

**Wavin ED TECH**

**Installation Manual**



PP SOIL, WASTE AND VENT SYSTEM

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### 1.1 Introduction

Wavin ED TECH is a complete soil, waste and vent system made of polypropylene. It has established itself in the European market for in-house and industrial discharge systems, due to its excellent chemical and physical properties in the material used and by its ease of connection and assembly.

The revolutionary technology used for the ED TECH pipes is a result of years of research in the most skilled laboratories in the United States of America (Trexel Inc.) and Europe (Wavin T&I).

Its technology is based on studies developed together with the M.I.T. in Boston (Massachusetts Institute of Technology).

The Wavin ED TECH system consists of pipes and

fittings. The pipes are available in a range of 32, 40, 50, 75, 90, 110, 125 and 160mm in a large variety of lengths and configurations: double socket, single socket and plain ended.

The system also consists of a broad range of rubber-ring fittings (elbows), branches, access fittings, connectors, reducers, WC-fittings and many more products.

The Wavin ED TECH system meets all requirements, in accordance with EN 1451 and ISO standards.

### 1.2 Fields of application

The standards for WAVIN ED TECH provide for the following conditions and fields of application:

#### CONDITIONS OF USE

Maximum temperature of fluids to be conveyed: 95°C

#### FIELDS OF APPLICATION

The Wavin ED TECH systems is used for in-house drainage applications, e.g.:

- sanitary facilities;
- washing machines and dish washers;
- large kitchens, laundries, industrial plants in case of extended use of waste water;
- Schools, laboratories and industrial buildings in case of use of aggressive fluids.

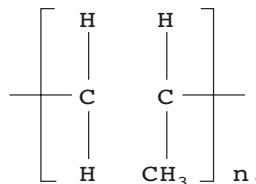
WAVIN ED TECH is also suitable for drainage of rainwater inside buildings.

### 1.3 Polypropylene

The whole range of ED TECH products is manufactured from flame retardant polypropylene (PP), a raw material with excellent physical and chemical properties. Polypropylene is a thermoplastic resin meaning that its state according to temperature is reversible, thus getting plastic with heat and returning rigid with cold.

Polypropylene presents a monomeric unit.

In practice, only isotactic polypropylene is used (all CH<sub>3</sub> groups are orientated i.e. they are all positioned on the same side of the chain), and it is obtained from polymerisation of polypropylene by means of stereo specific catalysts. Polypropylene has a lower density than polyethylene. It has the lowest of all thermoplastic materials, but shows high mechanical resistance, a high melting point (175 °C)



and an excellent stability in size. Polypropylene is a colourless, translucent and rigid thermoplastic product with good mechanical properties, extremely good dielectric and electrically insulating characteristics and high resistance to chemical agents. Polypropylene is a very versatile material and is used in the manufacture of textile fibres, big capacity tanks for solid and liquid material (TANKONE), valves and fittings of even bigger dimensions, exhaust fans getting into contact with corrosive gases and a variety of parts in the textile, automotive, electric, and electronic industry. ED TECH pipes and fittings are made of a special flame retardant formula, obtained by adding special substances to polypropylene, thus conforming it to the fire regulations in force in almost all European and several non-European countries. ED TECH pipes and fittings are used in a wide variety of European countries for house drainage. This product has been qualified by the most important European institutes of quality marking.

**1.4 Characteristics**

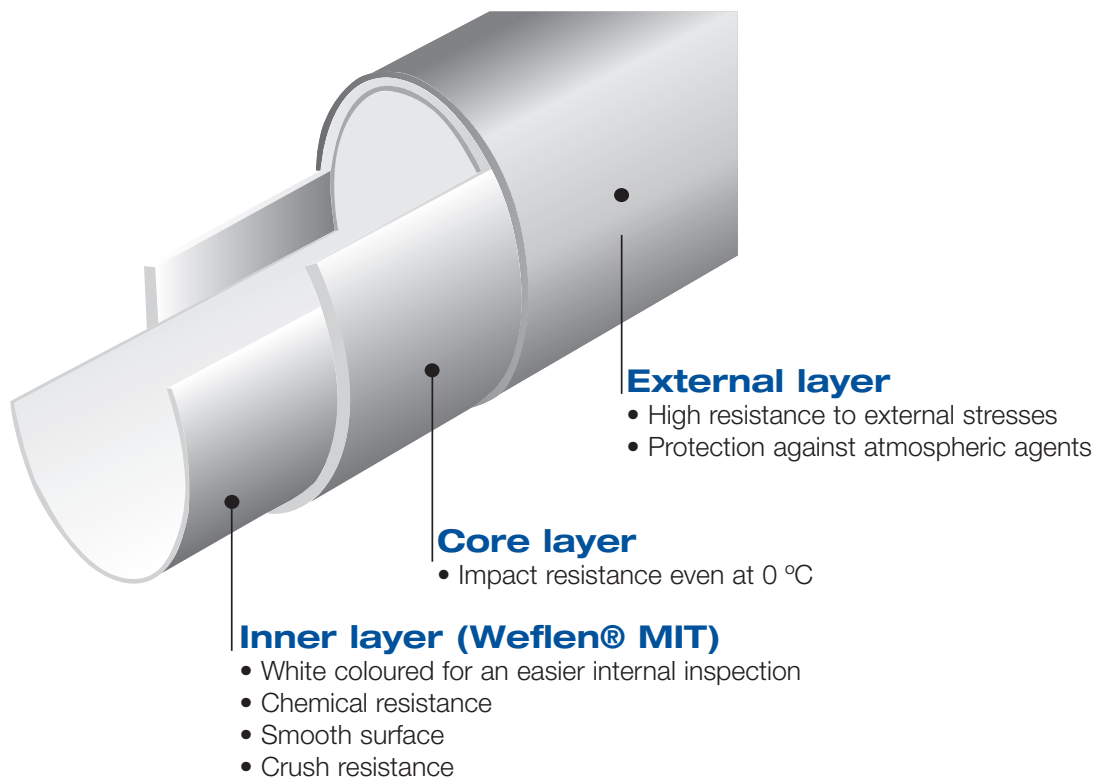
Wavin ED TECH is a system of self-extinguishing polypropylene pipes and fittings that, thanks to the specification of the raw material used and because of the technological detail in its manufacture, is characterized by:

- high molecular weight of the raw material used;
- excellent resistance to acidic and caustic (alkaline) materials including all commonly used detergents and dry cleaning chemicals;
- high impact resistance;
- excellent resistance to waste water from washing machines and dishwashers;
- the wide range of pipe diameters (from 32 mm to 160 mm), of fittings, and of special accessories;
- easy connection;
- elastomeric rubber seals that have as long a working life as the pipes;
- smooth surfaces (favouring the flow of waste water) and avoiding the formation of incrustations;
- low thermal conductivity limiting condensation;
- good packaging system facilitating transport and storage of the tubes and couplings as well as avoiding ovalization and flattening.

**1.5 Structure Wavin ED TECH pipes**

The pipe is made up of 3 polypropylene layers and has an increased thickness (for example, the 110 mm ED TECH pipes offer a 26% higher wall thickness compared to traditional polypropylene pipes).

The pipes are manufactured by coextrusion, which means that the 3 layers are permanently linked. Each layer has its specific functions to realise a superior performance as a whole.



### 1.6 Achievements

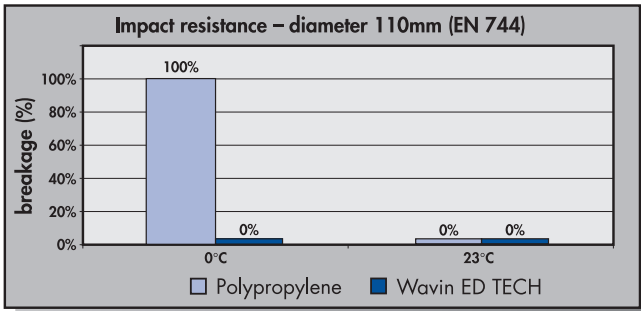
The 3-layer pipe with increased wall thickness not only make the pipe extremely robust to ambient temperature but also to frosts (0°C) when the probability of breakage is significantly greater. It should be remembered that traditional pipes only have good impact resistance (in agreement with EN 1451 and EN 744) at a temperature

of 23°C (see table 1). ED TECH pipes are only damaged by more force than is normally met during construction on a building site.

What is more, the pipe is not only highly robust but also flexible giving it considerable resistance to flattening so it more than meets a variety of installation requirements.

Another important factor is the white internal layer made of Weflen MIT, a material conceived in the Wavin laboratory that helps the flow of waste water discharged, limiting incrustations and adherence of detergents and organic products to the minimum not to mention the formation of mold.

Lastly, the special white coloration facilitates easier internal inspection. Numerous patents for this technology protect Wavin's exclusivity.



#### Resistance to discharge water

The wall thickness and the raw material used guarantee a high resistance to hot water from washing machines and dish washers.



#### Flexibility

Flexibility is a must, especially for buildings exposed to strong vibrations (earthquakes). The sockets have the same function as expansion joints, thanks to the rubbering push fit system.



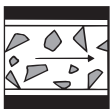
#### Resistance to low temperature

The elasticity of Wavin ED TECH makes the system resistant, even in case of frost.



#### Easy connection by means of sockets

Wavin ED TECH pipes and fittings can be easily connected by means of the push fit system. It is the most simple and fast connecting system.



#### Resistance to abrasion

Drainage water may contain suspended particles, which may cause abrasion. Wavin ED TECH resists to these particles due to the compactness and smoothness of the walls. The wall thickness assures a considerable security also in the most critical conditions.



#### Impact resistance

At room temperature Wavin ED TECH shows a very good resistance to impact. This resistance is maintained even at low temperatures.



#### Absence of clogging

The walls of pipes and fittings are perfectly smooth, ensuring the discharge of all kinds of drainage water. Good installation is key to avoiding such problems.



#### Rubber ring connection

The pipes and fittings can be connected by means of rubber rings, no glue necessary.



#### The gaskets of Wavin ED TECH

When drainage takes place, the Wavin ED TECH gaskets of the sockets are getting wet only marginally. Despite this they are resistant to all kinds of chemical agents in the same way as polypropylene is. Gaskets are made of an elastomeric material that assures a perfect sealing and durability (even under hard working conditions)



#### Fire resistance

Wavin ED TECH is flame retardant.

## 1.7 Properties

### 1.7.1 Marking

Each pipe or fitting is marked as follows:

- Commercial brand (Wavin ED TECH)
- Applicable quality standards (EN 1451, DIN 4102-B2)
- Quality mark (IIP 152, UNI)
- Indications of outside diameter and wall thickness
- Indications of outside diameter (DN) and thickness series "S" (fittings only)
- Angle (fittings only)
- Year, month, day and shift of production (pipes only)
- Year of production (fittings only)

The quality marks applied to our pipes and fittings give our customers the guarantee that there is a continuous control of:

- Raw material
- Tightness of gasket
- Dimensions
- Flame retardation
- Physical properties

### 1.7.2 Colour

Wavin ED Tech pipes and fittings are grey-coloured and stabilised for UV exposure. The grey tone of ED TECH

corresponds to RAL colour 7037, according to DIN standards.

### 1.7.3 Physical properties

The flame retardant polypropylene used for the production of ED TECH pipes and fittings has the following physical properties.

#### Raw material

Polypropylene (PP)

#### Joining method

Rubber-ring push fit

#### Density g/cm<sup>3</sup>

0.91 (pipes 32 – 50mm)  
0.75 (pipes 75 – 160mm)  
(ASTM D 1505)

#### Hot water resistance

95° C short term loading  
90° C long term loading

#### Wall thickness

DN (mm)	Wall thickness (mm)
32	1.9
40	1.9
50	1.9
75	2.3
90	2.8
110	3.4
125	3.4
160	4.3

#### Chemical resistance

pH 2 - 12

#### Linear expansion

0.12 mm x m C

#### Fire classification

DIN 4102 – B1 (fitting)  
DIN 4102 – B1 (pipe)

#### Quality marking

IIP 152, UNI

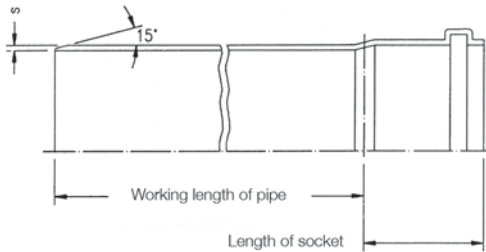
#### Weight per meter of pipe (plain ended HTGL)

DN (mm)	kg/m
40	0.218
50	0.274
75	0.414
90	0.586
110	0.854
125	0.976

### 2.1 Connections

The main characteristic of the Wavin ED TECH system is that all pipes and fittings have a socket with an elastomeric gasket. This simple system of connection, carried out by hand, enables a quick connection of

different pipes and fittings. No glue or tools are required. ED TECH fittings are all injection moulded and correspond to EN 1451 standards.



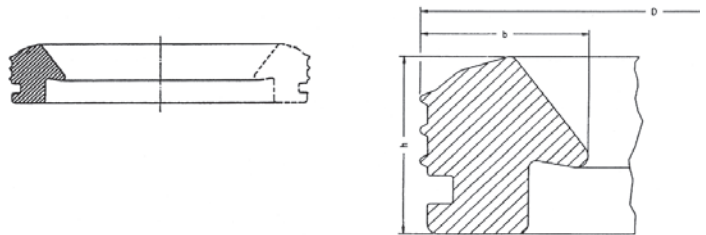
Nominal diameter mm	Wall thickness mm	Internal diameter socket mm	Wall thickness socket mm	Length of socket mm
32	1,9	32,3	1,6	46
40	1,9	40,3	1,6	48
50	1,9	50,3	1,6	50
75	2,3	75,4	1,7	55
90	2,8	90,4	2,0	65
110	3,4	110,4	2,4	70
125	3,4	125,4	2,8	75
160	4,3	160,4	3,6	83

### 2.2 Gaskets

The gaskets inside the sockets are of elastomeric material, thus giving a guaranteed tightness and durability, even under extreme conditions. Furthermore, they have the same properties and resistance to chemical agents and high temperatures as polypropylene. Their special shape of "lips" assures a simple and secure connection. All gaskets used for the ED TECH system have the German quality mark PA-I.

If stored, pipes and fittings come into contact with sand, dust or crushed stone. The gasket can be taken out in order to be cleaned and put back into its seat, to ensure the best working conditions.

The particular shape of the gasket makes it possible to support offsets of pipes up to 4° without losing their



perfect tightness.

### 2.3 Preparation and installation

Every material will either expand or contract when exposed to temperature differences. The coefficient of expansion of ED amounts to 0.12 mm·m·C. Independent of the type of drainage used, recommendations in order to compensate for expansion of the ED TECH system can be synthesized as follows:

The part to be connected must be inserted into the socket, until it reaches the bottom of the socket and then has to be extracted by 1 cm (see figure below).



mark the pipe with a pencil at the beginning of the socket and extract the pipe for 1cm in relation to the marked line. This simple working process ensures that the pipe will absorb thermal expansion; the depth of the socket was calculated to absorb expansion or contraction of pipes with a maximum length of 3 cm.

The result of an insufficient depth of connection will be a weak junction. The results of excessive depth of the connection (to insert the pipe until the end of the socket) could prevent the expansion of the pipeline.

The Wavin ED TECH system can be used for all drainage systems in buildings, from houses to shopping centres. It can also be used for industrial plants and laboratories. Additionally it can be used as a down pipe for gutter systems (rainwater).

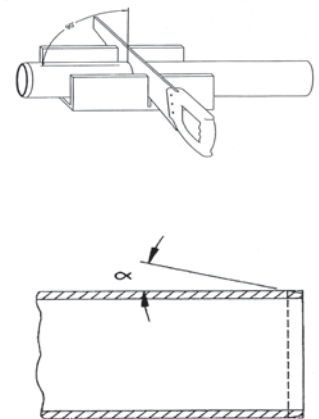
Insert the pipe into the socket until the end of the pipe,

**2.4 Cutting and chamfering**

Wavin ED TECH pipes can be cut using a pipe cutter or a fine toothed saw. Square cuts can be achieved by means of a guided saw. In case of large pipe diameters a cutting disk can be utilized. The cut edges must be deburred. The pipe ends are to be chamfered and cleaned, thus forming an angle of about 15° (it is advisable to use a bevelling machine for diameters from 40 up to and including 315 mm). This will ensure that the gasket of the socket will not be damaged when the pipe is inserted. Any dust, sand, or traces of conc<sup>15°</sup> or lubricant in the section inserted in the socket are cleaned using an appropriate lubricant in a tube or by using a lubricant spray.

Use of mineral oils and fats is absolutely excluded. After insertion, the spigot is pulled back a centimeter.

WAVIN ED TECH does not need a specific device when it is in contact with products composed of other materials. All the same, it is a good idea to protect it with adhesive tape or thick paper in the connecting section between spigot and socket to prevent possible infiltration of cement particles.



**2.5 Assembly of vertical columns (Drainage columns)**

The existence of expansion sockets simplifies the assembly of drainage columns. To prevent the column from sliding downwards, a guide bracket has to be fixed under the pipe socket, immediately after the column installation. Vertical pipes can be assembled in two different ways:

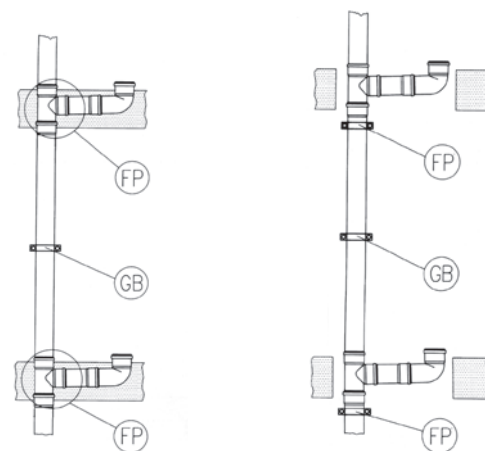
- 1) Column with branch on the floor, buried in concrete;
- 2) Column with branch on the floor, free.

In the first case, the branch on the floor, buried in concrete gives origin to a natural “fixed point”, provided that the branch and the column have the same diameter, so that no further fixed points are needed.

Should any column dilatation take place, it will be absorbed by the expansion socket of the underlying branch. A movable bracket situated between the two floors will work as a pipe guide.

In the second case, where the branch is not fixed in concrete, the creation of a fixed point is necessary. This “fixed point” is made by fixing the pipe socket with a bracket, which, in turn, is fixed to the wall.

Distance between the brackets: 15 x diameter (Ø mm).



Column buried in concrete      Free column  
**FP** = Fixed Point      **GB** = Guide Bracket



### 2.6 Assembly of horizontal pipelines

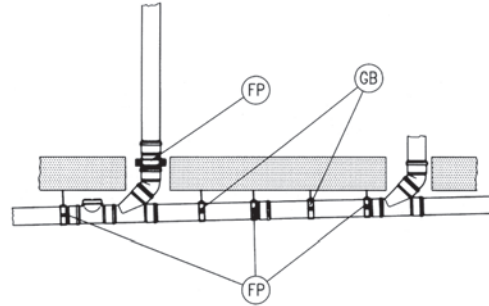
As in the case of columns, also horizontal pipelines for drainage do not require specific interventions during their assembly and installation, thanks to the expansion sockets and the pipes' reduced length (maximum length: 3 metres).

The sockets have to be fixed to the structure (ceiling or wall) by means of brackets in order to create a "fixed point". The pipes are supported by guide brackets placed at a distance of 10 times the pipe diameter. A fixed point has also to be made in correspondence with every branch and branch of the pipeline.

It is, however, advisable to reduce the distance between the structure and the pipeline as much as possible, taking into account the slope, in order to avoid bending of the support. When installed according to these instructions, horizontal pipes will be well supported and

guided and their functionality will be guaranteed.

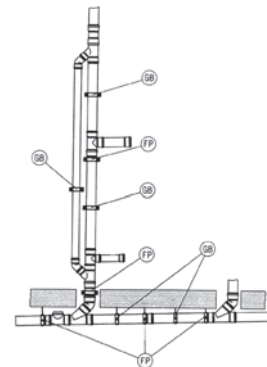
Distance between the brackets: 10 x diameter ( $\varnothing$  mm).



**FP** = Fixed Point      **GB** = Guide Bracket

### 2.7 Example of columns and horizontal pipelines

The guide brackets and fixed points should be placed in such a way so as not to hinder the axial contraction and extension caused by thermal expansion.



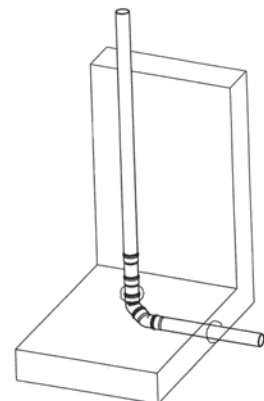
**FP** = Fixed Point      **GB** = Guide Bracket

### 2.8 Installation in concrete

Wavin ED TECH pipes and fittings can directly be embedded in concrete casting. Even if they do not stick to the concrete casting, movement will be restricted due to the resistance given by the shape of the sockets of pipes and fittings. Owing to its high elasticity, PP material is able to absorb dilatation. Pipes conveying continuously high temperature waste waters (in case of dishwashers, washing-machines, laboratories) should be protected by heavy or corrugated paper, put around the sockets in order to improve dilatation caused by the differences in temperature.

During concrete casting, pipes may be compressed. For this reason it is advisable to fill the pipes with water, thus

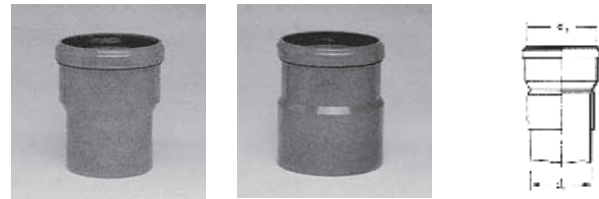
limiting pressure. One can also carry out concrete casting only partially i.e. in steps or stages, so that concrete does not set all at once.



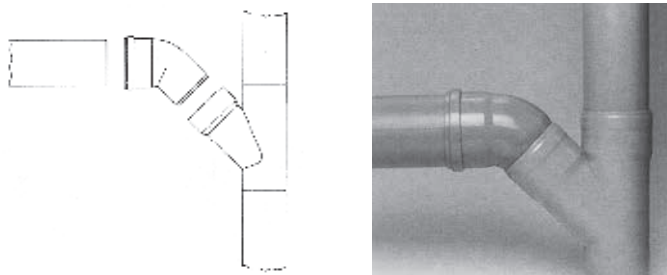
**2.9 Connection of Wavin ED TECH to PVC**

Wavin has manufactured special PVC transition fittings, which the installer can use to connect the WAVIN ED TECH to PVC columns or bends. This frequently occurs in renovation projects.

The transition fitting is manufactured from PVC and is connected to the spigot end of a PVC pipe or fitting by means of glue. The socket end is designed exactly to accept a ED spigot end. If the vertical downpipe is made of PVC, it is possible to connect ED TECH, using the



elbow fittings shown below. The fitting will be connected to the downpipe by means of glue.

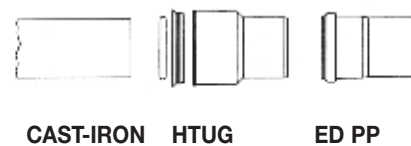


The following sizes are available:

d/d1	α
110/100	15°
110/100	30°
110/100	45°
110/100	67°30'
110/100	87°30'

**2.10 Connection of Wavin ED TECH to Cast-iron**

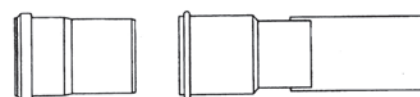
The connection between ED and cast-iron pipes can be carried out by means of a HTUG fitting. The double ring gasket has to be put on the spigot end of the cast-iron pipe and then the HTUG fitting is put on. It is advisable to fill the air space with inert material.



**CAST-IRON HTUG ED PP**

**2.11 Connection of Wavin ED TECH to lead**

In order to connect ED to lead pipes, a brass adaptor is used.



**ED PP ADAPTOR LEAD**

**2.12 Fittings HTMM - HTU - HTLL**

With these special fittings, reparations on the working place or even variations on an already existing pipeline are possible. It is also possible to use pieces of pipes.



**HTMM = Fitting with central stopper**

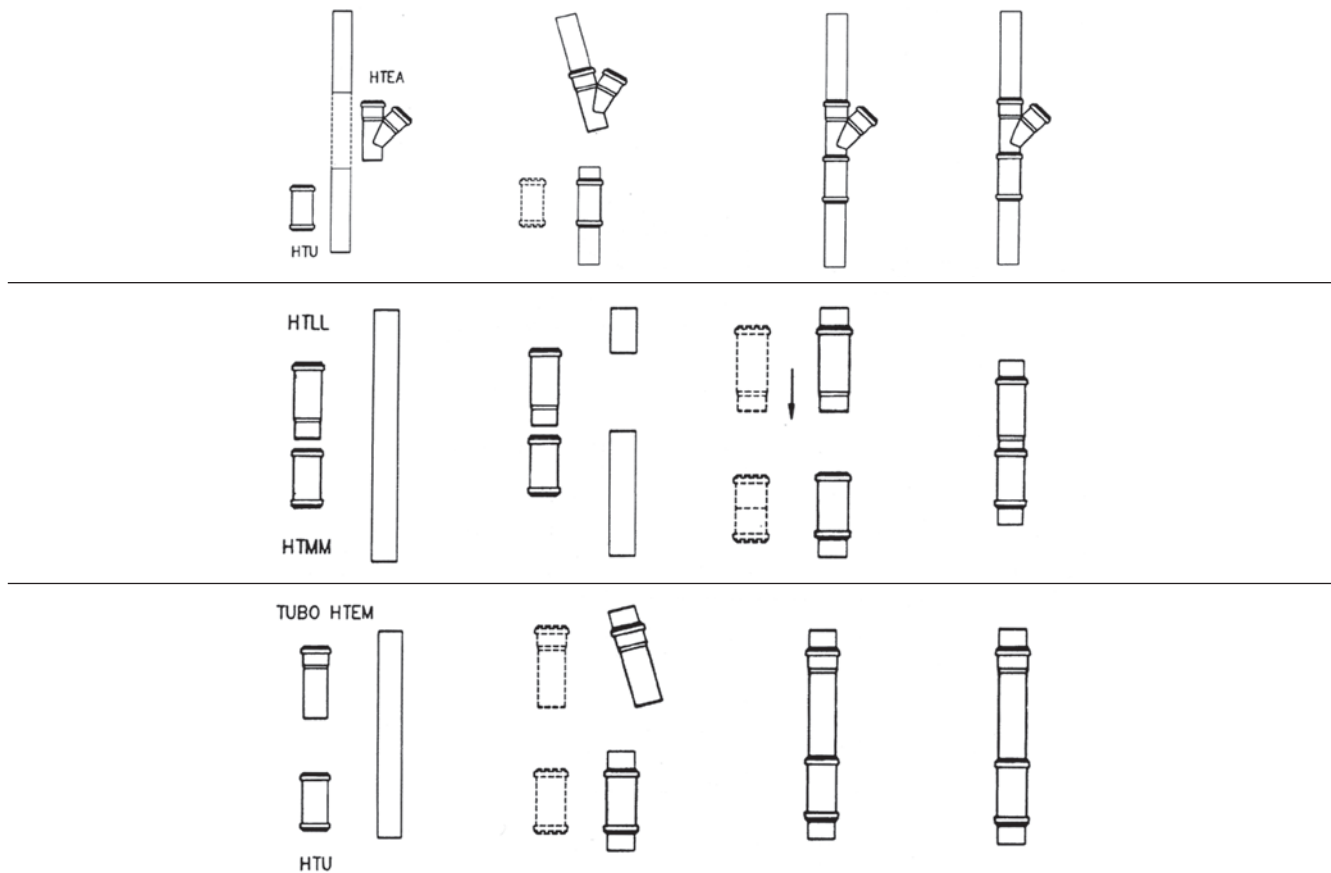


**HTU = Fitting without stopper**

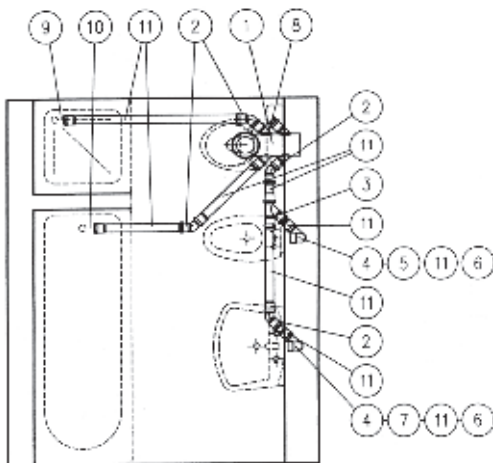


**HTLL = Double length connector**

### 2.13 Some examples of utilisation



### 2.14 Example list of materials for a bathroom



Item	Description	Diameter	Number
1	WC bend with 4 connectors	Ø 40	1
2	Bend 45°	Ø 40	4
3	Branch 45°		1
4	Gasket		2
5	Double length bend for connection with trap	Ø 40x1¼"	1
6	Bend 87° 30	Ø 40	2
7	Bend for connection with trap HTSW	Ø 40 x 1¼"	1
8	Protection cap	Ø 40	1
9	Shower trap	Ø 80 x 40	1
10	Pipeline for bath - tub	Ø 40	1
11	Pipe	Ø 40	

## Wavin ED TECH



### Meeting your needs

Wavin ED TECH soil, waste and vent system forms part of a comprehensive range of plastic pipe systems to provide intelligent solutions for all building and infrastructure projects. These include:

#### Above Ground Projects

- Wavin Hot & Cold water Systems
- Wavin Underfloor Heating Systems
- Wavin Soil & Waste Systems
- Wavin Rainwater Management Systems

#### Below Ground Projects

- Wavin Sewer Systems
- Wavin Inspection Chambers and Manholes
- Wavin Storm and Foul Water Drainage Systems
- Wavin Rainwater Management Systems
- Wavin Cable Duct Systems
- Wavin Pipeline Renovation Systems
- Wavin Water and Gas Pressure Systems

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