



Composite AQUART® pipes

Composite AQUART® pipes open the new era in the plastic pipe manufacturing. They look like ordinary composite pipes, having the same outer polypropylene layer and aluminum foil inner layer. But only AQUART® composite pipes have the foil closer to the inner pipe surface, but not to the outer.



It's a well known fact, that one of polypropylene pipe disadvantages is its relatively porous wall structure. Due to its peculiarities polypropylene molecular structure can't prevent gas penetration inside the pipe completely.

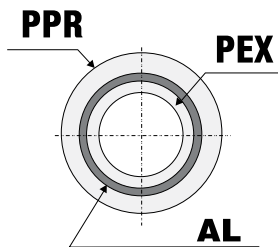
Such penetration isn't very important for water supply and sewerage systems, but the situation is absolutely different for heating systems especially for closed ones, where gas penetration can cause a lot of problems. Oxygen intrusion inside pipes promotes corrosion and may be a reason of spoiling expensive components, such as caldrons, radiators, automatic machinery.

This problem can be solved by including the aluminum foil of in pipe wall - it not only prevents the oxygen penetration, but reduces linear expansion as well. Such pipes are often called composite.

Their mounting is just the same as for ordinary polypropylene pipes but it requires 1 additional operation – the aluminum foil layer should be scraped with a small device resembling pen sharpener. Plumbers call it "shaver" which comes from the English word "shave".



The outer diameter of the new pipes is the same as of ordinary pipes, that's why they don't require scraping before welding. It saves much time and efforts during the mounting procedure, especially concerning large diameters.



The second particular feature of the new AQUART® composite pipes is that the inner pipe layer which is in direct contact with liquids and gases can be made of different types of plastic: PPR, PEX, FB, HDPE, LDPE – depending on the technical aims.

Thus, the application area of this pipe can be much wider - from ordinary heating systems to special equipment for chemical industry.

During the production process the aluminum foil is welded by ultrasound and fixed between two layers of plastic with the help of special cement.

AQUART® composite pipes meet such European standards as EN ISO 15874:2003 and German DIN 8077-8078.

Particular features

Thermal expansion of AQUART® PPR-Al-PEX pipes

During the mounting procedure the changes of the pipe length under high temperatures must be taken in consideration. Upon this reason, the pipe length in the process of installation will differ from that of the pipe with hot water. The average lengthening of 1 meter pipe under the temperature rise of 1° C is called the coefficient of thermal expansion.

For AQUART composite pipes this coefficient is 0.03 mm/m°C.

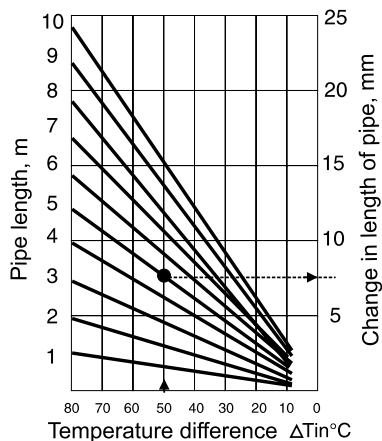
New AQUART® composite pipes with the diameters from 20 to 75mm are manufactured on different factories.

The pipes are marked in accordance with GOST and DIN standards. There should be the trademark, the name of manufacturing factory, the party number, the time and date of production. An important aspect is that the price for new AQUART® composite pipes is not higher than for ordinary composite pipes produced in Turkey.

The first AQUART® pipes of such type appeared on the market in the Autumn of 2005 and received only positive comments from the clients.

The example of linear thermal expansion design

The thermal expansion diagram for
AQUART® PPR-AL-PEX pipe



The pipe thermal lengthening is calculated by the formula

$$\Delta L(\text{mm}) = L(\text{m}) \times \Delta T(^{\circ}\text{C}) \times A(\text{mm}/\text{m}^{\circ}\text{C})$$

Where L – the original pipe length, m
 ΔL – the change of the pipe length, mm
 ΔT – temperature Difference, $^{\circ}\text{C}$
 A – the coefficient of linear expansion
If the length $L = 5\text{m}$,
the installation temperature $T = 15^{\circ}\text{C}$.
Maximal pipe temperature $T_{\text{max}} = 65^{\circ}\text{C}$

$$\text{So, } \Delta L = 5 \times 50 \times 0.03 = 7.5 \text{ mm}$$

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