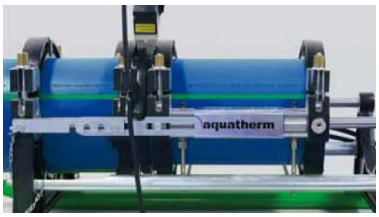
aquatherm PP-R Handling, Transport & Storage Instructions.

HANDLING AND WELDING AT LOWER TEMPERATURES.

At temperatures below +5°C aquatherm PP-R pipes or fittings can be damaged by high impacts, such as heavy falling objects, hammering on the pipe/fitting or throwing of the pipe/fitting. This may cause hairline cracks in the pipe or fitting which later can develop into bigger cracks. Even though the aquatherm PP-R material has a high impact strength, we recommend, especially at lower temperatures (below +5°C), to treat the material with care.

The minimum welding temperature is not (entirely) depending on the ambient temperature. As long as the (socket fusion) welding tools (Ø16 - Ø125) can obtain the required socket fusion welding temperature of 260°C +/- 10°C or the butt-welding heating element (Ø160 - Ø630) can obtain the required butt-welding temperature of 210°C +/- 10°C, people are allowed to weld. It may be recommended to build a sheltered tent or to use heaters to avoid cooling down of the tools by draft during the welding process and to protect the tools and welds from moisture, strong (cold) winds and low temperatures.



Welding of the aquatherm electrofusion sockets is only allowed at a temperature between +5°C and +40°C (according to DVS 2207). Make sure that the aquatherm electrofusion sockets and the, to be welded, pipe ends are 100% dry (i.e. free from condensation).

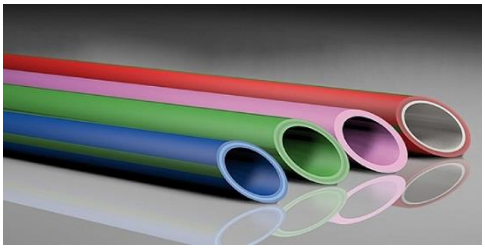
For any perfect welding joints, both the welding areas and tools must be clean and free of grease, dirt and moist.

TRANSPORT AND STORAGE.

Aquatherm pipes can be stored at all temperatures. The pipes should be stored flat and fully supported. Bending of pipes or throwing of pipes and fittings during transportation and storage, should be avoided.
Due to the limited UV resistance of PP-R, unprotected storage in the open air should be avoided. The fusiolen® PP-R material is not permanently UV resistant. All aquatherm pipes and fittings have an UV stabilizer to bridge transport and installation times. Aquatherm pipes are packed in UV protective plastic bags. Maximum storage time in the open air is 6 months (under European conditions).

For countries where there is an intense UV radiation (**i.e. Australia**),
storage time in the open **should be avoided**.

Aquatherm pipes made from fusiolen® PP-R (**aquatherm green pipe** and **aquatherm lilac pipe**), fusiolen® PP-R C (**aquatherm blue pipe**) and fusiolen® PP-R FS (**aquatherm red pipe**) should therefore not to be installed where subject to UV radiation.



For the application in open air aquatherm offers composite **aquatherm green pipes** and **aquatherm blue pipes** with an UV-protective layer made from **black polyethylene** (PE with carbon black), which excludes damage caused by sunlight. This PE layer must be peeled off, prior to welding.

All **aquatherm green pipes** and fittings are opaque / non translucent, so there won't occur any algae growth on the inside the pipes and in the water conveyed through the pipe. This makes the **aquatherm green pipe** ideal for potable water applications.

Material handling: Do

Inspect pipe upon receiving it. Aquatherm does not accept responsibility for damage that occurs after the pipe is shipped.

Don't fuse damaged pipe. Remove damaged sections and install the remaining pipe. Follow your distributor's policy for returns.

Keep the pipe on a flat surface or close supports to avoid bowing. Use at least 3 supports for 13' pipes and 4 for 19' pipes.

Keep the pipe in its protective bag or wrap until you are ready to install it. The bag protects the pipe from dirt, scratches, and UV rays.

Handle the pipe carefully, especially in freezing weather. Plastic may become brittle at cold temperatures, so treat it accordingly.

Cover unbagged pipe with a light-colored tarp if storing it outside. A dark tarp generates heat and may cause warping.

Material handling: Don't

Don't run over the pipe with any type of vehicle or crush the ends. This is the most common cause of pipe damage.

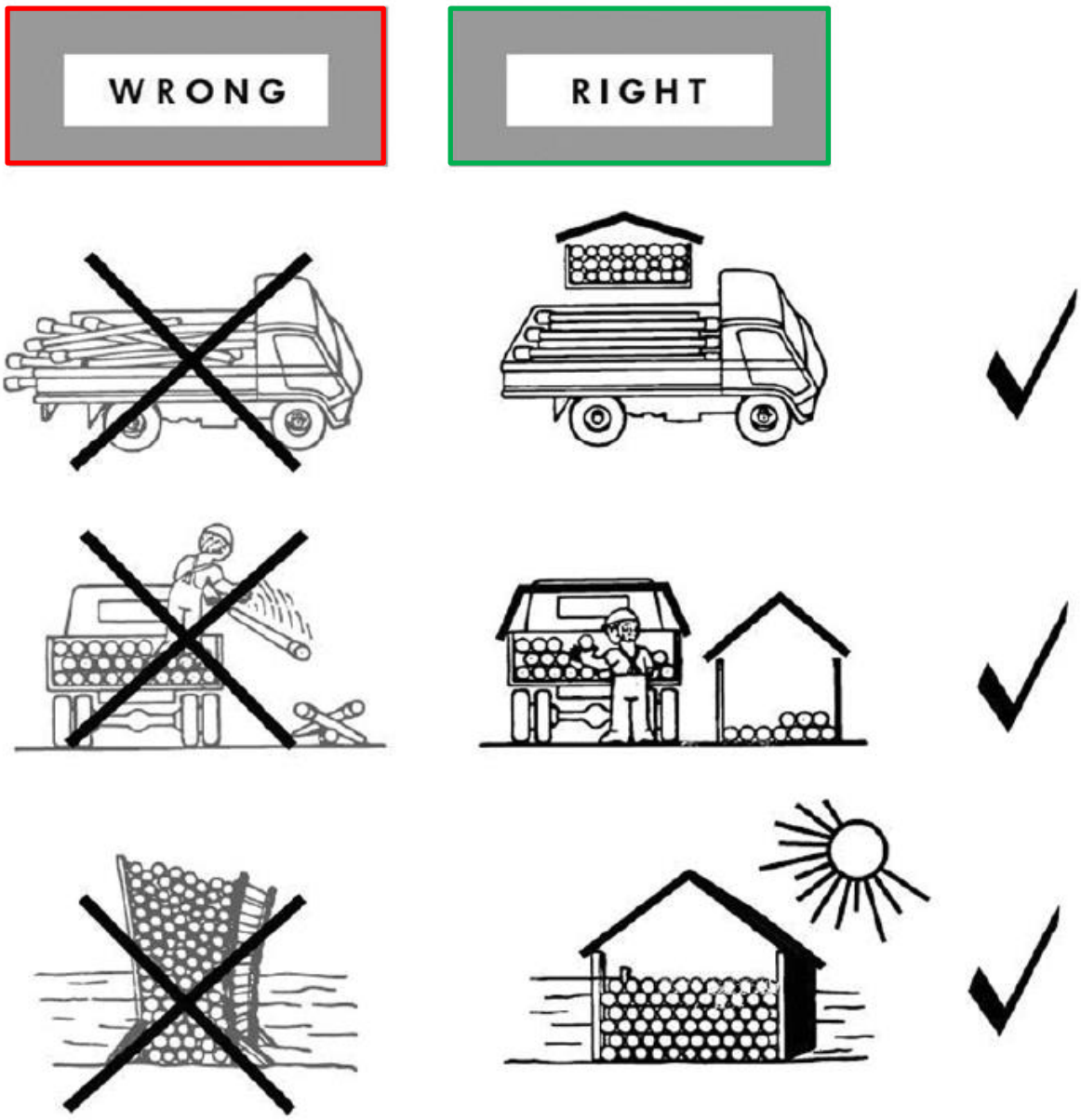
Don't drop the pipe or handle it roughly. PP-R can handle most impacts without issue, but there is no reason to risk damaging it.

Don't insert sharp or unpadded objects into the ends of the pipe. These can gouge the inside of the pipe and create weak spots.

Don't store pipe outside for more than 6 months uncovered. The pipe should be stored under a tarp or shade, or in its factory packaging.

Keep the fittings in their bags until you use them. Bagged fittings will be easier to identify and protected from contaminants.

Don't use damaged pipe that is gouged deeper than 10% of the wall thickness on the outside or 5% on the inside.


WRONG
RIGHT

ENVIRONMENT.

The environmentally friendly material **fusiolen® PP-R** is **recyclable** and can be ground, melted and reutilised for various applications e.g. motor protections, wheel linings, laundry baskets and other kinds of transport boxes.
There are no polluting substances with PP-R either in its processing or in its disposal.

fusiolen® PP-R – for the benefit of our environment!

Think of your Environment

DISPOSAL OF WASTE MATERIALS.

Dispose waste material separated according to the regulations.
International regulation on drinking water for human consumption prevents to apply recycled material in the production process for water supply systems.

- Transition fittings: **recyclable**, after separation of PP-R and brass or stainless steel.
- Gaskets: general waste
- Cardboard boxes: **recyclable**
- Plastic bags: **recyclable**
- Chips: general waste
- Wipes: general waste

Since 1996 aquatherm has been meeting the requirements of the certifiable **Quality Management System** according to DIN **ISO 9001**. The 2012 **TüV Certificate** was extended by the **Environment Management System** according to **ISO 14001** and currently by the **Energy Management System** according to **ISO 50001.** In 2015 the first product-specific **Environmental Product Declaration (EPD)** for polypropylene piping was awarded to **aquatherm**!

TÜVRheinland ZERTIFIZIERT

Management System
ISO 9001:2008
ISO 14001:2004
ISO 50001:2011

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SUSTAINABILITY CERTIFIED NSF Environmental Product Declaration

Safety

There are procedures that should be followed to work safely with Aquatherm pipe. These include:

Take proper precautions around electrical equipment and follow all instructions.

Follow Aquatherm-specific guidelines for proper material installation.

Wear OSHA-approved steel-toe shoes.

Wear a properly rated hard hat at all times.

Wear safety glasses.

Wear heat-resistant gloves while handling welding irons.

Be careful when handling hot irons.

Cutting the pipe: manual

These are recommended cutting methods, but you may use any method that doesn't damage the pipe. Cuts should be as square as possible (never more than 5° off) and without jagged edges. Check for longitudinal cracks on the pipe wall after each cut.

Use ratchet cutters with a sharp, pointed blade for smaller sizes. The pointed blade prevents the pipe from ovaling during the cut.

Don't use ratchet cutters with a dull or flat blade. Dull or flat blades can oval the pipe and cause it to crack.

Support the pipe while cutting to yield square ends and prevent bouncing or snapping.

Use tube cutters with a wheel taller than the pipe wall. Smaller wheels might not reach through the entire pipe wall.

Hand saws are a safe alternative, even in cold weather. Dry chain saws can be used to cut larger pipe, but will produce a jagged face.

Cutting the pipe: power

When using hand saws, use plastic or metal-safe teeth. With powered saws, blades that are intended for hardwood will yield the best results. Avoid jagged or angled cuts, as these require additional prep to fuse. Don't use any tool or method that causes damage to the pipe.

Use a circular hardwood blade (60-100T) with carbide teeth. This will produce a cut that needs little to no clean-up.

Band and reciprocating saws are safe to use. The thinner blades leave a smooth cut, but you will also have some shavings to clean up.

A wide-toothed blade (24-40T) will produce a jagged cut that is rough and not desirable for socket fusion.

A fine-toothed blade (180T) will overheat the pipe, as will cutting too slowly. Make your cut as quickly and squarely as possible.

Don't use power cutters if the pipe is 40 °F or colder. Cold pipe can crack and split. Warm the pipe before cutting it.

Inspecting the cut

Upon receiving the pipe, and after cutting it, inspect the ends for cracks or damage. Mark and remove damaged sections, cutting a few inches past the damage. Fusing pipe that is cracked will result in joints that leak.

Remove any debris left from cutting the pipe. This is common with powered saws. Often, you can simply pull them out by hand. You may need to carefully cut them away with a blade or reaming tool.

Remove standing dirt and oil using an isopropyl alcohol-based cleaner (70% by volume or greater). Dirty pipe will not form proper beads during fusion. Be careful not to wipe off the printed label.

A good cut is smooth, square, and has no cracks or stress marks inside or outside the pipe.

White stress marks and cracks indicate damage. Reassess any cutting tools that leave cracks. You may need to squeeze the end of the pipe to see small cracks.

made in Germany

aquatherm Australia Pty. Limited

Ecological pipe systems: just say yes to a better world!

aquatherm state of the pipe

Welding iron safety : Do

Compared to open flames or noxious glues, a welding iron is fairly safe to use. However, the iron is hot enough to burn on contact and can remain hot for 30 minutes after it is unplugged. Take care in its use and handling. Never use water to cool an iron or head.

Wear heat-resistant gloves while handling the iron. Few gloves are heat-proof, so know the limitations of your gloves.

After use, return the iron to its case for storage. The case will protect the iron from impact and damage.

Post a sign near irons to warn that they are hot. Irons can remain hot for up to 30 minutes after being turned off.

Be aware of where other people are at all times while fusing. Make sure they are clear before you move the hot iron around.

Keep the cord away from the heat surfaces. Some cords are heat-resistant, but it's best to keep everything away from the heating surface.

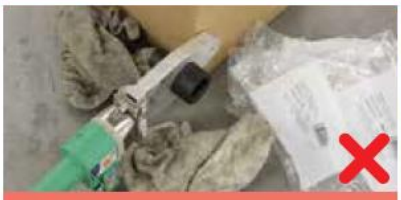
Welding iron safety: Don't

Don't leave the iron unattended. Passers-by may not know if the iron is hot and could accidentally burn themselves.

Don't drop the iron or hold it by its cord. The cord is not intended to hold weight and dropping the irons may break them.

Don't touch the iron with bare hands unless you are certain the iron has cooled. Assume irons and heads are hot until tested.

Don't store multiple irons in a single box. Irons can easily damage each other and should be stored separately.



Don't let the iron touch flammable or meltable surfaces. This is a fire hazard and can damage the plate or heads.

Don't use the welding iron if the plate or heads are dirty. Clean the plate with a soft wire wheel and the heads with a cloth.

Flushing, grounding, and freeze protection

Flushing: Before beginning operation, flush the system to remove dust, pipe shavings, and other particles that may have fallen into the pipe. Make sure the system is flushed in a safe manner that doesn't damage or clog any components. Unless otherwise required, water is sufficient for flushing out the system.

Grounding: Most building codes require that grounding be provided for all conductive components inside the structure. It is important to note that Aquatherm pipes do not carry electrical currents and cannot be used to provide grounding. Where metal pipes are replaced by PP-R pipes, the ground cannot be created by the piping system. An alternative ground system must be installed.

Freeze protection: Aquatherm piping systems can be installed in applications and conditions where freezing may occur. Generally, freezing the pipes and the water in them will not cause problems for the piping materials, but they should not be frozen intentionally. Maintaining a minimum flow can prevent the pipes from freezing solid.

All freeze protection products must be used in accordance with the manufacturer's recommendations, the product listings, and in compliance with all applicable local codes. When using any type of external heat source applied to the piping such as heat tape or heating cables, the product must be suitable for use with plastic piping. Additionally, the heat system must be self-regulating and the surface temperature of the Aquatherm pipe and fittings must not exceed 160 °F (71 °C).