1 System information

1.1 Intended use

Akatherm HDPE is a durable and tough soil & waste drainage system, designed to be installed in accordance with EN12056 'Gravity drainage systems inside buildings'.

The excellent characteristics of high density polyethylene makes it suitable for a wide range of applications. Akatherm HDPE is available in nominal diameters d40 to d315 mm with a full range of pipes, a comprehensive range of fittings including connection fittings, sanitary fittings, traps and tools. The Akatherm Stack-aerator is the high-rise solution for single stack downpipes.

The system has the following features:
- Complete plastic pipe system with excellent mechanical and chemical resistance properties
- Made from polyethylene: a proven material that is tough, elastic and flexible
- Akatherm HDPE pipe is tempered for reduced stress on connections
- Homogenous welded joints offer a completely closed system
- A wide range of mechanical joints for adjustability, flexibility and demounting
- Additives makes HDPE UV and weather resistant
- Akatherm HDPE is highly suited for prefabrication, a cost saving technique
- Non-toxic plastic, 100% recyclable and environmental friendly
- Akatherm Stack-aerator is the perfect high-rise solution

Illustration 1.1

1.2 Applications

Akatherm HDPE is designed to be installed in accordance with EN12056 and thereby meets the requirements for use in residential, commercial and public buildings.

Akatherm HDPE is a non-pressure drainage system, not intended for pressure applications.

Akatherm HDPE has a high temperature and chemical resistance which makes it ideal for drainage in:
- Residential housing
- Commercial kitchens
- Laundries

It is flexible and tough for installation:
- Underground
- Embedded in concrete
- In bridges and roads

Its closed system is perfect for applications where system integrity connections are critical like in:
- Storm water drainage
- Trade waste
- Industrial applications and laboratories
- Ceiling voids and hard to reach places

Furthermore Akatherm HDPE is a light weight plastic system, highly suited for prefabrication. It allows you to aim higher and answering all challenges of modern building design.

Application parameters
The pipes, fittings and seals can be used continuously at elevated temperature.

For a complete overview refer to the lifetime expectancy chapter. Akatherm HDPE is suitable for the drainage of chemically aggressive waste water with a pH value of 2 (acidic) to 12 (basic) by default. For installations in applications not listed in this manual or with chemicals not listed in the chemical resistance list of this manual, please contact your local office for further advice. More information at www.akatherm.com.

Behaviour in fire corresponds to B2 normal combustibility according to DIN 4102. When an HDPE pipe system passes through fire-rated building elements, it is mandatory to install fire protection collars that will not reduce the fire-rating of these building elements.

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1.3 HDPE pipe, fittings and tools

Pipe
Akatherm produces tempered pipe according to the standard EN 1519 which has undergone an extra heat treatment after extrusion. The result is less shrinkage when cooled down from high operational temperature. This gives less stress on joints resulting in a longer life of the pipe system.

The Akatherm tempered pipes are suited for applications where the temperature of the pipe can get relatively high or vary considerably. Both can be caused by ambient temperature or temperature of the medium.

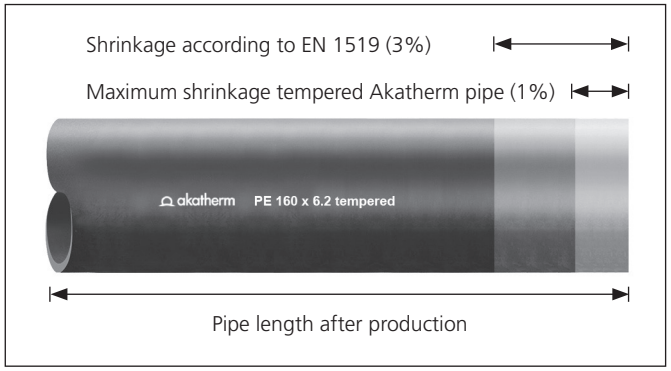


Illustration 1.2

Akatherm HDPE pipe has a standard length of 5 m and is produced according to high quality standard with many international approvals. Akatherm pipe is marked for proper weld alignment.

Fittings
Akatherm HDPE fittings are high quality injection moulded products produced by Akatherm BV in The Netherlands under ISO9001 quality management. Prefabricated product exceptions are clearly listed in the product tables.

Akatherm offers a complete wide range of fittings including:
- Reducers
- Bends
- Elbows
- Branches
- End caps
- Electrofusion couplers
- Mechanical connection fittings
- Sanitary fittings
- Traps
- Spare parts

All required fixing material for wall- and ceiling construction is available from Akatherm as well.

All Akatherm HDPE fittings are electrofusable, exceptions are clearly listed in the product tables.

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 "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 tables.

The fittings are dimensionally standardised to improve prefabrication repetition work and to facilitate welding alignment. Each fitting contains a graduated arc at 15° intervals.

Tools
Akatherm offers a full range of tools to be used for installation of HDPE:
- Electrofusion control boxes
- Butt-welding machines
- Manual butt-welding plates
- Pipe cutters
- Pipe and fitting scrapers
- PE cleaner and marking pencils

Refer to the chapter 'tools' in the product tables.

1.4 Jointing methods

The many jointing methods of Akatherm HDPE offer a solution for every situation.

Depending on the application Akatherm HDPE fittings and pipes can be joined by different methods.

- To be opened (dismountable)
These are jointing methods which can be disconnected after assembly. These jointing methods are ideal for pipe sections which need to be cleaned, calibrated, inspected or dismantled on a regular basis.

- Not to be opened (fixed)
These are jointing methods which cannot be disconnected after assembly. These are permanent joints in which the joints can remain closed for their lifetime.

- Tension-resistant (pull tight: PT)
These are connections which withstand tensional forces. This is ideal when thermal movement is expected or gravity pulls on the connection.

- Non-tension-resistant (not pull tight: NPT)
These are connections which cannot withstand tensional forces. This joint is used when the pipe system is designed to accommodate movement without risk that the joint is pulled apart.

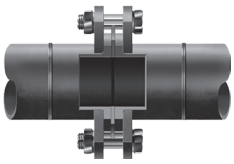
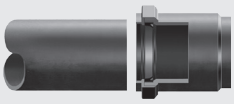
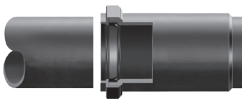
Jointing technique	Product	Welded/mechanical	Pull-tight	Dismountable
Butt-weld joint		Welded	Yes	No
Electrofusion		Welded	Yes	No
Snap Socket		Mechanical	Yes	No
Screw Coupler		Mechanical	Yes	Yes
Flanges		Mechanical	Yes	Yes
Plug-in Socket		Mechanical	No	Yes
Expansion Socket		Mechanical	No	Yes
Contraction Joint		Mechanical	No	No

Table 1.1

System information

1.5 Packaging, transport and storage

Packaging

Akatherm HDPE pipes are packaged in wooden crates that provide bottom, side and top support to the pipes. The crates keep the pipes tightly packed and allow stacking of the crates without pipe damage. Akatherm HDPE is UV resistant and does not require additional foil packaging.

The fittings are packaged in carton boxes stacked on wooden pallets (fumigated if required). Each carton box contains a corner label, clearly indicating the contents on two sides.

Transport

Pipes and fittings must be transported by a suitable vehicle and be secured against movement and deflection. The materials must be properly loaded and unloaded, wherever possible moved by hand or mechanical lifting equipment. Pipes must not be dragged across the ground.

When pipe crates are transported in an open truck, the pipe crate ends should be covered by a net. Sudden acceleration or deceleration can cause that the pipe will slip out of the crate.

Individual lengths of pipe transported loose should be transported side by side and firmly supported over the entire length and secured from movement and defect.

Exposure to rain and snow must be prevented, especially for carton boxes.

All tools, especially electrical, must be protected against moisture, dust and should not be dropped.

Storage

Pipes in their original crates:
Pipe crates must be stored on a clear and level ground with the battens supported from the outside by timber or concrete blocks.

Ensure that the wooden frames are aligned squarely when stacking. The first level of the stack should always be laying on the wooden blocks of the pallets.

For stability and safety, pipe crates should not be stacked more than 3 m high.

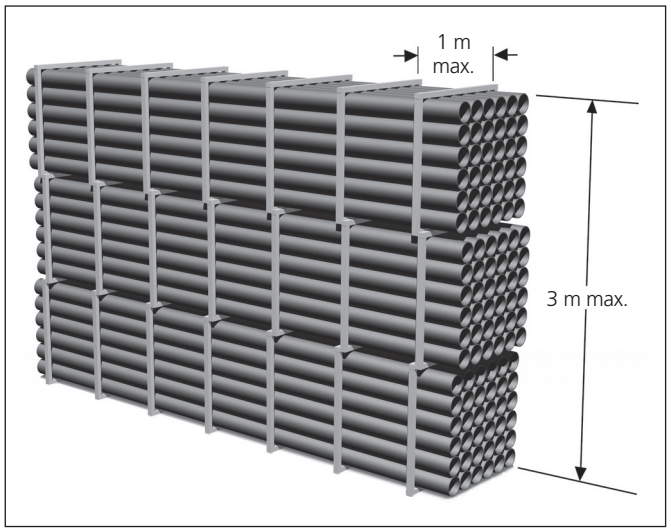


Illustration 1.3

Smaller pipes may be nested inside larger pipes. Side bracing should be provided to prevent stack collapse.

Individual pipe lengths:
Pipe lengths stored individually should be stacked in a pyramid not more than one metre high, with the bottom layer fully restrained by wedges. Where possible, the bottom layer of pipes should be laid on timber battens at one-metre centres. On site, pipes may be laid out individually (where appropriate, protective barriers should be placed with adequate warning signs and lamps).

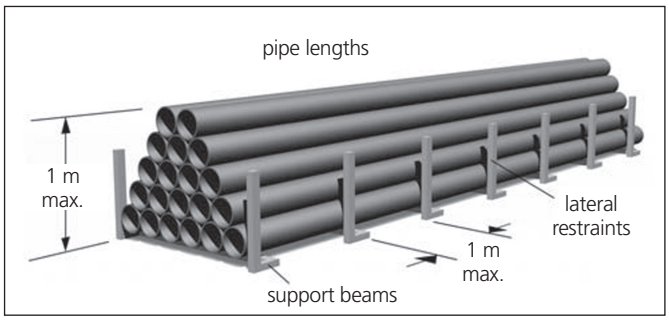


Illustration 1.4

Fittings:
The fittings and electrofusion couplers need to be stored at a dry place. To prevent oxidation and contamination it is recommended to leave the fittings in their original packaging until they are required for use.

Tools:
All tools, especially electrical, must be protected against moisture, dust and should not be dropped.

Outside storage of pipe crates is possible. HDPE is protected against UV radiation and has no negative effect on the pipe's structure and mechanical resistance.

HDPE pipe subjected to extensive periods of sun can cause pipe bowing of the top row of the pipes, due to single sided heating. Shielding the pipe from direct sunlight will prevent this effect.

1.6 Marking

Akatherm pipes and fittings are marked with:
- Manufacturer's mark or brand
- Material type
- Nominal diameter
- Area of application
- Conformity of dimensions
- Information on approvals
- Information on recycling
- Production information
- Wall thickness (pipe only)
- EAN barcode (fittings only)
- Angle indication (fittings only)

1.7 Recycling

HDPE pipes and fittings are 100% recyclable.

Left over materials should be recycled as following:
- Remainder pipe: residual waste
- Remainder fittings: residual waste
- Cleaning cloths: residual waste
- Wooden crating: recycled wood
- Carton boxes: recycled paper

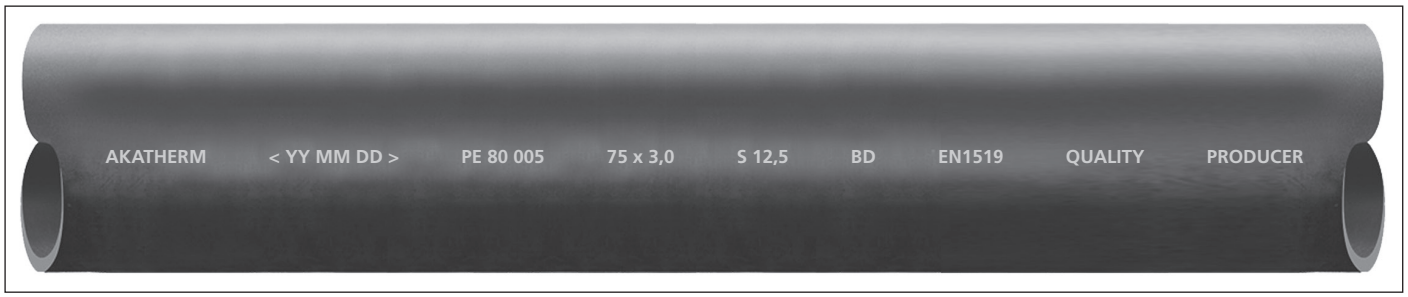


Illustration 1.5

System information