

9 Prefabrication

9.1 Choosing to prefabricate

Prefabrication of pipe systems refers to the manufacturing of standardized and factory-made pipe sections in large quantities, which are then assembled during installation on the building site. The fittings and pipes are butt-welded together during prefabrication.

- Building pipe systems requires time; time to measure, make cuts, joints and to complete testing. Using a fabricated system cuts downtime on site considerably.
- Reliable butt-welded joints made in factory conditions.
- Drainage systems designed and made accurately minimizes offcuts and waste on site.

Of course, pipe system can be prefabricated from other materials. HDPE however, offers some distinct advantages making especially suitable for this manner of installation:

- Easy handling due to the light weight of HDPE. A related advantage is the lower transportation costs.
- Minimal risk of breakage and deformation during transport and handling because HDPE is flexible, impact-resistant and tough material. It will even survive rough treatment.
- Simple assembly using butt-welding or electrofusion, enabling firm and leak-free welded joints to be made.

The advantages of prefabrication are especially visible in situations when the pipe systems are identical and can be prefabricated in large batches. Large identical pipe systems are typically installed in hospitals and residential buildings.



Illustration 9.1 Prefabricated pipe sections



Illustration 9.2 Prefabricated pipe sections installed on site

Examples of installation in difficult conditions

The pipe sections are prefabricated in controlled conditions, after which installation on site can be performed using simple electrofusion joints. This allows for safer assembly of the pipe system especially under difficult conditions.



Illustration 9.3

9.2 Pipe and fittings

K-dimension

In some situations, it is necessary to shorten fittings. Fittings with the dimension "k" included in the product table can be maximally shortened by the given "k" dimension in order to still allow butt-welding using a standard butt-welding machine. The k-dimension of the relevant spigot of most fittings is listed in the product table. When welding must occur by hand, the entire spigot can be shortened (-5 mm for butt-welding, see the conditions in chapter 8.2). Welding with the aid of a butt-welding machine is always recommended.

Graduated arc

To facilitate the welding of fittings at angles, they are marked with a graduated arc. This consists of a long lines at 45° with intervening short lines at each 15°. The pipe is also marked with two continuous lines.

Protection plugs

A single fitting or pipe is easy to inspect visually for blockages prior to installation. This is not always possible when prefabricating pipe segments. To prevent blockages, it is recommended to leave the protection plugs in the fittings (included in delivery) and to close the pipe ends with the special protection plugs for pipe (code 40xx29)

Dimensions

Dimensions of the fittings have been standardized. For instance, eccentric adapters are all 80 mm long and injection moulded 45° branches of the same diameter all have the same standard lengths.

9.3 BIM and prefabrication

BIM is a process for integrating intelligent 3D models of every aspect of a design into a single model from which one can extract enormous amounts of data. Before starting the building process a virtual building is created ensuring that every single component of the project works.



BIM will change the way architects and builders work. By combining the advantages of Akatherm HDPE and the intelligent functions of BIM, pipe systems can be prefabricated. Ultimately saving time and ensuring reliable joints, made under factory conditions.

The smart files will help you to automatically pick the right products for all your direction changes, branches and other junctions. Change in diameter and reducers are placed automatically without the hassle to re-enter your library. Integrated push-fit insertion and butt-weld jointing losses create truly accurate pipe lengths. The Akatherm Revit content packages create 'as built' designs.

We are continuously updating our Revit family files. The content is available in a multitude of Revit versions. Our packages are available at the Akatherm website only, ensuring you will always be able to download the most up-to-date files. Please go to: <https://akathermhdpe.com/en/pageid/download-page>.