperature in the products
8. **Tensile Tester**
   According to (ES 5232 – ASTM 681 – ISO 37)
   Measurement of the tensile strength of the products (Pipes, Fittings and gaskets)
9. **Compression Tester**
   According to (BS EN ISO 9969 – EN 1401 – ES 1717 – ISO 4435)
   Measurement the stiffness of the pipe
10. **Hardness Tester**
    According to (ISO 48 – DIN 681-1/2 – DIN 53505 – ASTM D 2240)
11. **Thermocycling Tester**
    According to (ISO 10508)
    Those test a net of the product (pipes and fittings) at different temperature and certain internal pressure for long time

The customer can be assured of the highest quality of the products.

External control

External supervision consists of tests of a defined scope and in defined intervals. The respective supervising institutions appoint authorized test organizations to carry out these tests.
The external supervision includes external tests of the products and:-

a) Internal audit of AL-AMAL's quality assurance system and test procedures.
b) Calibration of the test equipment.
c) Hygienic and toxicity tests.

The results of the supervisory visits as well as external tests made on pipe and fitting samples are confirmed to ALAMAL in test certificates.
In Egypt, the external supervision of the AL-AMAL pipe system is carried out by the Storage / packing / dispatch upon successful release the products are stored in suitable warehouses.
Internal instructions control the method of packing, storage and dispatch of the products. The warehouse staff is responsible for control of the stored product.

General Characteristics

Material

Polypropylene (PP) resistant to hot water light – stabilized permanent low inflammability.

Good Mechanical properties

A- High ring stiffness
High Ring stiffness compliant with DIN 1451.

B- Secure against external loads
High Impact strength and high level of resistance for lumped loads.

C- Abrasion resistance
AL –SHARIF PPH/B PIPES SYSTEM formulation ensure that there is no noticeable wear, even after decades of operation.

Easy to install

It’s flexible, light, easy to cut for installation.

Fire protection

AL –SHARIF PP-H/B PIPES SYSTEM in normal inflammable that required to ensure that buildings are fire safety.

AL –SHARIF PP-H/B PIPES SYSTEM are produced according to DIN 4102 for fire protection.

Environmental effect

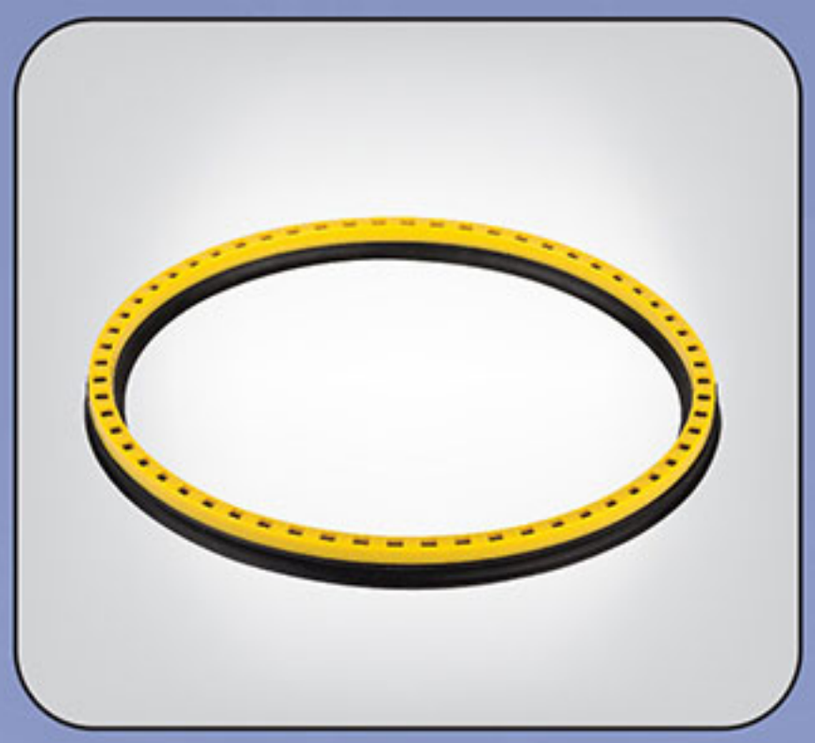
AL –SHARIF PP-H/B PIPES SYSTEM in physiologically environmentally and microbiologically harmless.

Sealing Ring

Produced according to DIN EN 681-2 and DIN 4060.

1- Material :
   Rubber : TPE
   Plastic : PPR
2- Colour :
   Black / Yellow
3- Size :
   From 50 mm to 160 mm
4- Features :

- Ease assembly
- Good Fixation
- Good flexibility
- Good elasticity
- Long lifetime
- Shore Hardness 50 to 60



Service time

AL –SHARIF PP-H/B PIPES SYSTEM have very long service time.

PPH/B Properties

Technical features AL –SHARIF PP-H/B PIPES SYSTEM with high thermal stability.

Typical values	Test method	Unit	Mean value
Properties			
Abbreviated term	ISO 1043	-	PP-H/B
Colour	-	-	Heavy (7035 RAL) Normal (7042 RAL)
Density 23°C	ISO 1183	g/cm³	0.9
Rheology			
Melt Mass Flow Rate MFR (230°C/2,16Kg)	ISO 1133	g/10 min	0.4
Mechanical properties			
Tensile Modulus (1 mm/min)	ISO 527-1, -2	MPa	1300
Tensile Stress at Yield (50 mm/min)	ISO 527-1, -2	MPa	28
Tensile Strain at Yield (50 mm/min)	ISO 527-1, -2	%	10
Notched Impact Strength Izod 23°C	ISO 180/1A	KJ/m²	59
Notched Impact Strength Izod -20°C	ISO 180/1A	KJ/m²	6.2
Notched Impact Strength Charpy 23°C	ISO 179/1eA	KJ/m²	65
Notched Impact Strength Charpy -20°C	ISO 179/1eA	KJ/m²	5.2
Flexural Modulus (2mm/min)	ISO 178	MPa	1400
Thermal properties			
Vicat Softening Point, A120	ISO 306	°C	150
Vicat Softening Point, B120	ISO 306	°C	79
Heat Deflection Temperature 1,8 MPa (HDT/A)	ISO 75-1, -2	°C	48
Heat Deflection Temperature 0,45 MPa (HDT/B)	ISO 75-1, -2	°C	87

- MFR is measured at °c under a load of 2.16 kg with standard nozzle having a diameter of 2.095 mm.
- Average mechanical property values of several measurements carried out on standard injection moulded specimens (ISO 3167) conditioned at room temperature (ISO 291).
- Data contained above represent typical values of individual properties. They are informative, please do not construed as specifications.

AL –SHARIF PP-H/B PIPES SYSTEM is a kind of pipes and fittings with high resistance against strike and external pressure, with fast and easy installation and highly light weight.

Chemical Resistance of PP

AL-SHARIF PP-H / B PIPE SYSTEM conforming to this standard is resistance to corrosion by water a wide range of PH-values such as soil and waste water, rain water, surface water and ground water.

Source: ISO/TR 10358

Definitions, Symbols and Abbreviations

The criteria of classifications, definitions, symbols and abbreviations adopted in this document are as follows:

S = Satisfactory

The chemical resistance of polypropylene exposed to the action of a fluid is classified as "satisfactory" when the results of test are acknowledged to be "satisfactory" by the majority of the countries participating in the evaluation.

L = Limited

The chemical resistance of polypropylene exposed to the action of fluid is classified as "limited" when the results of tests are acknowledged to be "limited" by the majority of the countries participating in the evaluation.

Also classified as "limited" are the resistances to the action of chemical fluids for which judgments "S" and "NS" or "L" is pronounced to an equal extent.

NS = Not satisfactory

The chemical resistance of polypropylene exposed to the action of a fluid classified as "not satisfactory" when the results of test are acknowledged to be "not satisfactory" by the majority of the countries participating in the evaluation.

Also classified as "not satisfactory" are materials for which judgment "L" and "NS" are pronounced to an equal extent.

Sat.sol	Saturated aqueous solution, prepared at 20˚C
Sol	Aqueous solution at a concentration higher than 10 % but not saturated
Dil.sol	Dilute aqueous solution at a concentration equal to or lower than 10 %
Work.sol	aqueous solution having the usual concentration for industrial use

Chemical Resistance of Polypropylene, Not Subjected to Mechanical Stress, to Various Fluids at 20, 60 and 100°C

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Acetic acid	Up to 40 %	S	S	-
Acetic acid	50 %	S	S	L
Acetic acid,glacial	> 96 %	S	L	NS
Acetic anhydride	100 %	S	-	-
Acetone	100 %	S	S	-
Aceptophenone	100 %	S	L	-
Acrylonitrile	100 %	S	-	-
Air		S	S	S
Allyl alcohol	100 %	S	S	-
Almond oil		S	-	-
Alum	Sol	S	-	-
Ammonia, aqueous	Sat.sol	S	S	-
Ammonia, dry gas	100%	S	S	-
Ammonia, liquid	100%	S	S	-
Ammonium acetate	Sat. sol	S	S	-
Ammonium chloride	Sat. sol	S	S	-
Ammonium fluoride	Up to 20 %	S	S	-
Ammonium hydrogen carbonate	Sat.sol	S	S	-
Ammonium metaphosphate	Sat.sol	S	-	S
Ammonium nitrate	Sat.sol	S	S	S
Ammonium persulphate	Sat.sol	S	S	-
Ammonium phosphate	Sat.sol	S	-	-
Ammonium sulphate	Sat.sol	S	S	S
Ammonium sulphide	Sat.sol	S	S	-
Amyl acetate	100 %	L	-	-
Amyl alcohol	100 %	S	S	S
Aniline	100 %	S	S	-
Apple juice		S	-	-
Aqua regia	HCI/HNO_3=3/1	NS	NS	NS
Barium bromide	Sat.sol	S	S	S
Barium carbonate	Sat.sol	S	S	S
Barium chloride	Sat.sol	S	S	S

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Barium hydroxide	Sat.sol	S	S	-
Barium Sulphide	Sat.sol	S	S	L
Beer	-	S	L	NS
Benzene	100%	S	-	-
Benzoic acid	Sat.sol	S	S	-
Benzyl alcohol	100 %	S	L	-
Borax	Sol	S	-	-
Boric acid	Sat.sol	S	S	S
Boron trifluoride	Sat.sol	S	S	-
Bormine, gas	-	S	-	-
Bormine, liquid	100 %	S	-	-
Butane, gas	100 %	S	S	-
Butanol	100 %	S	S	-
Butyl acetate	100 %	S	S	-
Butyl glycol	100 %	S	S	-
Butyl phenols	Sat.sol	S	S	-
Butyl phthalate	100 %	S	S	-
Calcium carbonate	Sat.sol	S	S	-
Calcium chlorate	Sat.sol	S	-	S
Calcium chloride	Sat.sol	S	S	S
Calcium hydroxide	Sat.sol	S	S	-
Calcium hypochlorite	sol	S	-	-
Calcium nitrate	Sat.sol	S	S	S
Camphor oil	-	S	S	-
Carbon dioxide, dry gas	-	L	-	-
Carbon dioxide, wet gas	-	S	S	S
Carbon disulphide	100 %	S	S	-
Carbon monoxide, gas	-	S	-	-
Carbon tetrachloride	100 %	NS	NS	NS
Castor oil	100 %	S	S	S
Caustic soda	Up to 50 %	S	S	S
Chlorine, aqueous	Sat.sol	S	S	S
Chlorine, dry gas	100 %	NS	NS	NS
Chlorine, liquid	100 %	NS	NS	NS
Chloroacetic acid	Sol	S	-	-

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Chloroethanol	100 %	S	-	-
Chloroform	100 %	L	NS	NS
Chlorosulphonic acid	100 %	NS	NS	NS
Chrome alum	Sol	S	S	-
Chromic acid	Up to 40 %	S	L	NS
Citric acid	Sat.sol	S	S	S
Coconut oil		S	-	-
Copper (II) chloride	Sat.sol	S	S	-
Copper (II) nitrate	Sat.sol	S	S	S
Copper (II)	Sat.sol	S	S	-
Corn oil		S	L	-
Cottonseed oil		S	S	-
Cresol	Greater than 90 %	S	-	-
Cyclohexane	100 %	S	-	-
Cyclohexanol	100 %	S	L	-
Cyclohexanone	100 %	L	NS	NS
Decalin (decahydronaphthalene)	100 %	NS	NS	NS
Dextrin	Sol	S	S	-
Dextrose	Sol	S	S	S
Dibutyl phthalate	100 %	S	L	NS
Dichloroacetic acid	100 %	L	-	-
Dichloroethylene (A and B)	100 %	L	-	-
Diethanolamine	100 %	S	-	-
Diethyl ether	100 %	S	L	-
Diethylene glycol	100 %	S	S	-
Diglycolic acid	Sat.sol	S	-	-
Diisooctyl	100 %	S	L	-
Dimethyl amine, gas		S	-	-
Dimethyl formamide	100 %	S	S	-
Dioctyl phthalate	100 %	L	L	-
Dioxane	100 %	L	L	-
Distilled water	100 %	S	S	S
Ethanolamine	100 %	S	-	-
Ethyl acetate	100 %	L	NS	NS

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Ethyl alcohol	Up to 95 %	S	S	S
Ethyl chloride, gas		NS	NS	NS
Ethylene chloride (mono and di)		L	L	-
Ethyl ether	100 %	S	L	-
Ethylene glycol	100 %	S	S	S
Ferric chloride	Sat.sol	S	S	S
Formaldehyde	40 %	S	-	-
Formic acid	10 %	S	S	L
Formic acid	85 %	S	NS	NS
Formic acid, anhydrous	100 %	S	L	L
Fructose	Sol	S	S	S
Fruit juice		S	S	S
Gasoline, petrol (aliphatic hydrocarbons)		NS	NS	NS
Gelatine		S	S	-
Glucose	20 %	S	S	S
Glycerine	100 %	S	S	S
Glycolic acid	30 %	S	-	-
Heptane	100 %	L	NS	NS
Hexane	100 %	S	L	-
Hydrobromic acid	Up to 48 %	S	L	NS
Hydrochloric acid	Up to 20 %	S	S	S
Hydrochloric acid	30 %	S	L	L
Hydrochloric acid	From 35 to 36 %	S	-	-
Hydrofluoric acid	Dil.sol	S	-	-
Hydrofluoric acid	40 %	S	-	-
Hydrogen	100 %	S	-	-
Hydrogen chloride, dry gas	100 %	S	S	-
Hydrogen peroxide	Up to 10 %	S	-	-
Hydrogen peroxide	Up to 30 %	S	L	-
Hydrogen sulphide, dry gas	100 %	S	S	-
Iodine, in alcohol		S	-	-
Isoctane	100 %	L	NS	NS

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Isopropyl alcohol	100 %	S	S	S
Isopropyl ether	100 %	L	-	-
Lactic acid	Up to 90 %	S	S	-
Lanoline	Sat.sol	S	L	-
Linseed oil	Sat.sol	S	S	S
Magnesium carbonate	Sat.sol	S	S	S
Magnesium chloride	Sat.sol	S	S	-
Magnesium hydroxide	Sat.sol	S	S	-
Magnesium sulphate	Sat.sol	S	S	-
Maleic acid	Sat.sol	S	S	-
Mercury (II) chloride	Sol	S	S	-
Mercury (II) cyanide	100 %	S	S	-
Mercury (I) nitrate	100 %	S	S	-
Mercury	5 %	S	S	-
Methyl acetate	Up to 32 %	S	S	-
Methyl alcohol	100 %	S	L	L
Methyl amine	100 %	S	-	-
Methyl bromide	100 %	NS	NS	NS
Methyl ethyl ketone	>85 %	S	-	-
Methylene chloride	Sat.sol	L	NS	NS
Milk	Sat.sol	S	S	S
Monochloroacetic acid	Sat.sol	S	S	-
Naphtha	Up to 30 %	S	NS	NS
Nickel chloride	From 40 to 50 %	S	S	-
Nickel nitrate	100%	S	S	-
Nickel sulphate	100%	S	S	-
Nitric acid	100%	S	NS	NS
Nitric acid	100%	L	NS	NS
Nitric acid, fujming (with nitrogen dioxide)	Up to 90 %	NS	NS	NS
Nitrobenzene	Sat.sol	S	L	-
Oleic acid	Sat.sol	S	L	-
Oleum (sulphuric acid with 60 % of SO_3)	Sat.sol	S	L	-

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Isopropyl alcohol	100 %	S	S	S
Isopropyl ether	100 %	L	-	-
Lactic acid	Up to 90 %	S	S	-
Lanoline	Sat.sol	S	L	-
Linseed oil	Sat.sol	S	S	S
Magnesium carbonate	Sat.sol	S	S	S
Magnesium chloride	Sat.sol	S	S	-
Magnesium hydroxide	Sat.sol	S	S	-
Magnesium sulphate	Sat.sol	S	S	-
Maleic acid	Sat.sol	S	S	-
Mercury (II) chloride	Sol	S	S	-
Mercury (II) cyanide	100 %	S	S	-
Mercury (I) nitrate	100 %	S	S	-
Mercury	5 %	S	S	-
Methyl acetate	Up to 32 %	S	S	-
Methyl alcohol	100 %	S	L	L
Methyl amine	100 %	S	-	-
Methyl bromide	100 %	NS	NS	NS
Methyl ethyl ketone	>85 %	S	-	-
Methylene chloride	Sat.sol	L	NS	NS
Milk	Sat.sol	S	S	S
Monochloroacetic acid	Sat.sol	S	S	-
Naphtha	Up to 30 %	S	NS	NS
Nickel chloride	From 40 to 50 %	S	S	-
Nickel nitrate	100%	S	S	-
Nickel sulphate	100%	S	S	-
Nitric acid	100%	S	NS	NS
Nitric acid	100%	L	NS	NS
Nitric acid, fujming (with nitrogen dioxide)	Up to 90 %	NS	NS	NS
Nitrobenzene	Sat.sol	S	L	-
Oleic acid	Sat.sol	S	L	-
Oleum (sulphuric acid with 60 % of SO_3)	Sat.sol	S	L	-

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Olive oil		S	S	L
Oxalic acid	Sat.sol	S	L	NS
Oxygen, gas		S	-	-
Paraffin oil (FL65)		S	L	NS
Peanut oil		S	S	-
Peppermint oil		S	-	-
Perchloric acid	(2 N) 20 %	S	-	-
Petroleum ether (ligroine)		L	L	-
Phenol	5 %	S	S	-
Phenol	90 %	S	-	-
Phosphine, gas		S	S	-
Phosphoric acid	Up.to 85 %	S	S	S
Phosphorus oxychloride	100 %	L	-	-
Picric acid	Sat.sol	S	-	-
Potassium bicarbonate	Sat.sol	S	S	S
Potassium borate	Sat.sol	S	S	-
Potassium bromate	Up.to 10 %	S	S	-
Potassium bromide	Sat.sol	S	S	
Potassium carbonate	Sat.sol	S	S	
Potassium chlorate	Sat.sol	S	S	
Potassium chlorite	Sat.sol	S	S	
Potassium chromate	Sat.sol	S	S	
Potassium cyanide	Sol	S	-	
Potassium dichromate	Sat.sol	S	S	S
Potassium ferricyanide	Sat.sol	S	S	-
Potassium fluoride	Sat.sol	S	S	-
Potassium hydroxide	Up.to 50 %	S	S	S
Potassium iodide	Sat.sol	S	-	-
Potassium nitrate	Sat.sol	S	S	-
Potassium perchlorate	10 %	S	S	-
Potassium permanganate	(2 N) 30 %	S	-	-
Potassium persulphate	Sat.sol	S	S	-
Propane, gas	100 %	S	-	-
Propionic acid	> 50 %	S	-	-

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Pyridine	100 %	L	-	-
Seawater		S	S	S
Silicon oil		S	S	S
Silver nitrate	Sat.sol	S	S	L
Sodium acetate	Sat.sol	S	S	S
Sodium benzoate	35 %	S	L	-
Sodium bicarbonate	Sat.sol	S	S	S
Sodium carbonate	Up to 50 %	S	S	L
Sodium chlorate	Sat.sol	S	S	-
Sodium chloride	Sat.sol	S	S	-
Sodium chlorite	2 %	S	L	NS
Sodium chlorite	20 %	S	L	NS
Sodium dichromate	Sat.sol	S	S	S
Sodium hydrogen carbonate	Sat.sol	S	S	S
Sodium hydrogen sulphate	Sat.sol	S	S	-
Sodium hydrogen sulphite	Sat.sol	S	-	-
Sodium hydroxide	1 %	S	S	S
Sodium hydroxide	From 10 to 60 %	S	S	S
Sodium hypochlorite	5 %	S	S	-
Sodium hypochlorite	10 % - 15 %	S	-	-
Sodium hypochlorite	20 %	S	L	-
Sodium metaphosphate	Sol	S	-	-
Sodium nitrate	Sat.sol	S	S	-
Sodium perborate	Sat.sol	S	S	-
Sodium phosphate (neutral)		S	S	S
Sodium silicate	Sol	S	S	-
Sodium sulphate	Sat.sol	S	-	-
Sodium sulphite	40 %	S	S	S
Sodium thiosulphate (hypo)	Sat.sol	S	-	-
Soybean oil		S	L	-
Succinic acid	Sat.sol	S	S	-
Sulphuric acid	Up to 10 %	S	S	S
Sulphuric dioxide, dry or wet	100 %	S	S	-

The Advantages of ALSHARIF PPH/B pipes system

Excellent Chemical resistance	→	Increase reliability scope of use
High impact strength	→	Better durability
High thermal Resistance	→	Less vulnerable to weathering
High Stress Crack Resistance	→	Prevent inching growth of Cracks
Excellent Fusion Capabilities	→	Easy Installation and movements
Low density, low weight	→	Quick installation and transportation
Homogenous structure	→	Aesthetically superior pipelines
Good elasticity	→	Reduces number of fittings, ease installation
Non toxic, Food grade	→	Can be used in food or pharmacy industry
smooth inner surface	→	low friction losses, deposition, increase flow
Good thermal installation	→	Excellent for use in Hot and cold water system
Very good fatigue resistance	→	Possesses integral-hinge property
Excellent dielectric properties	→	Safe even under water with no performance loss

SEMI SILENT POLY PROPYLENE (HEAVY)

The noise emitted by sewage systems originates from the impact and constant striking of water and solid particles against the inside walls of the piping, especially the system's vertical pipes, couplers and joints. This impact causes vibrations to spread along the walls of the piping and the anchoring systems that transmit them to the structural elements to which they are attached. This noise is transmitted not only to the pipe. but also spreads along the inside, causing discomfort to the occupants the homes above and below it.

Inside the building itself, noise has two basic components:

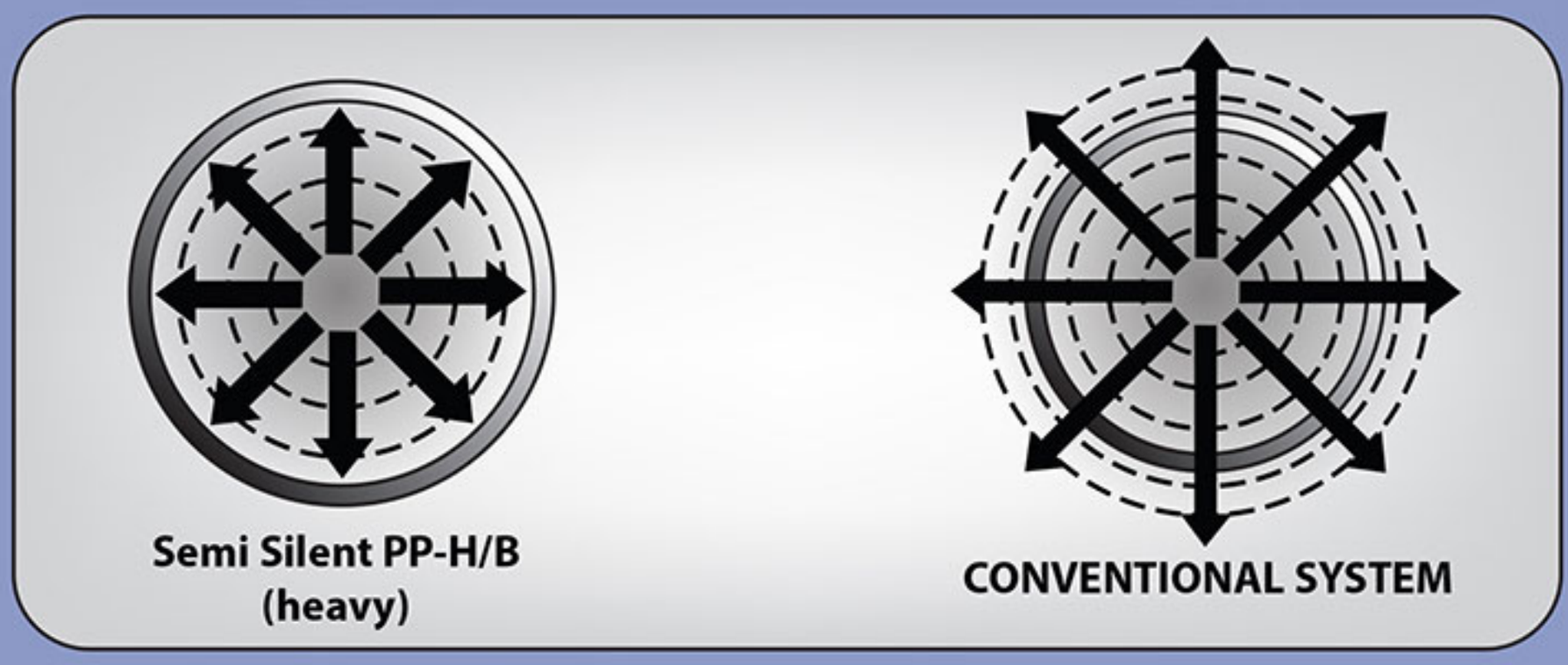
Airborne noise – this is merely the transmission of the sound wave from the source of the sound through the air to the person who perceives it.

Noise from impacts- this is a sound wave caused by the vibratory excitation of structural elements as a consequence of an object striking it. The sound from the vibration must be reduced at the anchoring points using special clamps, fitted with a joint that guarantees sound insulation.

In view of the phenomenon described, it is understandable that there are many variables capable of having an impact on the amount of noise reaching a room in a home: Descending drains, sewers (small sewerage), discharges from appliances, etc.

Therefore, and as a general rule, the following aspects must be taken into account:

- The hydraulic characteristics of the discharge.
- The molecular structure, mass and thickness of the piping and components of the sewage system.
- The dimensions and configuration of the system.
- The techniques used for installing and anchoring the system: Rigid or flexible joints,breakage of sound bridges, debarkation angles, etc.
- Construction elements : panel materials and their density, the location of descending pipes with respect to the most noise sensitive rooms (descending zones), etc.



Semi Silent PP-H/B
(heavy)

CONVENTIONAL SYSTEM

Recommendations for installation

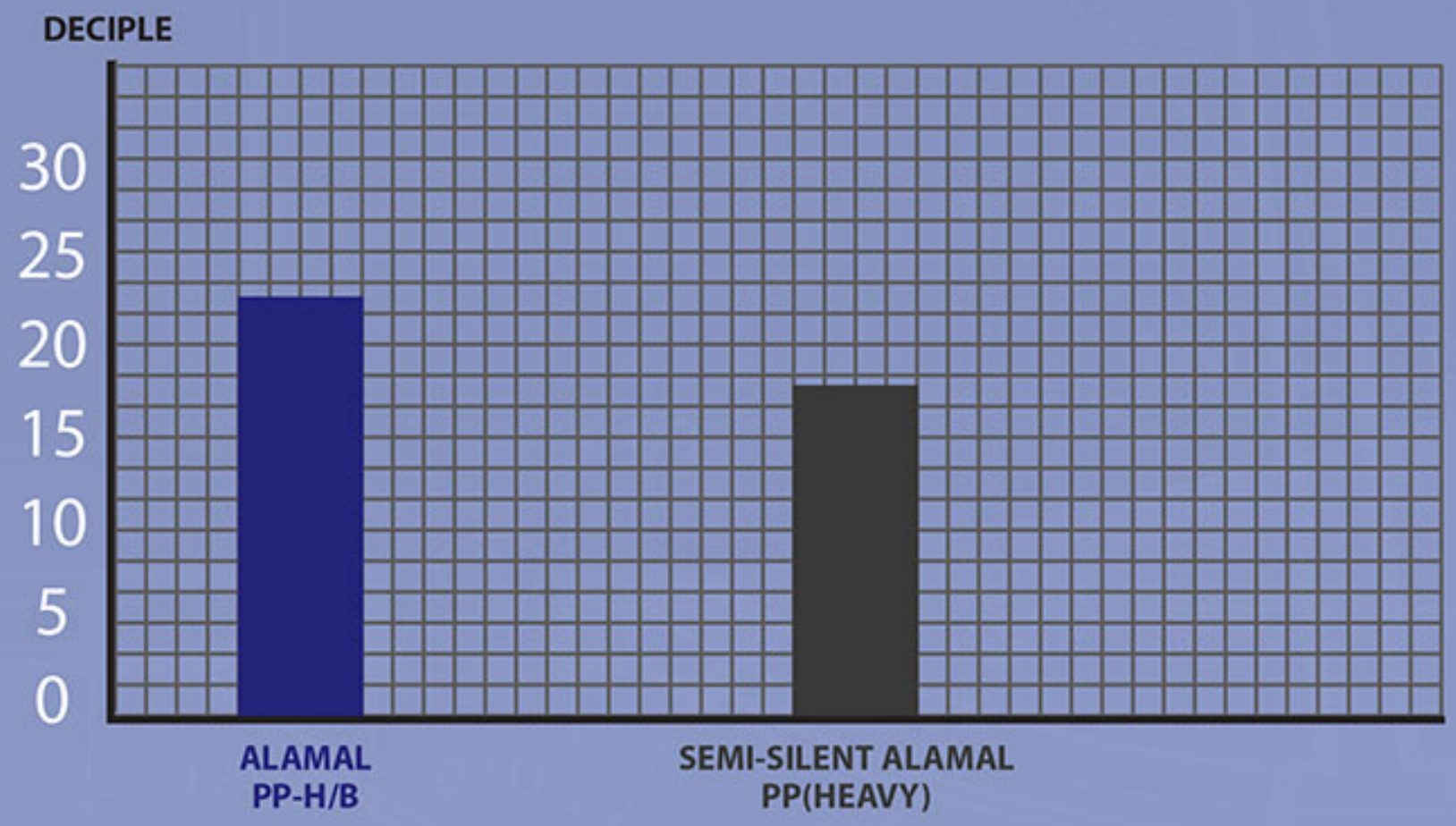
The new SEMI SILENT POLY PROPYLENE (HEAVY)is highly effective insulating system in the market.
However, for soundproof sewerage system to perform to the best of its abilities, it must be installed in compliance with a strict series of conditions:

The descending joints must be made at 45° angles

Joints between the components and the pipes must be made

The brackets or anchoring systems must be isophonic, containing rubber elements that break the sound bridges. Similar elements must be also be positioned where piping is anchord to outside or inside walls.

COMPARISON BETWEEN SEMI SILENT POLY PROPLENE(HEAVY) AND PP-H/B.



Application of PP Pipes system

- Acid Filling Stations
- Laboratories
- Automotive Industry
- Nuclear Research Centers
- Chemical Industry
- Construction "Plumping"
- Pharmaceutical Industry
- Desalination Plants
- Picking Lines
- Water Purification Plants
- Refineries
- Suction and Exhaust pipelines
- Lined Piping (Mild Steel + PP),(FRP + PP)
- Water, effluent, Chemical transport
- Hoods, Fume Ducts
- Storage tank for chemical

Connection instruction

1- Clean the ends of the pipe and fitting.

2- Check that the socket seal is in perfect condition.

3- Lubricate the part to be coupled with AL –SHARIF PPH /B product.

4- Insert the pipe all the way to the end of the socket then back up.

5- The AL – SHARIF PP-H/B Pipes system have a perfectly beveled edge to facilitate connection. If pieces of pipe are used, make a precise, perpendicular cut. Then, bevel using suitable equipment, to avoid damaging the gasket during connection.

Connection instruction

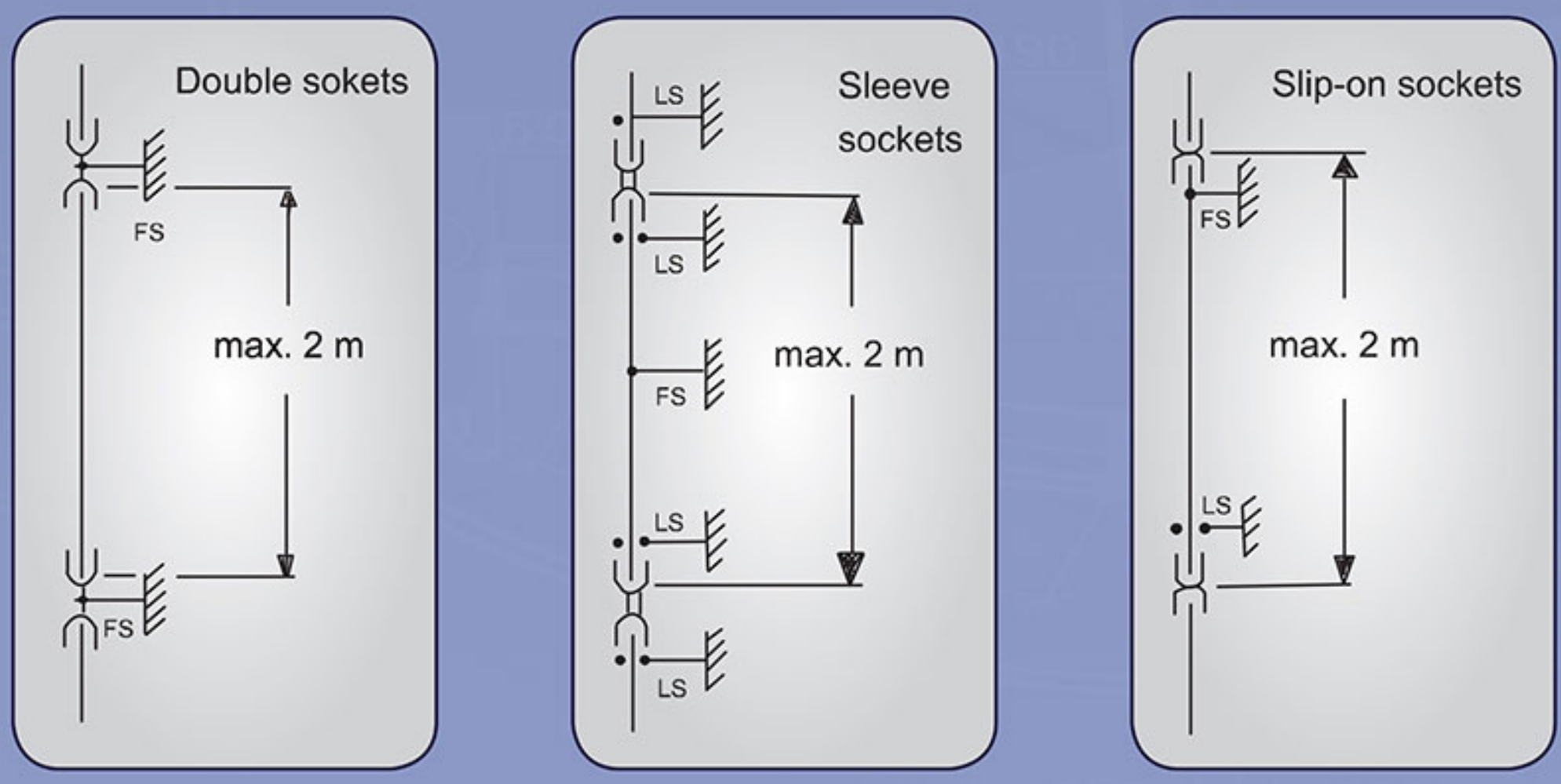
DN/OD	No. of possible connections with 1 Kg lubricants
50	400
75	285
90	250
110	222
160	151

Installing of pipe clamps

AL –SHARIF PP-H/B PIPES SYSTEM must be set in a way that gets bereft of any tension and doesn't block its length conversion.

Using fixed clamps must not prohibit any movement or slip in piping.

In the cases that pipe and fitting are joined together ,clamp should be set behind the socket.



To see recommended pipe clamp spacing look at the table below

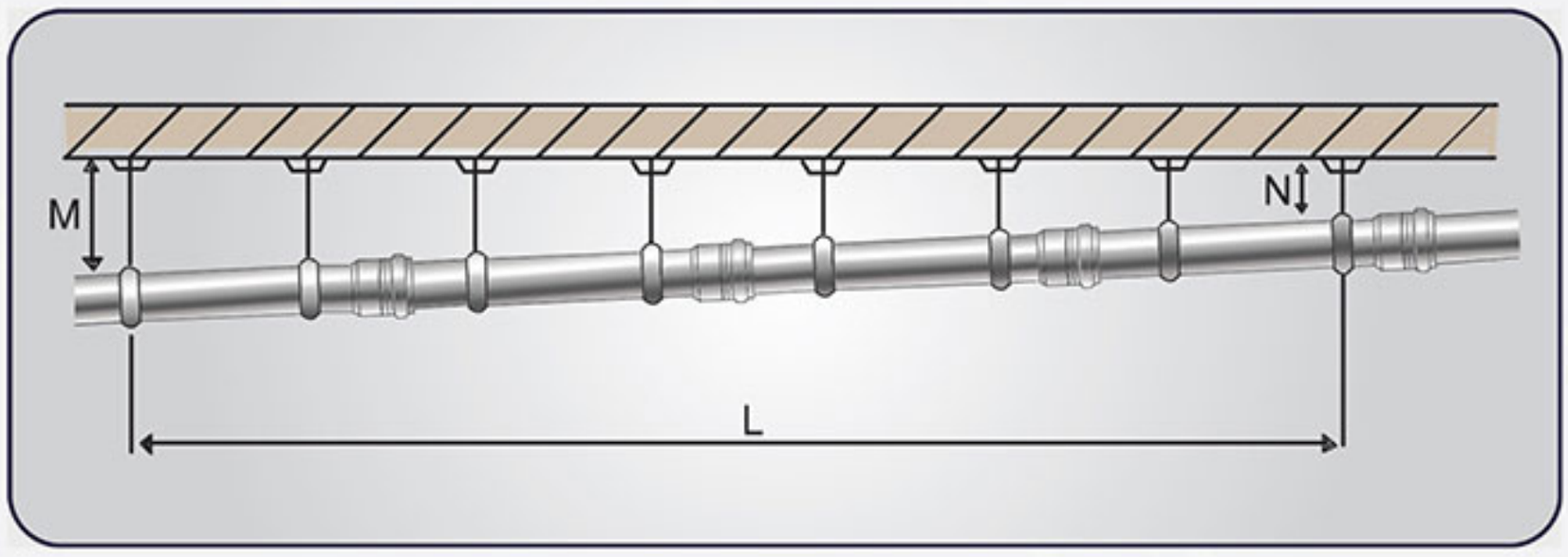
Nominal outer diameter d_1 mm	Piping Horizontal m	Vertical m
50	1.5	0.5
75	2	0.8
90	2	0.9
110	2	1.1
160	2	1.2

Precautions for installation

To proper sewage evacuation AL –SHARIF PP-H /B PIPES SYSTEM should benefit from proper and steady inclination.

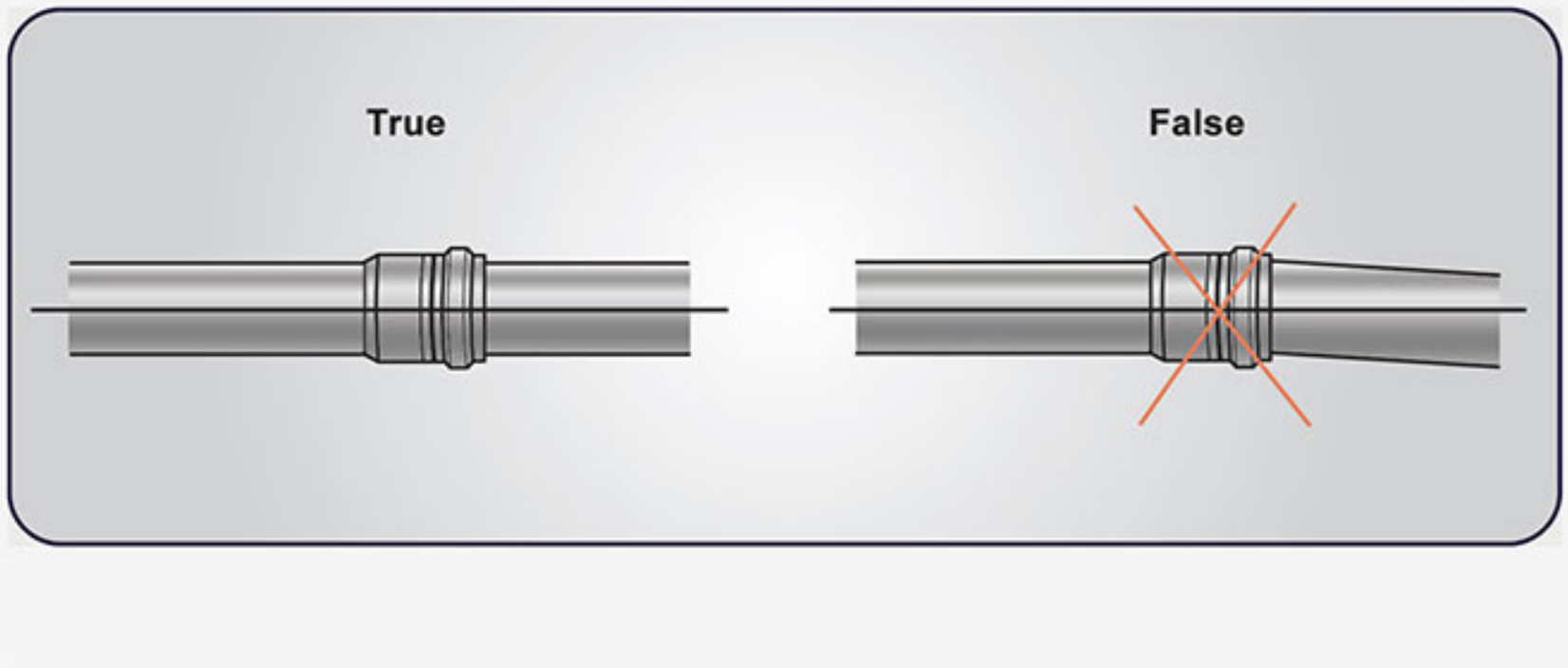
To do this along side of horizontal direction of pipes base on the table blow get the necessary inclination.
You can get the proper inclination by changing the length of clamps.

Calculation Method	Slope scale	Nominal diameter of pipe
$\frac{M - N}{L} \times 100 \geqslant$	2%	50 - 75
	1%	90 - 160



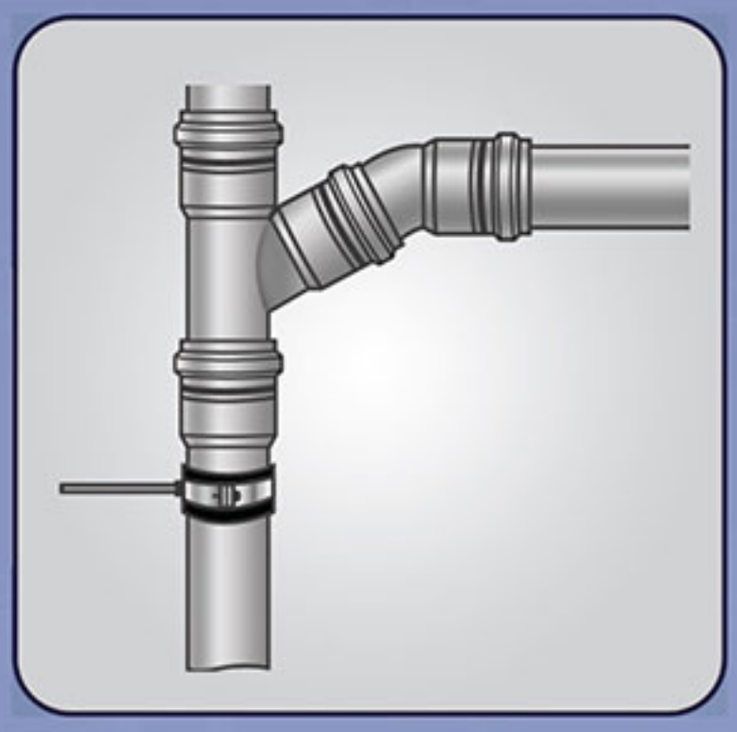
Notes

1- In the cases in which main horizontal pipe sets in the floor, making a proper flooring should be considered in order to prevent from any changing caused by sinking.
2- Prevent from laying pipes and fittings under the direct sunlight.
3- Pipe and fittings must be set in the same direction.



Installing pipes system in Vertical line

Vertical systems must be secured using bands placed beneath the coupling right after assembly so as to prevent them from slipping.

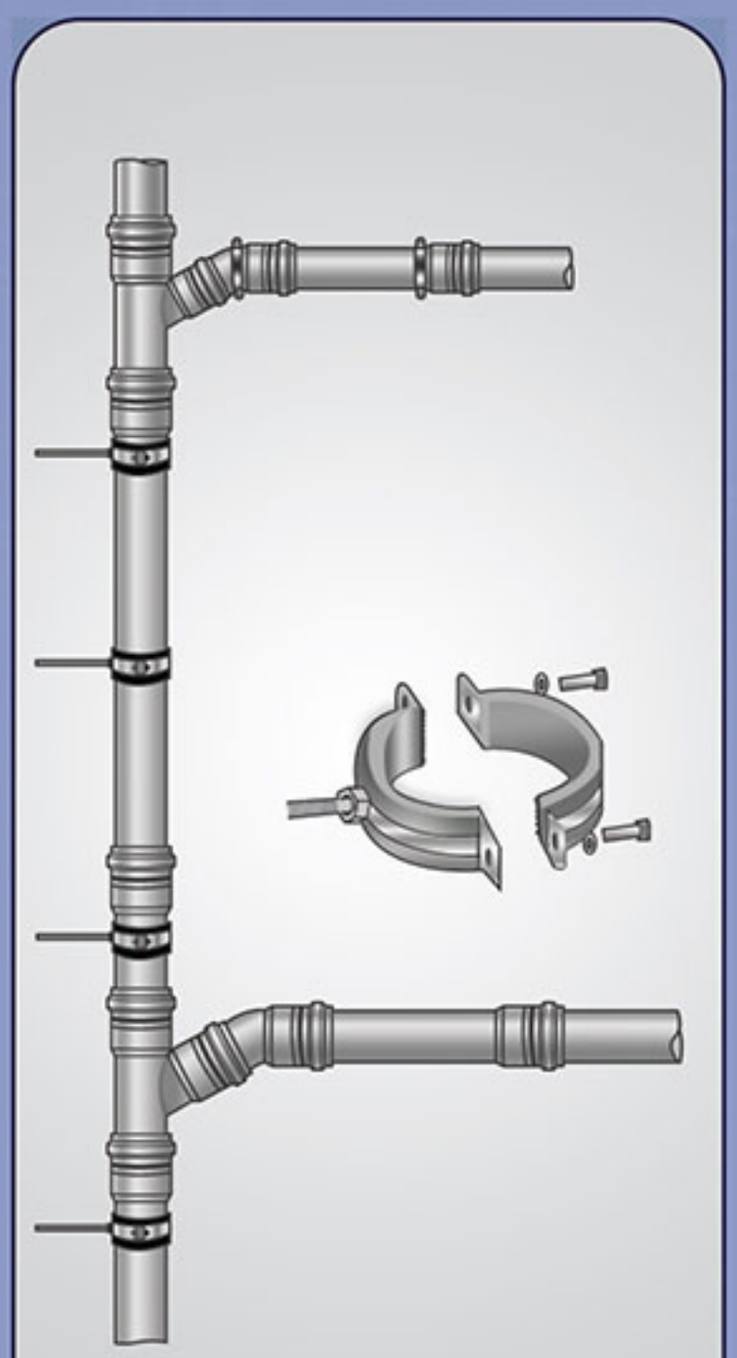


the length of the coupling socket was calculated of the coupling socket was calculated to absorb thermal expansion of single construction length no longer than 2 meters.

It is customary to calculate the thermal expansion of 5 mm per meter in the used water drain and 2 mm per meter in the water columns.

The system must be built in such a way that it does not prevent thermal expansion.

It is for this purpose that a fixed point is to be made under the coupling of each pipe of every construction length that will lock leaving the rest free to expand.



Fixed point

Bands that completely warp around the pipe are used to create a fixed point. If no protective tape is used the interior of the band must be smooth with its edges rounded off.

Sliding point

The bands for sliding points have the job of keeping the system aligned while permitting it to freely expand.

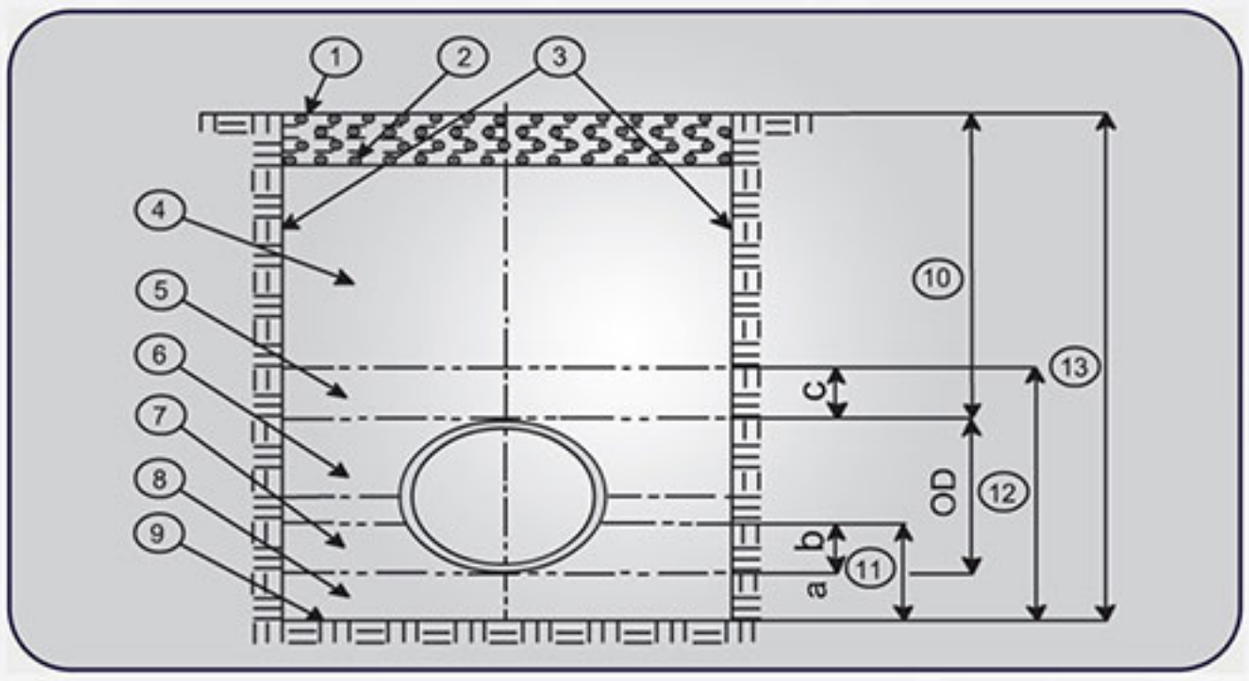
Support and embedding

Pipes can be laid in consistent, relatively loose, fine-grained soil if a support along the entire length is possible. At the sockets, hollows are to be made in the lower embedding area so that the connection can be properly carried out. The hollows may not be larger than necessary in order to carry out proper connections.

Should the soil in question not be suitable as a support, the ditch bed must be dug deeper and support made. The thickness of the lower embedding layer may not exceed the following:

a) 100mm in the case of nominal soil

b) 150mm in the case of stones or compact soil



1 Surface
2 Lower edge of the road or rail structure, if present
3 Ditch walls
4 Main filling
5 Cover
6 Slde fillings
7 Upper bedding layer
8 Lower bedding layer
9 Ditch bed
10 Cover height
11 Thickness of embedding
12 Thickness of the piping area
13 Ditch depth
a Thickness of the lower bedding layer
b Thickness of the upper bedding layer
c Thickness of the cover

The thickness of the upper embedding layer should be carried out in such a manner that structural analysis conditions are fulfilled and a support angel of 180 ° is achived. i.e. generally 0.5 x DA Should the bed of the ditch prove to not have sufficient supporting properties. Special measures are required, Should, due to construction, a concrete slab be necessary in the area on which the pipe rest, it is recommended that provision is made for an intermediate layer of suitable soil between the pipe and slab. This layer should be 150 mm under the pipe shaft and 100 mm under the connection.

Should, for structural reasons, additional steps for instalment be considered essential, a concrete slab above the covering area is recommended instead of a concrete jacket load distribution purposes. Should a concrete jacket be planned, it is to be produced in such a manner that the entire structural load can be absorbed by the jacket .

EMBEDDING IN CONCRETE

Polypropylene pipes and fittings may be directly embedded directly in concrete. However, the following instructions must be observed:

a) Cover the socket gap with adhesive tape so that no concrete grout can seep in. which may then hinder the subsequent functioning of the push-fit socket.

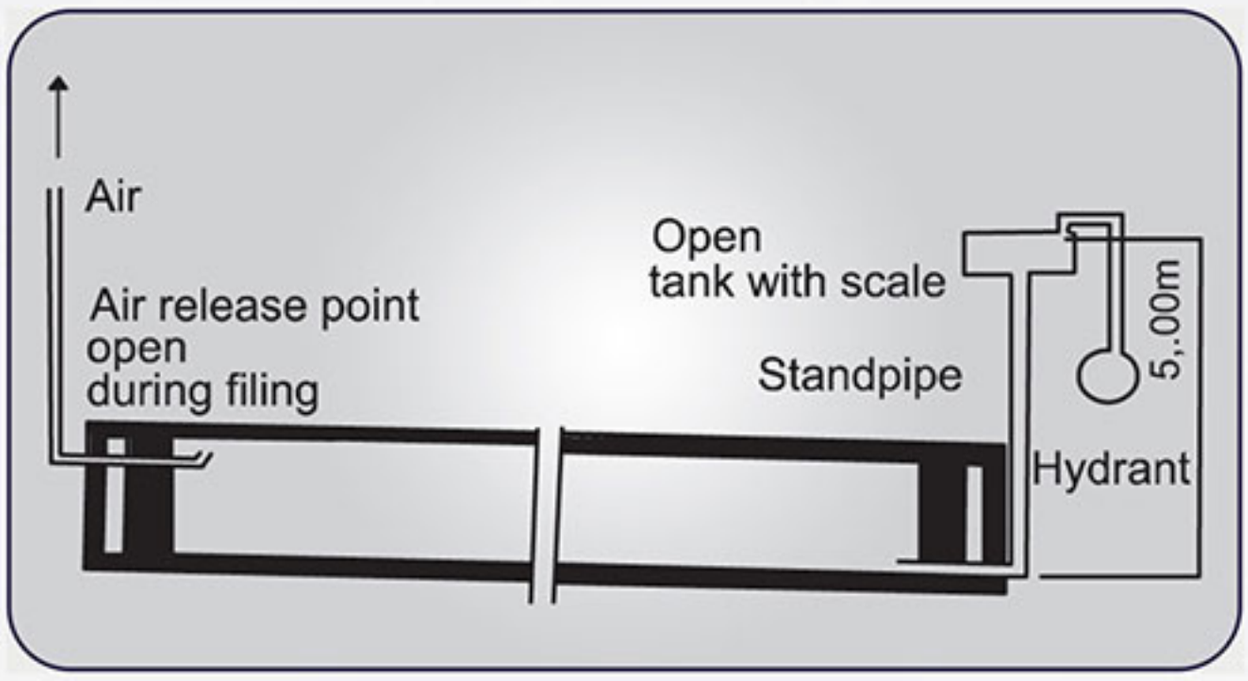
b) Protect the pipe against uplifting. The intervals between the mounting points must ensure that no excessive sagging can occur (formation of water traps).

c) Thermal changes in length, both on installation and in subsequent operation, must be taken into consideration.

Watertight test

Checking to see that piping, shafts and inspection openings are watertight is carried out with water

Testing with water all openings of the section of piping to be checked as well as branches and junctions are to be closed in a watertight manner and secured against pressure and being pressed out. It is recommended – particularly in the region of the property – that the large number of fittings be anchoring by means of driving in posts or by means anchoring them with appropriate locking clamps so that any changes in position are avoided. In straight pipelines, too, pipes and inspection stoppers are to be supported accordingly against horizontal pressure. The piping, should it not have been covered, is to be secured against changes in position. The piping is to be filled with water in such a manner that it is free of air. Therefore it makes sense to fill the pipes slowly from the lowest point so that the air present in the pipes can escape from the sufficiently – large air release points at the highest point of the piping.



Sufficient time (one hour) in to be provided between filling and checking the piping in order to allow any air flowing into the test pressure is to be taken at the lowest point in the part to be checked. Non – pressure pipes are to be checked with 0.5 bar excess pressure. The test pressure which must have been achieved prior t testing, has to be maintained for 30 min. if necessary the quantity of water required isto be constantly filled and gauged.

The test requirements have been fulfilled when the volume of water added in 30 min. is nor more than 0.15 L/m2 for pipes.

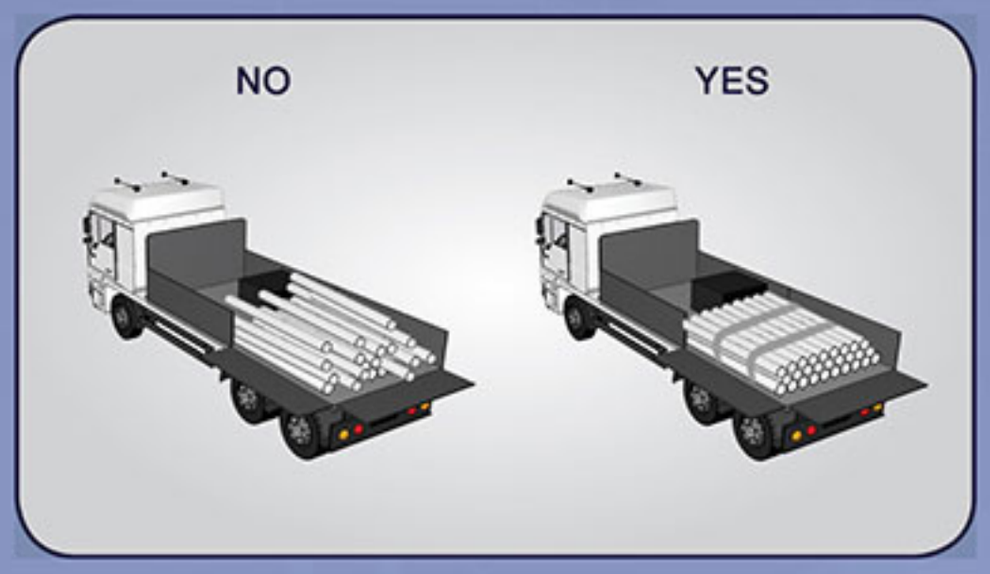
Loading

- Use suitable vehicles.

- Set the pipe down on their entire length.

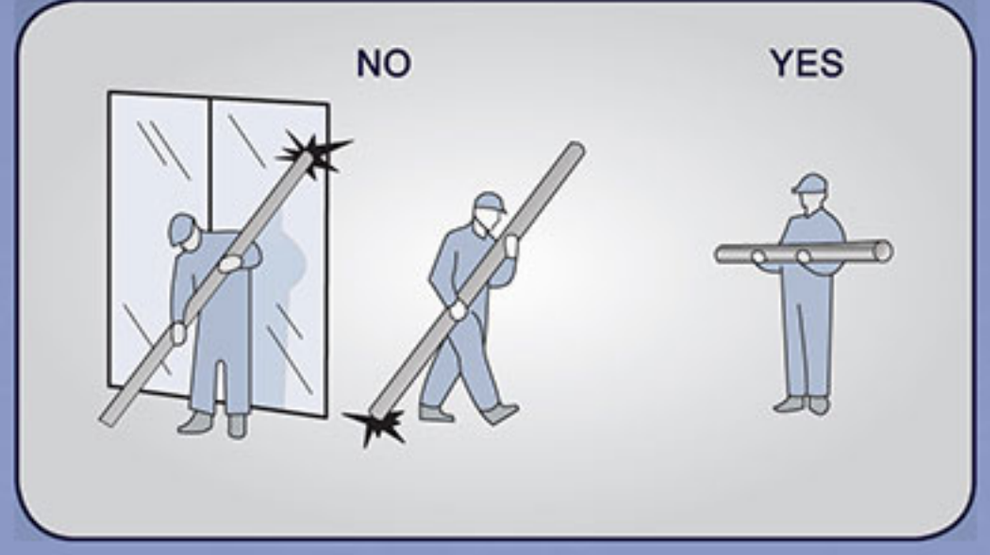
- Load the heaviest pipes first.

- Do not let the pipes protrude more than one meter from the loading bed of the lorry.



Handling

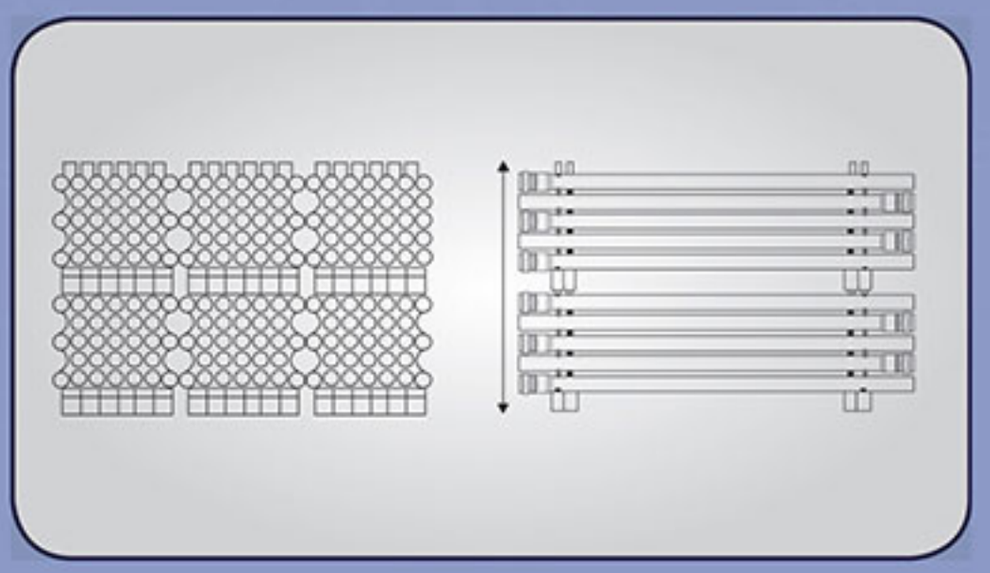
- Do not bang or drag the pipes.



Stacking

- Set the smooth pipes on surface without roughness the socketed pipes are packaged in special frames in order to prevent deformations.

- Do not exceed the height of 1.5 m when stacking.

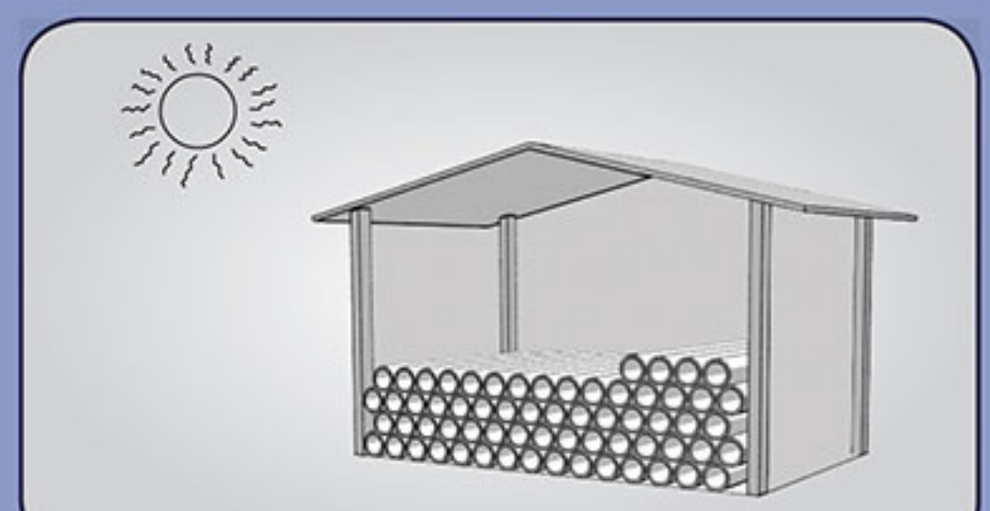


Storage

- Use the same precautions as those of the pipe for the fittings.

- They must not be stored outdoors for more than 2 years.

- Prevent all contact with benzene.

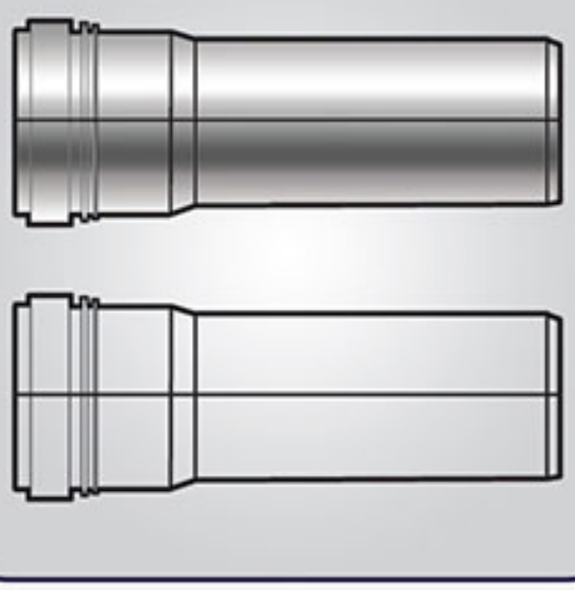


PIPES
Dimensions

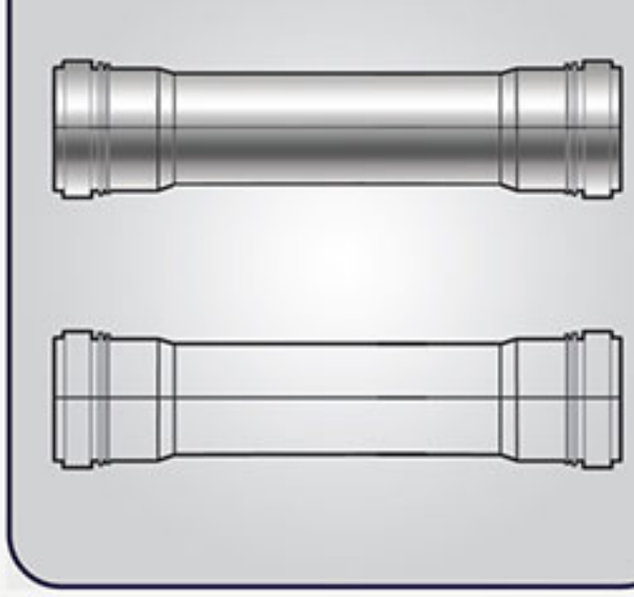
Nominal size DN/OD	Nominal outside diameter	Pipe series					
		S20		S16		S14	
		Wall thickness					
	d_n	e_{min}	$e_{m.max}$	e_{min}	$e_{m.max}$	e_{min}	$e_{m.max}$
50	50	1.8	2.2	1.8	2.2	1.8	3.0
63	63	1.8	2.2	2.0	2.4	2.2	3.1
75	75	1.9	2.3	2.3	2.8	2.6	3.1
90	90	2.2	2.7	2.8	3.3	3.1	3.7
100	100	2.5	3.0	3.2	3.8	3.5	4.1
110	110	2.7	3.2	3.4	4.0	3.8	4.4
160	160	3.9	4.5	4.9	5.6	5.5	6.3

- Pipes available with:

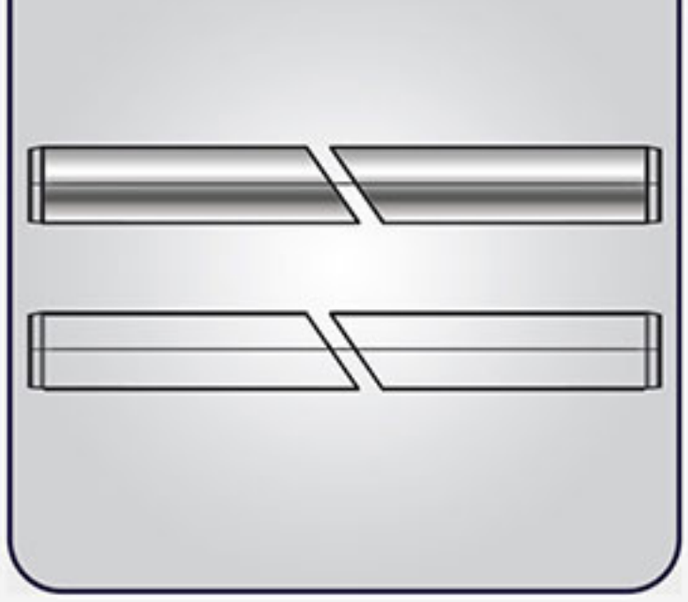
Socket x Spigot



Socket x Socket

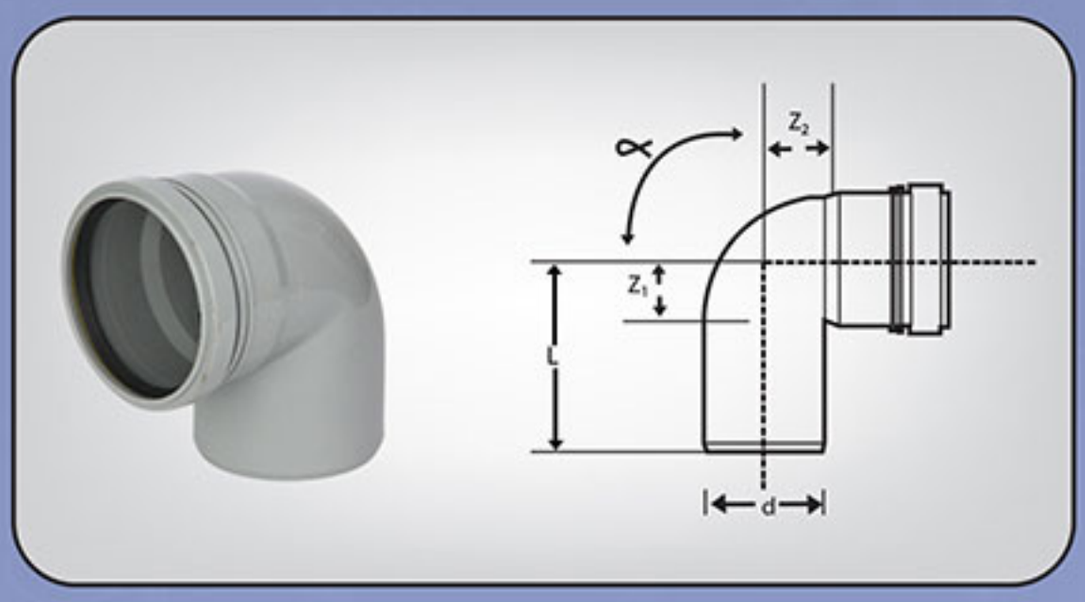


Spigot x Spigot



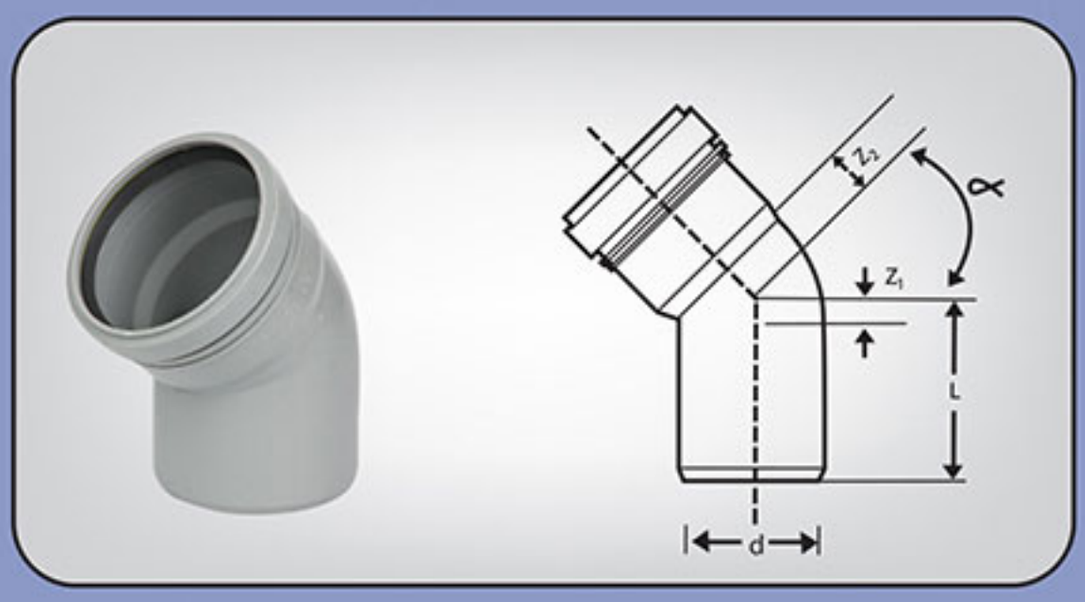
FITTINGS
Dimensions

Elbow 90°



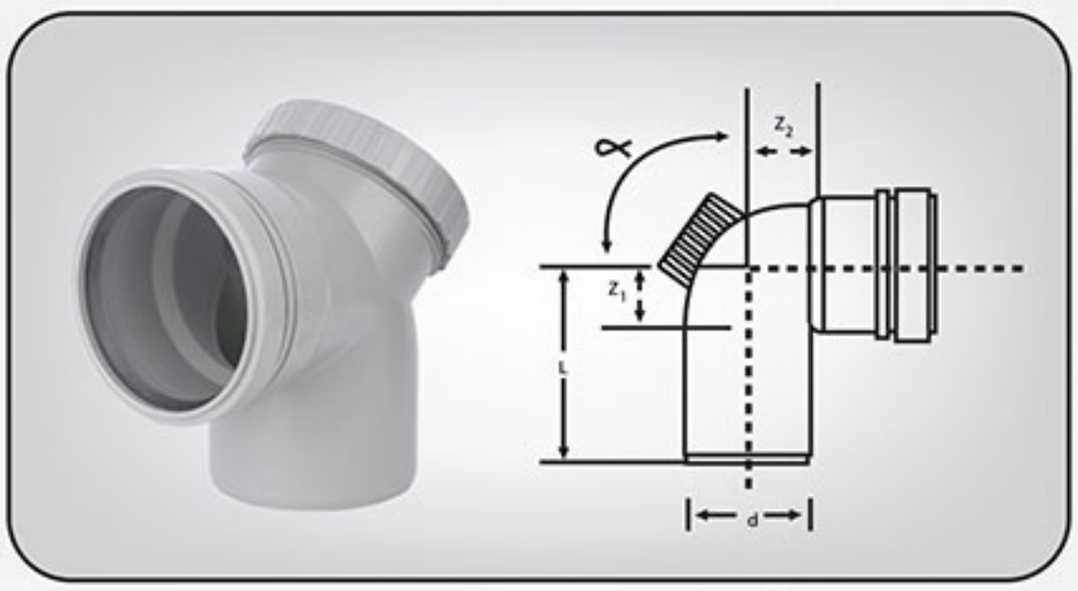
d	α	Z_1	Z_2	L
50	87.5°	26	28	79
75	87.5°	39	40	96
110	87.5°	57	58	118
160	87.5°	77.69	85.36	156.5

Elbow 45°



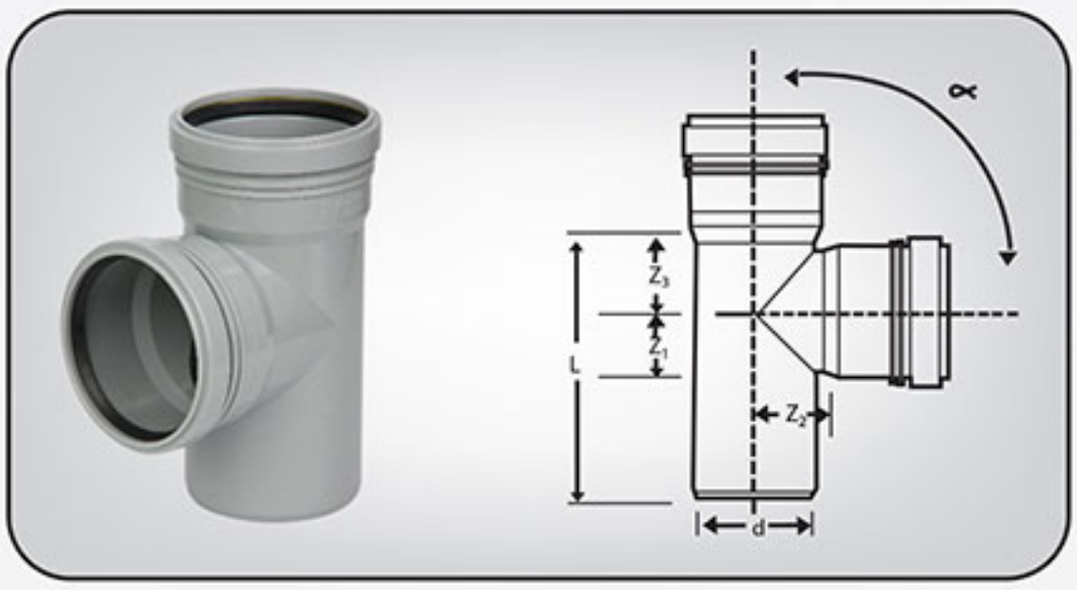
d	α	Z_1	Z_2	L
50	45°	10.5	13.5	65.5
75	45°	16	20	75.5
110	45°	23	28	88
160	45°	33.69	41.66	120

Elbow 90° with Cap



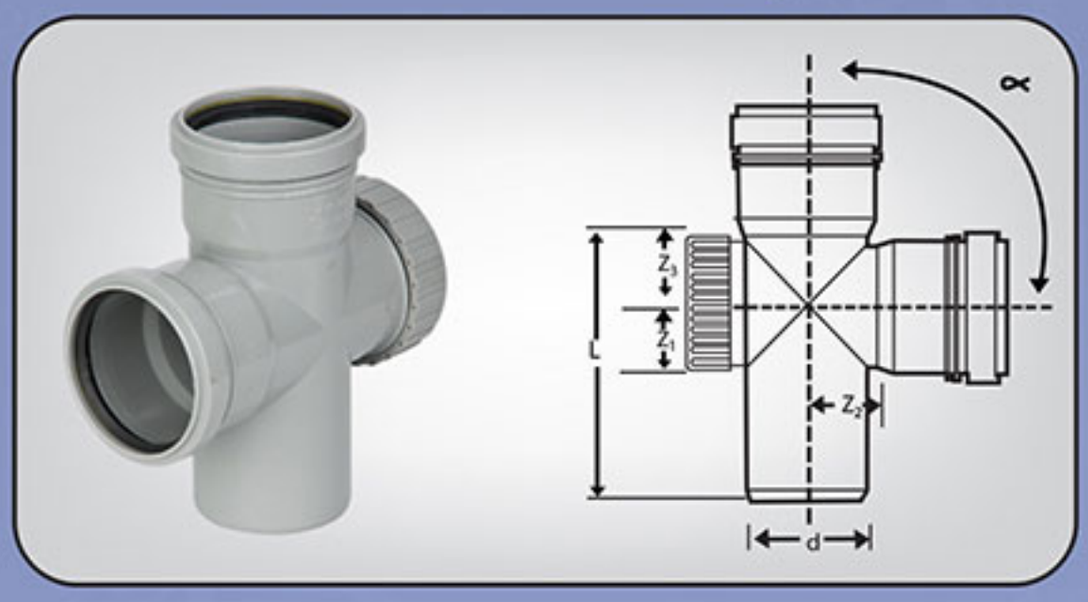
d	∝	Z_1	Z_2	L
50	87.5°	26	28	79
75	87.5°	39	40	96
110	87.5°	57	58	118
160	87.5°	77.69	85.36	156.5

Tee 90°



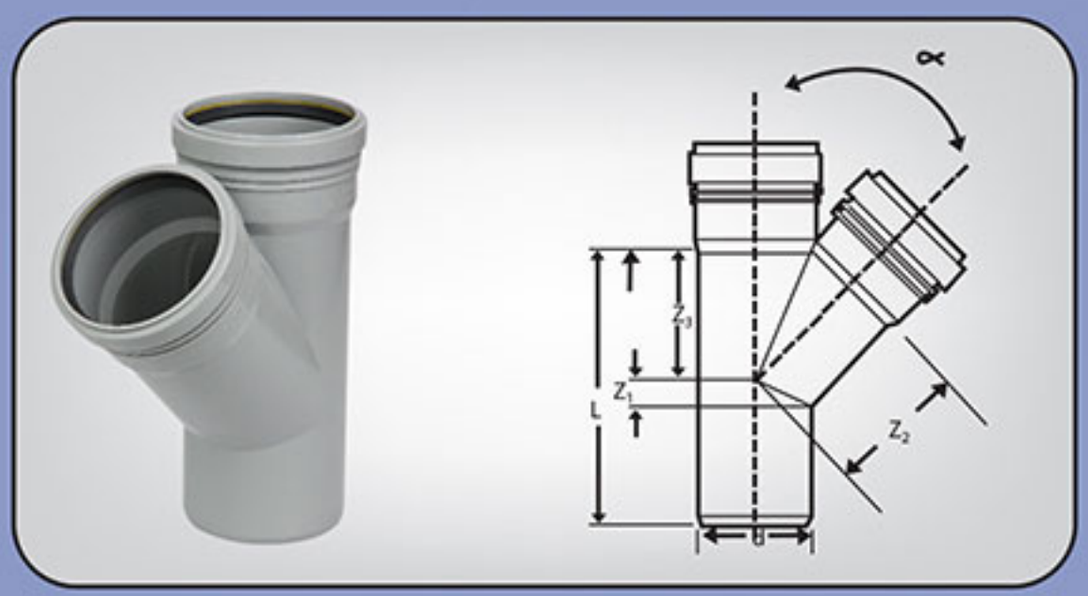
d	∝	Z_1	Z_2	Z_3	L
50	87.5°	26	31.5	31	112.5
75	87.5°	39	42	44	142
110	87.5°	57	62	59	181
160	87.5°	84.66	91.36	84.53	247

Tee 90° with cap



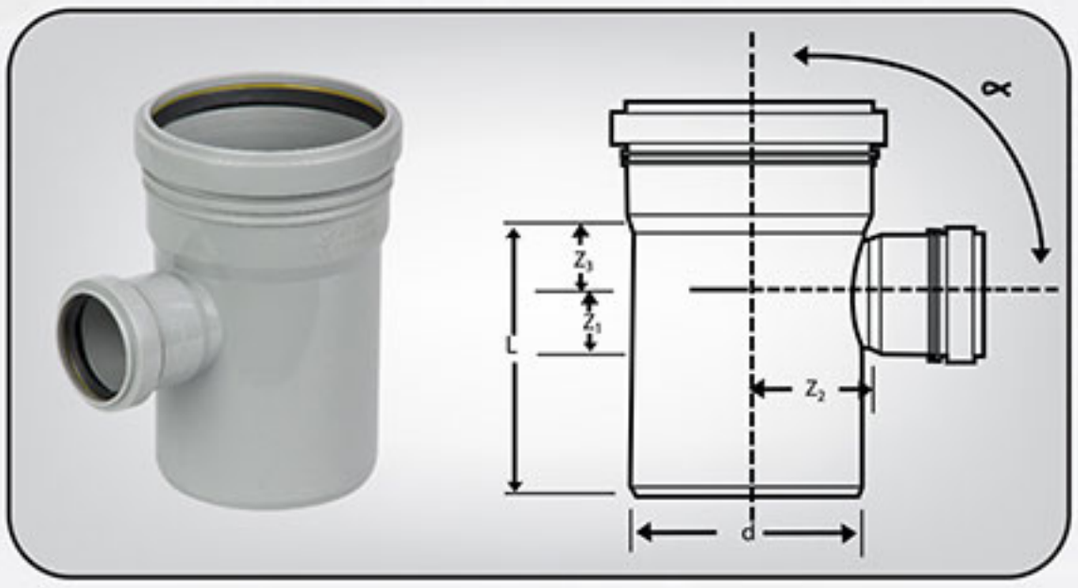
d	∝	Z_1	Z_2	Z_3	L
75	87.5°	37	43	46	142
110	87.5°	56	62	60	181.5
160	87.5°	84.66	91.36	115.46	247

Tee 45°



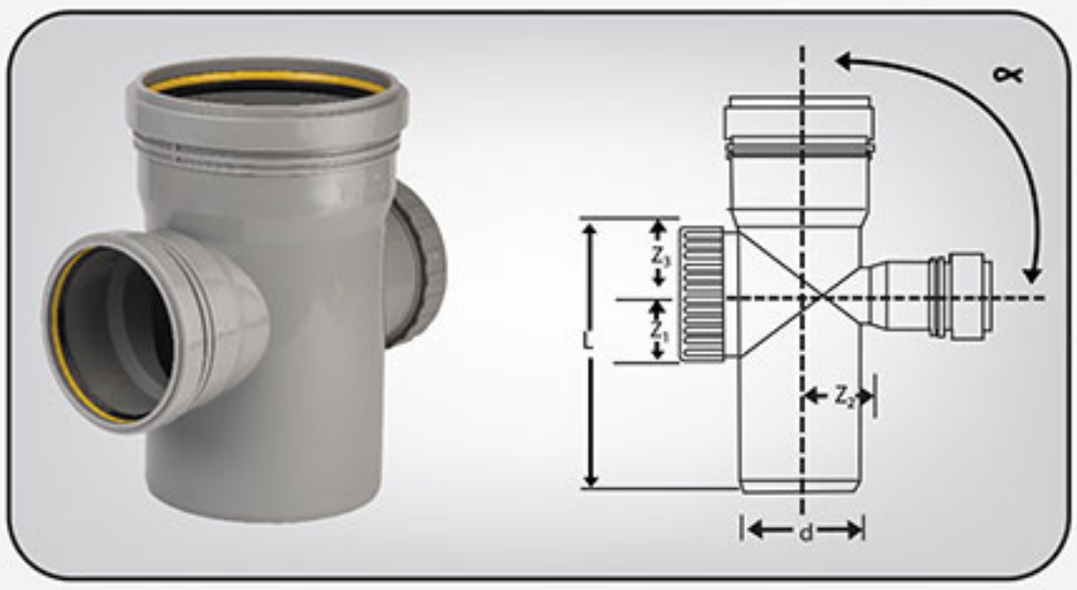
d	∝	Z_1	Z_2	Z_3	L
50	45°	11	62	62	127
75	45°	16	93	93	169
110	45°	23	133	133	221
160	45°	113.02	195.01	115.46	308

Tee Reducer 90°



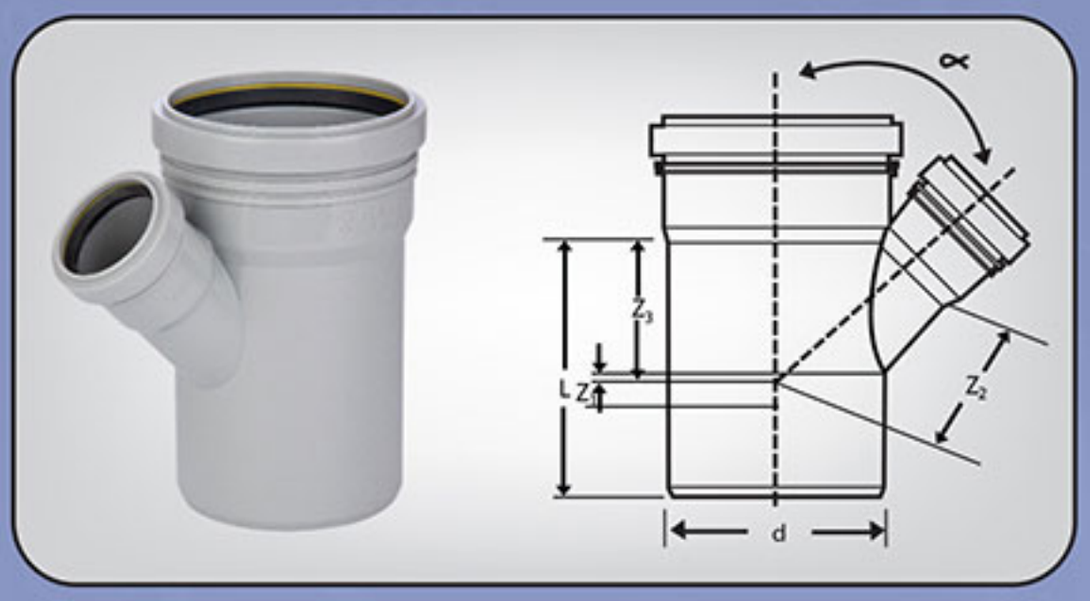
d	α	Z_1	Z_2	Z_3	L
75/50	87.5°	26	43	26	112
110/75	87.5°	38.5	60	42	145.5
110/50	87.5°	26	61.5	32	123
160/110	87.5°	58.13	87.37	60.33	200

Tee Reducer 90° with cap



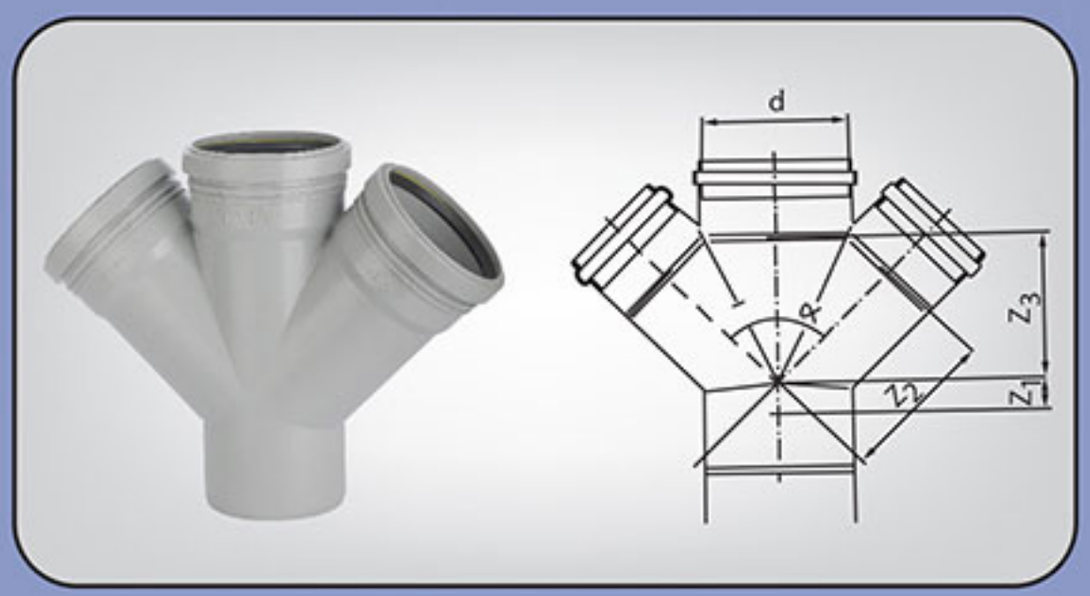
d	α	Z_1	Z_2	Z_3	L
75/50	87.5°	26	43	26	112
110/75	87.5°	38.5	60	42	145.5
110/50	87.5°	26	61.5	32	123
160/110	87.5°	58.13	87.37	60.33	200

Tee Reducer 45°



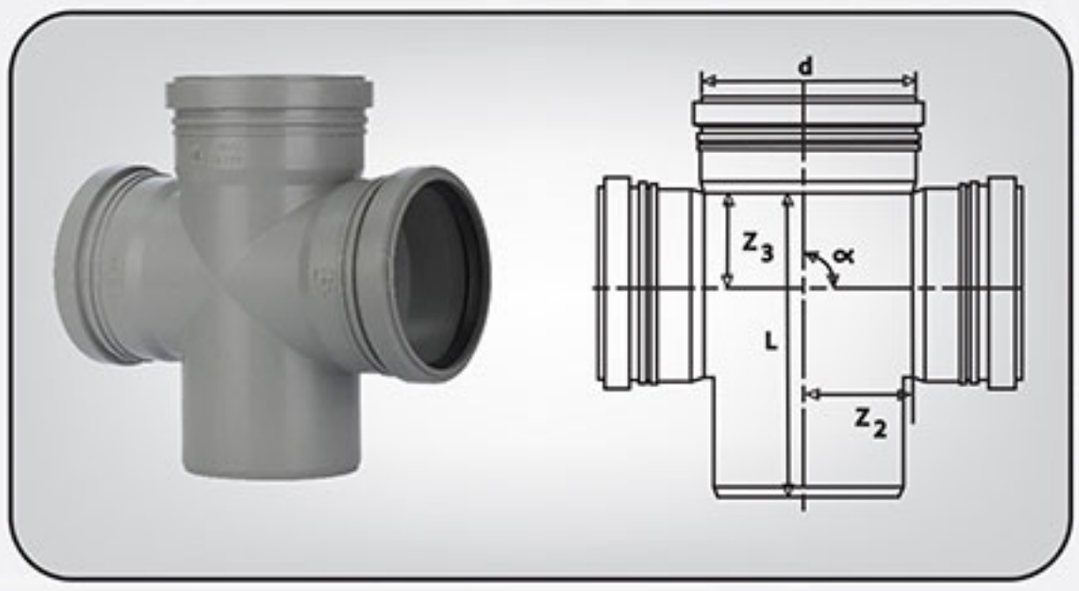
d	∝	Z_1	Z_2	Z_3	L
75/50	45°	2	81	74	132
110/75	45°	-1.9	116	109	172.5
110/50	45°	-19	106	88.5	134.5
160/110	45°	77.03	171.33	80.79	238

Double Branch 45°



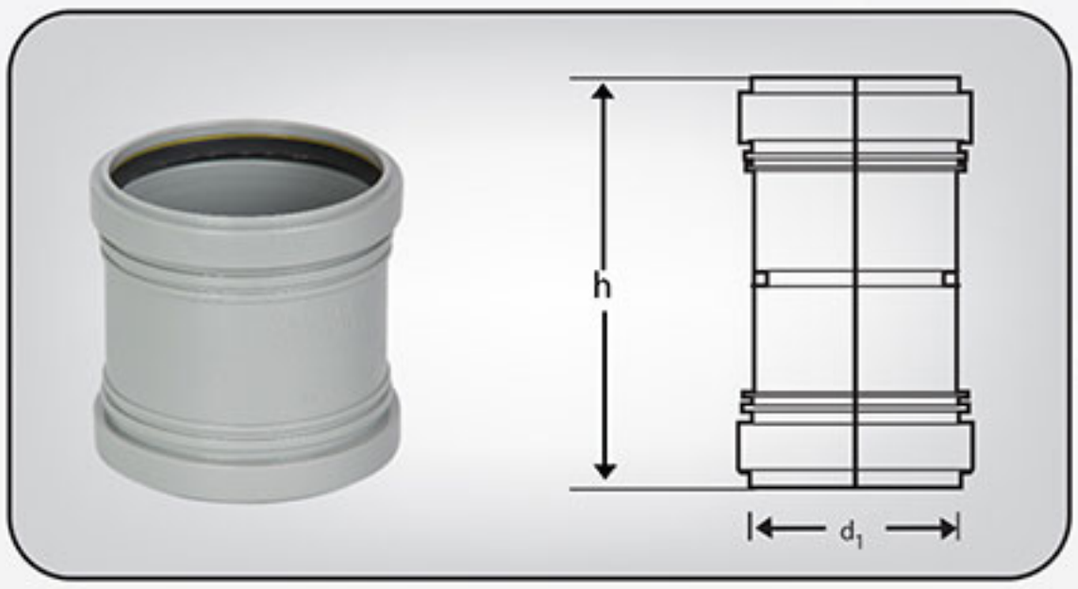
d	∝	Z_1	Z_2	Z_3	L
50	45°	2.23	61.08	61.42	127
75	45°	8.43	92.82	92.82	169
110	45°	22.27	132.84	132.84	221.5

Double Branch 90°



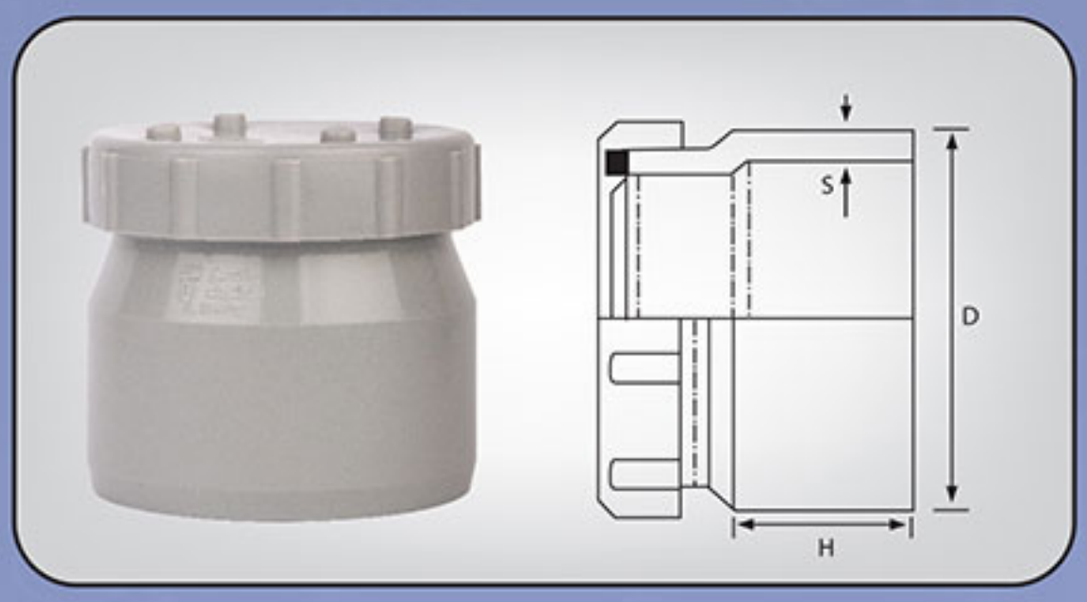
d	∝	Z_1	Z_2	Z_3	L
110	87.5°	28.08	61.7	62.49	181

Coupling



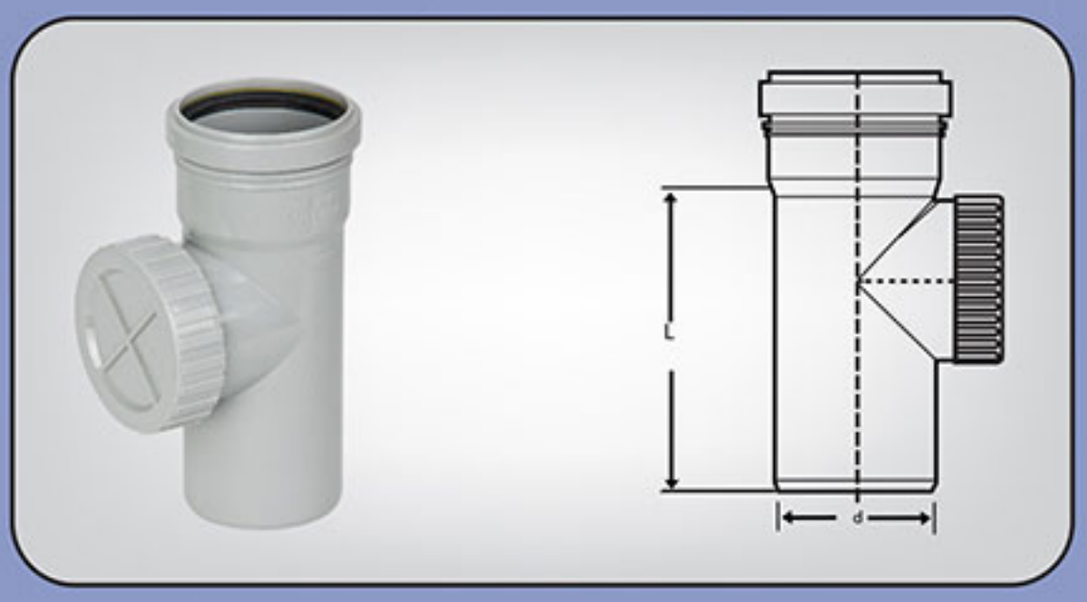
d_1	h
50	108
75	116
110	124
160	161.9

Clean out



item No	Dimension	D mm	S mm	H mm
1	50mm	50	5	35
3	75mm	75	5	44
5	110mm	110	5	53
6	160mm	160	6	79

Clean Pipe (Inspection)

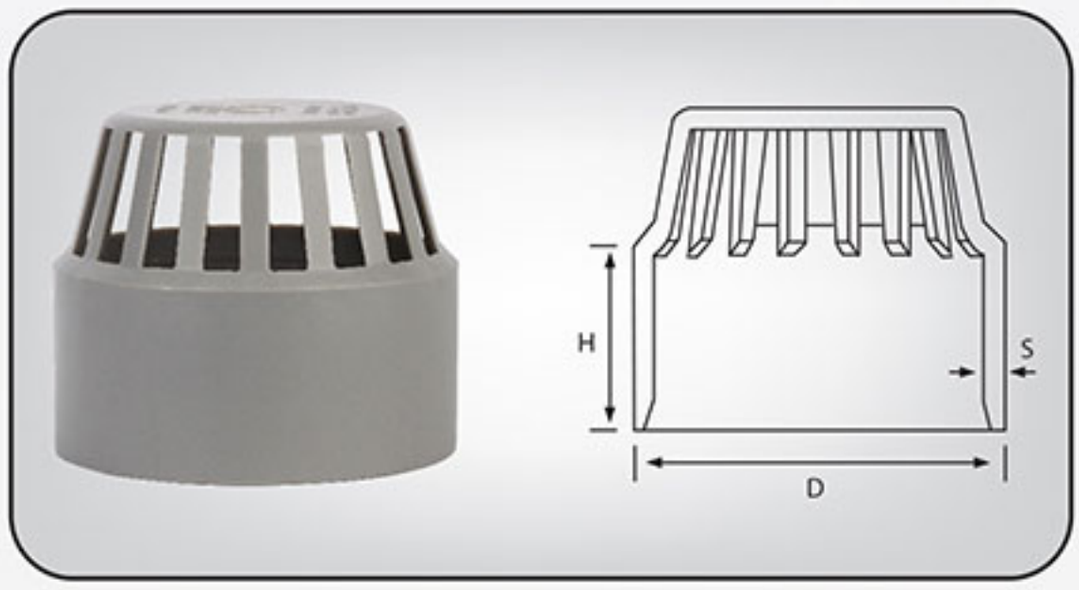


d	L
75	142
110	181.5

Syphon

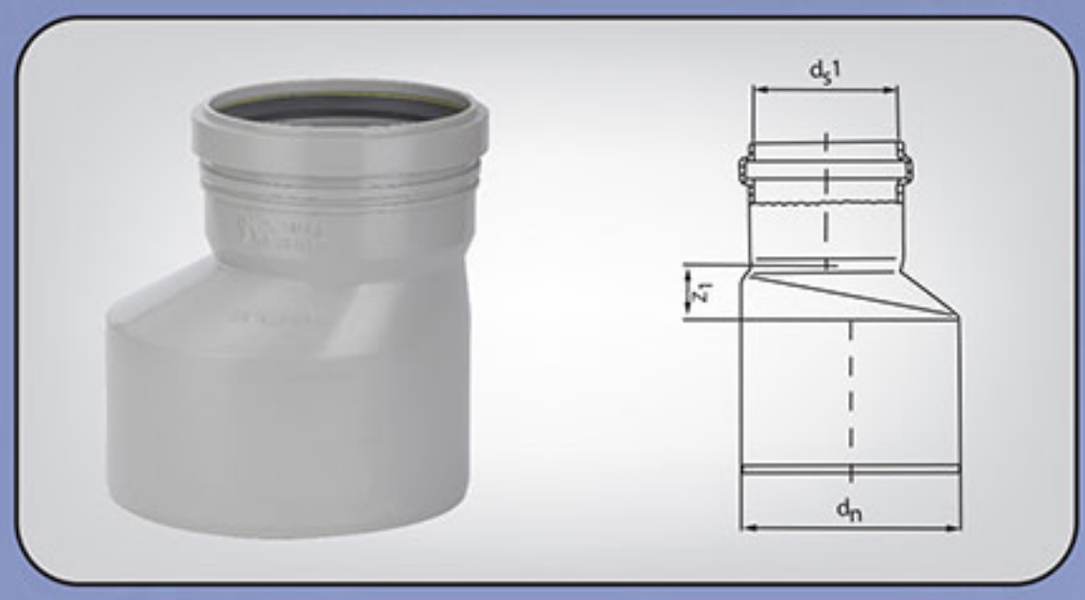
d_n	d_s	L	Z_1
110	111.2	305	55.3

Air vent



item No	Dimension	D mm	S mm	H mm
1	75mm	82	3	45
2	110mm	118	4	52

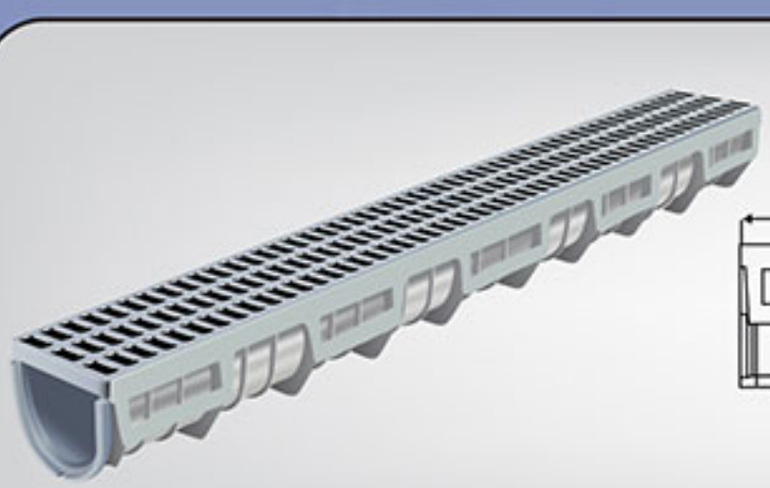
Reducer

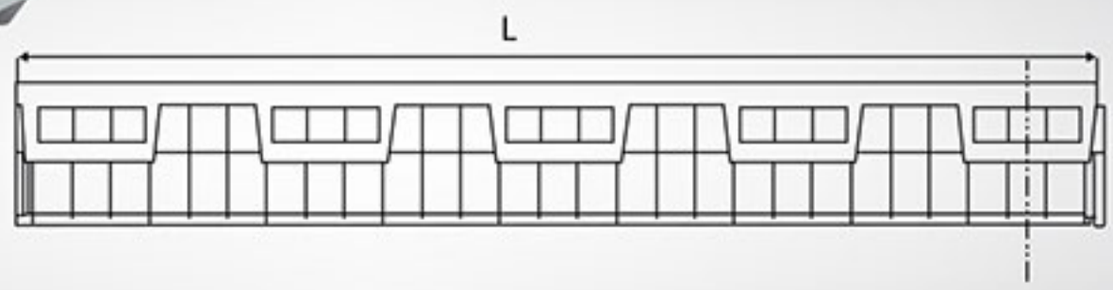


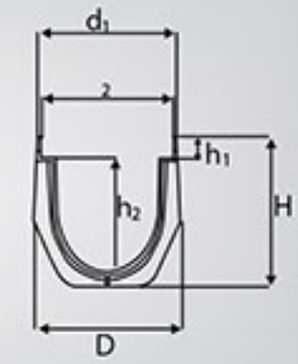
d	d_{s1}	d_n	Z_1
75/50	51.2	75.1	16.84
110/75	76.2	110.15	24.36
110/50	51.2	110	33.59
160/110	111.2	160.2	33.65

GRILLED CHANNEL

Property	Value	Unit
General Properties		
Abbreviated term	PP-B	----
color	Light gray	Ral 7042
Density 23°	0.9	g/cm³
Load(calculated)	Up to 3.6	Ton/M
Rheology		
Melt Mass Flow Rate MFR (230 C/2.16kg)	0.4	g/10min
Mechanical Properties		
Tensile Modulus (1mm/min)	1300	MPa
Tensile stress at (50 mm/min)	28	MPa
Tensile strain at yield (50 mm/min)	10	%
Notch Impact strength (izod) 23 C°	6.2	KJ/cm²
Notch Impact strength (charpy) 23 C°	5.2	KJ/cm²
Flexural modulus (2mm/min)	1400	MPa
Thermal Properties		
Vicat Softening point, A120	150	°C
Heat deflection temperature 0.45MPa(HDT/B)	87	°C

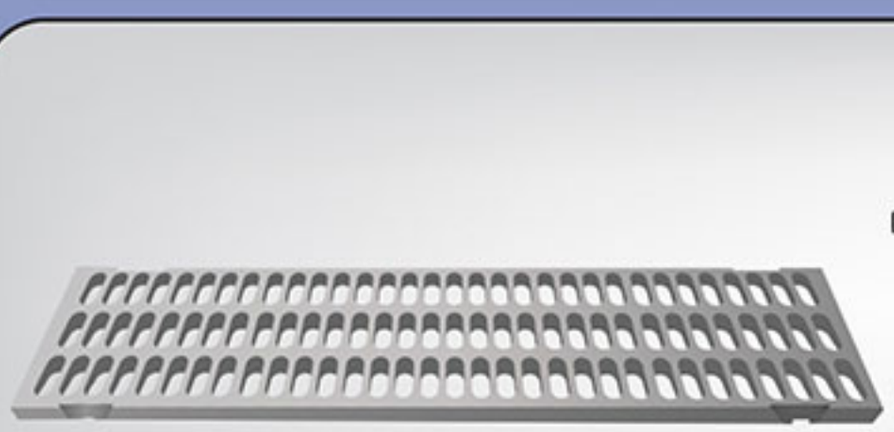


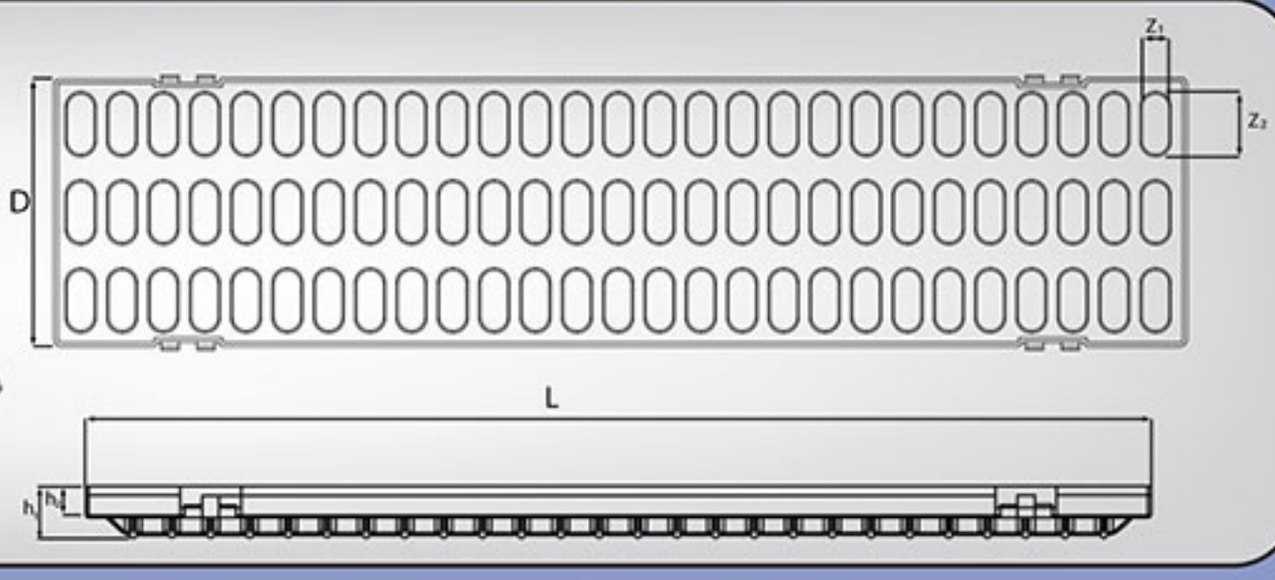




D mm	d_1 mm	$d_2$mm	H mm	h_1 mm	$h_2$mm	L mm
135.5	125	120.5	106	15	80.5	1020

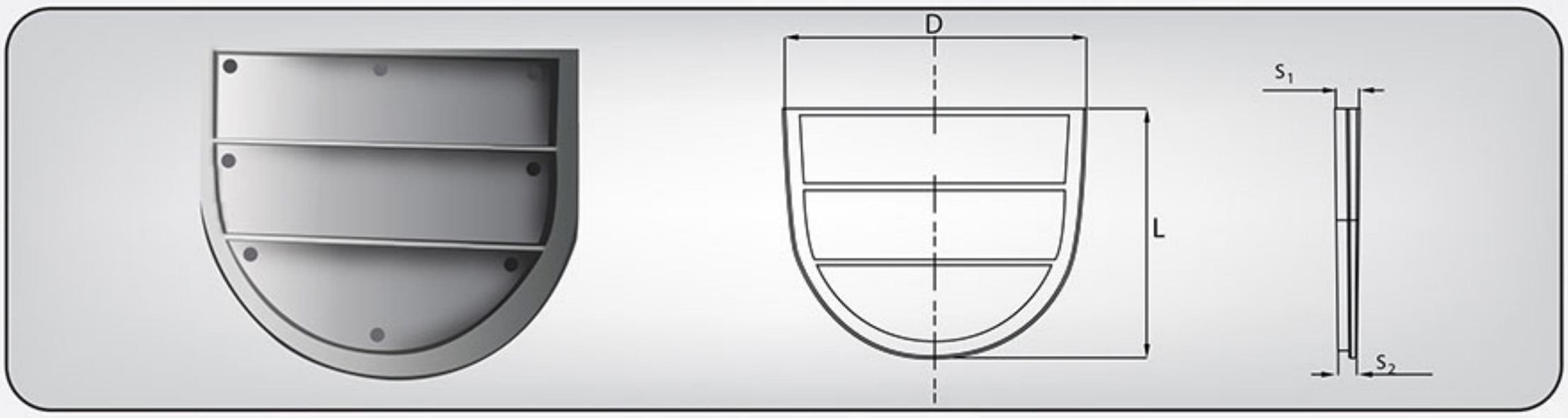
Channel Cover





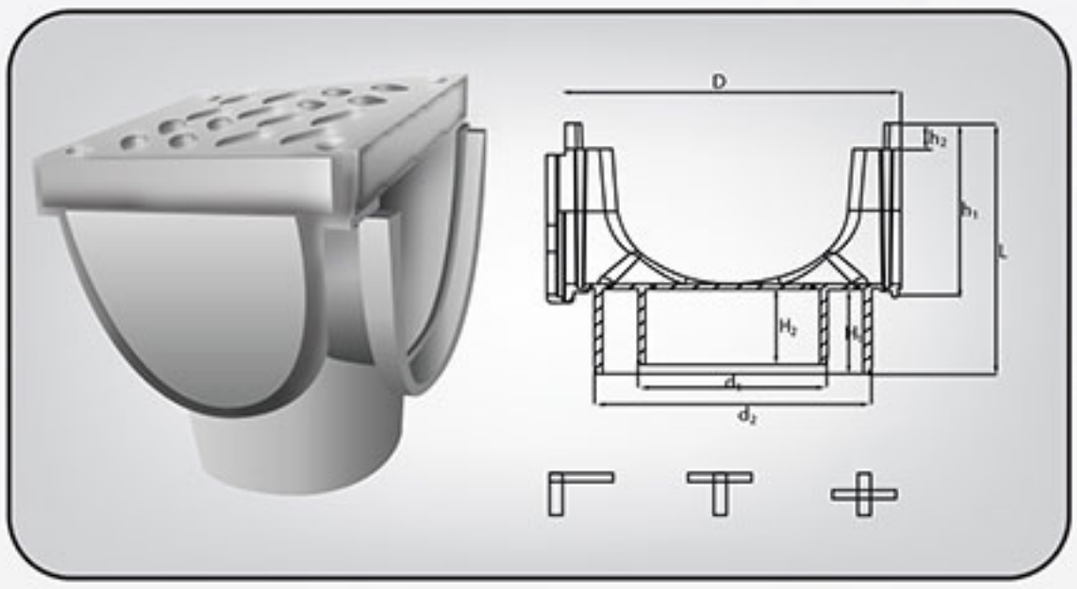
D mm	h_1 mm	$h_2$mm	Z_2mm	Z_2mm	L mm
119.5	25	15	13	30	508

Channel End



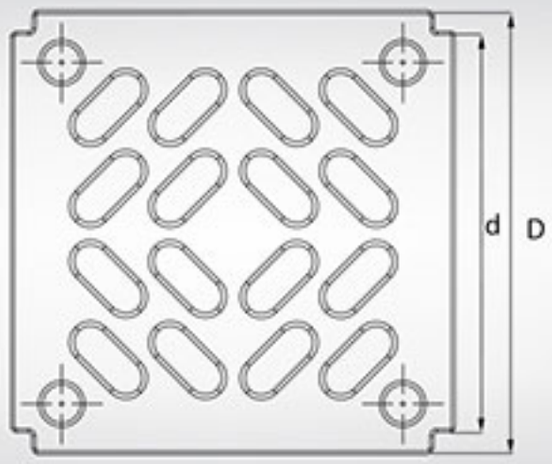
D mm	S_1 mm	S_2 mm	L mm
100	7.5	6.2	83

Channel Corner



D mm	d_1 mm	d_2 mm	H_1 mm	H_2 mm	h_1 mm	h_2 mm	L mm
133	75	110	51	45	103.5	15	150

Channel Corner Cover



D mm	d mm	h_1 mm	h_2 mm
132	119.5	25	15

CERTIFICATES

CERTIFICATES

CERTIFICATES

Registration Certificate

This is to certify that
the Environmental Management Systems of

AL-AMAL COMPANY FOR PLASTIC PIPES AND FITTINGS (AL-SHARIF)

have been assessed by AJA Registrars and registered against the requirements of

BS EN ISO 14001:2004

Certificate No. : **AJA10/AN/1453**

Date of Original Registration : **05/07/2010**

Date of Expiry : **04/07/2016**

Date of Re-Registration : **19/07/2013**

ANAB ACCREDITED

Raymond Hinton Timothy Dixon

Joint Chief Executives, AJA Registrars

ANGLO JAPANESE AMERICAN AJA REGISTRARS

This Certificate has been issued by AJA Registrars Limited, Unit 6, Gordano Court, Gordano Gate Business Park, Serbert Close, Portishead, Bristol UK BS20 7FS

This certificate is issued in respect of the locations & scope of registration detailed in the Associated Registration Schedule.
This certificate is the property of AJA Registrars and must be returned on request.

Registration Certificate

This is to certify that
The Occupational Health & Safety Management Systems of

AL-AMAL COMPANY FOR PLASTIC PIPES AND FITTINGS (AL-SHARIF)

have been assessed by AJA Registrars and registered against the requirements of

OHSAS 18001:2007

Certificate No: AP/EG/10/HS/472

Date of Original Registration: 23:06:10

Date of Expiry: **05:07:2016**

Date of Re-Registration: **05:07:13**

Chief Executive Officer

This Certificate is the Property of AJA Registrars and must be returned on request.

Registration Certificate

This is to certify that
the Management Systems of

AL-AMAL COMPANY FOR PLASTIC PIPES AND FITTINGS (AL-SHARIF)

have been assessed by AJA Registrars and registered
against the requirements of

ISO 9001:2008

Certificate No. : **AJA01/3823**

Date of Original Registration : **01/10/2001**

Expiry Date : **03/01/2016**

Date of Re-Registration : **03/01/2013**

UKAS MANAGEMENT SYSTEMS
0059

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Joint Chief Executives, AJA Registrars

AJA REGISTRARS
ANGLO JAPANESE AMERICAN

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Notes

2014

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لمياه الشرب و الصرف الصحى

ISO 9001:2008

0059

OHSAS 18001:2007

ISO 14001:2004

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