

# PEX-A: THE SAME ROUTE FOR RUSSIA AND EUROPE

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**The structure of the plastic pipes market for heating supply in RUBK (Russia, Ukraine, Belarus and Kazakhstan) is still closely linked to demand, the largest challenge being the need for products that are absolutely innovative by global standards. The market position of various plastic pipeline manufacturers in Russia and CIS markets is defined by three main factors:**

- **Large diameter flexible pipes in the range of products (D=110 mm and over);**
- **Chemical stability of the carrier pipes to chlorine and its compounds;**
- **The ability to operate at not less than 95 degrees and 1 MPa.**

**Our market is similar to Europe in choosing the basis polymer for carrier pipes: over 90% of carrier pipes used in RUBK countries and Europe are made of PEX-a.**

The application of flexible insulated plastic pipes in district heating and hot water supply pipelines in Russia and CIS countries began in the late 1990s and has become quite usual.

As expected, market leaders in plastic pipes applications are the major heating supply companies in metropolitan cities such as Moscow, Saint Petersburg, Kiev and Minsk. Russia's capital city has the largest heating supply networks in the world. About 1700 km of distribution networks have been renovated using plastic pipes.

Conversely, the champions in share of plastic pipes in renovated heating distribution networks can be found among small towns, such as Aktash Village in Altai Region where all 15 km of local heating supply pipelines were renovated using plastic pipes.

Technologies for plastic pipes production and installation in district heating systems came to Russia and CIS countries from Europe where they have been used extensively since the 1980s. However, unlike Europe, where half of the demand is concentrated in low-rise building construction, over 85% of the RUBK demand is used for central heating systems. The main differences are detailed below.

Firstly, the average diameter of flexible pipes in Europe is 40–50 mm (mainly 40 mm) whereas the average diameter of flexible pipes in Russia is 90–110 mm. This means that 125 mm, 140 mm and 160 mm pipes are widely used in Russia but are not so popular in Europe.

Secondly, Russian heating supply systems have a higher heat load. Heating supply networks with operating temperatures 95/70 degrees are higher than the 5th European class of operation (including temperature surges). A large proportion of heating supply networks are operating at 115/70 and 130/70 degrees temperature schedules which are unusual for Europe.

Thirdly, although Russian regulations do not contain specific limitations on chemical composition for transported water, a high chlorine content naturally limits the use of certain types of polymers in pipe production for the housing and utility sector, particularly in pressure pipe production for heating supply networks.

These three factors have dictated the course of development for flexible insulated pipes for heating supply in Russia and will continue to define the market structure.

It should be pointed out that RUBK and European markets develop independently. Today's European market meets demand with domestic production. RUBK demand

for insulated pipes is also covered mainly by local manufacturers and imports account for just 9%.

What insulated plastic pipes are used in Russian and European markets? Considering three parameters: carrier pipe material, type of design of the carrier pipe, and type of insulation –they can be divided into 6 classes:

- 1) PEX-a, unreinforced with PU foam insulation;
- 2) PEX-a, unreinforced with PE insulation;
- 3) PEX-a, reinforced with PU foam insulation;
- 4) PEX-b, unreinforced with PU foam insulation;
- 5) PEX-b, reinforced with PU foam insulation;
- 6) PB, unreinforced with PE foam insulation.

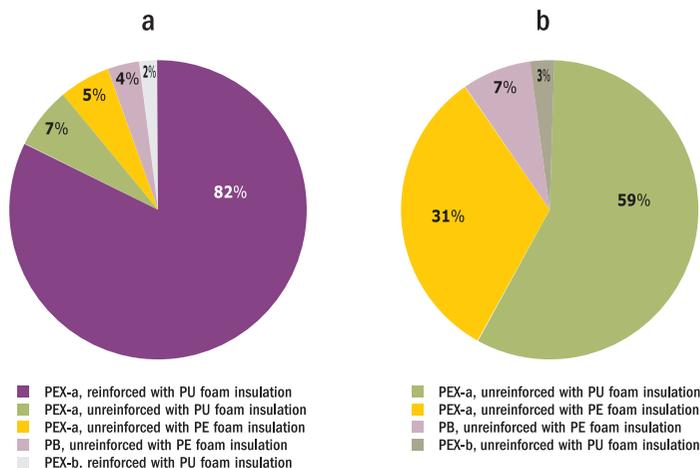
Pic. 1 shows the market structure of flexible insulated plastic pipes for district heating in RUBK countries and Europe in 2013 (according to expert estimates and production companies).

The main structural difference relates to the design type of the carrier pipe: 84% of all plastic pipes consumed by the heating supply sector in RUBK are reinforced systems which work with high operating pressures and temperatures whereas European heating networks, these are not used due to the excessive operating properties.

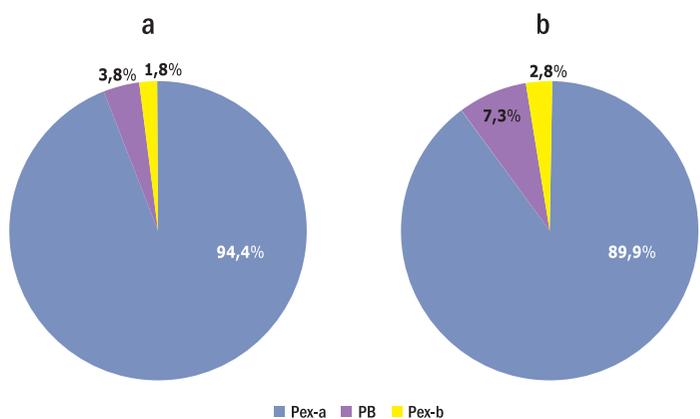
This difference is very obvious considering the total consensus of RUBK and Europe on the basis polymer for carrier pipe (pic. 2) and type of insulation (pic. 3). 90% of combined RUBK and Europe consumption is PEX-a carrier pipes and 2/3 of pipelines are insulated with semi-rigid PU foam.

Finally, Russian heating supply companies, and latterly, those of Ukraine and Belarus, have chosen reinforced pipeline systems. These are called “enhanced reliability pipes” due to their low failure rate. The market choice of PEX-a as a basis polymer for flexible insulated pipes is also logical.

**Pic. 1. Flexible insulated plastic pipes consumption in district heating systems by types: a – RUBK, b – Europe**



**Pic. 2. Flexible insulated plastic pipes consumption in district heating systems by material types: a – RUBK, b – Europe**



**Pic. 3. Flexible insulated plastic pipes consumption in district heating systems split by type of insulation: a – RUBK, b – Europe**

