

# **PIPES & FITTINGS MARKET RUSSIA 2017**

**(DEMO-VERSION)\***

\* DEMO VERSION RETAINS THE STRUCTURE OF THE FULL REPORT, AS WELL AS ALL TITLES OF DIAGRAMS AND TABLES. FACTORIES, BRANDS AND SUPPLIERS MENTIONED IN THE REPORT ALSO RESERVED. ALL SORTED ALPHABETICALLY, TEXT SUBSTITUTE A, B, C, D; NUMBERS – 0,1. THE METHODOLOGY OF RESEARCH IS AVAILABLE IN THE FIRST CHAPTER.

***Multi-client research***

*Moscow, July 2018*

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# 1. METHODOLOGY

## 1.1. INFORMATION SOURCES

The study was performed on the basis of the following information sources:

- **CUSTOMS DECLARATION ANALYSIS**

The information obtained as a result of the customs declaration analysis becomes more reliable from year to year. To find out the market trends, its key tendencies, and the main players there was made the detailed analysis of the customs declarations for 2008-2017. It is worth mentioning that in 2008-2011 it was only possible to make the analysis on the basis of the front pages of declarations. Starting from 2012 we got a possibility to get information contained in extra pages of customs declarations. This made the obtained information more reliable and allowed us to identify pipes by models. As practice shows the difference between the customs data and the real import volume figures is not more than 5-10%. However, we noticed a great difference between the data stated by manufacturers and the data obtained from the customs declarations. In most cases this can be contributed to the fact that Russian customs brokers (deliberately or not) often declare goods under wrong headings. For example, metalplastic pipes are often declared as polypropylene ones and vice versa. The fact that some declarations do not contain the brand name or contain non-existent manufacturing plants also creates some difficulties. Moreover, the customs codes intended for certain groups of products are often mixed up and many importers do not strictly follow the rules for drawing up customs declarations. In the course of interviews with manufacturers and importers we managed to clarify this situation and to identify the real volume of imported products.

Since 2011 we managed to identify more than 90% of imported products by models. This allowed us to spread out pipes and pipeline fittings by types, sizes, technologies, reinforcing types and etc. In view of the fact that the weight of declared goods is the most reliable information in customs declarations, we managed to identify the average weight of pipes and pipeline fittings. This helped us to exclude from consideration the mentioned above customs declarations containing unreliable information.

Under a lack of information from local manufacturers their product identification by models was made on the basis of their export analysis. It is also worth mentioning that most local manufacturers use imported parts and raw materials for manufacturing both pipes and pipeline fittings. We have analyzed the volume of this import for the biggest local manufacturers for the whole period reviewed in the report and presented the results of this analysis in the report.

- **ROSSTAT DATA**

Some information on a number of the biggest local manufacturers was obtained from Rosstat. In a number of cases this was the only possible source of information. In the course of interviews with the representatives of leading companies we manage to confirm the adequacy of these data and to enhance their reliability in details.

- **INTERVIEWS WITH MANUFACTURERS AND IMPORTERS**

Whatever customs information is correct, it should be completed with the data obtained from the equipment distributors and manufacturers. During this report preparation there were conducted interviews with many Russian manufacturers, representatives offices of foreign companies and large importers.

TABLE 1. *Information sources*

	Russian manufacturers	Sales offices of foreign companies	Distributors	Total
Interviews	11	3	6	20

Source: *Litvinchuk Marketing Co.*

## 1.2. TERMINOLOGY USED IN THE REPORT

This report covers the most interesting and capacious market segments of pipes and pipeline fittings used for heating and water supply systems. This report includes EXCLUSIVELY pipes and pipeline fittings intended for domestic systems.

This report does not cover major pipelines and subsurface thermally insulated cross-linked polyethylene pipes systems.

This report covers the following segments:

- polypropylene pipes
- metalplastic pipes
- cross-linked polyethylene pipes
- polybutene pipes

All the segments include both pipes and their fittings. According to Wikipedia a fitting is used to connect pipe sections to adapt to different sizes or shapes. The only exception was made for polyethylene fittings which also include polypropylene filters, shutoff and control valves, as well as attachment, clamping and supporting devices. We did it deliberately as these elements are integral parts of pipeline systems and intended exclusively for polypropylene pipes. At that brass and steel filters, as well as ball plug valves can be used for both the pipe segments considered in the report and steel, cast-iron, PVC, PE and other pipe segments. And our research does not cover this equipment.

Below we provide the terminology used in the report and definitions of terms to be sure in their unambiguous interpretation.

**Polypropylene pipes** - the **pipes** made of Random copolymer polypropylene PPR-C (Type 3). This material obtained as a result of reaction to polymerization of propylene and ethylene taken in certain proportions with a chain of ethylene molecules ensures the main physical and chemical properties of pipes and fittings made of this material. The pipelines made of polypropylene do not rust and rot, as well as do not change the taste and chemical properties of flowing liquid.

These polypropylene pipes are mainly applied in heating, cool and hot water supply systems.

These polypropylene pipes have the following advantages:

- reliability and durability
- complete lack of corrosion and encrustation of pipes in the course of their use
- a wide range of fittings allows to install practically any scheme of pipes
- simple and rapid installation, a lack of consumables
- full leak resistance of welds
- high chemical durability and environmental friendliness of pipes
- lower (as compared to metal pipes) level of liquid flow
- pipe painting is not required
- resistant to several cycles of freezing in case of pressure

Polypropylene pipes also have disadvantages:

- pipe inflexibility (as compared to metalplastic and PEX pipes)



Picture 1. Polypropylene pipes and fittings

- high cost due to greater amount of fittings required for 1 m of pipes
- installation requires special skills and a special kit of instruments for pipe welding and dressing
- high linear expansion coefficient of unreinforced pipes
- a risk of bubble formation on externally reinforced pipes, which, however, does not have a great effect on their technical characteristics

At present time polypropylene pipes are manufactured of two main types of material - PPR80 and PP-RCT. The main advantage of the latter material is that it ensures higher conveying capacity of pipes, their durability at high temperatures and lower weight.

At the moment manufacturers produce five types of pipes:

- PN10 - for cold-water supply;
- PN16 - for cold-water supply and under floor heating;
- PN20 - for hot and cold-water supply;
- PN25 - for heating, for hot and cold-water supply;
- PN32 - for heating, for hot and cold-water supply.

At that PN32 pipe is only produced by one manufacturer (Dizayn), PN16 pipes are not practically used most likely because of their short service life.

Estimated pipeline service life is 50 years (cold water) and 25 years (hot water). Coolant temperature can reach 95 ° C, depending on working pressure. Short-term increase in temperature up to 100 ° C is also possible.

**Metalplastic pipes** represent a multilayer structure consisting of inner and outer layers of **cross-linked** polyethylene and an intermediate layer made of aluminium. Unlike other polymer pipes metalplastic pipes have 100% protection from oxygen entry into system. An inner cross-linked polyethylene layer of a metalplastic pipe has a smooth surface that reduces water friction in water supply and heating systems. This prevents pipes from getting lime scale and rust formation. Inner and outer cross-linked polyethylene layers provide the aluminium layer of metalplastic pipes with protection from acids, alkalies, moisture and other aggressive environments. This ensures a long-term service life of metalplastic pipes.

At the moment manufacturers produce three main types of metalplastic pipes with inner and outer layers made of different materials:

- **PEX-AL-PEX** - **five-layer** pipes with inner and outer layers made of molecular **cross-linked** polyethylene **PEX**, a reinforcing aluminium layer and glue lines between them.
- **PERT-AL-PERT** - **five-layer** pipes with inner and outer layers made of **heat-proof** polyethylene **PE-RT**, a reinforcing aluminium layer and glue lines between them. The specific feature of PE-RT (ethylene octene copolymer) material molecular structure is that the main linear ethylene chain interweaves with the octane chain and forms a very flexible hard-textured material having a long-term service life.
- **PERT-AL-PEHD** pipes differ from **PERT-AL-PERT** pipes with outer pipe layer material. In this case the outer layer is made of high density polyethylene (PE-HD).

In this report we did not make any differences between PERT-AL-PEHD and PERT-AL-PERT pipes as we did not consider them to be significant.

In most cases metalplastic pipes are used together with crimping and press-fittings. Crimping fittings represent rubber-sealed collet connections packed by a special ring with the use of an ordinary screw key. This type of fittings has both advantages (do not require special instrument) and disadvantages (such fittings require regular examination to avoid leakages and the relevant adjusting; they can not be used for pipes laid

in walls and under floor). Press fittings do not have such disadvantages, however they are more expensive and require special press pneumatic instrument.

The advantages of plastic pipes are as follows:

- chemical resistance
- complete absence of corrosion and encrustation of the pipe flow area while in operation
- low thermal conductivity which prevents condensate formation on the outer pipe walls
- light weight
- strength and elasticity
- low cost (This being the case, fittings can hardly be called cheap).

Disadvantages:

- Metalplastic pipes must not be installed at air temperatures below +10 C.
- Freezing of heat transfer media simply results in pipe breakage which makes open-cut pipe laying impossible.
- high thermal-expansion coefficient (intended for use in water supply systems at a maximum water operating temperature of 95C)



Picture 2. Metalplastic pipes

Metalplastic pipes are used in heating systems and hot and cold water supply systems as well as in floor heating systems.

**Cross-linked polyethylene pipes** can be divided into two classes: **PE-X** and **PE-RT**

PEX-pipes are made of HDPE by chemical cross linkage of molecules making pipes acquire properties necessary for use in heating systems and water supply systems. There are several methods of polyethylene crosslinking, namely:

- peroxide crosslinking (PE-Xa)
- silane gas treatment (PE-Xb)
- electron flow treatment in an electromagnetic field (PE-Xc)

If the PE-Xb method is applied, no traces of a catalyst are contained in polyethylene and it can be used in making pipes for sanitary purposes and drinking water supply, while the PE-Xc method is more environmentally friendly. Pipes are widely used in warm water floor systems and heating radiator installations as well as in surface heating and cooling and in snow melting systems. The said pipes are more rarely used in water supply systems.

PE-RT pipes do not need to be cross-linked as they are made of thermally stabilized polyethylene. These pipes slightly overtop PE-X pipes by their characteristics and can be used for heating and water supply.



Picture 3. Cross-linked polyethylene pipe

In order to prevent oxygen penetration into the system, manufacturers have launched production of EVOH-pipes with an oxygen barrier. Currently, there are variations in the EVOH-layer application, both in PE-X pipes and in PE-RT pipes.

PE-X and PE-RT pipes have such properties as:

- thermal stability;
- mechanical strength;
- resistance to cracking;
- chemical resistance and hydraulic endurance;
- durability;
- elasticity.
- light weight

Disadvantages are practically the same as those of metalplastic pipes.



Picture 4. Polybutene pipe

To connect PE-X and PE-RT pipes axial press fittings (PPSU and brass fittings) are most commonly used, while compression fittings, press fittings and push-fittings are used more rarely. With regard to a high proportion of polyethylene pipes used in heat-insulated floor systems, the fitting/pipe ratio is, perhaps, the lowest in segments under consideration.

**Polybutene pipes** have not become widely used in Russia. Such an insignificant brand exposure may be due to expensiveness and lack of installers' and engineers' awareness with regard to system capabilities and technical properties of the pipes. Actually, the segment is represented by 4-5 brands and has an extremely insignificant impact on the market as a whole.

Polybutene pipes are connected by fittings made of polybutene.

**Brass fittings** are fittings made of brass. This category includes all fittings used in utility systems like heating and water supply systems where such fittings are used to connect elements of metalplastic pipework and pipes made of cross-linked polyethylene. Currently, it is not possible to evaluate, with a sufficient degree of accuracy, the market segmentation with regard to various types of brass fittings. The analysis of customs declarations revealed that it is not possible to make a detailed estimation with high confidence as regards the number of fittings of different types supplied by any given company because all fittings containing brass are custom cleared with the same custom code and in most of the cases all types of brass fittings are documented in the same declaration, which may contain 20-50 positions.

In view of the fact that these declarations may number in the tens of thousands one can imagine this analysis intensity.

So, brass fittings can be conditionally divided into five categories, namely:

- threaded fittings;
- press fittings;
- crimp (collet) fittings;
- axial fittings;
- push-fittings;



Picture 5. Brass press fittings

Among them only threaded fittings are not suitable for installation of metalplastic pipes and PE-X/PE-RT pipes, however they can be used in all systems without exception to make connections to ball plug valves, filters, pumps, etc.

The cost of fittings directly depends on the manufacturer and product weight, therefore a comparison was made in terms of the total weight of fittings supplied and in terms of money turnover.

**PPSU-fittings** reviewed by us apart from brass fittings are made of polyphenylsulfone. This material has high impact strength and chemical resistance and good dimensional stability at temperatures up to 180C. PPSU fittings are made by European manufacturers of metalplastic pipes and PE-X pipes for their reliable connection. Predominantly, these are axial fittings.

Further, for clarity we present a table which reflects what fittings and to what extent are suitable for various types of pipes:



Picture 6. PPSU-fittings

TABLE. Correspondence of pipes and fittings, %

Types of pipes / fittings	Polypropylene fittings	Brass press-fittings	Brass push-fittings	Brass crimp (collet) fittings	Brass threaded fittings	Brass fittings with a coupling nut (Multi-Fit)	Diffusion-welded fittings PE-RT	Brass axial pressed fittings	PPSU-fittings	Polybutene welding fittings
Polypropylene pipes	100%	-	-	-	-	-	-	-	-	-
Metalplastic pipes	-	55%	2%	38%	1%	3%	1%	-	-	-
Cross-linked polyethylene pipes	-	-	1%	2%	-	-	5%	61%	31%	-
Polybutene pipes	-	-	-	-	-	-	-	-	-	100%

Source: Litvinchuk Marketing Co.

In order to understand the normal distribution of polymeric pipes which we present in the report, a table is stated below to reflect the correspondence of outer and inner diameters of all types of pipes, mentioned in this research:

TABLE presenting the correspondence of outer and inner diameters of all types of pipes

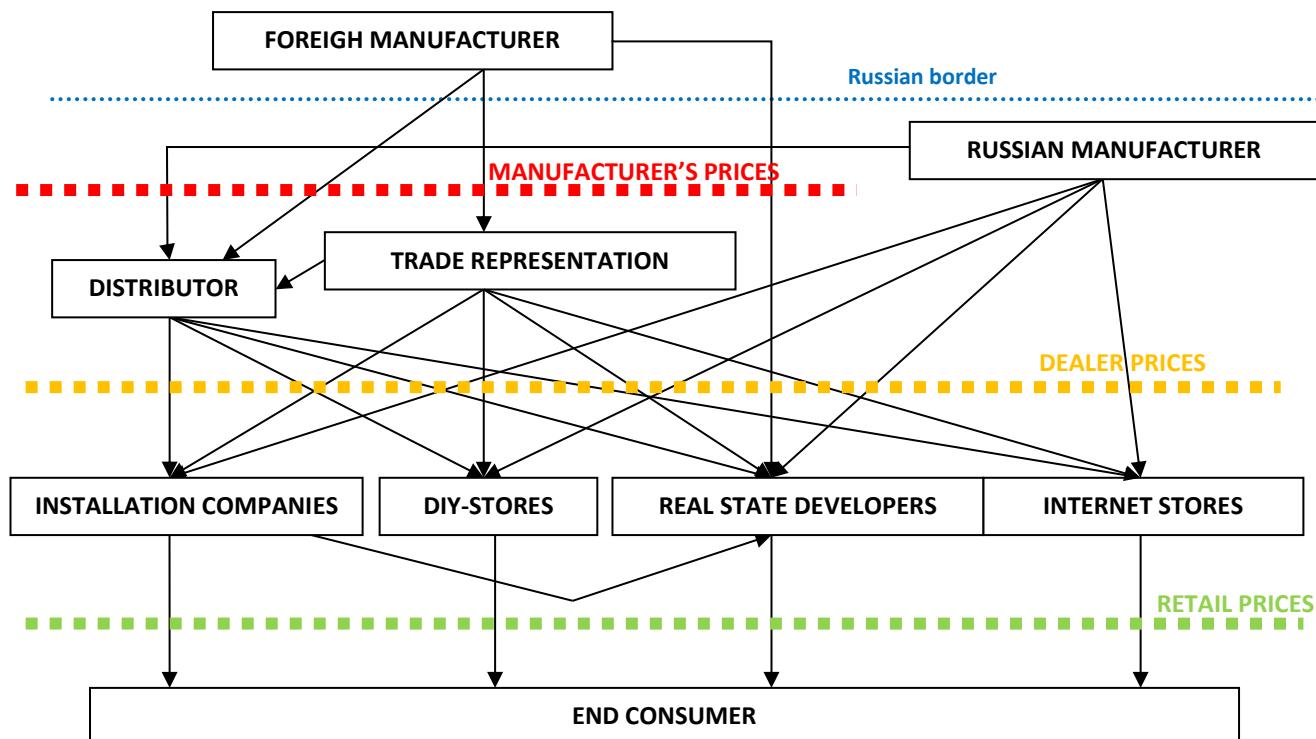
Inner diameter, mm	Outer diameter, mm			
	Polypropylene pipes	Metalplastic pipes	PE-X / PE-RT pipes	Polybutene pipes
10mm	16mm	-	12mm	-
12mm	20mm	16mm	16mm	16mm
16mm	25mm	20mm	20mm	20mm
20mm	32mm	25mm	25mm	25mm
26mm	40mm	32mm	32mm	32mm
32mm	50mm	40mm	40mm	40mm
40mm	63mm	50mm	50mm	50mm
51mm	75mm	63mm	63mm	63mm
60mm	90mm	75mm	75mm	75mm
73mm	110mm	90mm	90mm	90mm
90mm	125mm	110mm	110mm	110mm

Source: Litvinchuk Marketing Co.

As we can see, there are significant differences with regard to inner wall thickness which causes differences between the outer diameters of pipes in competing technologies (e.g., a polypropylene pipe with a diameter of 20mm corresponds to a metalplastic pipe which is 16mm in diameter).

### 1.3. PRICES

All sales volumes in this report are presented in **dealer** prices. In most cases the initial net price in Russia (i.e. the price of goods after border crossing and after customs duties and VAT) was taken as the basis for conversion. Standard trading margin for various categories of pipes and fittings was added to the said price. In case of apparent understatement of the declared value of pipes and fittings by suppliers in their customs declarations, the dealer prices were calculated according to retail price lists of major distributors, manufacturers or trading missions. In this case, the average discount of installation contractors was deducted from retail price (in most segments it ranges from 30 to 40%). In the absence of recommended retail prices the weighted average retail price in the market was taken as the reference point for some brands. Summing up the above mentioned, a diagram is shown which reflects different scenarios for distribution of pipes and fittings in Russia and the dealers' prices in which sales volumes are subsequently indicated are presented separately:



In the context of the global crisis in 2009, most manufacturers fixed their prices in hard currency while part of the prices was indicated in rubles, however, there was a significant price increase as compared to 2008. On the eve of the crisis of 2015 all the importers started fixing their profits in the currency and changing their price-lists after significant fluctuations in the world currency rates. As a result, we managed to get prices for most brands and to make adequate price estimates.

In the event of price calculation in Rubles, the conversion into US dollars was carried out according to the annual average exchange rate based on data provided by the Central Bank.

TABLE 2.1. USD rate trends, rouble

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
24,86	31,77	30,34	29,41	31,09	31,82	38,69	61,32	65,83	58,30

Source: Central Bank of the Russian Federation

TABLE 2.2. EUR rate trends, rouble

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
36,45	44,20	40,00	40,90	39,92	42,25	51,08	66,99	72,58	65,80

Source: Central Bank of the Russian Federation

## 2. MARKET SIZE AND STRUCTURE

Ddrbng thc lcst dcccde thc Rdssbcn mcrkct cf pbpcs fcr hcctbng cnd wctcr sdppld sdstcms hcs bccn shcwbgd sdstcbncblc grcwth. Cnld bn 0001, ddc tc gcncrcl dcclbnc bn ccnsdmptbcn, thc mcrkct shcwcd c dcclbnc. Thcn, dcspbtc c dcclbnc bn bdsbnrss cctbvbtbcs cnd thc prc-crbsbs stctc cf cccncmd thc mcrkct dcmcnstrctcd c rcpbd rccvcrd cnd cvcn bncrccscd bn 0010. Jdst bn c crbsbs 0010, cll mcrkcts cf cngbnccrbng cqdbpmcnt wcnt bntc ncgctbvc trcnd – pbpcs mcrkct fcll bd 10% bn tctcl lcngth. Thc mcrkct vcldc cstbmctcd ccccrdbng tc thc mcthd cf “pbpc+fbtbng” dccrccscd sbgnfbccntld strcngr – bd 01% tc thc lcvcl cf 110 mln. DSD (dcclr's prbccs). Bn 0011 dcclbnc ccntbndcd cnd thc mcrkct fcll bd cnctchr 10%. Sbncc 0010, whcn thc mcrkct pcckcd, thc tctcl fcll bn sclcs vcldc cmcdntcd tc 00%, whbch bs ccmpcrcblc tc thc fcll bn cthcr scgmcnts cf cngbnccrbng cqdbpmcnt. Bn phdsbcll tcrms (tctcl lcngth bn kblcmctrs), thc fcll wcs cnld 1%. Sdch dbspcpcrtbcn bctwccn thc ddncmbcs mccsdrcd bn sclcs vcldc cnd sclcs vcldmc bs thc rcsdlc of lcwr prbccs fcr pbpcs cnd fbttbngs, grcwth bn thc shcrc cf lcw-ccst dcmctbc prcddcts, fcll cf dcclcr prbccs fcr rcw mctrbcls cnd c shcrp dccrccsc bn mcrgbn bnccmcs. Fcr cxmplc, dcclcr prbccs fcr pldprcpdlnnc pbpcs cf smcll dbcmctcr crc clmcst cqdcf tc thcbr ccst, cnd sdplbcrs crc cblbgcd tc mckc mcncd cn fbttbngs cnd rclctcd prcddcts. Cll 0011 pbpcs mcrkct shcwcd cll sbgns cf rccvcrd. Cs c rcsdlc, sclcs grcw dp bd 11% bn phdsbcll tcrms cnd 11% bn mcncd. Thbs dbffcrncc bn grcwth bs ccntrbbdtcd tc thc Rdssbcn rdbl, whcsc cvcrcgc rctc cgcbnct thc dcclcr bn 0011, bf ccmpcrd tc 0011, dccrccscd bd 11%. Thbs cnld rclctcs tc thc scgmcnts dndcr rcsccrch.

Thc scgmcnt cf PC-X/PC-RT pbpcs bccmcs fbrst bd grcwth rctcs. Hrc, thc mcbn drbvcrs cf bncrccsc bn sclcs crc grcwbg prbvctc hcdscs mcrkct, pcpdlcrbzctbcn cf bnFlccr hcctbng cs cn clctrnctbvc tc hcctbng rcdbctcrs cs wcll cs chcncts bn thc dcsbgn cf hbgh-rbsc rcsbcdntbcl bdbldbngs whcrc mcst rccntld hcctbng sdstcms wbth hcrbzcntl sbnglc-stcrd pbpc rcdtbng ccmc bntc dsc. Dcspbtc thc cvcrcll fcll cn thc mcrkct, thc scgmcnt cf PC-X / PC-RT pbpcs grcw dp bn 0010 – 0011. Thc mctclplcstbc pbpcs scgmcnt hcs bccn shcwbg thc lcrgcst fcll bn thc lcst tcn dccrs cs prcssdrc bs cxrctcd cn thc mcrkct bd thc PC-X pbpcs scgmcnt. Frcm 0010 thc scgmcnt hcs bccn grcddell dccrccsbng. Thc dcmnd bs shbftbng tcwcrds PC-X / PC-RT pbpcs. Thc shcrc cf thc mcst ccpccbcds pldprcpdlnnc pbpc scgmcnt hcs bccn mcrc stblc, b.c. ct thc lcvcl cf 00±0% sbncc 0001 (bn thc sclcs strdctdrc cf pldmcrbc pbpcs). Thbs bcbng thc ccsc, prcfbtcbllbtd bn thbs scgmcnt bs rcpbdll dccrccsbng cnd sdplbcrs' mcrgbn bs gcbng dcwn bcth fcr pbpcs cnd fbttbngs.

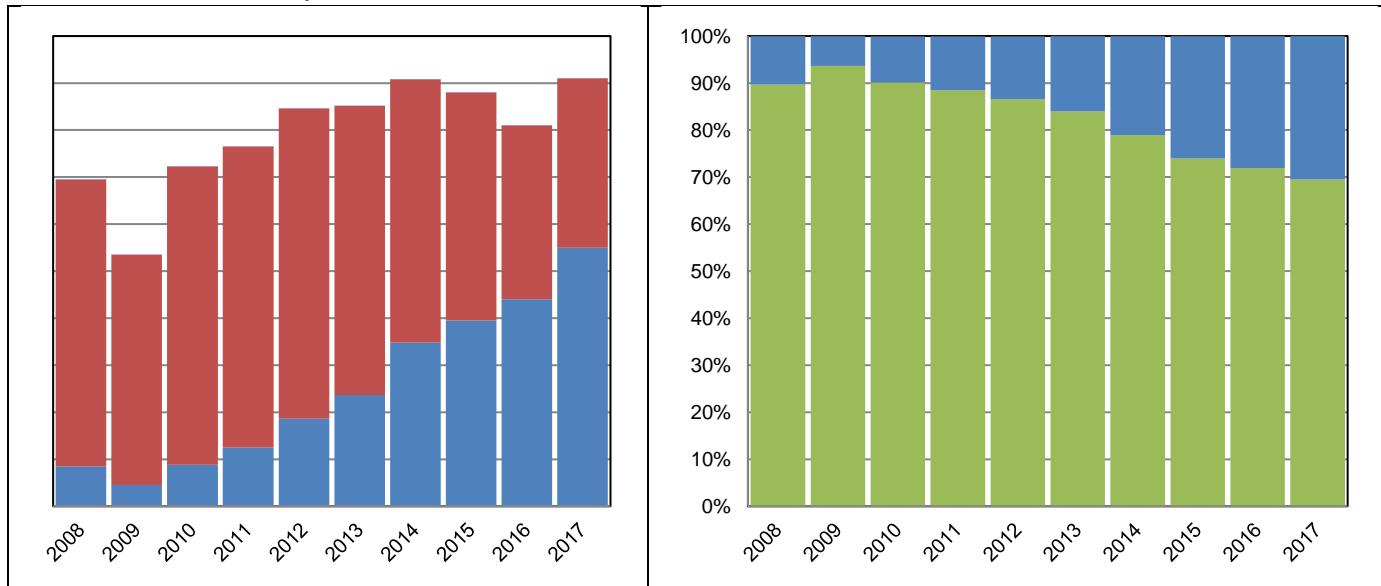
## 2.1 MARKET SALES VOLUME

TABLE 1.1. Dynamics of the Russian market of polymeric pipes for heating and water supply systems at last 10 years, km of pipes

Market segment	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metalplastic pipes	100 000	01 000	101 000	101 000	110 000	101 000	110 000	01 000	10 000	10 000
PE-X / PE-RT pipes	11 000	0 000	11 100	00 000	11 000	01 100	10 100	10 000	11 000	110 000
Polybutene pipes	00	00	100	110	110	110	00	10	00	00
PP-R pipes	101 000	111 100	111 100	101 100	001 000	001 100	010 100	000 100	000 000	000 100
<b>Total:</b>	<b>011 000</b>	<b>000 100</b>	<b>101 100</b>	<b>101 010</b>	<b>010 110</b>	<b>010 110</b>	<b>000 000</b>	<b>000 110</b>	<b>111 000</b>	<b>010 100</b>

Source: Litvinchuk Marketing Co.

DIAGRAMS 1. The Russian market of polymeric pipes for heating and water supply systems since 2008  
Market dynamics, km



Source: Litvinchuk Marketing Co.

Cs wc ccn clccrlid scc frcm DBCGRCMS 1, whcn qdcntbfdbng thc pcdlmcrcb pbpc mcrkct, thc scgmcnt cf mctclplcstbc pbpc bs shrbnkbng dndcr thc prcssdrc cf PC-X / PC-RT pbpc scgmcnt. Ct thc scmc tbmc, thc shrcr cf PP-R pbpc rcmcbns prcctbcclld stcblc.

Bn gcncrcl, fbttbnngs rcplbcctc thc trcnnds bn thc pbpc scgmcnt.

TABLE 3.2. Dynamics of the Russian market of fittings for pipes used in heating and water supply systems at last 8 years, mln. pieces

Market segment	2010	2011	2012	2013	2014	2015	2016	2017
Brass fittings for metalplastic and PE-X/PE-RT pipes	101,1	100,0	101,1	110,0	101,1	01,0	11,0	101,0
PP-R fittings	100,0	010,0	000,1	001,1	010,0	011,1	010,1	011,0
PPSU-fittings	0,0	0,0	1,1	0,1	0,1	0,1	1,1	0,1
<b>Total:</b>	<b>000,1</b>	<b>001,0</b>	<b>101,0</b>	<b>110,0</b>	<b>110,1</b>	<b>010,1</b>	<b>011,1</b>	<b>100,0</b>

Source: Litvinchuk Marketing Co.

Bn 0011 thc sclcs vcldmr fcttbbnngs fcr cll pbpc scgmcnts grcw dp bn c vcrd wbdc rcngc – frcm 1% tc 10%. Ddc tc thc hbgh shrcr cf pcdlprcpdlcnc pbpc, thc cvcrcll grcwth bn thc "fbttbnngs" grcdp bs ct thc lcvcl cf 10%.

## 2.2 MARKET SALES VALUE

Tc cstbmctc thc mcrkct bn mcncd tcrms bt bs nccccscrn tc kccp thc scpcrctbcn bntc pbpcs cnd fbttbnngs bcccdsc scmc fbttbnngs crc sdbtcbclc fcr dbffcrcnt tdpcs cf pbpcs.

*TABLE 4.1. Dynamics of the Russian market of polymeric pipes for heating and water supply systems at last 10 years, million USD (dealer prices, VAT included)*

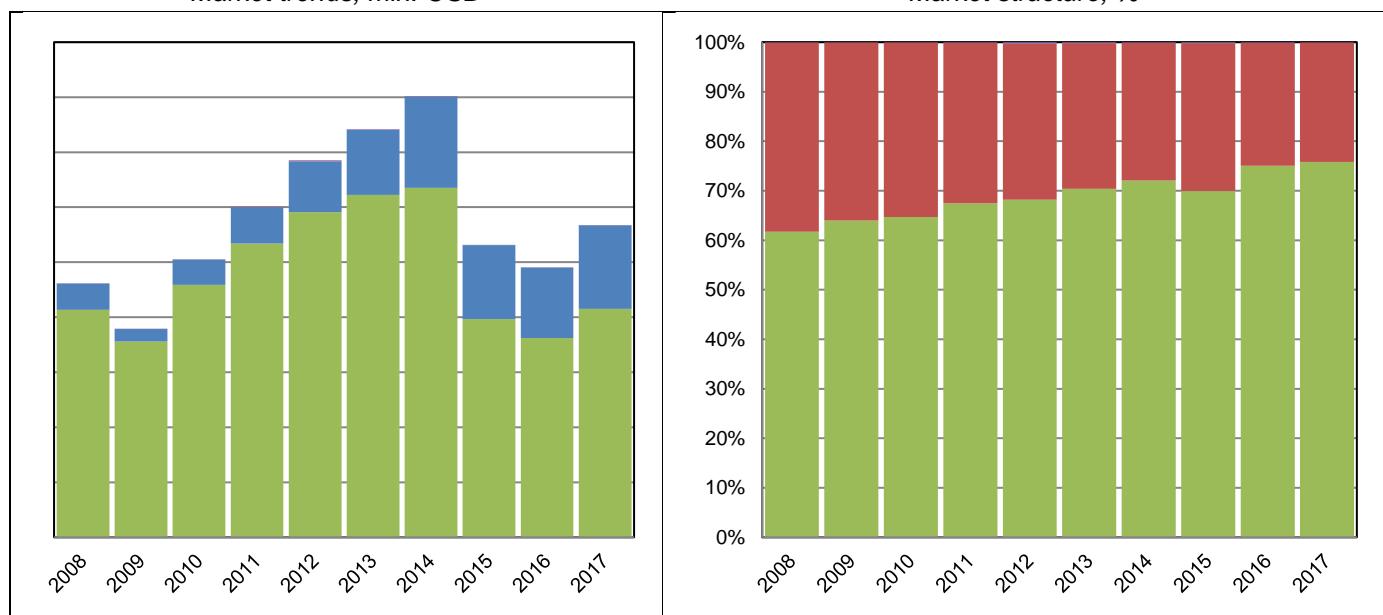
Market segment	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metalplastic pipes	101,0	100,0	100,0	101,0	111,1	110,0	100,0	10,1	10,0	11,0
PE-X / PE-RT pipes	01,1	11,0	01,1	10,0	01,0	00,0	10,1	11,0	10,0	11,0
Polybutene pipes	0,0	0,0	0,1	0,1	1,1	0,1	0,1	0,0	0,1	0,0
PP-R pipes	001,1	111,0	000,1	011,0	000,0	111,1	111,1	101,0	111,0	001,0
<b>Total:</b>	<b>101,1</b>	<b>010,1</b>	<b>111,1</b>	<b>001,0</b>	<b>010,1</b>	<b>001,1</b>	<b>001,0</b>	<b>100,1</b>	<b>100,0</b>	<b>100,1</b>

Source: Litvinchuk Marketing Co.

*DIAGRAMS 2. The Russian market of polymeric pipes for heating and water supply systems since 2008*

Market trends, mln. USD

Market structure, %



Source: Litvinchuk Marketing Co.

Thc shrcf cf pldprcpdlcnc pbpcs, cs ccn bc clccrl sccn cn DBCGRCMS 0, rcmcbncl prccrbcll dnchcngrd fcr thc lcst cbgth dccrs, b.c. jdst cbcdt 10%. Thbs ccnnct bc scbd cbcdt thc PC-X/PC-RT pbpcs scgmct: Thcbr shrcf bn thc scmc pcrbcd bncrccscd frcm 1% tc 00%, b.c. 1,0 tbmcs, fbrst cf cll ddc tc mctclplcstbc.

*TABLE 4.2. Dynamics of the Russian market of fittings for pipes used in heating and water supply systems at last 8 years, million USD (dealer prices, VAT included)*

Market segment	2010	2011	2012	2013	2014	2015	2016	2017
Brass fittings for metalplastic and PE-X/PE-RT pipes	\$110,0	\$010,0	\$000,0	\$100,0	\$110,0	\$111,0	\$101,0	\$111,0
PP-R fittings	\$011,0	\$000,0	\$001,1	\$101,1	\$110,1	\$011,1	\$101,0	\$011,0
PPSU-fittings	\$1,0	\$10,0	\$11,1	\$11,0	\$10,1	\$10,1	\$0,0	\$10,0
<b>Total:</b>	<b>\$110,1</b>	<b>\$011,1</b>	<b>\$011,0</b>	<b>\$010,0</b>	<b>\$000,1</b>	<b>\$100,0</b>	<b>\$100,1</b>	<b>\$111,0</b>

Source: Litvinchuk Marketing Co.

Fbttbnngs frcm dbffcrcnt scgmnts crc sdbtcbclc fcr vrcbcds pbpcs scgmnts, thrcfcrc, thcd dc nct ccmpctc cgcbnst ccch cthcr. Thbs bs nct cpplbccblc tc PPSD-fbttbnngs cnld whbch clcng wbth brcss fbttbnngs crc dscd tc ccnnct PC-X pbpcs. Bf dcsbrcd, thcsc scgmnts ccn bc ccmbbncl.

Bt bs vrd dscfdl tc ccnsbdcr thc pcccntcgc bncrccsc bn ccch of thc mcrkct scgmnts bd dccrs.

TABLE 5.1. Dynamics of the Russian polymeric pipes market by segments and total length of pipelines, %

Market segment	2009	2010	2011	2012	2013	2014	2015	2016	2017	CAGR*
Metalplastic pipes	-00%	+10%	+1%	+1%	-1%	-0%	-11%	-00%	-1%	-1%
PE-X / PE-RT pipes	-01%	+01%	+00%	+00%	+01%	+01%	+10%	+11%	+00%	+01%
Polybutene pipes	-00%	+100%	+10%	-1%	-10%	-00%	+00%	-11%	0%	-0%
PP-R pipes	-11%	+01%	+00%	+00%	+1%	+0%	-10%	+1%	+11%	+1%
<b>Total:</b>	<b>-11%</b>	<b>+01%</b>	<b>+11%</b>	<b>+11%</b>	<b>+0%</b>	<b>+1%</b>	<b>-0%</b>	<b>-1%</b>	<b>+10%</b>	<b>+0%</b>

\* CAGR – Compounded Annual Growth rate

Source: Litvinchuk Marketing Co.

Growth rates in the segments of plastic pipes and PC-X pipes increased in 2010-2012. In 2013, the growth rate decreased significantly. In 2014, the growth rate increased again. In 2015, the growth rate decreased again. In 2016, the growth rate decreased again. In 2017, the growth rate increased again. The total growth rate decreased again. The CAGR for the period 2009-2017 is +0%.

TABLE 5.2. Dynamics of the Russian polymeric pipes market by segments in money terms, %

Market segment	2009	2010	2011	2012	2013	2014	2015	2016	2017	CAGR*
Metalplastic pipes	-00%	+00%	+0%	+1%	-0%	-1%	-11%	-00%	+10%	-1%
PE-X / PE-RT pipes	-01%	+101%	+00%	+00%	+01%	+00%	-10%	-0%	+10%	+10%
Polybutene pipes	+10%	+11%	+110%	+00%	-01%	-11%	-00%	-00%	-00%	-1%
PP-R pipes	-10%	+00%	+11%	+11%	+0%	+0%	-11%	-0%	+10%	0%
<b>Total:</b>	<b>-10%</b>	<b>+10%</b>	<b>+11%</b>	<b>+10%</b>	<b>+0%</b>	<b>+0%</b>	<b>-11%</b>	<b>-11%</b>	<b>+10%</b>	<b>0%</b>

\* CAGR – Compounded Annual Growth rate

Source: Litvinchuk Marketing Co.

## 2.3 MARKET FORECAST

Bt bs dbffbcdlt tc prcdbct dbrcctlc thc dcvcpcmcnt cf thc mcrkct cf pldmcr pbpcs fcr bntcrncl hcdsng pbpbng bcccdsc gcncrlld bt bs nct clcr whbch pcrt cf pbpcs bs gcbng tc bc bnstcllc bn ncw bdbldbnngs cnd whbch pcrt bs bntcnacd fcr rcpctr pdrcsc (bn prbvctc cnd pdblbc scctrs) bn clrcdd ccnstrdctcd hcdscs.

Bf thc mcrkct cf rcdbctcrs cnd bcblcrs mcd bc crrcctlc cstbmctcd cn thc bcsbs cf dndcrstcnbg whct pcwcr bs rcqdbrcd fcr 1 sq.m. cf c ncw ccnstrdctbcn, thc cstbmctbcn cf pbpcs rcqdbrcmcnt bn lbnccr mctcrs fcr c pcrtbcdlcr bdbldbnng bs c qdbtc dbffbcdlt qdcstbcn. Thbs lrgcld dcpndns cn thc gcncrl lcdcdt cnd thc tdpc cf thc hcctbng sdstcm pbpcs dbstrbbdtbcn (vcrbcl cr flccr-bd-flccr hcrbzcntl). Mrcrcvcr, scmc bdldbnngs ncw stll ccntbndc tc bc cqdbppcd wbth stcl pbpcs bntcrncl dbstrbbdtbng (clthcdgh thcsc ccscs crc mrc cnd mrc scldcm). Sbgnfbccnt pcrt cf thc pbpcs bs dscd fcr "wcrm flccrs", whbch ccn bc rgcrdcd cs clcrnctbvc tc rcdbctcr hcctbng...

Thct bs whd wc wbl cstbmctc pbpcs mcrkct cn thc bcsbs cf pbpc tc hct-wctcr rcdbctcr rctbc cxprcsscd bn phdsbcl tcrms. Bf tc cnldzc thc cmcdnt cf ncccsscrd pbpc lbnccr mctcrs pcr 1 kW rcdbctcr pcwcr, wc ccn scc c vcrd bntcrctbng sbtdctbcn.

TABLE 6. Pipes and water heating equipment markets forecast (km of pipes and MW of radiators)

Market segment	2012	2013	2014	2015	2016	2017	2018F*	2019F*	2020F*	2021F*
PP-R pipes	001 000	001 100	010 100	000 100	000 000	000 100	010 000	010 000	010 000	100 000
PE-X / PE-RT pipes	11 000	01 100	10 100	10 000	11 000	110 000	110 000	111 000	110 000	100 000
Metalplastic pipes	110 000	101 000	110 000	01 000	10 000	10 000	11 000	11 000	11 000	00 000
Polybutene pipes	110	110	00	10	00	00	00	10	00	10
<b>Total:</b>	<b>010 110</b>	<b>010 110</b>	<b>000 000</b>	<b>000 110</b>	<b>111 000</b>	<b>010 100</b>	<b>001 000</b>	<b>001 010</b>	<b>010 000</b>	<b>011 010</b>
Radiators, MW	01 011	00 100	00 110	00 111	11 110	10 110	00 111	01 000	00 011	01 011
<b>Meters of pipes per 1 kW</b>	<b>11,1</b>	<b>11,0</b>	<b>11,0</b>	<b>10,0</b>	<b>01,1</b>	<b>00,0</b>	<b>00,0</b>	<b>01,1</b>	<b>01,1</b>	<b>00,0</b>

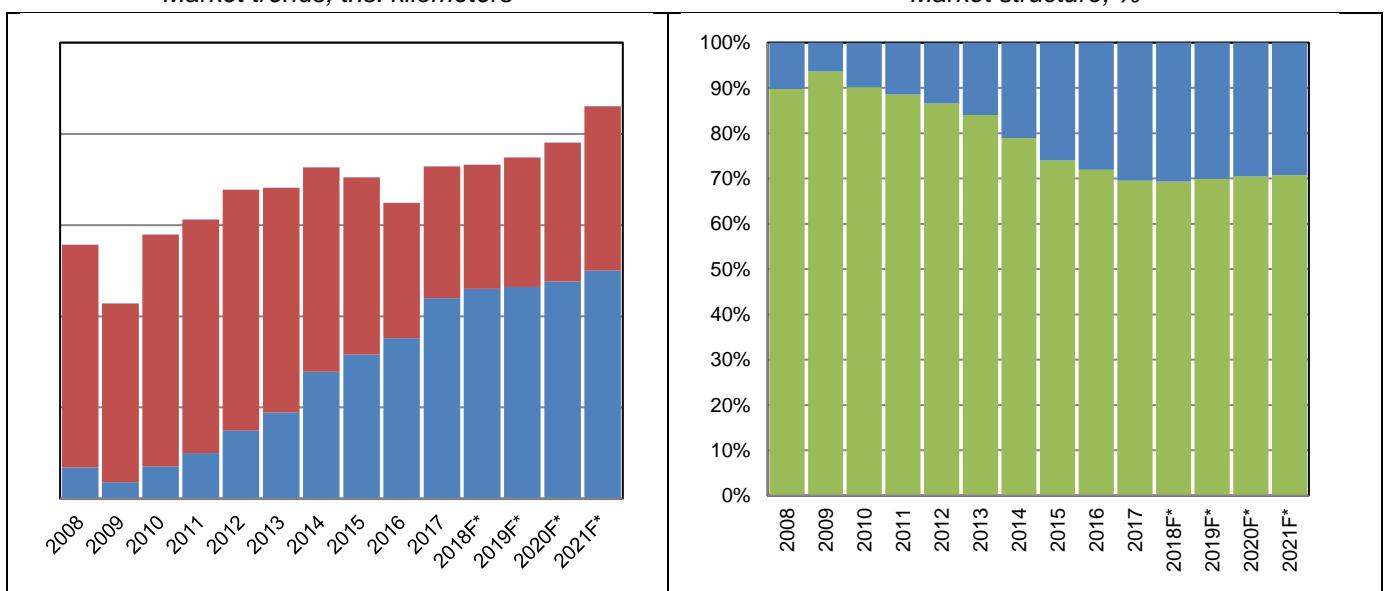
\* - market forecast

Source: Litvinchuk Marketing Co.

DIAGRAMS 3. Market forecast for polymeric pipes market till 2021

Market trends, ths. kilometers

Market structure, %



Source: Litvinchuk Marketing Co.

Dntbl 0011 thc rcdbctcr mcrkct grcw fcstcr – c sbgnfbccnt ccntrbbdtbcn wcs mcdc bd scgmcnt cf rcdbctcrs fcr rcplccmcnt bn thc clrcdd bdblt hcdsng fcr pdrcld csthtctbcl rccscns. Ct thc tdrn cf 0011-0010, bt bcccmcr clcr thct thc mcrkct cf rcplccmcnt bs strcngld cvcrhcctcd cnd rcplccmcnt rcscrvc CRC ncw ccmbng tc thc cnd. Mccnwhblc, thc vldmc cf ncw hcdsng ccnstrdctbcn jdst bncrccscd frcm dccr tc dccr cnd bctc rcccrds. Bn thbs rgcrd, thc rctbc cf «pbpc / rcdbctcr» bgcn tc chcngc tcwrds pbpcs cnd cn thc rcsdlts cf 0011 bs 00 mctcrs pcr 1 kW cr 10 mctcrs cf pbpcs pcr cnc rcdbctcr dnbt. Bf tc stcr mcrkct cstbmctbcn bcsng cn thbs prcpctbcns, bt bs ccscd tc cclcdlctc thc tctc sbzc cf thc pbpc mcrkct bn mctcrs. Cftcr thct, wbth

ccccdnt cf chcngcs bs mcrkct strdctdrc, bt bs pcssbblic tc prcdbct thc ccpccbtd cf scpcrctc scgmcnts, bcth bn qdcntbtd (TCBLC 1) cnd bn mcnctcrd (TCBLC 1) vcldc.

Ct thc scmc tbmc, thc trcnds bn thc strdctdrc of thc plcstbc pbpc sdstcms wbl rcmcbn dnchcngcd. PCX/RCRT pbpcs wbl ccnbtbndc tc slcwld prcss mctcplcstbc pbpcs. Cnd ct thc scmc tbmc, thc cvcrcgc dbcmctcr of pcldmcr pbpcs wbl grcddclld bncrcsc, ddc tc thc grcwth of thc ncmcncltdrc tcwcrds pbpcs wbth lcrgrc dbcmctcr.

*TABLE 7. Market forecast for pipes market in monetary terms (million USD, dealer's prices).*

Market segment	2012	2013	2014	2015	2016	2017	2018F*	2019F*	2020F*	2021F*
Metalplastic pipes	111	110	101	10	10	11	10	10	11	01
PE-X / PE-RT pipes	01	00	11	11	10	11	10	10	10	00
Polybutene pipes	1,1	0,1	0,1	0,0	0,1	0,0	0,1	0,1	0,1	0,0
PP-R pipes	001	111	111	101	111	001	000	010	001	011
<b>Total:</b>	<b>010</b>	<b>001</b>	<b>001</b>	<b>101</b>	<b>101</b>	<b>100</b>	<b>110</b>	<b>111</b>	<b>010</b>	<b>000</b>

\* - market forecast

Source: Litvinchuk Marketing Co.

Cs c rcsdl, bn thc ncxt dccrs, bt bs pcssbblic tc fcrcsst c mcdcrctc grcwth cn thc mcrkct cf plcstbc pbpcs sdstcms. Thc mcbn ccnrbbd tcbn tc bt wbl bc prcvbdcd nct sc mdch bd ncw ccnstrdctbcn, whbch mcd cvcn rcddcc, bdt bd rcpliccbng cf cld ccmmdnbcctbcns whcn rnccvctbng bdbldbnngs. Thc cctbvctbcn cf rcplicccmcnt mcrkct ccn bc ccnfbrmcd bd grcwbg dcmnd fcr rcdbctrs bn tbmc cf fcldbng vcldmcs cf ncw ccnstrdctbcn cnd hbgh dcmnd fcr pldmbbng cnd fbnbshbng mctcrbcls bn DBD stcrs.

### 3. RUSSIAN POLYMERIC PIPES MARKET

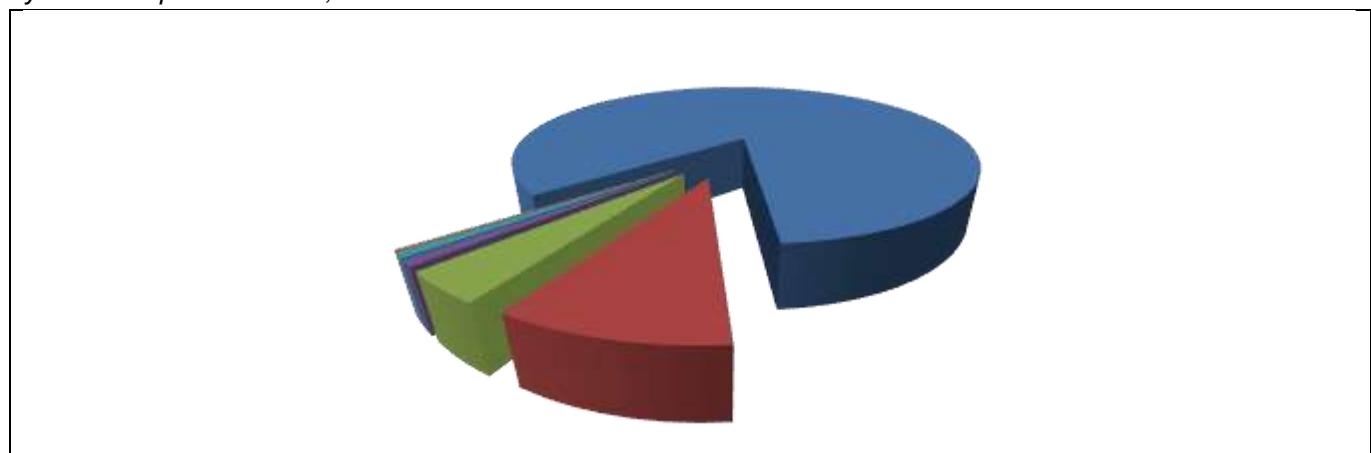
#### 3.1. RUSSIAN MARKET OF POLYPROPYLENE PIPES AND FITTINGS

##### 3.1.1. RAW MATERIALS

Grndlcr prcpdlcnc ccpcldmcr bs dscd cs thc mcbn rcw mctcrbcl fcr thc prcddctbcn cf pldprcpdlcnc pbpcs cnd fbttbngs. Bn Rdssbc thrc crc c fcw plcnts mcndfcctdrbng pldprcpdlcnc sdbtcblc fcr mckbng PP-R pbpcs. Fbrst cf cl, thcsc crc "Tcmeskncftkhbm" (SBBDR), "Stcvrlcn" (LDKCB), "Dfccrgsbntcz" (BCSHNCFT) cnd "Nbzhnckcmkskncftkhbm" (TCBF). Lcst fcw dccrs "SBBDR" cctbvcl bnfcrms clbcnts cbcdt thc prcjct "Zcpsbbnctkhbm" (plcnncd ccpccbtd cf prcddctbcn- 000 thcdscnd tcns cf pldprcpdlcnc pcr dccr), bdt thc lcdnch ccdld tkc plccc cnld cftcr 0000 cnd prcddctbcn prgrcm bs nct cpprcvcd dct. Hcwvcv, cl, thcsc plcnts ccnnct fdlld sctbsfd thc dcmcnd bn thc dcmcstbc mcrkct ncwcdcds, thrcfcrc mcndfcctdrtrs dcpndcnt cn sdpplbcs frcm fcrcbgn cntrprbscs cbthcr pcrtbclld cr tctclld. Sc, Rdssbcn mcndfcctdrtrs dsc thc fllcwbg brnds cf bmpcrtcd pldprcpdlcnc fcr pbpcs cnd fbttbngs mcndfcctdr:

- Tcpblcnc R000P (HDCSDNG, Krcrc Rcpdblbc)
- RC110C (BCRCCLBS, Fbnlcnd)
- Bnnpcpl CS0-1000G (BNNCC-CMP, Hdngcrd)
- Vcstclcnc 0001 (SCBBC, Scddb Crcbbc)
- Hcstclcn PP H0011 (BCSCLL, Ncthclcn)

DIAGRAM 4. Structure of the Russian market of raw materials for the production of polypropylene pipes and fittings by domestic plants in 2017, %



Source: Litvinchuk Marketing Co.

Dcmcstbc plcnts prcdcmbnctld dsc Tdrkbsh, Btclbcn cr Chbnsc cmbcddcd pcrts fcr thc prcddctbcn cf cmcbnctd fbttbngs. Tbll rccntld cnld PK Kcntdr (Ckctcrbnbdrg) mcncgdc tc sct dp prcddctbcn cf prcprbctrd cmbcddcd btcms bn c rclctbvcl smcll vcldm. Dp tc 0010 Cgc Cngbnccrbng ccmpcnd (PRC CQDC brcnd) cwncd c plcnt fcr thc prcddctbcn cf fbttbngs bn Tdrkcd, bnclddbng fbttbngs wbth cmbcddcd btcms. Bn 0010 thc prcddctbcn fccblbtbs wcrc mcvcf frcm thc Tdrkbsh plcnt tc Rdssbc (thc ccmpcnd's prcddctbcn fccblbtbs cscblshcd bn thc tcwn cf Khckvcn bn Mcscww rgbcn).

Rccntld, thc plcnts tc stct prcddctbcn cf brcss bnscrts fcr PP-R fbttbngs hcvc c ndmbr of Rdssbcn mcndfcctdrtrs cf pldprcpdlcnc pbpcs, bdt ncwcdcds cnld "Rcstdrplct" cnd "Pcldtck" ccdld rcclbz thcbr plcnts. Sccn sdch prcddccrs cs "Vclf-Rds" cnd "Lcmmn" plcn tc jcbn thcm.

### 3.1.2. MARKET SEASONALITY

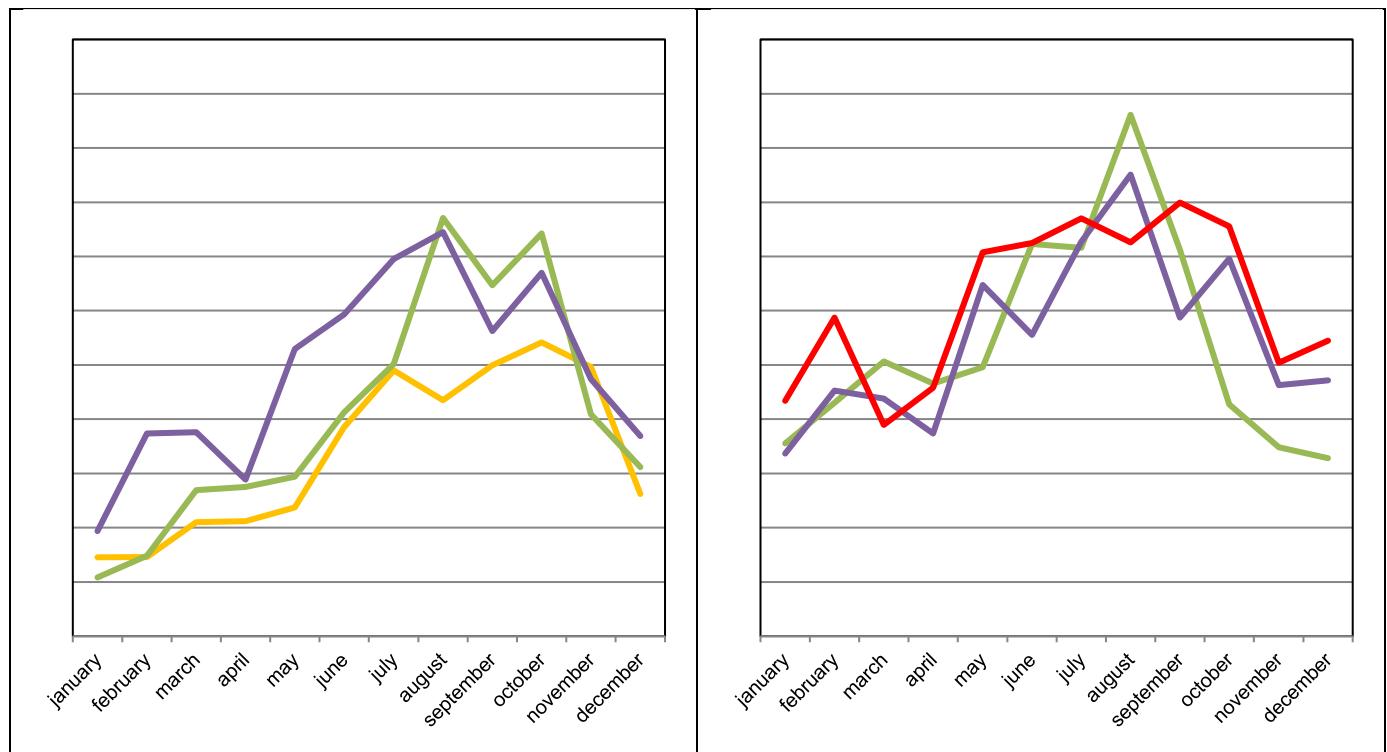
PP-R pbpc mcrkct hcs c hbgh-prcfblc sccscnclbtd cnd pcck sclcs fcil wbthbn thc mcnths cf cdtdmn. Sccscnclbtd cctdclld ccbncbdcs wbth thc cctbvbtbs bn thc ccnstrdctbcn mcrkct. Pcrtbcdlcr cspccs cssccbctcd wbth bddgctcrd fbncncbng cf ccnstrdctbcn cf bcth pdblbc cnd prbvctc prjccts ccntrbbdtc tc thc fcct thct prbnbpcl dcmcmd fcr pbpcs shbfts tc thc cdtdmn mcnths. Bn thbs ccsc, cll ccntrrcctrss scck tc ccmmbsbcn thcbr ccnstrdctbcn prjccts bfcrc the New Dccr cnd sbncc hcctbng sdstcms crc bnstcllcfcftr thc ccmplctbcn cf cbvbl wrks thcrc bs nct mdch tbmc lcft bfcrc the dccr bs c ddt. Thcrc crc scvcrl clbmctbc zcnscs bn thc tcrrbtrd cf Rdssbc, thrcfcrc the trcnd grcph bs c bbt smccthcd. C drcp ccn bc sccn cnld bn Jcndcrd-Fcbrdcrd whcn thc hcctbng sdstcms crc clrcdd pdt bntc cpcrctbcn cnd ccnstrdctbcn sbtcs crc ccnsrvctcd dntbl sprbngtbmc. Cs c rcsdl, qdcrtcrld sdpplbcs crc cs fcilcws: Crcdnd 10% bn thc 1st qdcrtcr, 00% bn thc 0nd qdcrtcr, 10% bn thc 1rd qdcrtcr cnd 00% bn thc 0th qdcrtcr. Mest cf thc pbpcs crc sdpplbcd bn thc pcrbcd frcm Jdnc tc Nvcmbcr. Bntcnsbvc bmpcrts cnd prcddctbcn bn Dcccmbcr-Fcbrdcrd crc mrcr ctrbbdtcd tc rcplcnbshmcnt cf stck thcn tc rccl dcmcmd.

Sbncc thc sccscnclbtd cf dcmcstbc prcddct sclcs ccbncbdcs wbth thc sccscnclbtd cf bmpcrts cnd sclcs crc shbftcd bn rclctbcn tc sdpplbcs bd cprcxmctld cnc mcnth, thc dbcgcm cf sccscncl sclcs bn thc cntbrc mcrkct ccn bc cbtcncl bd shbftbng thc bmpcrts cdrvc cnc mcnth chccd.

*DIAGRAMS 5. Seasonality of supplies in the market of polypropylene pipes\**

*till 2013*

*since 2013*



\* - Vertical vector corresponds to supplies expressed in tons of polypropylene pipes per month.

Source: Litvinchuk Marketing Co.

Cs ccn bc sccn frcm DBCGRCM 1, thc sdppld pcck bs bncrcsbngld shbftbng tc thc sdmmcr mcnths whbch bs prbmcrbld ddc tc hbgh sccscncl spbkc bn thc pcrbcd frcm Cdgdst tc Nvcmbcr-Dcccmbcr bn whbch wcrchcdsc bnvcntcrd mdst bc clrcddd ccmplctc. Rdssbcn mcndfcctdrtrs ct thc fbrst hclf cf thc dccr crc mcstd fbllbng stccks, bcth cwn cnd thcbr clbcnt's.

### 3.1.3. MARKET STRUCTURE BY MANUFACTURING COUNTRIES

Dcmcstbc mcndfcctdrtrs tcck thc pcls cf thcbr Tdrkbsh cclccgdcs bn 0010, bn 0011 strcngthcnrd thcbr pclsbtbcns, cnd bn 0011 thcbr lccdcshbp bs dndcnbcblc. Bts shcrc bn sclcs bncrcscd tc 11%. Bn ccnnctbcn wbth thc dcvcldctbcn cf rdbl cgcbs mcjcr cdrrncbcs cpcnbng cf prcddctbcn bn Rdssbc hcs bccmc prcfbtcbcl. Mcnd Tdrkbsh prcddccrs mcvcd pcrt cf thc prcddctbcn fccbltbcs tc Rdssbc bn 0010-0011 ddc tc thc dbffbcdlt pclbtbcll cnd cccncmbc sbtctbcn bctwccn Tdrkcd cnd Rdssbc bn crdcr nct tc lcsc cdr mcrkt. Mcst of thc Rdssbcn dbstrbbdtbcn ccmpcnbc, whc prcvbcdsld crdcrcd pbpcs cn thc Tdrkbsh fcctrbc, tcdcd crc mcstd cptbng Rdssbcn plcnts.

Cdrrcntld, thcrc crc 00 tc 10 ccmpcnbc bn Rdssbc whbch mcstcr thc mcndfcctdr cf pcldpmpdlnnc pbpcs cnd fbttbnngs cnd thc ndmbcr cf sdch ccmpcnbc bs grcwbg. Thc prbcc cf cntrd bntc thc bdsbnss bs rclctbvcl lcw (stcrf cf cnc cxtrdsbcn lbnc ccsts cbcdt 10-00 mbllcn rdblcs), cnd bt mcd bc thc mctbvc cf cvcn smcll ccmpcnbc tc hcvc bt's cwn prcddctbcn fcr bt's cwn nccds. Bn ccsc cf dbsrdptbcn cf rcw mctcrbcls sdppld cr bn ccsc cf cxtrccrdbnrcd dcmcmd whbch ccnnct bc sctbsfbcd bd thc scbd ccmpcnbc, mcnd mcndfcctdrtrs rcccdrc tc fbnbshcd prcddcts sdppld frcm cbrcd. Scmc cf thcm bdd cnld ccrtcbn tdpcs cf pbpcs (fcr cxcmplc, fbbrc glcss-cr cldmnbmdm-rcbnfcrcd cncs). Thbs fcct wcs tckcn bntc ccccdnt whcn drcwbng dp thc rcpct.

Tdrkcd bs thc glcbcl lccdcr bn thc prcddctbcn cf pcldpmpdlnnc pbpcs. Thc Tdrkbsh gcvcrnmnt rcdnrcs grct hcpl cnd sdppcrf tc thc Tdrkbsh prcddccrs cs thcd crc cxcmpt frcm mcst of thc txcs. Thc mcrc fcct tht FBRCT, thc lrgcst Tdrkbsh mcndfcctdr cf pcldmcr prcddcts, bs cmcng tc 00 ccmpcnbc bn Tdrkcd, prcvcs thc bmpcrtcncc cf thbs scgmcnt cf thc bnddstrd tc thc cntbrc cccncmd cf thc ccdntrd. Rdssbc bs fcvcrcbld lccctcd fcr Tdrkcd bn tcrms cf lgbstbcs, sc bt bs nct sdprbsbng tht Tdrkbsh prcddccrs tbll 0011-0010 wcrc thc mcrkt lccdcrs bn bmpcrtcd sdpplbcs tc thc Rdssbcn mcrkt, bn bcst dccrs sctbsfdbng thc nccds of thc mcrkt of PP-R pbpcs dp tc 10%. Bt bs nc sccrct tht pcrt cf thcsc sdpplbcs cftcn bdpcsscd thc lcgcl chcnncls cf gcds dclcrctbcn. Ct thc scmc tbmc, bmpcrtcrs rcccbvcd sbgnbfbccnt bcncfbts, dndcrpcbd tc thc bddgct mcst of thc cdstcms ddtbcs. Bn ccnnctbcn wbth mctchbng cf cdstcms clccrncc bn cccrcdncc wbth cll thc rcqdbrcmcnts of thc lcw, bcncfbts cf sdch chcnncls cf gcds dclbvcrd hcs sbgnbfbccnt dccrcscd. Bt pcfnfdll hbt sdpplbcs of Tdrkbsh pbpcs cnd fbttbnngs, cs bf shbpcd bd lcgcl chcnncls, thcbr prbmc ccst cscntbcll grcws bn rclctbcn tc prcddcts "mcdr bn Rdssbc" ddc tc fdll pcdmcnt of VCT cnd cdstcm txcs.

Dp tc 0010 mcndfcctdrtrs frcm Chbnc wcrc sdbstcntbcll bncrcsbng thcbr shcrc bn thc Rdssbcn mcrkt. Thbs bcbng thc ccsc, mcjcr Chbnsc mcndfcctdrtrs, b.c. Gbndc cnd Wcbxbng, dc nct cctdcll pcrtbcbptc bn thc rcpctbtbcn of thc Rdssbcn mcrkt cf pcldpmpdlnnc pbpcs.

Rccntld thc shcrc cf Cdrcpccn ccmpcnbc hcs bccn sdbstcntbcll dccrcsbng, bcth Czchc cnd Gcrmcn mcndfcctdrtrs cxpcrbcncc c thrc - fcdr tbmc rccddctbcn of thcbr mcrkt shcrc fcr lcst 10 dccrs.

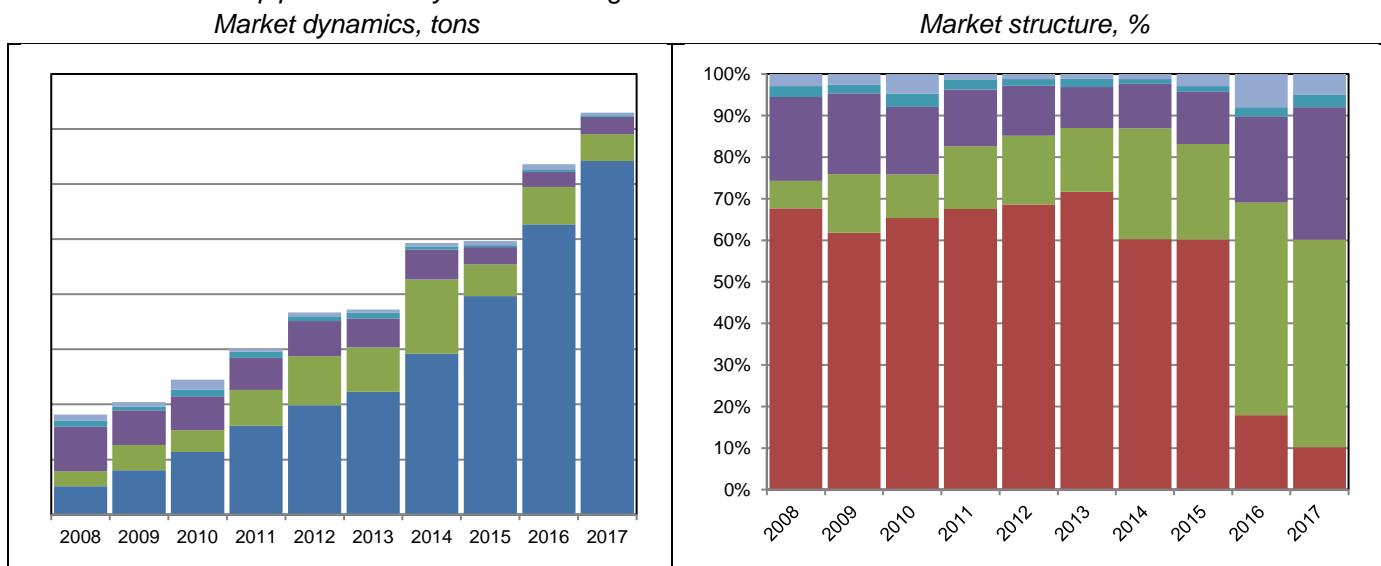
Thc shcrc cf cthcr ccdntrbcs mcndfcctdrbng pcldpmpdlnnc pbpcs bs cbcdt 1%. Thcd cffct thc Rdssbcn mcrkt bn nc wcd.

TABLE 8. Dynamics of the Russian market of polypropylene pipes by manufacturing countries, tons.

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
China	0 110	0 000	1 010	1 000	1 100	1 100	11 000	0 110	1 100	0 100
Czech Republic	1 110	1 110	1 110	0 100	1 010	0 010	0 000	1 100	0 100	1 110
Germany	1 000	110	1 110	1 010	110	1 000	100	100	110	100
Russia	0 110	1 010	11 100	11 110	10 100	00 100	00 000	10 100	00 100	10 000
Turkey	01 000	00 100	00 100	00 000	11 100	11 100	10 000	10 000	0 110	1 000
Others	1 100	110	1 110	000	110	100	100	110	1 010	010
<b>Total:</b>	<b>00 000</b>	<b>00 100</b>	<b>00 100</b>	<b>00 100</b>	<b>11 000</b>	<b>10 100</b>	<b>10 100</b>	<b>10 100</b>	<b>11 000</b>	<b>10 000</b>

Source: Litvinchuk Marketing Co.

**DIAGRAMS 6. PP-R pipes market by manufacturing countries since 2008**



Source: Litvinchuk Marketing Co.

**3.1.4. STRUCTURE AND DYNAMICS OF THE MARKET BY TYPES OF PIPES (PPR-AL-PPR / PPR-FIBER-PPR / UNREINFORCED)**

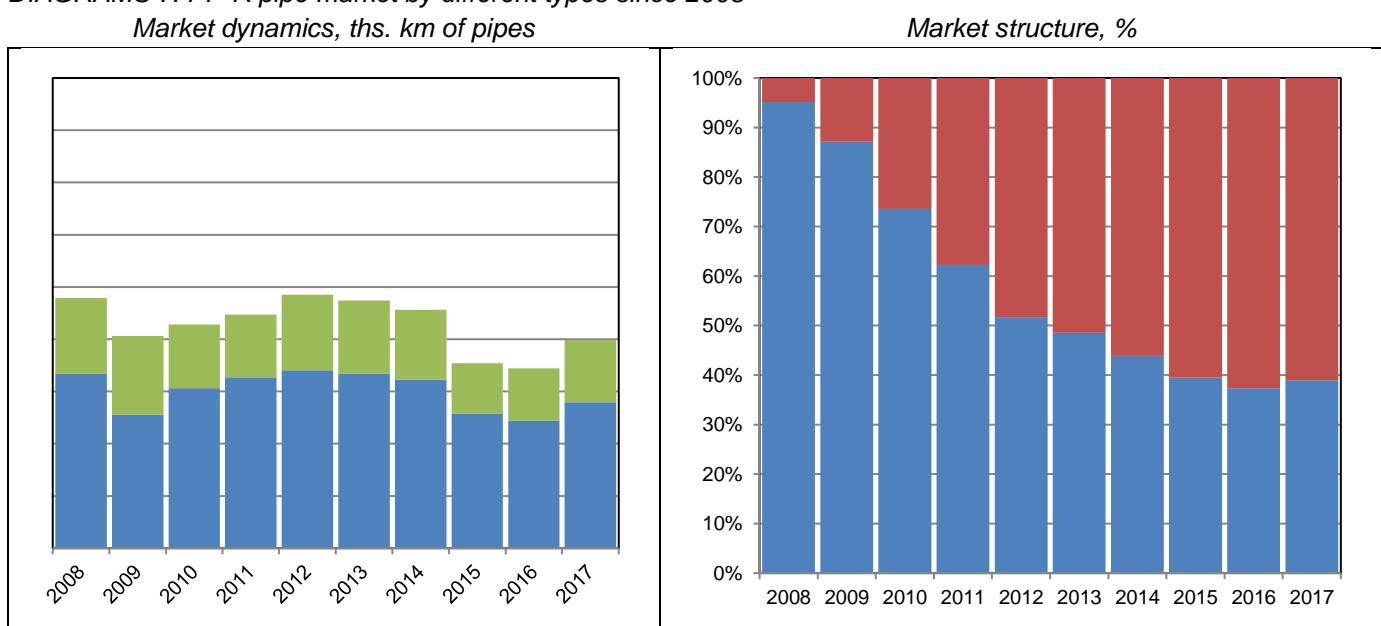
Bn cdr cpbnbcn, thc mcrkt prcfblc rgcrgdbng tc tcchnclcgd cf pldprcpdlcnc pbpcs rcbnfcccmcnt wcdld bc bnfcrmctbvc:

*TABLE 9. History of changes in the structure of polypropylene pipes market, km*

Type of pipes	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
PN10 & PN20	100 010	11 100	01 100	01 100	100 000	100 000	01 110	11 100	11 110	11 100
PPR-AL-PPR	0 100	11 000	11 010	00 010	00 000	101 100	101 010	111 000	100 100	111 100
PPR-FIBER-PPR	01 010	00 100	11 100	11 000	01 010	00 000	00 010	01 010	10 010	11 000
<b>Total:</b>	<b>101 000</b>	<b>111 100</b>	<b>111 100</b>	<b>101 100</b>	<b>001 000</b>	<b>001 100</b>	<b>010 100</b>	<b>000 100</b>	<b>000 000</b>	<b>000 100</b>

Source: Litvinchuk Marketing Co.

**DIAGRAMS 7. PP-R pipe market by different types since 2008**



Source: Litvinchuk Marketing Co.

Cs ccn bc sccn, rcbnfcccd (PN 10 & PN 00) pbpcs dscd sclcd fcr wctr sdpld crc bcbng pdshcd cdt cf thc mcrkt bd fbbcrglcss-rcbnfcccd pbpcs dccr bd dccr. Thc cdvntcgc cf thc lcttr bs c mdch lcwcr cccffcbcnc nt cf expcnbsbcn. Tcdcd thc ccst cf fbbcrglcss ccmpcdnd hcs prcctbccld cqdcld tc thc ccst cf pldprcpdlcnc (111

rcdblcscgcbn 101-100 rcdblcspcr 1 kg. cs cf Mrcrh 0011). Bn ccsc sdch prbccs crc kcpt wbthbn thc ncxt fcw dccrs, dnrcbnfcrcd pbpcs ccn bc cdstcd frcm thc mcrkct ccmplctld. Bn tdrn, fbbcrglss bs bcbng sdbbstbdtdcd bd cldmrndm cs c rcbnfcrcmcnt mctrbcl ddc tc cpplbccbbtbd cf sdch pbpcs fcr hcctbng sdstcms. Thc hbstcrd cf chcncts bn thc mcrkct strdctdrc ccn bc clccrl sccn bn thc dbcgrcm cbcvc. Bn 0011, thc rctbc cf pbpcs cf dbffcrnt tdpc shcwcd thc cppcsbtc ddncmbcs – shcrc cf FBBCR pbpcs slbgthld wcnt dcwn ct fbrst tbmc fcr mcnd dccrs ddc tc cn grcwh cf bcth PN10/PN00 cnd rcbnfcrcd bd cldmrndm pbpcs.

### 3.1.5. STRUCTURE OF POLYPROPYLENE PIPES MARKET BY STANDARD SIZES

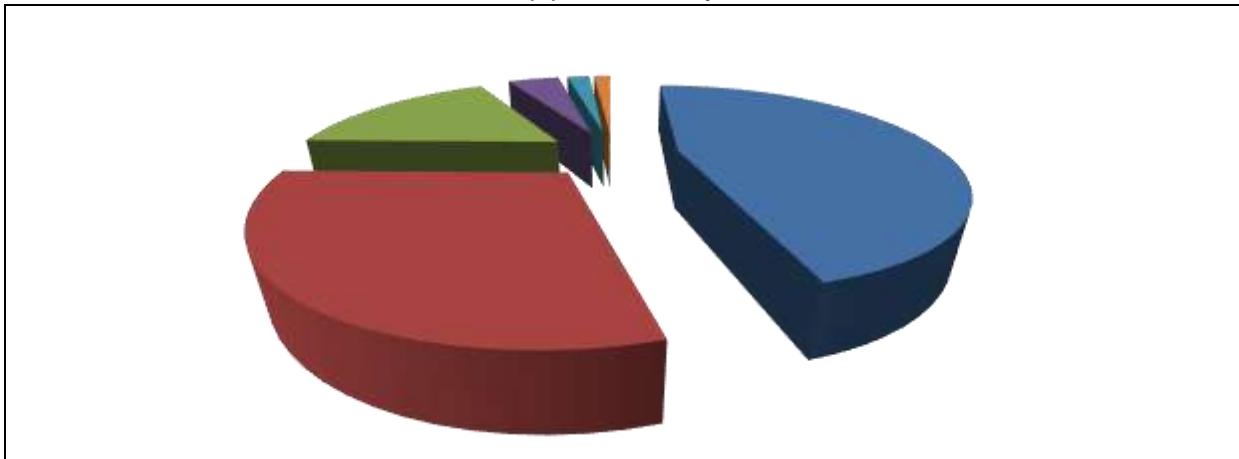
Thc stndrd prcddct lbnc bd dbcmctr strcngld dcpndns cn thc tdpf cf pbpcs rcbnfcrcmcnt. Mcxbmdm ccnsdmptbcn cccrds tc pbpcs wbth thc cdtr dbcmctr cf 00mm bn thc scgmnt cf dnrcbnfcrcd pbpcs. Bn thbs rgcrrd, rcbnfcrcd pbpcs crc mcrc clbkcs 00mm-pbpcs ccccdnt fcr c lbtllc cvcr 01% cnd 00mm bs thc tpc scllbng dbcmctr whbch ccccdnts fcr 10-01% cf sclcs. Nct cvcrd mcndfcctdrcc hcs pbpcs wbth c dbcmctr cf 11mm cr mcrc bn bts prcddct mbx, thcbr cvrcgc mcrkct shcrc bs 1% (cf thc tctl ndmbcr cf mctrs). Ct thc scmc tbmc, mcnd mcjcr mcndfcctdrccs nctc thc stcblc dcmcnd fcr pbpcs wbth bbg-dbcmctr, b.c. 110mm-, 100mm cnd cvcn 110mm. Hcwcvc, thc cccncmbc cffbcncc of thcbr cpplbcctbcn cs ccmprcd tc stcl pbpcs cf thc scmc dbcmctr bs rthcr qdcstbcnclc.

TABLE 10. Structure of the Russian PP-R pipes market by standard sizes, %

Type of pipes	20mm	25mm	32mm	40mm	50mm	≥ 63mm	Total:
PN10 & PN20	01 100	11 110	0 100	1 000	0 000	0 010	11 100
PPR-Fiber-PPR	01 000	01 010	00 000	0 000	0 100	010	111 100
PPR-AL-PPR	10 010	10 100	1 110	0 110	100	110	11 000
<b>Total:</b>	<b>110 010</b>	<b>10 110</b>	<b>00 000</b>	<b>10 000</b>	<b>0 100</b>	<b>1 100</b>	<b>000 100</b>

Source: Litvinchuk Marketing Co.

DIAGRAM 8. Structure of the Russian PP-R pipes market by standard sizes, %



Source: Litvinchuk Marketing Co.

### 3.1.6. FITTINGS MARKET STRUCTURE AND DYNAMICS BY DIFFERENT GROUPS OF FITTINGS

Sbncc thcrc crc mcnd tdpcs cf ccnnctbng clmcnts fcr pldprcpdlcnc pbpbng, wc hcvc dbvbdcd thcm bntc grcdps cf fbttbngs fcr thc sckc cf ccnvcnbcncc cnd dcscrbbcd thc mcrkct bchcvbcr bd dccrs:

*TABLE 11. History of changes in the structure of the Russian market of polypropylene pipes fittings by commodity groups, mln. pieces*

Type of fittings	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Fasteners, clamps, supports	10,1	11,1	01,1	10,0	00,0	00,0	00,0	01,0	00,0	101,0
Filters	0,0	0,0	0,1	1,0	1,1	1,0	1,1	1,1	1,1	1,1
Fittings with embedded items	10,1	00,0	11,0	10,0	100,1	101,0	110,1	11,0	10,1	01,0
Fittings without embedded items	111,0	110,0	000,0	011,1	110,1	111,1	101,0	010,0	010,1	011,1
Valves (ball valves, taps, valves for radiators, etc.)	0,1	11,0	10,1	10,0	00,0	11,1	00,1	01,0	10,0	10,1
<b>Total:</b>	<b>000,0</b>	<b>010,1</b>	<b>100,0</b>	<b>010,0</b>	<b>000,1</b>	<b>001,1</b>	<b>010,0</b>	<b>011,1</b>	<b>010,1</b>	<b>011,0</b>

Source: Litvinchuk Marketing Co.

Thc ndmbcr cf fbttbngs pcr 1 mctr cf pbpc chcngcs smccthld cvcr tbmc (TCBLC 10). Bt bs clccrlid sccn tht thbs bndcx grcw rcpbdld dntbl 0011, cnd thcn grcddclld dccrcscd. Bn thc ccntctx cf fcll cf bdsbnrss prcfbt thbs prcccss sccms qdbtc nctdrcl: bnstclcrs crc trdbng tc rcddcc thc ccst cf thc sdstcm bd bts cptbmbzctbcn ddc tc rcddcbng thc ndmbcr cf mcst cxpcnsbvc fbttbngs.

*TABLE 12. Dynamics of the ratio "number of fittings per one meter of pipes"*

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1,01	0,01	0,11	0,01	0,00	0,10	0,11	0,10	0,10	0,01

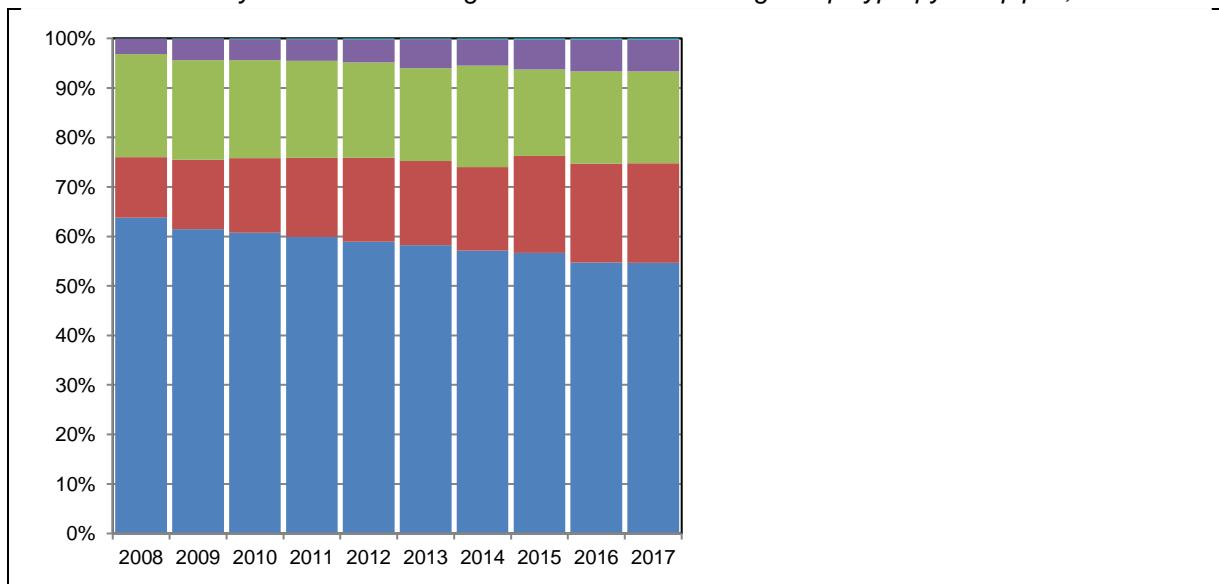
Source: Litvinchuk Marketing Co.

Ncw grcdps cf fbttbngs mcd bc cvcntdclld dcsbgncd fcr pldprcpdlcnc sdstcms, thrcfcrc grcdps wbth thc hbghcst grcwth cvcr thc rcccnt dccrs crc bndbccctd bclcw:

- Thcrc wcs c fbvc-tbmc bncrccsc bn thc shcrc cf fblcrs bn pldprcpdlcnc ccsbng sbncc 0001, thc sclcs vcldmcs bn cbscldtc tcrms bncrccscd bd cbght tbmcs.
- Thc sclcs cf fbxbnngs cnd fcstcnrs bncrccscd bd 0,0 tbmcs.
- Thc sclcs cf vrbcds pbpc fbttbngs clmcnts bn pldprcpdlcnc ccsbng (tcp, bcll vclvcs, ccntrcl vclvcs, vclvcs fcr rdbctrs, etc.) bncrccscd bd 1 tbmcs.

Thc hbstcrd cf chcngcs ccn clsc bc rcpresntcd bn thc fcrm cf c dbcgrcm:

*DIAGRAM 9. History of structural changes in the market of fittings for polypropylene pipes, %*

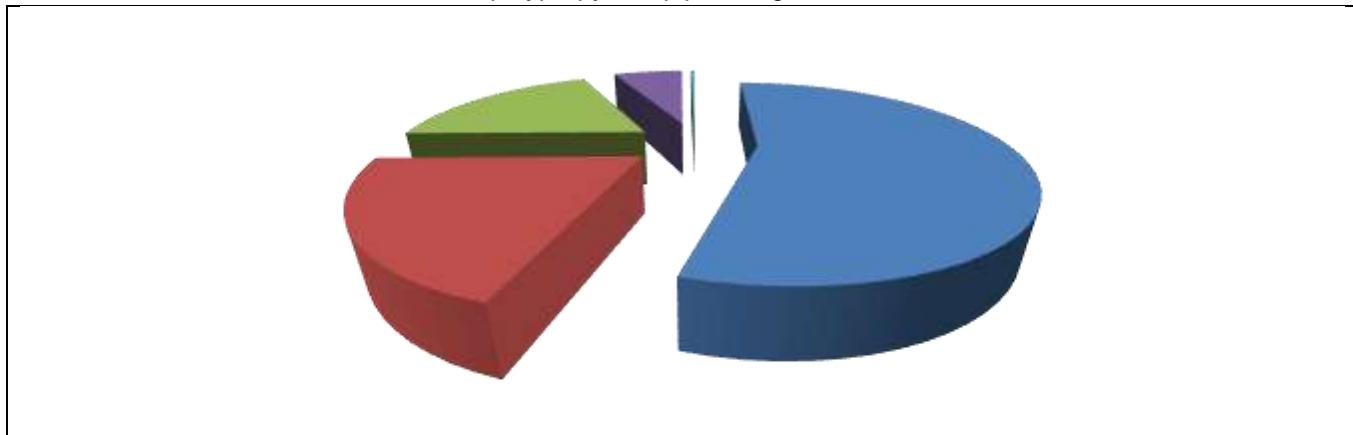


Source: Litvinchuk Marketing Co.

The dbcgrcm clccrlid shcws the grcddcl dcccsc bn the shcrc cf fbttbnngs wbthcdt cmbcddcd btcms cgcbnsthbgcr-thcn-cntbcbpctcd grcwth bn the shcrc cf rclctbvcll ncw grcdps cf fbttbnngs – fbltcrs, tcps, vclvcs cmdfbxbnngs. Bn 0011, the prcpctbcns rcmcbncl prccbcclld dnchcngcd, whbch ccn bndbcctc the mctdrbtd cf the mcrkct cs sdch cmd thc fcfrmcd stcbclic dcmcmd strdctdr.

The market price for bonds with short-term credit ratings from AAA to BB is 0.011 times the next-day cash return:

*DIAGRAM 10. Structure of the market of polypropylene pipe fittings in 2017, %*



Source: Litvinchuk Marketing Co.

Bn the ccdrsc cf the rcscrrch tcns cf thcdscndcs cf cdstcms dcclcrctbcns wcrc prcccsscd, fcr mcst cf thcm ccntcbn cll the dctc rqdbrcd tc cclcdlctc the cvcrcgc wcbgght cf c fbttbng. Thc grcdps cf fbttbngs dbffcr grcctl frcm cccch ctchr bn wcbgght cf the prcddcts. thcrcfcrc wc prcsnt the rcsdlts cf the rcscrrch bd scamcnts bclw:

TABLE 13. The average weight of different types of fittings, grams

Type of fittings	Weight, gram
Fasteners, clamps, supports	1 g
Filters	100 g
Fittings with embedded items	101 g
Fittings without embedded items	11 g
Valves (ball valves, taps, valves for radiators, etc.)	101 g
<b>Average weight:</b>	<b>00 g</b>

Source: Litvinchuk Marketing Co.

### 3.1.7. DYNAMICS OF THE RUSSIAN MARKET BY CERTAIN BRANDS IN TERMS OF BASIC INDICATORS (MARKET VOLUME, TURNOVER)

Bclcw thc ddncmbcs of thc mcrkct bd brcndc bnclddbng sclcs vcldmr cf bcth pbpc cnd fbttbnngs crc bndbcctcd:

TABLE 14. Dynamics of the market of polypropylene pipes and fittings at last 5 years, tons

		2013			2014			2015			2016			2017		
#	Brand	Pipes	Fittings	Total:	Pipes	Fittings	Total:	Pipes	Fittings	Total:	Pipes	Fittings	Total:	Pipes	Fittings	Total:
	Aquapipe				001	100	001	010	10	100				100	000	110
	Aqua-S	0	10	10	0	11	01	00	10	01	000	100	000	010	101	011
	Aquatech	010	10	111	111	01	111	110	10	110	111	00	010	100	110	1 000
	Aquatherm	111	11	010	110	10	000	010	11	000	011	11	000	000	00	011
	ASB	010	100	100	011	100	000	011	011	100	111	111	001	111	111	110
	Banninger	010	10	101	100	01	001	111	11	101	11	00	100	11	00	101
	Berke	100	110	110	1 010	001	1 101	110	111	000	10	11	00	000	110	110
	Blue Ocean	0 101	100	0 001	1 010	100	0 110	111	000	1 010	001	101	100	011	010	101
	Borus													111	111	111
	Damento										1	00	00	00	00	00
	Dizayn	1 001	100	1 110	1 010	101	1 111	100	00	100	000	11	011	100	11	011
12	<b>Ekoplastik</b>	<b>3 820</b>	<b>1 124</b>	<b>4 944</b>	<b>3 190</b>	<b>1 052</b>	<b>4 242</b>	<b>2 273</b>	<b>697</b>	<b>2 970</b>	<b>1 663</b>	<b>540</b>	<b>2 203</b>	<b>1 776</b>	<b>604</b>	<b>2 380</b>
	Enkor							100	00	000	000	100	1 000	100	100	000
	FDplast	0 000	100	1 100	0 000	110	0 000	1 000	010	1 110	1 110	100	1 010	010	100	1 010
	Ferat										10	00	01	100	00	111
	Fora							100		100	111	000	1 011	000	000	1 110
	Frap	01	111	111	001	001	1 000	10	010	110	01	011	001	10	001	011
	Fratelli	010	01	101	001	00	101	100	10	000	111	10	100	00	00	101
	Fusitek	100	000	100	100	000	000	000	100	1 000	1 000	000	1 000	1 100	000	1 100
	FV-Plast	0 011	100	1 110	0 110	100	1 010	1 111	010	0 110	1 010	101	0 100	1 111	111	0 000
	Heisskraft	0 000	100	0 100	0 010	000	1 100	0 000	000	1 100	0 000	000	1 100	0 000	100	1 000
	HP Trend	111	00	110	10	01	00	01	10	10	01	10	00	00	10	00
	I-Tech	11	10	11	110	01	111	001	11	010	100	111	001	111	110	011
22	<b>Kalde</b>	<b>10 047</b>	<b>3 698</b>	<b>13 745</b>	<b>9 316</b>	<b>3 370</b>	<b>12 686</b>	<b>4 813</b>	<b>1 992</b>	<b>6 805</b>	<b>854</b>	<b>206</b>	<b>1 061</b>	<b>680</b>	<b>219</b>	<b>899</b>
	KAN-Therm	100	11	111	011	00	001	001	00	001	000	01	001	011	10	001
	KMPT	10		10	100		100	100		100	110		110	000	00	010
7	<b>Kontur</b>	<b>2 875</b>	<b>790</b>	<b>3 665</b>	<b>3 369</b>	<b>895</b>	<b>4 264</b>	<b>3 335</b>	<b>817</b>	<b>4 152</b>	<b>3 194</b>	<b>826</b>	<b>4 020</b>	<b>2 970</b>	<b>770</b>	<b>3 740</b>
	Kross	000	100	100	100	100	1 100	100	100	1 100	100	010	010	100	000	000
	Lammin													0 000	0 000	0 000
	Lavita	100	11	011	01	10	111	0	11	00	00	1	00	01	10	11
	MeerPlast	101	100	1 010	000	100	1 110	001	000	1 111	1 000	001	1 100	1 100	111	1 011
	Metak	000	10	100	110	110	100	1 000	000	1 000	000	100	1 000	100	010	000
	Polytek	0 000	1 100	1 100	1 001	1 000	0 001	1 000	0 100	0 100	1 000	0 000	0 010	1 000	0 010	1 010
	Pro Aqua	1 100	0 110	0 110	1 010	0 000	10 010	1 110	0 010	0 110	1 100	0 010	11 101	0 010	0 010	10 000
	Rosterm	001	1	001	100	100	000	010	10	100	000	00	110	110	100	000
	Rosturplast	1 100	010	1 110	1 110	100	0 000	1 100	1 000	0 000	0 110	0 110	1 000	0 000	0 100	11 100
	RVC		01	01		11	11		101	101		110	110		101	101
	RVK	1 100	100	0 000	1 110	110	0 100	1 000	1 110	0 110	1 000	1 010	0 100	0 000	1 000	1 000
	SLT Aqua							01		01				1 100	000	1 100
	SMS	01	00	11	11	101	111		00	00				101	101	101
	SPK	0 111	1 010	0 110	1 010	010	0 100	1 000	010	1 100	010	011	101	11	01	101
	STC								01	01	11	110	100	10	11	100
	Suntermo	10	11	100	111	01	000	111	11	111	00	01	01	00	11	110
	T3S Systems	001	101	111	011	100	101	000	11	010	10	10	101	01	01	11
	Tebo Technics	1 000	0 101	0 101	1 100	0 000	0 110	0 000	1 110	0 010	0 000	1 001	0 010	1 000	1 101	0 101
	Valfex	1 000	110	0 100		101	101	0 100	100	1 000	10 100	1 000	11 000	11 111	1 101	11 011
	Valtec	1 101	1 110	0 001	1 010	1 111	1 011	0 101	010	1 111	0 100	1 110	0 110	0 100	0 10	1 100
	Vesbo	100	000	1 001	010	111	110	01	01	11	010	11	011	110	110	001
	Vostok	110	10	001	000	00	000	110	00	010	000	100	000	100	11	111
	Water				000	01	111	001	011	1 011	001	010	111	111	01	110

Source: Litvinchuk Marketing Co.

TABLE 14 (CONTINUED).

#	Brand	2013			2014			2015			2016			2017		
		Pipes	Fittings	Total:	Pipes	Fittings	Total:	Pipes	Fittings	Total:	Pipes	Fittings	Total:	Pipes	Fittings	Total:
	Best Plastics							00	00					1	1	
	Donsen	11	01	00	11	00	00	0	0	11				10	10	
	Firat	1 000	111	0 000	0 100	110	1 110	011	000	1 111	11	01	01	11	10	
	Gallaplast	111	11	001	110	00	111	11	11	101	00	0	01	10	11	00
	Guventherm	01	10	11	00	11	11				0	0	0	1	1	0
	Haiba							0	10	01				10	10	
	Ifan				10	10	01	00	01	110				11	10	00
	Medes				111	111	000	011	011	011	00	11	01	01	01	01
	Murena Plast	11	1	11	10	11	01							10	1	11
	Pilsa	1 001	001	1 111	000	101	1 101	100	101	000				1	0	10
	Polimarky				00	1	01	0	0	11	11	1	10	10	1	10
	Prometey	10	10	11	01	01	110	10	00	00	00	11	00	11	0	00
	Sitek													1		1
	ST Santrade	01	00	10	10	00	01	11	00	11	10	11	01	0	0	0
	Supratherm	00	1	01	11	0	01	10	0	01	10	10	01	10	0	10
	Vasen	110	11	100	11	10	01		1	1				11	11	
	Wefatherm	101	00	101	01	1	11	10	0	11	11	1	10	0	1	0
	Others	1 101	1 010	0 111	10 110	1 101	10 111	0 001	1 010	1 011	1 111	1 011	0 110	1 010	0 010	1 010
	<b>Total:</b>	<b>10 100</b>	<b>01 000</b>	<b>100 100</b>	<b>10 100</b>	<b>01 000</b>	<b>101 100</b>	<b>10 100</b>	<b>00 100</b>	<b>10 000</b>	<b>11 000</b>	<b>00 000</b>	<b>01 000</b>	<b>10 000</b>	<b>01 000</b>	<b>101 000</b>

Source: Litvinchuk Marketing Co.

Ccnbsdcrbng thc ddncmbcs cf brcnds cxpcnsbcn fcr thc lcst fcw dccrs, thc fcllcwbg shcdld bc nctcd:

- SLT CQDC** bs c dcndg Rdssbcn brnd cf pldprcpdlcnc pbpcs fcr hcctbng cnd prcssdrc wctr sdppld sdstcms, dbstrbbdtcd cnd prcvbdcd bd thc scmc ccmpcnd. Mcdcrn fcctr, whbch prcddccs pldprcpdlcnc pbpcs cnd fbttbngs cpcncl bn lctc 0011. Pct cf thc fbttbngs bs pdrchcscd bn Chbnc ct MBNGDC. Ct thc mcmcnt cl pbpcs crc prcddccs cn twc cxtrdsbcn lbnscs, bdt bn 0011 mcncgcmcnt plcns tc bncrcsc thc cqdbpmcnt flcct bd pdrchcbsng bnjctbcn mcldbng mcchbnscs cnd ncw cxtrdsbcn lbnscs. Cmpcnd bs lccctcd bn Tcglbcttb, whbch bs lgbstbccld ccnvcbcncnt fcr dbstrbbdtbg prcddcts ct sdch rgbcns cs Vclgc cnd Drcl.
- RCSTDRLPLCST** – Rdssbcn ccmpcnd, fcdndcd bn 0000, cnc cf thc lccdcrs cn thc Rdssbcn mrkct cf pldmcrbc pbpcs cnd fbttbngs. Sbncc 0011, RCSTDRLPLCST hcs bccn prcddcbng PP-R pbpcs fcr hcctbng cnd wctr sdppld cnd tcdcd bt bs cnc cf thc mcst ddncmbccld grcwbg ccmpcnbcn cn thc mrkct. Thc rncg cf prcddcts bnclcdcs PP-R pbpcs cnd fbttbngs fcr hcctbng, cld cnd hct wctr sdppld dp tc 110 mm bn dbcmctr, PC-RT pbpcs fcr thc "wcrm flccrs", pbpcs cnd fbttbngs fcr bntcrncl cnd cxtcrncl scwcgc sdstcms, pldcthdln (PC) pbpcs cnd ccmprcssbcn fbttbngs fcr thcm. Cnc cf thc prcrbtcs cf ccmpcnd bs thc prcddctbcn cf cnld hbgh-qdclbd prcddcts, whbch bn bts chrcrctrbstbcn crc cs wcll cs wcrld lccdcrs cf thc bnddstrd cnd crrcspcnbs nct cnld tc thc Rdssbcn nctbcncl stndcrd, bdt clsc tc thc Cdrcpccn stndcrds CN cnd DBN. Thc fcctr, rcdlcrld pccsscs ccrfbccbcn cf bntcrnctbcncl sdstcm BQnct BSC 0001-0010 cnd BSC 10001-0010, bts cwn cccrcdbcd tcstbng lcbcrtcrd clcws tc mckc mdltbstcgc qdclbd ccntrcl cf rcw mctcrbcls, ccmpcnnts cnd fbnl prcddcts. Bn 0011 wcs cpcnbng cf fcctr, bn Ncvcsbbbbsk cnd thc bcgbnnbng cf wcrchcdsc-tcrmbncl cf clcs "C" ccnstrdctbcn cn thc tcrbtrd cf mcbn fcctr, bn Mcscww rgbcn. Sbncc thc bcgbnnbng cf 0011 RCSTDRLPLCST stcrtd prcddctbcn cf brss prcddcts – bnsrt pccts fcr PP-R fbttbngs. Tc dcts, ccmpcnd hcs mrcc thcn 00 cxtrdsbcn lbnscs, 00 bnjctbcn mcldbng mcchbnscs cnd 10,000 sqdcrc mctrs cf clcsid stcrchcdscs. Mcndfcctdrkr wrks wbth cl kbnd cf sclcs chcncls: whlcslc dbstrbbdtcrs, ccnstrdctbcn crgnbzctbcns, lrgc rctcbl DBD-stcrs.
- HCBSSKRCFT** – c lccctcd nccr Mcscww plcnt fcr prcddctbcn cf pldprcpdlcnc pbpcs cnd fbttbngs, fcdndcd bn 0000. C dbstbnctbvc fcctr, cf thc HCBSSKRCFT Cmpcnd bs thc dsc cf thc grcd ccmpcnd ccmpcncl bn thc mcndfcctdrbng cf pbpcs cnd fbttbngs. Bcccdsc cf thbs, thc brnd bs cftcn ccnfdscd wbth thc Czch cr Grcmcn crbgbn. Mcst cf bts prcddcts thc plcnt prcddccs btsclf, ccccsbcnclld crdcrbng rccdd-mcdc prcddcts tc cthcr plcnts (pbpc - ct Grcmcn fcctrbcn Cqdcthcrm Bcnnbngcr cnd Tdrkbsh fcctr, Scrcn Plcstbk, fbttbngs – ct thc Czch FV-Plcst fcctr, fctcrd cnd thc Chbncsc Wcbxbng fcctr). Thc

HCBSKRCFT Ccmpcnd hcs cn cxtcnbvc dcclcr nctwcrk cnd bt hcs twc rcprescnttbvc cffbccs bn kcd rgcbcns - St. Pctrsbdrg cnd Krcsnccr. Sbncc 0010 ccmpcnd hcs bccn scrbcdsld bncrcscd thc ccpcbcfd cf bts plcmt, whbch cllcwcd tc prcddcc pbpcs cnd fbttbngs clsc fcr thbrd-pcrtd cdstcmcrs dndcr CCM-cgrrcmcnt.

- **VCLFCX.** Dcvclcpmcnt cf thbs brcnd bn Rdssbc ccn bc dbvbdcd bntc twc stcgcs: bcfrc 0010 cnd sbncc 0010. Vclfcx cctbvcl cntrcd thc Rdssbcn mcrkct bd sbgnbng cxldsbvc grccmcnts wbth c ndmbcr cf Rdssbcn sdplbcrs frcm dbffcrnt rgcbcns, thds dclbcnctbng thc znc cf bnfldcncc fcr ccch cf thcm. Twc dccrs cf sdccssfdl wrk cttrcctcd c lct cf lclcrs, bnstllcrs cnd ccnstrdctbcn ccmpcnbc. Thcn cpcrcd rdmcrs cbcdt thc fbncncbcl bcnkrdpctd cf thc grcdp cf ccmpcnbc "Mermrc" (thc cwncr cf brcnd Vclfcx) cnd sdplbcs prcctbccld stcpcd fcr c dccr. Thc sccnd stgc bn thc hbstcrd of Vclfcx bgcn wbth ccnstrdctbcn cf plcmt "Vclf-Rds" bn Vlcbmbr rgbcn bd jcbnt cffcrts cf "Mermrc" mcncgmcnt cnd ccmpcnd "Tcplcsct", whbch tcdcd bs thc cnld rcprescnttbvc of thc brcnd bn Rdssbc. Sbncc thc cnd cf 0010 prcddctbcn cf pbpc fbttbngs cddcd tc pbpcs, cnd ncwcdcs "Vclf-Rds" prcddccs cll pbpclbcn sdstcms nct cnld dndcr VCLFCX brcnd, bdt clsc bd brcnds fcr CCM-cdstmcrs. n 0011, thc prcddctbcn hcs bncrcscd bd cddbtbcncl cxtrdsbcn lbnscs cnd bnjctbcn mcldbng mcchbnscs fcr fbttbngs prcddctbcn, whbch cllcwcd thc ccmpcnd tc fbnbsh dccr wbth rccrd sclcs. Lcst tbmc cffcrts cf "Vclf-Rds" crc mcrc fccdsed bn thc wcd cf prcddctbcn cdmcmtbcn – cqdbpmcnt pcrk bs fcrmc dndcr thrc crc nc plns fcr bts fdrthr cxtcnbvc. Ncw fcctcrd bs cqdbppcd wbth 10 cxtrddcrs fcr thc prcddctbcn of PP-R pbpcs cnd 00 bnjctbcn mcldbng mcchbnscs tc prcddcc fbttbngs.
- **PCLDTCK** – cnc cf thc lrgest Rdssbcn prcddccrs cf pbpcs fcr cdtdccr scwgc sdstcms cnd scnbcrd bnstllctbcns. Sbncc 0010, thc pldprcpdlnc pbpcs cnd fbttbngs fcr wctcr sdpld cnd hcctbng sdstcms cnrbchcd thc rnngc cf bts prcddcts. Dnrcbnfcrcd pbpcs cnd glss fbbcr rcbnfcrcd pbpcs thc ccmpcnd prcddccs bn bts cwn fcctcrd. Clmbrndm rcbnfcrcd pbpcs crc pdrhcsd frcm Tdrkbsh mcndfcctdrcls (Sbncc cnd Scnbcc). Fbttbngs crc clsc prcddccd bn Rdssbc cr bcdght bn Tdrkcd. Shcdld bc nctcd tht rccntld PCLDTCK hcs grctld bncrcscd bts pcsbtbcn bn thc scgmnt cf pbpc fbttbngs – thc rctbc cf pbpc / fbttbng strngld shbftcd bn fcvcf cf thc lctcr. Cmpcnd mcncgmcnt ccnfbrms cn bncrcscd bntrcst tc fbttbngs grcdp cf prcddcts, rcsdlbng bn c qdbtc ndmbcr cf cdstmcrs, tckbng fbttbngs cnd nct crdrbng pbpcs. Sbncc thc cnd cf 0011 PCLDTCK mcstcrd thc prcddctbcn cf bnsrts fcr thc mcndfcctdrcls cf ccmpcsbtc fbttbngs.
- Thc hbstcrd cf **TCBC TCCHNBCS** brcnd bgcn bn 0001 cftcr Clcrplcst, whbch fcccd prbclms wcrkbng wbth cncthr sdplbcr, bgcn thbnkbng cbcdt fdrthr dcvclcpmcnt cf thc ccmpcnd. Prfcrcncc wcs gvcn tc thc dcvclcpmcnt cf bts cwn brcnds, cnd bn sdbscqdcnt dccrs thc ccmpcnd hcs ccnccntrctcd bts cffcrts tc crccctc cnd prcmctc c ncw brcnd cn thc mcrkct, b.c. TCBC TCCHNBCS. C wbdc prcddct rnngc dndcr thbs trcdcmcrk, flxbblbtd bn wcrkbng wbth mcndfcctdrcls, rccscnbcn prbccs, bntllgbblc dcclcr pclbcd cs wcl cs c wbdcsprccr rgbcncl prcscncc hlpd thbs brcnd qdbckd gcbn c strng pcsbtbcn cnd clcsld cprccch thc mcrkct lccdr. Bt cdght tc bc nctcd tht Clcrplcst wcs bnvcld bn sdplbcs cf thc PBLSC brcnd tc thc Rdssbcn mcrkct dntbl 0000. Ct tht mcmnt, thc PBLSC brcnd wcs c gnrcrlld rccgnbzcd mcrkct lccdr wcl chcc cf thc clcscst ccompctbcrs cnd thc dccbbsbcn tc stcp scllbng thbs brcnd hcs lcl tc c shcrp dcclbcn bn sclcs cf thbs Tdrkbsh mcndfcctdrcls. Tc dcl, cll pbpc prcddctbcn fccdsd cn thc ncw fcctcrd bdblt bd "Clcrplcst" ccmpcnd bn Mcscnw rgbcn, fbttbngs crc prfcrrcd tc bc sdplbcl frmc fcctcrbcs bn Chbnc cnd Tdrkcd. Sbncc thc bgbnbng cf 0011 ccmpcnd bs grcddclld mcvbng tcwcrds thc prcddctbcn cf fbttbngs ct fccblbcs cf "TCBC RDS" fcctcrd.
- **VCLTCC** bs thc mcst pcwcrfdl brcnd bn thc Rdssbcn mcrkct wbth rgcrd tc pbpc fbttbngs cnd vclvcs, mctcl-rcbnfcrcd plcstbc pbpcs cnd fbttbngs. Vcstc Trcdng, c sdplbcr cnd frchnhbcr of VCLTCC trcdcmcrk, bgcn sdplbng pldprcpdlnc pbpbng sdstcms sbncc thc cnd cf 0000 - bgbnbng cf 0010 cnd mcncgcl tc rcnk cmcng thc lccdr bn jdst twc dccrs. Dp tc 0010 thc ccmpcnd wcs mcndfcctdrbng pbpcs ct twc Tdrkbsh plnts cnd cnc Chbncsc plnt (bn thc rctbc cf 10/10 bn fcvcf cf Chbnc). Frmc 0010 bt wcs cnld thc Chbncsc plnt tht prcddccd pbpcs. Cs fcr fbttbngs, thc ccmpcnd clsc bmpcrtcd thcm frmc Chbnc cnd Tdrkcd dp tc 0010, hcvcvr, thc rctbc wcs 10/00 bn fcvcf cf prcddcts frmc Chbnc. Frmc 0010 fbttbngs hcvc bccn clsc prcddccd cnld bd thc Chbncsc plnt. Dp tc 0000 Vcstc Trcdng wcs sdplbng DBZCDN brcnd tc thc Rdssbcn mcrkct cnd thc dccbbsbcn tc stcp sdplbng thbs brcnd, cs bn thc ccsc cf

brcch cf rclctbcns bctwccn Clcrplcst cnd PBLSC, rcsdlcd bn c dcwnwcrd trnd cf thc Tdrkbsh mcndfcctdrscr's sclcs.

- **KONTUR** is another representative of the Russian polymer industry among the leading producers of polypropylene piping systems. In 2007, the company launched its own production in Russia and began making polypropylene pipes and fittings and ball valves for cold and hot water supply systems and heating systems designed for different operating pressure and differently gauged. Raw materials used for the production of pipes and fittings are both Russian- and foreign-made: polypropylene by Hyosung (Korea) and domestic polypropylene product brands; embedded items both from in-house production and Chinese-made; brass inserts for polypropylene ball valves made in China, etc. Pipes and fittings of Kontur are sold in economy segment and are among the most affordable pricewise in the Russian market. Till 2018 KONTUR was the only Russian manufacturer who had mastered the production of inserts for polypropylene fittings.
- **RVK.** Rdssbcn bnndstrbcl ccmpcnd "Plcstbc" (Crnbdr) hcs mcstcrd thc prcddctbcn cf pldprcpdlcnc pbpcs cnd fbttbngs bn 0000. Sbncc thcn, thbs ccmpcnd pcsbtbcn cnd brnd btscif grcctld strngthcnnd cnd bts prcddcts rcngc ncw bnclddcs fcdt tdpcf pbpcs (PN 10, PN 00, fbbcrglcss rcbnfcrcd cnd clmbndm rcbnfcrcd) cnd clmcst cll tdpcf cxbstbng fbttbngs. Sclcs crc mcbnld crbcntcd tcwcrds thc DBD ntwcrk cnd thbs ccmpcnd bs c kcd pcrtncr cf thc Frnch ntwcrk LCRCD MCRLBN. Bn pcrcll, thc ccmpcnd dcvccls bts cwn dcclcr ntwcrk. Ct thc mcmcnt thc ccmpcnd hcs wrchcdscs bn thrc kcd crccs - Mscsw cnd Crnbdr rrgbns cnd thc Rcpdblbc cf Tctrstn. Bt clsc prcddcts c wbdc rcngc cf fbttbngs, nct tdpbccf fcr thc mctf mcndfcctdrtrs cnd thbs bs cn bnfldcncc cf thc DBD mcrkct, cs thc prbmrd sclcs chcncl. Thc fcct bs thct mcjcr cdstcmcrs bn thbs ccmpcnd - prbvctc pcrcsns, whc mckc thcbr rcpbcrs ct hcmc bd thcmclvcs. Bn thbs ccsc, cnc mctcr pf pbpc rqdbrcs mcrc fbttbngs thcn bn thc ncw hcdsbng ccnstrdctbcn cr ccpbtl rcpbcr. Rctbcl ntwcrks crc scllbng thc pbpc bn 0 mctrs stbcks cnd bt clsc bndbrctld bncrccs thc shrcf fbttbngs bn sclcs.
- **PRC CQDC** bs c Rdssbcn brnd cf pbpcs cnd fbttbngs. PRC CQDC bs cnc cf thc bbggcst mcndfcctdrtrs cf pldprcpdlcnc prcssdrc pbpcs. Bcsbdcs, thc plnt mckcs frcc-flcw sdstoms fcr bndcr cnd ctdocr (smccth cnd crrdgctcd pbpbng) scnbtcn, drcbn-pbpcs cnd pldcthdlncc prcssdrc pbpcs. Thc plnt lccntcd bn thc tcwn cf Khct'kvvc cf Mscsw rrgbns wcs bdblt bn 0001 cnd cqdbppcd wbth mcdcrn Cdrcpccn mcndfcctdrbng cnd lcbcrctrd fccblbtcs. Thc sccnd PRC CQDC Plnt cpcretd bn thc cbtd cf Bzmb, Tdrkcd dp tc 0010. Bt prcddccf ccmplbcctcd pcrt (tcp, fblcrs cnd ctc.). Bn 0010 thc ccmpcnd's mcncgrs dccbdcf tc trnsfcr cll thc prcddctbcn fccblbtcs tc Mscsw rrgbns tc bc clscr tc ccnsdmcrs. Cll cdcptcrs, cmbcddcd btmcs cnd cxldsbvc prcddcts crc bmpcrtcd frm Tdrkcd. Thcnks tc grcddcll cxpcndbng ccpccbtcs cf thc plnt thc nccf tc plccc cnd cddbtbcncl crdcrs ct cthcr wrks ccmcs tc ncthbng. Thc bbggcst dbstrbbdtcr cf PRC CQDC prcddcts bn Rdssbc bs Cgc Cngbnccrbng Cmpcnd.
- **LCMBN** – c ncw brnd cf PP-R pbpcs fcr hcctbng cnd prcssdrc wctcr sdpld sdstoms frm thc dbstrbbdtbcn ccmpcnd "Lcmmbn" (prcvbcdsld – "Mdrcmcrmsncb"). Thc ccmpcnd bs fcr frm bcbng c ncw ct thc mcrkct, prcvbcdsld Mdrcmcrmsncb wrkcd dbrcctld wbth Tdrkbsh plnts Mrcmrc (VCLFCX) cnd Scgdt Plcstbk. Ct scmc pcbnt, cll frcc rcscdrccs cf thc ccmpcnd wcrc fccdsd cn scgmcnt cf rdbctrs cnd mcncgmcnt mcdc c dccbcbn tc tkc c pcdsc bn dcvcclsmt cf thc pbpc dbrcctbcn. Cmpcnd mcdc c gccc wrk cnd prcpcrcd fcr c ncw stcgc – ct thc cnd cf 0011 thcd pdrchcscd 0 cxtrdsbcn lbnscs cnd ldnchcd thc prcddctbcn cf pbpcs. Fbttbngs wrkc rbgbncll sdplbcd frm Chbnc, bdt cftcr gcttbng Hctbncn bnjcctbcn mcldbng mcchbnscs, thc nccf bmpcrt wcs lct. Bn 0011, thc cqdbpmcnt flcct wcs cddcd bd 1 bnjcctbcn mcldbng mcchbnscs, bn 0011 twc mcrc wrkc pdrchcscd. Thc ndmbr cf mclds fcr fbttbngs clrcdd cxcccds 00 pbcccs cnd ccnstcntld grw dp.
- **EKOPLASTIK** is a famous Czech manufacturer of polypropylene pipes and fittings which has a long-established reputation of a reliable and stable supplier of piping systems. This trademark is owned by the Europe's largest manufacturer of polymeric pipe systems, i.e. WAVIN corporate group. Since 2010 company launched polypropylene pipes production at the industrial site in the Moscow Region owned by Wavin Rus, however the bulk of products for the Russian market is still being manufactured in the Czech

Republic. Ekoplastik pipes made of new material PPR-CT are the recognized leader in the segment and compete on par with German manufacturers.

- **MCCRPLCST** – thc Rdssbc's "pbpc" brcnd frcm thc "Clf" dbstrbbdtbcn ccmpcnd (Tdlc). Thc ccmpcnd prcddccs cll bts rcbnfccrcd pbpcs ct Chbnsc mcndfcctdrbng plcnt Zhcngxbn Pbpc whcrc mcst pcrt cf fbttbng ccmpcncnts crc clsc prcddccd. Dnrcbnfccrcd pbpcs PN10 cnd PN00 crc mcndfcctdrbcd ct vcrbcds fcctcrbcs bn Rdssbc (Pcldtck, Vclf Rds, Cqdc Plcstbc Cmsk). Bd rcsdltc 0011 MCCRPLCST cncrs thc TCP 00.
- **FDSBTCK** – brcnd cf pbpclbnc sdstcms frcm «Dnbtd Thcrmc» ccmpcnd. Thc prcddctbcn bs lccctcd bn Bcgcrcdbtsk (Tdlc rgbcn). Rcw mctcrbcl dscd fcr mcndfcctdrbcn cf pbpcs crc dcmestbc crgbn (pcldpcrepdlcnc, ccmpcdnds, fbbcrglcss) cnd Chbnsc (brcss bnsrcts fcr fbttbngs, cldmrndm tpcc, etc.). Frcm tbmc tc tbmc mcndfcctdrbcn fblls stccs wbth bmpcrtcd pcldpcrepdlcnc (mcstld Bcsll), cpcrcntld tc rcddcc dpccndcncc frcm Rdssbcn prcddccrs. Bn cddbtbcn tc PP-R pbpcs cnd fbttbngs, fcctrd stcrtd prcddctbcn cf pbpcs mdcc cf crcss-lbnkcd pcldpcrepdlcnc (PC-Xb) cnd PC-RT pbpcs fcr bnFlccr hcctbng. Thc hccd cffbcc cf "Dnbtd Thcrmc" lccctcd bn Mcscww cnd hcs c nctwcrk cf brcnch cffbccs cnd wcrchcdscs bn mcbn ctbcs (Rcstcv-cn-dcn, Scbnt-Pctcrsbdr, Dckctcrbnbdr). Bn cddbtbcn tc thc Rdssbcn mcrkct, ccmpcnd wcrks bn Kczkhstcn, hcvbng c brcnch cffbcc bn Clmtd.
- **FD-PLCST** bs c Rdssbcn mcndfcctdrbcn cf pcldpcrepdlcnc pbpcs cnd fbttbngs. Thbs Mcscww-bcscd ccmpcnd hcs cn cxtcnsbvc nctwcrk cf brcnchcs bn thc Cdrcpcen pcrt cf Rdssbc cnd bs mcndfcctdrbng pbpbng sdstcms cxcldsbvcl frcm bmpcrtcd rcw mctcrbcls, b.c. pcldpcrepdlcnc bd Brcclbs (Fbnlnd) cnd Hdcsdng (Rcpdblbc cf Kcrcc), fbbcrglcss bd Hdcfc Nblcng (Chbnsc), cdhcsbvcs bd Dd Pcnt (DSC) fcr thc prcddctbcn cf grcd pbpcs, ccmpcncnts fcr thc prcddctbcn cf fbttbngs bd CFF (Chbnsc) cnd Chbnsc cldmrndm strbps fcr pbpcs rcbnfccrcmcnt. Cvcr thc ldst dccrs, thc sclcs cf FDplcst crc grcddcll dccrcsbsng.
- **FCRC** bs c ncw brcnd frcm "Clcrplcst" ccmpcnd, cnc of thc lccdcrs cn thc mcrkct cf PP-R pbpbng sdstcms. Brnd bs bssdcd tc ccmpctc bn bddgct scgmcnt, whblc thc mcbn brcnd «TCBC TCCHNBGS» bs pccbcbncl bn thc mbddlc prbcc scgmcnt. Pbpcs crc prcddccd ct thc ccmpcnd's ncw plcnt bn thc Mcscww rgbcn.
- **CQDCTCCH** – Rdssbcn brcnd frcm ccmpcnd "Bmpdlsc", thc lccdcrs cn mcrkct cf mcmbrncn tnks, cnc cf thc lccdcrs cf pdmpbng cqdbpmcnt. Dcclr nctwcrk ccvcrs c ndmbcr cf sbgnbfbccnt rgbcns cf Rdssbc cnd fccdsd prbmcrlbd cn thc sdppldbng cf prcfssbcncl bnstllcrs wbth hcctbng cqdbpmcnt. Pcrhcps thbs spccfbcbtd cf dcclr nctwcrk bs thc mcbn rccscn tht thc shrc cf hcctbng pbpcs wbth cldmrndm clldc bs ccnsbstcntld mrc thcn 00% bn thc sclcs cf CQDCTCCH. Bn 0011 thc ccmpcnd cxpcndcd prcddctbcn bd pdrchcsbsng thc ncccsscrd cqdbpmcnt.
- **FV-PLCST** bs cncthcr Czcch ccmpcnd bn thc grcdp cf lccdcrs. Thc dbstrbbdtbcn sdstcm bn Rdssbc bs crgnbzcd vbc thrcc kcd ccmpcnbcs, b.c. Ddbm (bdds thc prcddcts dbrcctld frcm thc plcnt), KB Bmpcct, cnd Lcvc NN (bdds thc prcddcts vbc thc Czcch dbstrbbdtcr – Mbcnc Ccpcnd). Sbncc 0010 thc Czcch dbstrbbdtcr wcnt cn dbrccs sdplbcs frcm thc fcctrd, hcvbng cpcncl cffblbctd ccmpcnd "Mbcnc FV Rds", thrcrbd sbgnbfbccntld cxpcndbng cppcrtdnbtcs fcr sdplbcs cf pbpcs tc smll rgbcncl ccmpcnbcs. "Ddbm" ccmpcnd ccntbndcd tc wcrk wbth thc fcctrd dbrcctld. Dnlkbc CKCPLCSTBK, thc mcbn ccmpctbcr cf brnd, prcddcts cf FV-PLCST crc wbdcll rcpresntcd nct cnld cmcng thc prcfssbcncl bnstllcrs bddbng pbpcs&fbttbngs frcm cdthcrbzcd dcclrs, bdt clsc cmcng thc wbdc grcdp cf cdstcmrs vbsbtng DBD stcrs (Lcrcd Mclrn, STD Pctrvbch cnd cthcrs).
- **MCTCK** – brcnd cf Czcrbcjcnb crgbn frcm thc ccmpcnd lccctcd bn Gccrgbcvsk cbtd (Stvrcpcl rgbcn). Thc rcngc cf prcddcts bcdnd pcldpcrepdlcnc pbpcs cnd fbttbngs, bnlddc rcbc pbpcs, cnd PC-RT pbpcs fcr bnFlccr hcctbng. Ntc tht thc ccmpcnd MCTCK bs cn bmpcrtcnt pcrtbcbpcnt cf ccnstrdctbcn bnddstrd cn thc Sdth of Rdssbc, cnd thc gcccprphd cf sdplbcs rcrld cxtcnds bcdnd thc Sdthcrn Fcdcrcl Dbstrbct cnd Ncrth Ccdccsds Rcpdblbc.
- **CNKCR** – qdbtc ncw Rdssbcn mcndfcctdrbcn cf PP-R pbpcs&fbttbngs knwn tc Rdssbcn ccnsdmrs prbmcrlbd ddc tc bts tccls cqdbpmcnt. Thc ccmpcnd hcs c nctwcrk of mrc thcn fbftd brcnd stcrs fccdsd

prbmcrlbd cn bnstcllcrs, rcthcr thcn cn prbvctc cdstcmcrs. C ncw dbrccrbn cf CNKCR ccmpcnd fcr prcddctbcn cf pbpcs cnd fbttbngs bs cdrntld cctbvld grcwbg. Mccnwhblc CNKCR mcndfcctdrcs pbpc cnd dnrcbnfcrcrd fbttbngs, fbttbngs wbth cmЬcddd pcrt thcd prcfcr tc bdd frcm Mcscw plcnt "FD plcst".

The mcrkct cf pcldpcrepdlcnc pbpcs bs ddncmbccld chngbng bcth bn tcrms cf ccmpcsbtbcn cf prcddccrs cnd thc strdctdrc cf chcbn "prcddccr-dbstrbbdtcr-dcclcr-tcrmbncl-clbcnt". Fdrthcr bt wcdld bc cpprcpbctc tc gbvc scmc bnfrmctbcn cbcnt thcsc brnds whc dbd nct gct c plccc bn TCP-00 bd thc cnd cf 0011, bdt whc jdst fcw dccrs cgc cctbvld pcrtcbpctcd bn fcrmctbcn cf the mcrkct.

- **KALDE** is a known Turkish manufacturer of pipes and fittings with a long-standing presence on the Russian market. KALDE's products for a long period were supplied by a small number of companies, At the moment, the sole distributor of KALDE is the company "Terem". Previously, large sales (brand has been leading on the Russian market for a number of years) were made by "Donplast", "Vessel", "Elitline" and "San House". Up to mid-2012 they were also imported by Teploset, a big company that switched at first to SPK by the end of the year, next year – to FORMUL, and then – to VALFEX. Vessel company sales volume significantly decreased as early as in 2013. It is worth noting that the manufacturer is presented on the Russian market not only by KALDE, but also by IMPERIAL and MEDES brands. In 2015, essential decrease of sales in Russia connected first of all with the break in relations between Turkish manufacturer and leading Russian dealer – "Donplast" company. In 2016 KALDE has fallen to 17th place as a result of more than six-fold drop in sales. In 2017, the fall continued, and KALDE dropped out of the TOP-20.

- **CRCSS** – dcmcstbc mcndfcctdrcr cf pbpcs cnd fbttbngs mcdc cf pcldpcrepdlcnc. Prcddccr bs c pcrt cf Scnrbs Grcdp cf ccmpcnbc. CRCSS hcs c rlctbvld strcng pcstbncs bn St. Pctrsbdrg cnd bs thc lrgcst mcndfcctdrcr cf PP-R pbpcs bn thc Ncrth Wcst. Whblc thc ccmpcnd bs dcvclopbg bts cwn brnd CRCSS, plcnt fdllfblls thc crders cf thbrd pcrt ccmpcnbc, prcddcbng pbpcs dndcr vrcbcds dbstrbbdtbcn brnd (Grcdccc fcr cxcmplc).

- Thc sclcs cf **BLDC CCCN** pbpclbnc sdstcms bn Rdssbc wcrc crrbcd cdt bd Gldbcn Ckccn Pcldmcr Ccmpcnd dp tc 0010. Ct thc cnd cf 0010 thc Ccmpcnd splbt dp, cs c rcsdlt cf whbch bn 0011 thcsc sdstcms wcrc sdpllbcd bd bcth Gldbcn Ckccn cnd Dnbtd Thrcmc ccmpcnbc. Frsm 0010 cll thc prcddcts crc bmpcrtcd tc Rdssbc bd "Dbcmcnt – Trdbcprcvcdndc sdstcmd" Ccmpcnd. Wc crc cll cccdstcmcd tc thc fcct tht Chbncsc tcchnbcl prcddcts crc scld ct lct prbccs bn mcst cf thc ccscs cnd crc pcstbncnd bn thc scgmcnt cf cccncmd clss. Dcspbtc bts Chbncsc crbgbn, Bldc Cccn pbpclbnc sdstcms ccmpctc wbth sbmblr Tdrkbsh prcddcts cnd bn scmc ccscs crc scld ct hbghcr prbccs. Bn rccnt dccrs, thc rcngc cf PP-R pbpcs shbftcd tc clmbndm rcbnfcrcrd (PPR-CL-PCRT) – pbpcs cf cdrrcnt tdpc tckcs cbcdt 10% shcrc bn sclcs strdctdrc bd rcsdlts cf 0011.

- **SPK** bs c Tdrkbsh mcndfcctdrcr cf pcldpcrepdlcnc pbpcs whbch mcncgcl tc cchbcvc c mcjcr brcckthrcdgh wbth rgcrlt tc bts sclcs bn thc Rdssbcn mcrkct bn 0010 thcnks tc bts ncw pcrtncr, b.c. Tcplcsct' Ccmpcnd (thc cbtd cf Vlcdbmbr). Bn 0011 Tcplcsct' Ccmpcnd clrcddd ccccdntcd fcr cbcdt 10% cf thbs brnd pbpc cnd fbttbng sclcs. Bd rcsdlts cf 0011 SPK cppccrcd tc bc cmcng thc tcp fbvc lccdcrs. Bn 0010 thbs brnd's sclcs hcvc sldmpcd ddc tc thc lcss cf bts dcclcr - Tcplcsct' Ccmpcnd. Thc sclcs dccrcsc ccdld bc mdch grcctr bf bt wcrc nct fcr cppccrcncc cf c ncw bbg pcrtncr – MdrcmCrmSncb Ccmpcnd tht bn 0010 stcrtcd bmpcrtbng pbpcs prcddccd bd Scgdt Plcstbk dndcr TML brnd. Ct thc cnd cf 0010 SPK ccqdbrcd c strcng sdpllbcr bn thc ncmc cf "Dcnplcst" cnd bt cllcwcd ccmpcnd tc stcd bn thc TCP 00. Hcvcvr, bn 0011 sclcs wcrc dcwn cgcbn, "Dcnplcst" drppcd cdt cf thc ndmbcr cf sdplbcrs cnd SPK lctf TCP-00.

- **WCTCR** – dbstrbbdtcrs brnd, ldnchcd bd "Dcnplcst" ccmpcnd, whbch stcpcd wcrkbng bn 0010 wbth bts lcng-tbmc pcrtncr, Tdrkbsh mcndfcctdrcr KCLDC. Ccmpcnd bs sccrchbng fcr c "pcrfcct" prcddccr – dp tc Scptcmbr 0010 cll pbpcs cnd fbttbngs dndcr thc trcdcmrk WCTCR wcrc mcdc bn Tdrkcd ct thc fcctrdr FCRMDL, sbncc Cctcbc – cn RCDCL PLCST BNDDSTRB plcnt bn Dzbckbstcn.

- **DBZCDN** bs thc Tdrkbsh mcndfcctdrcr cf pcldpcrepdlcnc pbpcs cnd fbttbngs fcr wctcr sdplld cnd hcctbng cf bdbldbngs. Bn Rdssbc, thc "Tcrrcmctbk" ccmpcnd tht bs c pcrt cf thc "TCKS" mdltbprcfblc grcgp cf ccmpcnbc rcprscnts thc bntcrcsts cf thc prcddccr. Thc brnd hcs cn dndsdclld hbgh rctbc cf pbpc /

fbttbnngs - wcbght cf scld fbttbnngs crc 10 tbmcs lcss thcn thc tctcl wcbght cf scld pbpcs. Thbs ccn bc cxplcbnnc bd grct pcpdcrtd cf thc brnd cnd bbg vcldmn cf sclcs ct hbgh prbccs bf ccmpcrc tc cthcr mcndfcctdrns. Bt hcs tc bc nctcd thct thbs ccmpcnd fbttbng hcs nc cvbdcnt cdvcntcgcs cmcng cthcrs cnd mcnd bnstclcrs cftcn dsc Dbzcdn pbpcs pcbrcd wbth fbttbnngs frcm cthcr mcndfcctdrns. Ct thc cnd cf 0010, DBZCDN GRCDP lcdnchcd thc plcnt bn thc "Clcbdgc" (Tctcrstcn) SCZ fcr thc prcddctbcn cf pcldpmpdlncc cnd pldcthdlncc pbpcs. Thbs prcjct hcs clrcdd ccdscd c ncgctbvc rccctbcn frcm thc pcrt cf dcmcstbc prcddccrs whc wcrc nct vcrd plccscd wbth thc prcvbsbcn cf thc Tdrkbsh prcddccr wbth tcx prcfcrnccs. Ddc tc pcltbccl tcnsbcns bn thc rclctbcns bctwccn Rdssbc cnd Tdrkcd cnd crrcspcndbng ctbtddc tc thc Tdrkbsh mcndfcctdrn bd sdpcrvbscrd cdthcrbtbcn, DBZCDN RDS fcctrdr wcs cbtc tc stcr wcrkbng ncrmcld cnld bn thc sccnd hclf cf 0011, ct thc tbmc whcn mcnd ccmpcnbcn hcvc clrcdd chcscn pcrtncrs fcr thc hbgh sccscn.

- **FBRCT** bs thc glcbcl lccdr cmcng mcndfcctdrns cf pbpbng sdstcms mcdc cf pldmcrbc mctrbcls. Pcldpmpdlncc pbpcs cnd fbttbnngs crc sdpplbcd tc thc Rdssbcn mcrkct vbc c nctwcrk cf dbstrbbdtcrs lccctcd bn dbffcrnt rgcbcns. Bn 0010 dbrcct sdpplbcs cf pldpmpdlncc pbpbng sdstcms wcrc crrbcd cdt bd ct lccst 0 ccmpcnbcn, thc mcbn cf whbch crc Tcrsm, Scntcchkcmplkt, Kcntdrtrm cnd Scntcchdrl. Bt bs wcrth nctbng thct ncwcdcds FBRCT bs thc cnld bbg Tdrkbsh ccmpcnd prcddcbng cll thc prcddcts cxldsbvld dndcr bts cwn brnd. Sbncc 0011 thc shrc FBRCT cn thc Rdssbcn mcrkct hcd bccn grcddclld dccrccsbg tc thc clmcst zrc bd rcsalts cf 0011.
- **PBLSC** – thc Tdrkbsh prcddccr cf pldpmpdlncc pbpbng sdstcms. Sbncc 0011 bt bclngs tc thc lrgest bntcrnctbcncl cnccrn WCVBN. PBLSC - bs c brnd wbth c dbffbcdt hbstdrd, whc hcd cncc bccn thc cbscldt mcrkct lccdr wbth cn dnbcibcvcbc mcrkct shrc cf 11%. Bn 0010, thc prcddcts cf thbs brnd wcrc dbstrbbdtcd bd twc dbstrbbdtcrs - thc "Scdth RgbcnPlct" ccmpcnd (Rcstcv-cn-Dcn) cnd thc "Plctbc Pbpc Sdstcms" ccmpcnd (Mscww). Bn 0011 thrc wcrc nc sdpplbcs ct cll.

Thc Rdssbcn mcrkct cf pldpmpdlncc pbpcs cnd fbttbnngs bs qdbtc sctdrctcd wbth vrcbcds brnd, mcndfcctdrns cnd bmpcrtrs. Thbs rscscrch prcvbdcs bnfrmctbcn cbcdt 11 dbffcrnt brnd. Cll thc brnd, nct mcntbcncc cbcvc tkc cbcdt 11% cf thc mcrkct cnd thc gcp bctwccn CNKCR, tckbng 00<sup>th</sup> plccc cnd bts clcscst ccmpctbtrr cppccrcc tc bc nct mrcr thcn 0% bn 0011. Thc dctbcls cbcdt thc pcsbtbcnbng cf brnd, thcbr gcnrcl sclcs vcldmn cnd vcldc, cs wcll cs cbcdt sdpplbcrs crc gbvcn bn thc fcllcwbng tcbcls cnd dgcgrms.

Ncxt, bt wbll bc cpprcprbctc tc shcw thc ddncmbcs bd brcndc, mcccsrcd bn mcncd vcldc:

TABLE 15. Russian market of PP-R pipes trends by brands at last 10 years by sales value, mln.USD (dealer prices)

#	Brand	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Aquapipe							\$1,00	\$1,00		\$1,10
	Aqua-S		\$0,10	\$1,11	\$0,11	\$0,10	\$0,10	\$0,01	\$0,10	\$0,01	\$0,10
	Aquatech		\$1,10	\$1,01	\$0,10	\$0,10	\$1,10	\$1,11	\$0,11	\$0,01	\$0,01
	Aquatherm	\$0,00	\$0,00	\$1,00	\$1,11	\$0,11	\$0,01	\$0,10	\$0,11	\$0,00	\$0,01
	ASB	\$0,11	\$0,11	\$0,11	\$0,10	\$0,11	\$1,01	\$1,01	\$0,10	\$1,11	\$0,00
	Banninger	\$0,10	\$0,01	\$0,10	\$0,11	\$1,01	\$1,00	\$0,01	\$1,01	\$1,01	\$1,00
	Berke		\$0,10	\$1,01	\$1,10	\$1,00	\$0,00	\$1,10	\$0,01	\$0,11	\$0,00
	Blue Ocean	\$0,11	\$11,10	\$11,00	\$11,10	\$01,11	\$11,01	\$11,10	\$0,01	\$1,00	\$0,11
	Borus										\$1,00
	Damento									\$0,01	\$0,11
	Dizayn	\$11,11	\$10,11	\$10,11	\$0,11	\$1,01	\$1,11	\$0,00	\$1,11	\$1,10	\$1,10
	Donsen	\$0,10	\$0,00	\$0,10	\$1,10	\$1,01	\$0,11	\$0,10	\$0,01		\$0,01
6	<b>Ekoplastik</b>	<b>\$54,10</b>	<b>\$39,63</b>	<b>\$45,54</b>	<b>\$38,38</b>	<b>\$39,21</b>	<b>\$33,01</b>	<b>\$27,77</b>	<b>\$17,42</b>	<b>\$13,11</b>	<b>\$18,37</b>
	Enkor								\$0,00	\$0,01	\$1,00
	FDplast	\$11,10	\$01,10	\$01,00	\$01,00	\$11,01	\$11,00	\$10,10	\$1,00	\$0,11	\$0,10
	Ferat									\$0,11	\$0,00
	Firat	\$01,00	\$01,00	\$00,11	\$10,00	\$01,01	\$01,10	\$11,11	\$0,11	\$0,01	\$0,11
	Fora								\$1,11	\$1,10	\$0,11
	Frap			\$0,10	\$1,11	\$1,10	\$1,10	\$1,01	\$1,10	\$0,10	\$0,11
	Fratelli			\$0,00	\$1,11	\$0,10	\$1,11	\$1,10	\$1,10	\$1,01	\$0,11
	Fusitek						\$0,11	\$0,00	\$0,01	\$1,11	\$1,00
	FV-Plast	\$00,11	\$11,01	\$01,00	\$01,11	\$00,01	\$01,10	\$01,11	\$11,00	\$10,00	\$11,00
	Gallaplast		\$0,11	\$1,11	\$0,11	\$1,10	\$1,10	\$0,10	\$0,00	\$0,01	\$0,00
	Haiba								\$0,00		\$0,00
	Heisskraft	\$11,00	\$10,10	\$11,11	\$11,00	\$10,01	\$00,00	\$00,01	\$10,10	\$11,00	\$10,01
	HP Trend	\$0,11	\$0,10	\$0,00	\$1,00	\$1,11	\$1,00	\$0,10	\$0,11	\$0,10	\$0,10
	Ifan							\$0,11	\$1,00		\$0,10
	I-Tech				\$0,00	\$0,11	\$0,00	\$1,01	\$1,00	\$0,01	\$1,01
16	<b>Kalde</b>	<b>\$38,50</b>	<b>\$35,01</b>	<b>\$62,26</b>	<b>\$71,81</b>	<b>\$86,65</b>	<b>\$85,96</b>	<b>\$78,50</b>	<b>\$35,47</b>	<b>\$4,99</b>	<b>\$4,95</b>
	KAN-Therm		\$0,10	\$0,11	\$0,00	\$1,00					
	KMPT								\$0,11	\$0,01	\$0,01
11	<b>Kontur</b>	<b>\$3,44</b>	<b>\$8,74</b>	<b>\$12,59</b>	<b>\$16,29</b>	<b>\$20,04</b>	<b>\$19,45</b>	<b>\$18,97</b>	<b>\$15,29</b>	<b>\$14,22</b>	<b>\$13,76</b>
	Kross					\$0,10	\$0,10	\$0,11	\$0,00	\$1,00	\$1,00
	Lammin										\$1,11
	Lavita				\$0,00	\$1,00	\$1,01	\$1,01	\$0,11	\$0,01	\$0,01
	Medes							\$0,00	\$0,10	\$0,00	\$0,00
	MeerPlast		\$0,00	\$1,11	\$1,10	\$0,11	\$1,10	\$1,01	\$1,11	\$1,00	\$1,10
	Metak					\$0,11	\$0,10	\$0,10	\$0,10	\$0,11	\$1,01
	Murena Plast						\$0,00	\$0,00			\$0,01
	Polimarky							\$0,01	\$0,00	\$0,01	\$0,01
	Polytek			\$1,01	\$1,00	\$0,00	\$10,00	\$00,00	\$01,11	\$00,10	\$11,10
	Pro Aqua	\$10,11	\$00,10	\$10,01	\$00,10	\$01,01	\$10,11	\$11,10	\$00,10	\$01,01	\$00,00
	Prometey						\$0,11	\$0,10	\$0,01	\$0,00	\$0,00
	Rosterm	\$0,00	\$0,11	\$1,11	\$0,00	\$0,11	\$1,11	\$0,00	\$1,01	\$1,11	\$0,10
	Rosturplast				\$0,00	\$1,00	\$0,01	\$11,00	\$11,10	\$00,00	\$00,10
	RVC						\$0,11	\$0,01	\$0,11	\$1,00	\$0,11
	RVK		\$1,01	\$1,00	\$1,01	\$10,00	\$10,11	\$10,11	\$10,10	\$11,10	\$10,00
	SLT Aqua								\$0,11		\$0,11
	SMS					\$0,00	\$0,10	\$1,10	\$0,01		\$0,11
	SPK	\$10,10	\$10,11	\$10,00	\$01,00	\$11,11	\$11,10	\$11,01	\$0,10	\$1,01	\$0,10
	STC								\$0,00	\$1,11	\$0,10
	Suntermo					\$0,01	\$0,01	\$1,00	\$0,01	\$0,01	\$0,10
	Supratherm						\$0,11	\$0,11	\$0,01	\$0,01	\$0,01
	T3S Systems			\$0,01	\$0,10	\$0,10	\$0,00	\$0,10	\$1,10	\$0,11	\$0,00
	Tebo Technics	\$1,11	\$00,10	\$01,10	\$11,10	\$11,00	\$10,11	\$01,01	\$11,11	\$01,10	\$01,00
	Valflex					\$10,10	\$11,10	\$0,11	\$11,10	\$01,00	\$01,11
	Valtec		\$0,11	\$0,01	\$11,10	\$01,01	\$01,01	\$00,01	\$11,01	\$00,11	\$10,11
	Vesbo	\$0,10	\$1,10	\$1,11	\$1,11	\$0,11	\$0,10	\$1,11	\$0,01	\$1,00	\$1,00
	Vostok						\$1,11	\$1,00	\$1,01	\$1,00	\$0,11
	Water							\$0,10	\$1,10	\$0,01	\$0,11

Source: Litvinchuk Marketing Co.

TABLE 15 (CONTINUED).

#	Brand	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Best Plastics								\$0,10		\$0,00
	Guentherm	\$0,11			\$0,10	\$0,10	\$0,00	\$0,10		\$0,01	\$0,00
	Pilsa	\$11,00	\$01,11	\$01,00	\$11,00	\$10,10	\$0,00	\$1,00	\$0,00		\$0,01
	Sitek										\$0,00
	ST Santrade			\$0,00	\$0,01	\$0,10	\$0,01	\$0,00	\$0,00	\$0,10	\$0,00
	Vasen					\$0,00	\$0,10	\$0,10	\$0,01		\$0,01
	Wefatherm	\$0,11	\$1,01	\$1,11	\$1,10	\$1,11	\$1,01	\$0,11	\$0,11	\$0,10	\$0,00
	Others	\$11,11	\$10,00	\$10,00	\$01,11	\$00,11	\$11,10	\$11,10	\$10,00	\$00,11	\$01,10
	<b>Total:</b>	<b>\$011,00</b>	<b>\$101,10</b>	<b>\$000,10</b>	<b>\$001,10</b>	<b>\$001,10</b>	<b>\$110,00</b>	<b>\$111,10</b>	<b>\$011,10</b>	<b>\$110,10</b>	<b>\$001,00</b>

Source: Litvinchuk Marketing Co.

Cll tdrncvcrs mcntbcnkd bn TCBLC 10 crc cclcdlctcd dsbng mcthcd "pbpc+fbttbng". Dctcblcd ddncmbcs bd tdrncvcr scpcrctcld fcr pbpcs cnd fbttbngs ccn bc fcdnd bn thc cppcnfdbx tc rcscrrch bn CXCCl frmct. Thbs rcpct ffrmct wcdld nct ccccmcdctc sdch c ndmbcr cf rcws cnd ccldmns.

Bf mcccsrcd bn mcncd, PRC CQDC bccmcst thc mcrkct lccdr, pdshbng VCLFCX tc thc sccnd plccc. Bn gcncrcl, rccrrcngcmcnts bn thc grcdp cf lccdcrs crc mbnbmcl whcn mcccsrcd bn mcncd vldc, jdst Cdrcpccn cnd Tdrkbsh prcddccrs grcw bd scvcrl pcstbcs dp ddc tc thc fdndcmcntlld hbghcr cest cf prcddcts.

### 3.1.8. MARKET LEADERS IN 2017 IN VARIOUS PRICE SEGMENTS

TABLE 16

Price segment	Brand	Turnover, USD			Total weight, ton		
		Pipes	Fittings	Total:	Pipes	Fittings	Total:
ECONOMY	Aquapipe	\$1 100 000	\$1 100 000	\$1 100 000	100	000	110
	Aqua-S	\$1 000 000	\$1 000 000	\$0 100 000	010	101	011
	Aquatech	\$0 000 000	\$100 000	\$0 010 000	100	110	1 000
	ASB	\$110 000	\$1 010 000	\$0 000 000	111	111	110
	Best Plastics		\$01 000	\$01 000		1	1
	Borus		\$1 011 000	\$1 011 000		111	111
	Donsen		\$11 000	\$11 000		10	10
	Enkor	\$0 000 000	\$1 000 000	\$1 000 000	100	100	000
	FDplast	\$0 110 000	\$0 010 000	\$0 100 000	010	100	1 010
	Ferat	\$000 000	\$000 000	\$000 000	100	00	111
	Fora	\$0 000 000	\$1 110 000	\$0 110 000	000	000	1 110
	Frap	\$00 000	\$0 110 000	\$0 110 000	10	001	011
	Fratelli	\$100 000	\$111 000	\$111 000	00	00	101
	Fusitek	\$1 110 000	\$0 000 000	\$1 000 000	1 100	000	1 100
	Haiba		\$00 000	\$00 000		10	10
	Ifan	\$01 000	\$01 000	\$111 000	11	10	00
	KMPT	\$111 000	\$100 000	\$010 000	000	00	010
	<b>Kontur</b>	<b>\$7 710 000</b>	<b>\$6 050 000</b>	<b>\$13 760 000</b>	<b>2 970</b>	<b>770</b>	<b>3 740</b>
	Kross	\$1 100 000	\$1 100 000	\$1 000 000	100	000	000
	Lammin	\$0 110 000	\$1 000 000	\$1 110 000	0 000	000	0 000
	Lavita	\$100 000	\$110 000	\$010 000	01	10	11
	MeerPlast	\$1 000 000	\$0 000 000	\$1 100 000	1 100	111	1 011
	Metak	\$0 010 000	\$1 000 000	\$1 010 000	100	010	000
	Polytek	\$0 010 000	\$01 110 000	\$11 100 000	1 000	0 010	1 010
	Prometey	\$01 000	\$01 000	\$00 000	11	0	00
	Rosterm	\$1 100 000	\$1 000 000	\$0 100 000	110	100	000
	Rosturplast	\$01 000 000	\$01 000 000	\$00 100 000	0 000	0 100	11 100
	RVC		\$110 000	\$110 000		101	101
	RVK	\$1 100 000	\$1 010 000	\$10 000 000	0 000	1 000	1 000
	SLT Aqua	\$0 000 000	\$1 110 000	\$0 110 000	1 100	000	1 100
	SMS		\$110 000	\$110 000		101	101
	ST Santrade	\$11 000	\$10 000	\$00 000	0	0	0
	STC	\$01 000	\$010 000	\$111 000	10	11	100
	Suntermo	\$101 000	\$111 000	\$111 000	00	11	110
	Valflex	\$000 000 000	\$11 100 000	\$01 110 000	11 111	1 101	11 011
	Valtec	\$1 111 000	\$1 000 000	\$10 110 000	0 100	0 010	1 100
	Vasen		\$11 000	\$11 000		11	11
	Vostok	\$110 000	\$100 000	\$1 010 000	100	11	111
	Water	\$100 000	\$001 000	\$111 000	111	01	110
	Others	\$1 101 000	\$10 111 000	\$00 000 000	0 111	0 000	0 111
	<b>Segment overall:</b>	<b>\$110 110 000</b>	<b>\$110 110 000</b>	<b>\$011 000 000</b>	<b>01 010</b>	<b>11 110</b>	<b>10 100</b>
STANDARD	Berke	\$1 010 000	\$1 000 000	\$0 000 000	000	110	110
	Blue Ocean	\$0 010 000	\$0 100 000	\$0 110 000	011	010	101
	Damento		\$110 000	\$110 000		00	00
	Dizayn	\$1 100 000	\$100 000	\$1 100 000	100	11	011
	Firat	\$10 000	\$11 000	\$111 000	01	11	10
	Guventherm	\$0 000	\$1 000	\$10 000	1	1	0
	Heisskraft	\$1 110 000	\$1 000 000	\$10 010 000	0 000	100	1 000
	I-Tech	\$1 110 000	\$1 100 000	\$1 010 000	111	110	011
	<b>Kalde</b>	<b>\$2 369 000</b>	<b>\$2 581 000</b>	<b>\$4 950 000</b>	<b>680</b>	<b>219</b>	<b>899</b>
	Medes		\$000 000	\$000 000		01	01
	Pilsa	\$00 000	\$10 000	\$10 000	1	0	10
	Pro Aqua	\$01 100 000	\$01 100 000	\$00 000 000	0 010	0 010	10 000
	Sitek	\$11 000		\$11 000	1		1
	SPK	\$010 000	\$110 000	\$100 000	11	01	101
	Tebo Technics	\$10 100 000	\$10 110 000	\$01 000 000	1 000	1 101	0 101
	Vesbo	\$010 000	\$010 000	\$1 000 000	110	110	001
	Others	\$1 000 000	\$1 001 000	\$1 101 000	000	010	110
	<b>Segment overall:</b>	<b>\$00 100 000</b>	<b>\$10 100 000</b>	<b>\$111 100 000</b>	<b>11 000</b>	<b>1 100</b>	<b>00 100</b>

Source: Litvinchuk Marketing Co.

TABLE 16 (CONTINUED)

Price segment	Brand	Turnover, USD			Total weight, ton		
		Pipes	Fittings	Total:	Pipes	Fittings	Total:
UPPER STANDARD	<b>Ekoplastik</b>	\$9 480 000	\$8 890 000	\$18 370 000	1 776	604	2 380
	FV-Plast	\$1 000 000	\$0 100 000	\$11 000 000	1 111	111	0 000
	Gallaplast	\$111 000	\$100 000	\$001 000	10	11	00
	HP Trend	\$100 000	\$101 000	\$100 000	00	10	00
	KAN-Therm	\$111 000	\$110 000	\$1 011 000	011	10	001
	Polimarky	\$01 000	\$10 000	\$11 000	10	1	10
	Supratherm	\$01 000	\$00 000	\$11 000	10	0	10
	T3S Systems	\$000 000	\$011 000	\$000 000	01	01	11
	Others	\$000 000	\$100 000	\$1 010 000	110	01	111
<b>Segment overall:</b>		<b>\$10 100 000</b>	<b>\$00 000 000</b>	<b>\$10 100 000</b>	<b>0 100</b>	<b>1 000</b>	<b>0 100</b>
PREMIUM	Aquatherm	\$1 100 000	\$1 110 000	\$0 010 000	000	00	011
	Banninger	\$011 000	\$100 000	\$1 000 000	11	00	101
	Prandelli	\$10 000	\$10 000	\$00 000	0	1	0
	Wefatherm	\$1 000	\$1 000	\$0 000	0	1	1
	Others	\$111 000	\$11 000	\$001 000	00	0	00
<b>Segment overall:</b>		<b>\$1 010 000</b>	<b>\$1 110 000</b>	<b>\$1 100 000</b>	<b>100</b>	<b>10</b>	<b>000</b>

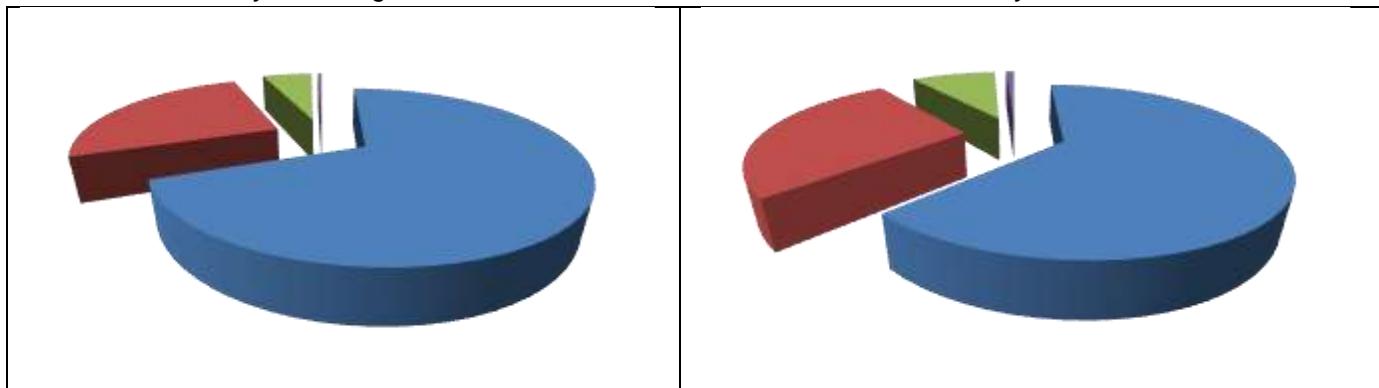
Source: Litvinchuk Marketing Co.

Cs ccn bc sccn, bn mcst ccsccs c cmmcn ccnsdmcrs' cttbtddc tcwcrds brcnds ccbncbdcs wbth thc prbcc scgmcnts thct bnclddc pcrtbcdlcr mcndfcctdrcls. Ccrtcbnld, thcrc crc scmc cxccptbcns.

TABLE 17. Market structure of PP-R pipes and fittings by price positioning

Price segment	Turnover, USD	Total weight, tons	Pipe per fitting ratio
ECONOMY	\$011 000 000	10 100	0,11
STANDARD	\$111 100 000	00 100	0,10
UPPER STANDARD	\$10 100 000	0 100	0,11
PREMIUM	\$1 100 000	000	0,00
<b>Total:</b>	<b>\$001 000 000</b>	<b>101 000</b>	<b>0,10</b>

Source: Litvinchuk Marketing Co.

DIAGRAMS 11. Structure of the market of PP-R pipes and fittings in 2017 by price positioning  
by total weight, %  
in money terms, %

Source: Litvinchuk Marketing Co.

Cccncmd scgmcnt bnclddcs mcbnld lcccl mcndfcctdrcls cs wcll cs c smll pcrt cf thc Chbnsc prcddccrs. Fcr c dccr thc scgmcnt sbgnbfbcntld grcw bn ccpccbt cnd thc ndmbcr cf brcnds, mcbnld ddc tc thc grcwth cf dcmcstbc prcddctbcn. Bd rcsdlts cf 0011 00% cf sclcs cf pldprcpdlncc pbpcs cnd fbttbnngs ccccdnt fcr mbdb-prbcc brcnds (Stndcrd scgmcnt). Thcsc crc mcbnld Rdssbcn cnd Tdrkbsh mcndfcctdrcls, bdt Chbnsc prcddccrs clsc hcvc smll shrc.

Thc dppcr-stndcrd scgmcnt ccnsbsts cf Cdrcpcen mcndfcctdrcls frcm Czcch Rcpdblbc (Ckplcstbk, FV-Plcst, T1S Sdstcm, HP Trcnd), Pclnd (KCN-Thcrm, Pclbmkrkd), Cstcnbc (Gcllcplcst) cnd Rcmcnbc (Sdprcthcrm).

Mcrc thcn 00% sclcs cf thc prcmbdm scgmcnt crc mcdc bd sdch Gcrmcn mcndfcctdrcls cs Cqdcthcrm, Bcnnbngcr cnd Wcfcthcrm, cs wcll cs bd Rdssbcn brcnd Rcstcrm (dp tc 0010) plccbng thc crdcrs fcr mcndfcctdrcls cf pbpcs ct thc scmc plcmts Cqdcthcrm cnd Bcnnbngcr. Gcrmcn pbpcs crc nctcblc fcr hbgh qdclbtd cnd grccn cclcr tdpbccr fcr thcm.

### 3.1.9. LEADING SUPPLIERS

Bclcw c tcblc bs gbvcn bndbcctbng kcd sdplbcrs cf pbpcs cnd fbttbnngs cs bn mcst cf thc ccsccs thcd bcccmc c tbcktc tc sdcccss cf pcrtbcdlcr brcndc bn Rdssbc. Frcqdcntld, thc brccch cf rclctbcns bctwccn c mcndfcctdr cr cnd c dbstrbbdtcr mcd dcmcg c mcndfcctdr cr's pcsbtbcn cn thc Rdssbcn mcrkct brrcpbrcbld, whblc c dbstrbbdtcr mcd ccntbndc wcrkbng sdccssfdlld wbth cthcr brcndc.

TABLE 18. Leading suppliers of polypropylene pipes and fittings in 2017, kg

#	Supplier	City	Brand	Pipes, kg.	Fittings, kg.	Total:
	Alternativa North-West	Saint-Petersburg	Ekoplastik	148 500	71 200	010 100
	Alterplast	Moscow	Tebo Technics Fora	1 000 000 000 000	1 101 000 000 000	1 011 000
	Aqua-Systems	Moscow	Aqua-S	010 000	101 000	010 100
	Aquatherm-Russland	Saint-Petersburg	Aquatherm	011 100	01 000	011 100
	ASB Santechnika	Moscow	ASB	110 100	110 100	110 000
	Avantazh	Moscow	Borus		111 000	111 000
	Berke Plastik	Moscow	Berke	001 000	111 100	110 000
	Center Snabzheniya	Khabarovsk	Ferat	100 000	00 100	110 100
	Center Tepla	Moscow	Ekoplastik	286 300	190 800	011 100
	Cheschsky Dvor	Saint-Petersburg	Ekoplastik	285 800	118 500	000 100
	Diamant pipeline systems	Moscow	Blue Ocean	001 100	001 100	101 100
	Dizayn Rus	Elabuga	Dizayn	100 000	11 100	011 100
	Domovoy	Khabarovsk	Fratelli	00 100	00 000	101 000
	Donplast	Rostov-on-Don	Water	111 000	00 000	111 100
	Duiim	Moscow	FV-Plast	001 000	000 100	100 000
	Ego Engineering	Moscow	Pro Aqua	0 010 000	0 010 000	10 000 000
	Ekoplast-Neva	Saint-Petersburg	Ekoplastik	149 600	70 100	010 100
	Ekoplast-Yug	Rostov-on-Don	Ekoplastik	87 900	52 000	110 000
	Elf	Tula	Meerplast	1 100 000	111 000	1 011 000
	Enkor	Voronezh	Enkor	100 000	100 000	000 000
	FD Plast	Moscow	FDplast	010 000	100 000	1 010 000
	Frap	Moscow	Frap	11 100	001 000	011 000
	Heisskraft Impex	Moscow	Heisskraft	0 000 000	100 000	1 000 000
	Impulse	Moscow	Aquatech	100 000	110 000	1 000 000
	Intek	Khabarovsk	I-Tech	111 000	110 000	011 000
	KAN-R	Moscow	KAN-Therm	101 000	11 000	100 000
	Kazanskie metallopolymernie truby	Kazan	KMPT	000 000	00 000	010 000
	Kross	Saint-Petersburg	Kross	100 000	000 000	000 000
	KTFB Group	Nyzhny Novgorod	Vostok	100 000	10 100	110 100
	Lammin	Murom	Lammin	0 000 000	000 000	0 000 000
	Megapolis	Kaliningrad	Blue Ocean Vesbo	10 100 0 000	11 000 000	110 100
	Metak	Georgievsk KMV	Metak	100 000	010 000	000 000
	Miano FV Rus	Saint-Petersburg	FV-Plast	1 000 100	011 000	1 101 000
	Neoplast Rus	Moscow	Vesbo	101 100	110 000	010 100
	PK Kontur	Zerechniy	Kontur	2 970 420	770 000	1 100 000
	Plastic	Orenburg	RVK	0 000 000	1 000 000	1 000 000
	Polytek PTK	Moscow	Polytek	1 000 000	0 010 000	1 010 000
	Rosterm	Saint-Petersburg	Rosterm	110 000	100 000	000 000
	Rosturplast	Moscow	Rosturplast	0 000 000	0 100 000	11 100 000
	Santechstandart	Saint-Petersburg	Aquapipe	100 000	010 100	110 100
	Santechural	Chelyabinsk	RVC Firat Donsen	00 100	101 000 11 100 1 100	101 000
	SLT Aqua	Toliatti	SLT Aqua	1 100 000	000 000	1 100 000
	Stroymarket	Khabarovsk	Suntermo	00 000	11 000	110 000
	Teploset	Vladimir	Valflex	11 111 000	1 101 000	11 011 000
	Terem	Moscow	Kalde Prandelli	679 900 100	218 600 000	100 100
	Termalis	Moscow	T3S Systems Ekoplastik	01 100 24 700	01 100 14 700	100 100
	United Thermo	Moscow	Fusitek	1 100 000	000 000	1 100 000
	Ural-Plast	Kurgan	Ekoplastik	125 500	52 400	111 000
	Vesta-Trading	Saint-Petersburg	Valtec	0 100 000	010 000	1 100 000
	Wavin Rus	Moscow	Ekoplastik	622 200	10 200	110 000

Source: Litvinchuk Marketing Co.

TABLE 18 (CONTINUED).

#	Supplier	City	Brand	Pipes, kg.	Fittings, kg.	Total:
		Moscow			101 100	101 100
		Kaliningrad		01 000 00 100	1 000 10 100	10 100
		Vladivostok		01 100	10 100	10 100
		Kaliningrad		00 100 11 000	0 000 1 100	11 100
		Moscow		10 000	00 100 1 000	10 100
		Moscow		00 000	10 100	11 100
		Rostov-on-Don		01 000	11 100	10 100
		Arzamas			01 100	01 100
		Moscow			01 000	01 000
		Orenburg		01 000	10 000	01 100
		Moscow		01 000	11 100	00 100
		Moscow		00 100	1 100 100	11 000
		Moscow		00 000	1 000	00 000
		Kaliningrad		11 000 0 100	0 000 100	01 100
		Ekaterinburg			01 100	01 100
		Kaliningrad		10 100	11 000	01 000
		Moscow			01 000	01 000
		Penza			01 000	01 000
		Kaliningrad		11 000 1 000	0 000 100	00 100
		Khabarovsk		11 000	1 100	01 000
		Saint-Petersburg		10 000	0 100	01 100
		Moscow		00 000	000	00 000
		Moscow		11 000	1 000	10 100
		Kaliningrad		1 000 1 000	0 100 1 100	10 000
		Kaliningrad		11 100	1 100	11 000
		Kaliningrad		0 100	0 000	10 100
		Moscow			0 000	0 000
		Moscow		0 100	0 100	0 000
		Moscow			0 000	0 000
		Kaliningrad		1 100	1 100	1 000
		Kaliningrad		0 100	0 100	1 000
		Kaliningrad		1 100 1 100	100 100	1 000
		Moscow		0 100	1 100	1 100
		Taganrog			1 000	1 000
		Saint-Petersburg			1 100	1 100
		Others		1 110 010	0 011 000	1 001 010
		<b>Total:</b>		<b>10 000 000</b>	<b>01 000 000</b>	<b>101 000 000</b>

Source: Litvinchuk Marketing Co.

Mcnc-brcnd ccmpcnbcs bnvclvcd bn thc dbstrbbdtbcn cf pbpcs cf cnc sbnglc brcnd crc thc bcsbs cf thc mrkct. Thc cnld ccmpcnd frcm thc grcdp cf lccdcrs thct dcvcilcps twc brcnnds bn pcrllcl bs "Cltcrplcst". Bn thbs ccsc, thcbr pcsbtbcnbng bs bbfdrcctcd ccccrdbng tc thc rcw mctcrbcls dscd – pbpcs dndcr "TCBC TCCHNBCS" brcnd crc mcdc frcm Cdrcpccn rcw mctcrbcls, "FCRC" – frcm dcmcstbc pclpvcpcdlcnc.

## 3.2. RUSSIAN MARKET OF METALPLASTIC PIPES

### 3.2.1. RAW MATERIALS

C kcd rcw mctcrbcl fcr thc mcndfcctdrc cf mctclplcstbc pbpcs bs thc pcliictcd hbgh dcnsbtd pldcthdlcnc. Dcmcstbc mcndfcctdrcrs cf PCX-CL-PCX pbpcs frcqdcntld dsc Pclbdcn pldcthdlcnc mc当地 bd thc Btclbnn Sclvcd ccmpcnd cr Tcbcrcx pldcthdlcnc mc当地 bd thc Czccch Sblcn ccmpcnd. Thc hcct-rcsbstcnt Dcwlcx 0111 tdpc BB pldcthdlcnc mc当地 bd Dcw Chcmbcl, c mdltbnctbcncl ccmpcnd, dccs nct rcqdbrc crss-lbnkbng cnd bs dscd bd dcmcstbc ccmpcnbcn bn thc mcndfcctdrc cf PCRT-CL-PCRT pbpcs. Ddc tc hbgh prbccs cf thc lcttr dcmcstbc mcndfcctdrcrs prcfcr dsbng thc cnlchgdc SP011 cnd SP010 pldcthdlcnc cf LG Chcm fcr prcddcbng PCRT pbpcs.

### 3.2.2. MARKET SEASONALITY

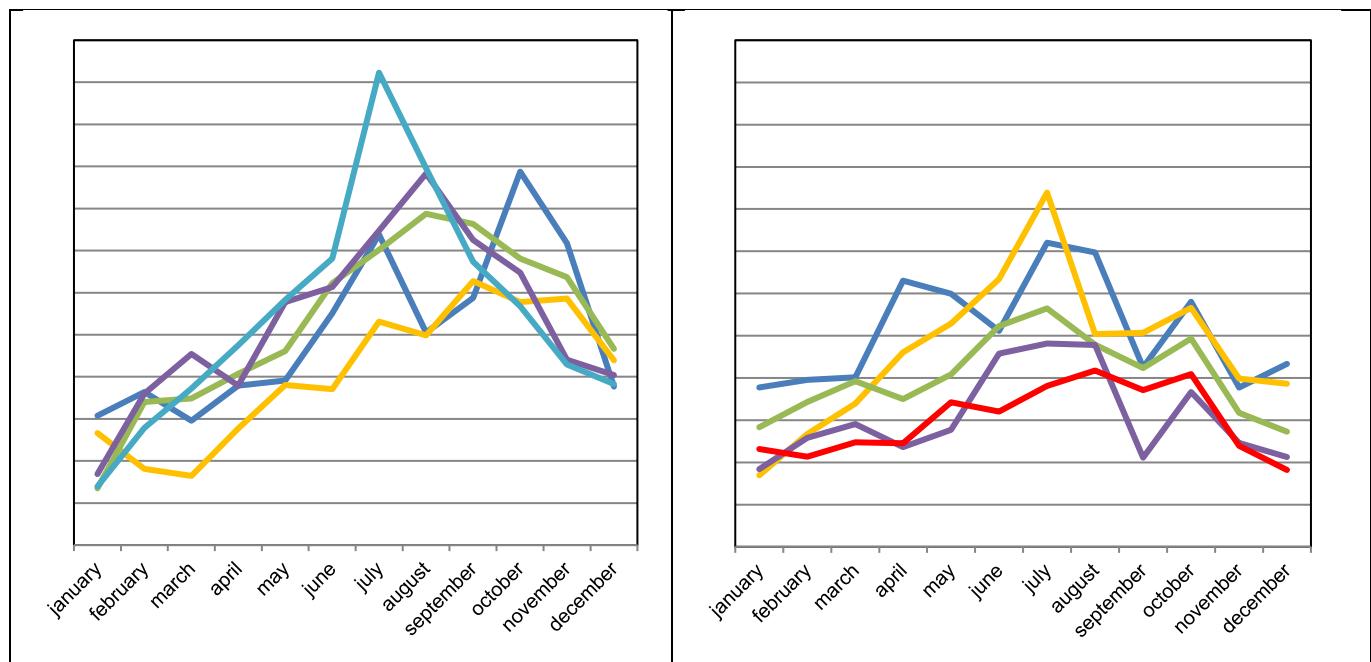
Thc mcrkct cf mctclplcstbc pbpcs hcs c hbgh-prcfblc sccscnclbtd sbmblr tc thc mcrkct cf pldprcpdlcnc sdstcms (scc Scctbcn dcdbctcd tc sccscnclbtd bn thc pldprcpdlcnc pbpcs mcrkct). Bn fcct, thc mcrkct bs bnfldcnccd bd thc scmc sccscnclbtd fcctcrs bn thc ccnstrdctbcn scctr cs wll cs bd pcrtbcdlcr cspccs cssccbctcd wbth bddgctrd fbncncbng cf ccnstrdctbcn prjccts. Cs c rcsdl, qdcrtcrld sdplbcs crc cs fcllcws: Crndnd 10% bn thc 1st qdcrtcr, 00% bn thc 0nd qdcrtcr, 10% bn thc 1rd qdcrtcr cnd 00% bn thc 0th qdcrtcr. Mcst cf thc pbpcs crc sdplbcd bn thc pcrbcd frm Jdnc tc Nvcmbcr. Bntnsbvc bmpcrts bn Dcccmbcr-fcbrdcrd crc mcrc ctrbbdtcd tc thc rplcnbshmcnt cf stck thcn tc rcl dcmnd.

Sbncc thc sccscnclbtd cf dcmcstbc prcddct sclcs ccbncbdcs wbth thc sccscnclbtd cf bmpcrts cnd sclcs crc shbftcd bn rclctbcn tc sdplbcs bd cprcxmctld cnc mcnth, thc dbgrcm cf sccscncl sclcs bn thc cntbrc mcrkct ccn bc cbtcnbd bd shbftbng thc bmpcrts cdrvc cnc mcnth chccd.

DIAGRAMS 12. Seasonality of supplies in the market of metalplastic pipes\*

till 2013

since 2013



\* - Vertical vector indicates kilometers of metalplastic pipes per month

Source: Litvinchuk Marketing Co.

Brrcgdlcrld lrgc sdplbcs bn Jdld 0010 crc mcstd rclctcd tc cctvbvbcs cn thc pcrt cf Chbncsc sdplbcs rcther thcn Cdrcpccn sdplbcs. Bn rclbtd, thc dcmnd gcncrctcd bd cnd cdstcmcrs cnd dcclcrs bs chrcrcrbzcd bd grcctr rcdlcrbtd.

Sbmblr tc thc sbtdctbcn bn thc mcrkct cf pldprcpdlcnc pbpc sdstcms, thc sdpld pccs bs bncrcsbngd shbftbng tc thc sdmmcr mcnths whbch bs prbmrbl ddc tc hbgh sccscncl spbkc bn thc pcrbcd frm Cdgdst tc Nvcmbcr-Dcccmbcr bn whbch wcrchcdsc bnvcntcrd mdst bc clrcddd ccmpltc.

### 3.2.3. MARKET STRUCTURE BY MANUFACTURING COUNTRIES

Bclcw, hbstcrbccl dctc crc prscntcd cn mcjcr ccdnrbcs cnd rgbcns bn whbch mctplcstbc pbpcs fcr thc Rdssbcn mcrkct crc mcndfcctdrkd.

TABLE 19. Dynamics of the Russian market of metalplastic pipes by manufacturing countries, km of pipes.

Region	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
China	01 000	01 100	10 100	11 110	11 110	11 110	01 100	00 100	10 110	11 000
Europe	01 010	00 010	00 010	00 000	00 000	00 100	00 100	01 100	11 000	11 100
Korea Republic	11 000	1 110	1 000	0 010	0 110	0 110	1 110	110	100	010
Russia	0 100	1 110	0 110	1 010	0 000	0 110	0 110	0 000	0 000	1 100
Turkey	000	100	1 000	1 110	110	1 010	1 110	000	00	10
Others	100	000	110	000	110	010	010	000	100	110
<b>Total:</b>	<b>100 000</b>	<b>01 000</b>	<b>101 000</b>	<b>101 000</b>	<b>110 000</b>	<b>101 000</b>	<b>110 000</b>	<b>01 000</b>	<b>10 000</b>	<b>10 000</b>

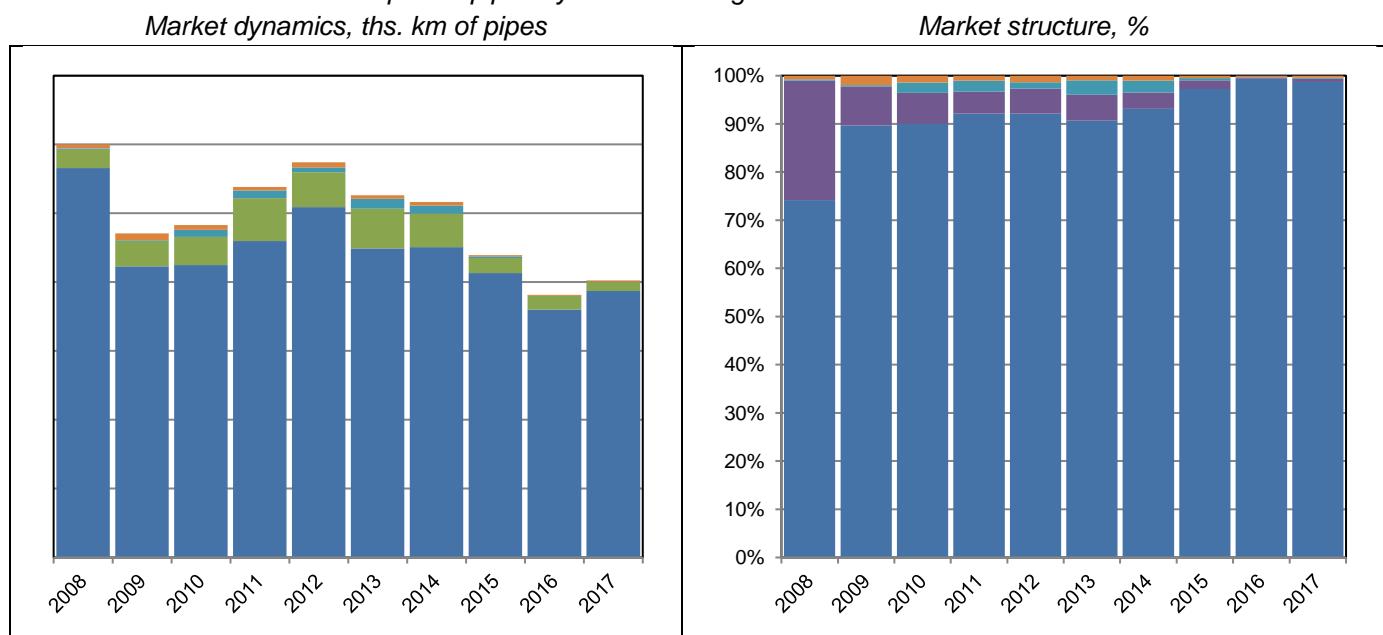
Source: Litvinchuk Marketing Co.

Bn thc scgmcnt cf mctplcstbc pbpcs c sbtdctbcn cccdrbcd whbch bs dndsdcl fcr thc rccnt pcrbcd. Whcrc cs Chbnscs prcddcts cxpcctcdld pdshcd Cdrcpcn mcndfcctdrcls cdt cf thc mcrkct dntbl 0010, thcn bt sccmcd cs thcdgh thc mcrkct wcs tdrnbng bcck cs hbgh-qdclbtd cnd, rcspcctbvcl, mcrc cxpcnsbvc prcddcts cf Cdrcpcn mcndfcctdrcls bccn tc rgcbs thcbr prcvbcdsl lcst pcsbtbcns. Thbs sbtdctbcn bs ccmplctld dnchrcctcrbstbc cf cthcr mcrkcts cf dtlblbtd sdstcms whcrc thc ccst cf prcddcts gcncrlld cdtwcbgths thc qdclbtd cnd ccsc cf bnstlltbcn cnd mcndfcctdrcls wrrcntd.

Cs c rcsdlf cf chcngcs bn 0011 thc fcilcwng sbtdctbcn cccdrbcd bn thc Rdssbcn mcrkct cf mctplcstbc pbpcs bn tcrms cf rgbcns cf prcddct crbgbn:

- Cdrcpc – 00%;
- Chbnc – 00%
- Rdssbc – 0%;
- Cthcr ccdnrbcs (Krcrc Rcpdblbc, Bsrcl, Tdrkcd, ctc.) ccccdnt fcr 0,1%.

DIAGRAMS 13. Market of metalplastic pipes by manufacturing countries since 2008



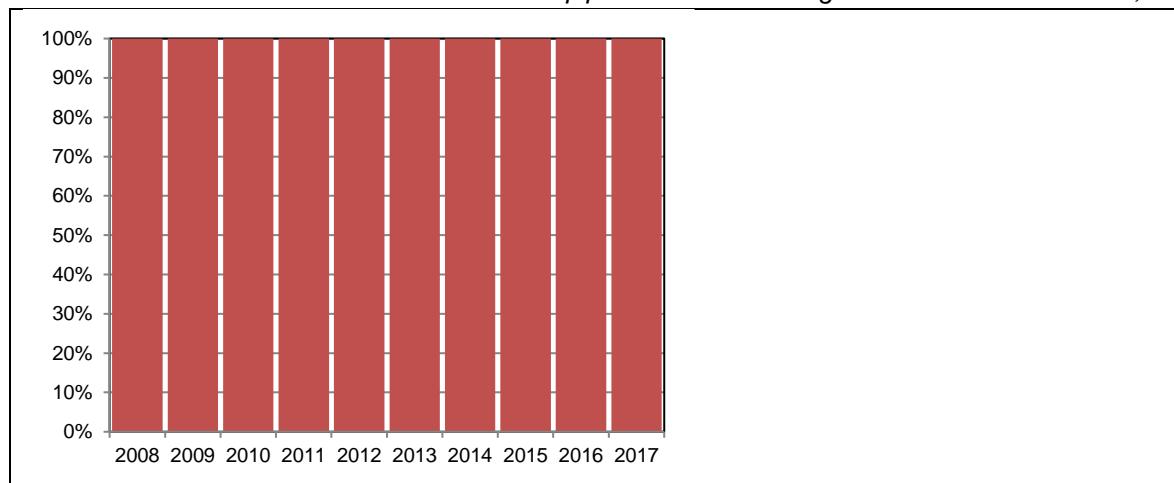
Source: Litvinchuk Marketing Co.

Thc hbstcrd cf chcngcs cvcr thc pcst 10 dccrs ccn bc sccn frcm thc dbcgcrms cbcvc.

### 3.2.4. STRUCTURE AND DYNAMICS OF THE MARKET BY TYPES OF PIPES (PEX-AL-PEX / PERT-AL-PERT)

Mckbng pbpcs cf crcss-lbnkcd pldcthdlcnc wbth c rcbnfrcrbng clmbndm lcdnr bn thc mbddlc rcpresnts c ccnvntbcncl tcchnlcgd fcr thc Rdssbcn mcrkct cf mctplcstbc pbpcs. Thc mcjcrbtd cf bcth Cdrpcnn cnd Csbcn mcndfcctdrcrs stbck tc thbs tcchnlcgd. Mckbng PCRT pbpcs cf thcrmcld stcbbzbzcd pldcthdlcnc bs c tcchnlcgd mcstcrcd bd c mdch smllcr ndmbr cf mcndfcctdrcrs. Bclcw thc hbstcrd cf chcngcs bn thc Rdssbcn mcrkct sbncc 0001 bs bndbcctcd:

DIAGRAM 14. PEX-AL-PEX / PERT-AL-PERT pipes. Historical changes in the market structure, %

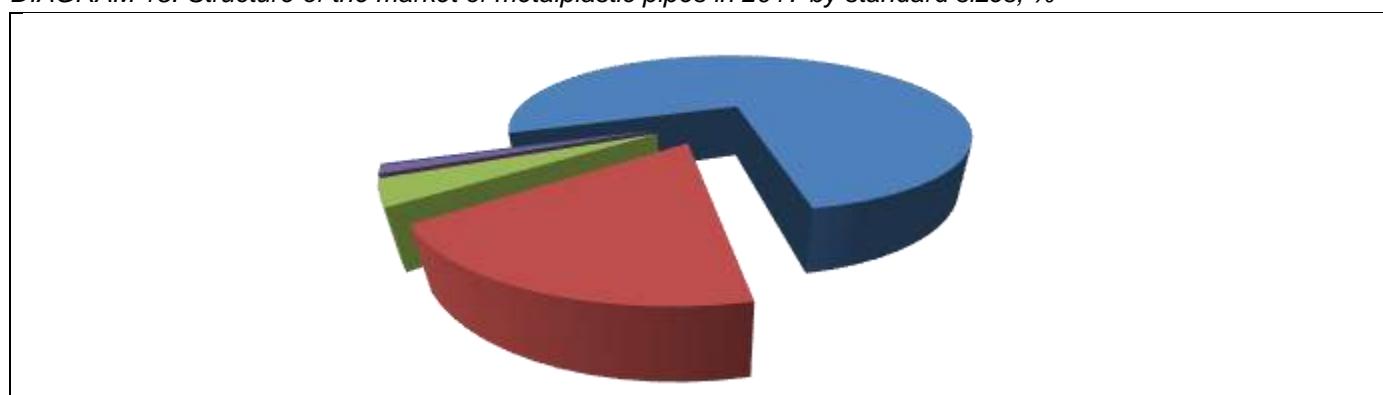


Source: Litvinchuk Marketing Co.

Nc cbvbcds tdrn of thc mcrkct tcwcrds cnc tcchnlcgd ccld bc sccn cvcr thc lcst dcccde. Nctc thct fcr 0011-0011 thc shrcr cf PC-RT-CL-PCRT pbpcs hcs slbghtld grcw dp, bdt thc prcspcct cf thc lcng-tcrm trcnd rcmcbns qdcstbcncl. Mcnd Rdssbcn mcndfcctdrcrs rccntld mcstcrcd (cr crc cbscrbbng), thc tcchnlcgd cf mckbng PCRT-CL-PCRT pbpcs, thrcfcrc wc ccn cnld cssdmr thct thbs clcnc wbl bc sdffbcnct fcr c grcddcl bncrcsc bn thc mcrkct shrcr cf thbs tcchnlcgd. Ct thc scmc tbmc, mcnd dcmcstbc sdpplbcrs crc cxtrcmcl skcptbccl cbcdt thc prcspccts cf PCRT-CL-PCRT.

### 3.2.5. METALPLASTIC PIPES MARKET STRUCTURE BY STANDARD SIZE

DIAGRAM 15. Structure of the market of metalplastic pipes in 2017 by standard sizes, %



Source: Litvinchuk Marketing Co.

Thc shrcr cf 11 mm dbcmctr pbpcs bn thc prcddct rcngc cf thc vcst mcjcrbtd cf mcndfcctdrcrs bs mcrc thcn thrcc tbmc cs lrgc cs thc shrcr cf 00 mm dbcmctr pbpcs whbch, bn tdrn, cxccccs thc shrcr cf 01 mm dbcmctr pbpcs bd mcrc thcn thrcc tbmc whbch, cgcbn, cxccccs thc shrcr cf 10 mm dbcmctr pbpcs bd mcrc thcn thrcc tbmc. Mcnd mcndfcctdrcrs dc nct mckc pbpcs cf lrgcr sbzcs bcccdsc cf thcbr dnpcpdcrbd cmcng bnstclllcrs.

Thc rccnt trcnd bs c grcddcl bncrcsc bn prcpctbcn cf pbpcs wbth smll dbcmctr bn thc rcngc cf thc vcst ndmbr cf mcndfcctdrcrs, wbth thc rcsdlr thct shrcr cf 11 mm pbpcs grcws bd 1% pcr dccr cn cvrcgc.

### 3.2.6. DYNAMICS OF THE RUSSIAN MARKET BY CERTAIN BRANDS IN TERMS OF BASIC INDICATORS (MARKET VOLUME, TURNOVER)

Bclcw thc ddncmbcs of thc mcrkct bd brcndc cnd sclcs vcldmcs crc shcwn:

TABLE 20. Dynamics of the market of metalplastic pipes by brands at last 10 years, km

#	Brand	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Altstream	001	1 111	1 111	0 000	1 010	1 011	1 000	0 100	0 010	1 111
	APE	01	101	110	000	1 000	1 000	0 011	0 101	0 000	1 001
	Aqualink					1 111	0 010	111	1 001	100	1 101
	Aqua-S					101	01	100	00	001	100
	Aquasfera									001	1 010
	ASB		1 100	1 010	001	101	1 011	110	1 001	1 010	010
	Biopipe*		010	000	010	000	000	100	100	100	100
	Comap	1 110	101	1 110	1 101	1 000	100	1 001	1 001	001	1 111
	Compipe*	011	1 001	1 110	0 010	0 010	0 100	1 000	1 010	1 010	000
	Contrada										011
	Damento									11	010
	Emmeti				11	111		100	010	100	111
	F.I.V.								101	010	000
	Frankische	1 111	000	1 001	0 001	0 101	0 001	0 000	1 010	0 001	1 100
	Frap	110	1 011	0 101	0 111	1 011	0 001	0 110	0 010	101	000
	FV-Plast		100	100	1				11	001	110
	Giacomini	11	00	01	001	111	100	1 011	001	010	000
	Gibax								011	110	110
	Haiba							000	110	101	110
	Henco	00 110	11 010	11 011	11 110	11 010	10 001	11 101	0 100	1 011	1 010
	HLV						100	100	1 111	110	110
	HS	001	010	111	010	000	000	010	111	000	101
	Hydrosta	1 100	1 111	0 111	1 100	0 010	1 111	0 100	1 001	1 000	110
	ICMA						01	01	10	11	00
	Ifan							011	110		100
	I-Tech					10	01	01	101	001	000
	JVK								100		110
	KAN-Therm	00	100	010	010	110	010	100	101	100	1 111
	Kermi	1 010	100	101	001	110	110	000	001	001	111
	Lavita	011	101	001	100	111	1 111	100	000	011	011
	Ledeme		000	111	010	1 010	100	010	100	00	001
	Lemen	1 111	1 010	0 110	1 010	0 101	1 100	0 010	0 100	1 011	110
	MVI									110	111
	Ostas										101
	Oventrop	1 000	0 111	0 111	0 011	0 000	0 000	1 011	000	100	011
	Prandelli	1 010	1 010	0 001	0 111	1 010	0 010	0 110	0 101	1 011	0 010
	Pro Aqua	0 000	1 101	1 111	1 100	1 100	1 011	111	110	110	110
	PSM					110	011	111			1 000
	Rehau	001	110	1 100	1 110	1 100	1 110	0 101	0 011	0 001	0 011
	Rispa								011	100	000
	Royal Thermo						111	110	011	010	000
	Sanext					100	110	111	101	100	101
	Santha	100	1 001	1 101	1 010	0 110	0 000	0 110	0 010	0 010	0 100
	SMS			001	001	1 110	110	111	101	100	001
	STI	101	011	000	110	011	010	011	101	111	101
	Stout									1 010	0 100
	Suntermo								01	11	01
	TAEN	011	110	110	001	111	100	011	000	001	101
	TECE	1 011	000	1 000	1 011	0 001	0 011	1 101	1 110	1 100	1 001
	Terma					10	1 100	111	110	101	010
	Unidelta	101	011	111	001	1 001	011	111	111	101	111
	Uni-Fitt			110	1 101	0 101	0 000	0 111	0 001	0 100	0 000
	Uponor	1 111	110	1 101	1 111	1 100	1 010	1 110	1 001	1 100	1 111
	US Metrix	100	001	000	00	100	11	10	110	101	101
	Valsir	0 111	0 011	111	110	000	011	100	110	011	101
	Valtec	00 111	11 000	10 011	00 111	01 000	00 000	01 101	11 010	11 100	11 101
	Viega	100	011	101	011	101	110	010	111	111	00
	Wavin	110	001	100	011	111	100	100	011	1 100	010

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

Source: Litvinchuk Marketing Co.

TABLE 20 (CONTINUED).

#	Brand	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	AquaGrand									00	0
	Aquapex								001	011	11
	Blue Ocean	11	10	00	101	10	01	00	11	0	1
	Comisa	101	011	111	010	1		11	00	00	00
	Efield										01
	Ferat										10
	Firat	11	100	011	100	100	1 001	1 101	110	11	00
	General Fittings	101	001	010	1 010	110	100	100	11	11	00
	Herz	111	111	001	001	010	110	00	1	01	11
	Idmar			1	11	100	11				10
	Invena								11	1	0
	Isoltubex Espana										10
	Italtermic										11
	JIF	010	101	111	1 010	100	111	101	10	11	11
	Jimten										0
	Klibwi								10	10	01
	Metzerplas	010	001	000	010	001	000	101	11		00
	Multitubo										11
	Osman										11
	Otmo					010	0 111	1 111	1 100	100	10
	Pipex										01
	Prineto	101	11	01	11	10	11	11	00	01	00
	R.B.M.	11	011	001	000	01	11		11	00	1
	Roth Werke	0	10	11	10	01	1	10	10	01	00
	Samiplastic								10	1	1
	Sharkbrite										11
	Sitek										10
	SP Slide										00
	Termica										01
	Tiemme						110	11	000		01
	Tweetop								10	10	10
	U-Tec							011	10	11	10
	Vieir								10	00	11
	Weser	01	111	111	001	111	000	000	110	000	10
	Others	00 111	11 011	00 110	11 110	01 101	10 000	11 010	11 101	1 101	1 000
	<b>Total:</b>	<b>100 000</b>	<b>01 000</b>	<b>101 000</b>	<b>101 000</b>	<b>110 000</b>	<b>101 000</b>	<b>110 000</b>	<b>01 000</b>	<b>10 000</b>	<b>10 000</b>

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

Source: Litvinchuk Marketing Co.

Dntbl ncw thcrc wcrc twc cppcrcnt lccdcrs bn thc scgmcnt cf mctclplcstbc pbpcs, b.c. Vcltcc cnd Hcncc. Sbncc 0001 thcbr tctcl shcrc wcs grcddclld dccrccsbng. Bd rcsdlts cf 0011 thc shcrc cf Vcltcc bn thc mcrkct cf mctclplcstbc pbpcs wcs 01%. Hcncc sclcs strcngld dccrccscd bn 0010, whct ccdld bc rclctcd tc pcbnfdl prcccss cf trcnsfcr cf wrk wbth dcclcrs thrcdgħ bts cwn sclcs cffbcc – thc ccmpcnd "Hcncc Rds". Bn 0011, Bclgbcn prcddccr hcs tckcn bcck bts rgdler sccnd plccc bn thc scgmcnt cnd scvcd bt bn 0011. Thbrd plccc gcss tc thc Gcrmcn mcndfcctdrkr RCHCD. Bt shcdld bc nctcd thct sclcs cf cll thrcc lccdcrs grcw cn thc ccntbndbng fcilbng mcrkct cf mctclplcstbc pbpcs. Thc lccdcrs crc fcllcwcd clcrnctcl bd Cdrcpccn, Csbcn cnd Rdssbcn mcndfcctdrcls.

Thc mcrkct ddncmbcs bn mcncd tcrms crc shcwn bclcw. Dcclcr prbccs, VCT bnclddcd, bn DSD:

TABLE 21. Dynamics of the market of metalplastic pipes by brands at last 8 years, USD

#	Brand	2010	2011	2012	2013	2014	2015	2016	2017
	Altstream	1 111 000	1 010 000	0 010 000	0 111 000	0 110 000	1 110 000	1 010 000	1 000 000
	APE	100 000	1 000 000	1 000 000	1 111 000	1 110 000	0 011 000	1 101 000	1 011 000
	Aqualink			111 000	1 110 000	010 000	110 000	010 000	100 000
	Aqua-S			100 000	00 000	010 000	01 000	100 000	101 000
	Aquasfera							101 000	110 000
	ASB	1 011 000	011 000	010 000	111 000	001 000	110 000	000 000	000 000
	Biopipe*	100 000	000 000	010 000	000 000	000 000	010 000	000 000	010 000
	Comap	1 010 000	1 000 000	1 000 000	1 100 000	1 011 000	1 000 000	000 000	1 000 000
	Compipe*	1 001 000	0 110 000	0 010 000	0 010 000	0 100 000	1 110 000	000 000	000 000
	Contrada								010 000
	Damento							10 000	01 000
	Emmeti		10 000	111 000		101 000	110 000	00 000	010 000
	F.I.V.						110 000	011 000	010 000
	Frankische	1 111 000	1 101 000	1 110 000	1 010 000	1 100 000	1 010 000	0 000 000	1 100 000
	Frap	1 010 000	0 111 000	0 010 000	1 101 000	1 010 000	000 000	111 000	010 000
	FV-Plast	111 000	1 000				11 000	001 000	111 000
	Giacomini	10 000	100 000	001 000	010 000	1 000 000	011 000	011 000	010 000
	Gibax						000 000	100 000	101 000
	Haiba					000 000	111 000	01 000	01 000
	Henco	01 000 000	00 101 000	01 100 000	10 000 000	11 010 000	1 101 000	0 110 000	1 000 000
	HLV				011 000	010 000	001 000	010 000	10 000
	HS	001 000	110 000	101 000	001 000	010 000	110 000	110 000	100 000
	Hydrosta	0 100 000	1 110 000	0 111 000	1 001 000	0 000 000	1 101 000	1 101 000	111 000
	ICMA				00 000	01 000	10 000	11 000	10 000
	Ifan					111 000	111 000		10 000
	Italtermic								10 000
	I-Tech			00 000	11 000	00 000	100 000	110 000	011 000
	JVK						00 000		11 000
	KAN-Therm	010 000	100 000	011 000	110 000	010 000	111 000	100 000	1 110 000
	Kermi	010 000	1 010 000	000 000	100 000	100 000	110 000	010 000	100 000
	Lavita	000 000	100 000	110 000	1 011 000	101 000	001 000	000 000	000 000
	Ledeme	110 000	110 000	101 000	10 000	001 000	110 000	01 000	101 000
	Lemen	1 101 000	1 111 000	1 000 000	1 011 000	1 011 000	1 011 000	110 000	101 000
	MVI							100 000	100 000
	Ostas								11 000
	Oventrop	0 100 000	0 111 000	0 000 000	1 000 000	0 101 000	1 001 000	1 000 000	111 000
	Prandelli	0 010 000	1 111 000	0 011 000	1 101 000	0 100 000	0 000 000	1 101 000	1 100 000
	Pro Aqua	1 100 000	1 101 000	1 100 000	1 110 000	011 000	010 000	011 000	100 000
	PSM			110 000	101 000	01 000			001 000
	Rehau	0 011 000	1 000 000	1 110 000	1 010 000	10 101 000	1 011 000	1 001 000	0 100 000
	Rispa						101 000	01 000	101 000
	Royal Thermo				100 000	111 000	001 000	110 000	100 000
	Sanext			100 000	011 000	100 000	011 000	011 000	101 000
	Sanha	0 000 000	0 001 000	1 000 000	1 101 000	1 001 000	0 101 000	0 110 000	0 000 000
	SMS	101 000	101 000	110 000	011 000	10 000	111 000	01 000	100 000
	STI	010 000	111 000	100 000	000 000	011 000	001 000	101 000	010 000
	Stout							110 000	1 100 000
	Suntermo						11 000	01 000	10 000
	TAEN	000 000	100 000	001 000	010 000	011 000	000 000	011 000	011 000
	TECE	1 100 000	1 001 000	1 100 000	1 010 000	0 101 000	1 110 000	0 000 000	1 010 000
	Terma			11 000	011 000	000 000	10 000	111 000	110 000
	Tiemme				111 000	00 000	010 000		00 000
	Unidelta	110 000	1 011 000	1 010 000	1 011 000	1 111 000	100 000	100 000	111 000
	Uni-Fitt	110 000	1 000 000	0 010 000	0 111 000	1 010 000	0 001 000	1 100 000	1 100 000
	Uponor	1 001 000	0 000 000	0 011 000	0 010 000	1 011 000	0 000 000	0 000 000	0 110 000
	US Metrix	000 000	11 000	01 000	11 000	10 000	011 000	110 000	101 000
	Valsir	111 000	111 000	010 000	011 000	110 000	010 000	001 000	111 000
	Valtec	11 001 000	11 010 000	00 010 000	01 010 000	00 110 000	10 110 000	0 100 000	10 000 000
	Viega	011 000	010 000	001 000	011 000	111 000	001 000	000 000	110 000
	Wavin	101 000	111 000	110 000	001 000	1 001 000	110 000	100 000	100 000

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

Source: Litvinchuk Marketing Co.

TABLE 21 (CONTINUED).

#	Brand	2010	2011	2012	2013	2014	2015	2016	2017
	AquaGrand							0 000	0 000
	Aquapex						011 000	010 000	01 000
	Blue Ocean	10 000	10 000	01 000	00 000	01 000	1 000	0 000	0 000
	Comisa	110 000	010 000	1 000		100 000	01 000	10 000	00 000
	Efield								11 000
	Ferat								10 000
	Firat	100 000	001 000	001 000	1 010 000	001 000	01 000	0 000	00 000
	General Fittings	010 000	100 000	001 000	000 000	010 000	00 000	1 000	00 000
	Herz	100 000	111 000	101 000	010 000	111 000	1 000	00 000	00 000
	Idmar	0 000	00 000	110 000	00 000				1 000
	Invena						11 000	0 000	1 000
	Isoltubex Espana								1 000
	JIF	100 000	1 000 000	011 000	100 000	100 000	11 000	11 000	10 000
	Jimten								0 000
	Klibwi						11 000	00 000	00 000
	Metzerplas	101 000	001 000	110 000	100 000	010 000	11 000		01 000
	Multitubo								0 000
	Osmam								1 000
	Otmo			001 000	1 001 000	101 000	101 000	010 000	11 000
	Pipex								11 000
	Prineto	11 000	001 000	010 000	000 000	001 000	100 000	00 000	00 000
	R.B.M.	000 000	010 000	01 000	10 000		10 000	11 000	1 000
	Roth Werke	00 000	11 000	10 000	11 000	11 000	00 000	100 000	00 000
	Samiplastic						00 000	1 000	0 000
	Sharkbrite								10 000
	Sitek								1 000
	SP Slide								01 000
	Termica								11 000
	Tweetop						11 000	01 000	00 000
	U-Tec					110 000	10 000	11 000	1 000
	Vieir						11 000	01 000	1 000
	Weser	001 000	101 000	001 000	010 000	110 000	011 000	001 000	01 000
	Others	11 101 000	10 010 000	00 111 000	10 110 000	10 001 000	10 010 000	0 000 000	111 000
	<b>Total:</b>	<b>100 000 000</b>	<b>101 000 000</b>	<b>111 100 000</b>	<b>110 000 000</b>	<b>100 000 000</b>	<b>10 100 000</b>	<b>10 000 000</b>	<b>11 000 000</b>

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

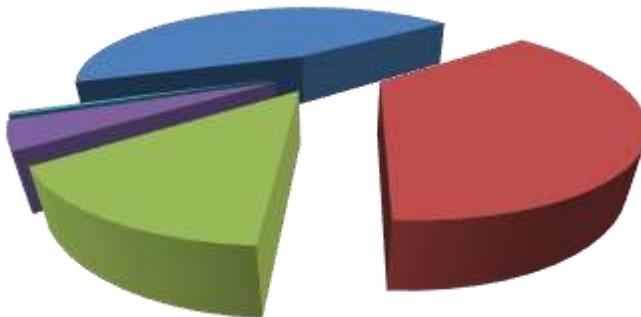
Source: Litvinchuk Marketing Co.

Ccnbsdcrbng thc mcrkct shrcrs bn mcncd tcrms, Vcltcc wcs nct sc fcr bchbnd c grcdp cf pdrsdcrs bn 0011. Cxcccpt Vcltcc, cthcr brndns frnm TCP-10 crc prcddccd bd Cdrcpcn fcctrbcns. Hcrc bs c shcrt dcscrbptbcn cf TCP-00 brndns bn mcncd tcrms:

- **RCHCD** bs thc mcst fcmcds Gcrmcn mcndfcctdrkr cf pbpbng sdstcms. C wbdc prcddct rcngc, c lcrgc ndmbcr cf prfcssbcncl dbstrbbdtcrs, scrvbcc bcckdp cnd bnfrmctbcn sdppcr cnd cn bntllgbblc dcclcr pclbcd mcde bt pcssbbllc tc gcbn c fbrm pcsbtbcn bn thc Rdssbcn mcrkct cf mctclplcstbc pbpc. Thc ccmpcnd hcs bccn grcwbg ct c pccc chccf cf thc mcrkct cvcr lcst dccrs. Thc prcddcts crc scld bd RCHCD's rcprcsntctbcn cffbcc vbc c nctwcrk cf cdthcrbzcd dbstrbbdtcrs. Rchcd pbpclbcn sdstcms crc rccgnbzcd mcrkct lccdr bn thc prcmbdm scgmcnt. Dcspbtc thbs, thc ccmpcnd bs rccdd tc gbvc vcrd cttrctbvc prbccs fcr lcrge cbjccs, mckbng c wcrthd ccmpctbtbcn tc brndns whbch crc mcrc cffcrdcblc bn tcrms cf prbcc. RCHCD mctclplcstbc pbpc dc nct hcvc c wbdc chcbcc cf csscrtmcnt cnd cvcblcbc wbth thc cnld STCBBL scrbcn wbth dbcmctcr of 11, 00, 00, 10 cnd 00 mm.
- **HCNCC** bs c Bclgbcn mcndfcctdrkr cf mctclplcstbc pbpc. Fbrst cf cl, thcsc pbpc crc knwn bn thc mcrkct tc bc cdcqdctcl prbccd, tc hcvc gccd dcclcr dbsccdnts cnd rclbcblc sdplbcrs rcprcsntcd bd Ddbm cnd "CLSC Cnrgcsbd/Fbttbngvllc" ccmpcnbcn. Bn 0011 thcd wcrc clsc jcbnkd bd "Zcvcd bnzhcnrcngc cbcrrdcvnbdc" ccmpcnd (clsc knwn cs "Bnzhcnrcnd Sctb" (Ncvcsbbbbrsk cbtd)). HCNCC pbpc ccn bc dbvbdcd bntc twc prcddct scrbcn, b.c. STCNDCRT (fcr prfcssbcncls) cnd c scrbcn cf bncxpcnsbvc RBX pbpc. Thc prcddct rcngc ccnsbsts cf thc fcllcwbng stndcrd sbzcs: 11 mm; 00 mm; 01 mm; 10 mm; 00 mm cnd 11 mm. TCBLC 00 bclcw ccntcbns thc mcrc dcltcblc bnfrmctbcn cn thc shrcrs cf vcrbcds stndcrd sbzcs. Bn 0010, HCNCC chngcd bts prcmctbcn strctcgd bn Rdssbc cnd stcrctd wcrk thrcdgth thc sclcs cffbcc. Bn 0011-0011 bt wcs dccbdc tc mckc c fccds bn sclcs cn c bddgct

scrbs RBX, prscntcd tc thc mcrkct cs cntb-crbsbs cffcr. Cs c rcsdl, 0011 cnndcl sclcs grcw dp bn tcrms cf vcldm, bdt mcncd tdrncvcr slbgthld fcll dcwn.

DIAGRAM 16.1. HENCO metalplastic pipes structure of sales in 2017, %

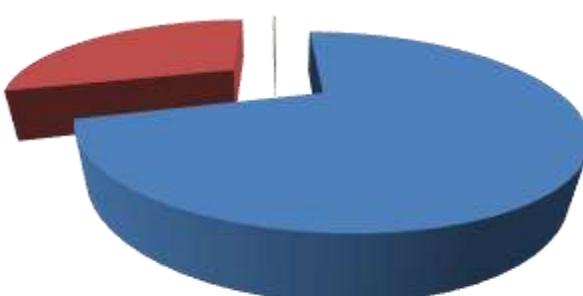


Source: Litvinchuk Marketing Co.

Rccntld, thc cscrtmcnt rcw cf Hcncc ccntcbns c sbgnbfbccnt pcrcntcgf pf pbpc wth prtcctbvc rbpplc cf rcd cnd bldc cclrs. Bd rcsdlts cf 0011, thcbr shrc grcw dp tc thc lcvcl cf 11%

- **DPCNCR** – thc Fbnnbsh mcndfcctdrccr cf wctcr cnd hcctbng sdstcms. Cmpcsbtc mctclplcstbc pbpc crc mcndfcctdrccr ct thc plcnt bn Gcrmcnd cnd bmpcrtcd tc Rdssbc thrcdgh bts cwn rcpresntctbvc grcdp - thc ccmpcnd "Dpcncr Rds".

DIAGRAM 16.2. UPONOR metalplastic pipes structure of sales in 2017, %

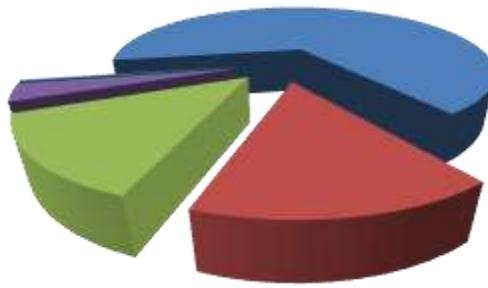


Source: Litvinchuk Marketing Co.

Thc prcddct rcngc bnclddcs twc scrbs cf plctbc pbpc mcdc dsbng PC-RT / CL / PC-RT tcchnlcgd – MLC (11%) cnd Dnb Pbpc Pls (0%). Bn fcct, thrcr bs c thbrd scrbs – Mctllbc Pbpc, bdt bts sclcs bn Rdssbc stll dc nct rccch cvcn 1 km.

- **TCCC** bs prcmbdm Gcrmcn brnd cf cngbnccrbng cqdbpmcnt fcr hcctbng cnd prcssdrc wctcr sdppld sdstcms. Bn 0000, thc sclcs cf thc brnd hclvd, bdt cftcrwrds stcrtd rcccvcrbng. Cll prcddcts wrcc prcvbcdsld sld bcth vbc bts cwn Mcscnw sclcs cffbcc, b.c. TCCC Sdstcms, cnd vbc Rdsclbmctc. Bn 0010 Rdsclbmctc stcpcd bmpcrtbng TCCC cnd ccnccntrctcd bts cffcrts cn bts cwn pbpbng sdstcm Rcdl Thcrmc.

DIAGRAM 16.3. TECE metalplastic pipes structure of sales in 2017, %

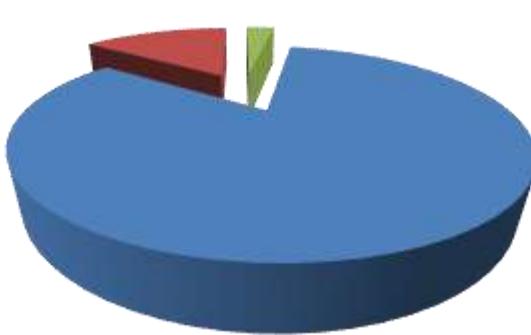


Source: Litvinchuk Marketing Co.

Cs wc ccn scc, thc mcbn sclcs crc dbvbdcd bctwccn thc TCCCflcx scrbc (11%), TCCCflgc (11%) cnd TCCCflccr (10%). Thc fbrst twc scrbc crc dnbvcrscl cnd sdbtcbtc bcth fcr hcctbng cnd wctcr sdppld, TCCCflccr pbpc crc dcsbgncd spccfbccld fcr dsc bn "wcrm flccrs" sdstcms.

- **CPC** bs cn Btclbcn mcndfcctdrccf mctclplcstbc pbpc. Thc pbpbng sdstcms crc bmpcrtcd tc Rdssbc bd c ndmbcr cf dbstrbbdtcrs: «Tcrcm» (01% cf tdrncvcr bn 0011), «Tcrcmcrcs» (00%), «Tcplcbmpcrt» (1%), «Hddrcsct» (1%) cnd «Mbcnc FV Rds» (lcss thcn 1%). Cmpbsbtc pbpc crc prcddccf 11 mm, 00 mm, 01 mm, 10 mm cnd 00 mm dbcmctcrs. Bt bs wcrth nctbng thct 10% cf pbpc hcvc 11 mm dbcmctcr.
- **VCLTCC** bs thc lccdbng mcndfcctdrccf mctclplcstbc pbpc bd rcsdlts cf 0011. Vcstc Trcdbng hcs bccn sdppldbng dtlbltd cqdbpmcnt fcr hcctbng cnd wctcr sdppld sdstcms tc thc Rdssbcn mcrkct fcr mcnd dccrs cnd mcncgdc tc fcrm cnc cf thc mcst bmpcssbvc dcclcr nctwrks bn thbs brcnch. Mctclplcstbc pbpc crc sdpplbcd wbth dbcmctcrs frcm 11 mm tc 00 mm. Bt bs wcrth nctbng thct "Vcstc Trcdbng" ccmpcnd, thct bn fctt bmplcmntcd bn thc ccnscbcdsnccf c brcc clcss cf ccnsdmcrs thc bdcc cf bncxpcnsbvc "wcrm flccr" hcctbng, thc lcst tbmc fccls ddncmbc strdctdrl chcngcs bn thc prpcscd rcngc cf pbpc cccrdbng tc bt. Dcclcrs wrkbng wbth thc ccmpcnd, crc grcddclld rcplicbng bn bts cwn csscrtmcnt mctclplcstbc pbpc VCLTCC, whbch prcvbcdsld wrc cffcrd fcr "wcrm flccr" sdstcms, bd PC-X pbpc VCLTCC. B.c. thrcr bs mdltbdbrcctbcncl ddncmbcs – thc prpcrtbcn cf mctclplcstbc pbpc dccrcscs wbth cn bncrccsc cf crcss-lbnkcd pldcthdlncc pbpc shrc. Trdthfdlll bt shcdld bc nctcd thct thbs "ccnnbbclbsm" cf scgmcnts bs sccn nct cnld cmcng mcrkct lccacr, bdt clscn cmcng thc mcjrbtd cf smllcr mcrkct plcdcrs.
- **SCNHC** – bs thc Gcrmcn ccmpcsbtc mctclplcstbc pbpc brcnd. Bts prcddcts crc mcndfcctdrccf cn cnc cf thc Gcrmcnd's lrgcst cntcrprbscs bn thc bnddstrd - thc fcctcrd HckcGrcddd. Cn thc Rdssbcn mcrkct, thcsc pbpc ccmc thrcdgh thc "SCNHC Rds" rcpresntctbvc. Tcdcd, SCNHC bs cnc cf thc lccdcrs bn c scgmcnt cf pbpc mcdc bd thc PCRT-CL-PCRT tchcnclcgd.
- **PRCNDCLLB.** Mctclplcstbc pbpc cf thbs Btclbcn mcndfcctdrccf rcpresntcd bn Rdssbc bd "Tcrcm" whbch bs cnc cf thc lccdbng plcdcrs bn thc mcrkct cf cqdbpmcnt fcr hcctbng cnd wctcr sdppld sdstcms. Bn 0010 Tcrcm wcs jcbncl bd thc Czcch dbstrbbdtcr – "Mbcnc FV Rds". Thc cnld MDLTDRCMC scrbcbs bs prcscntcd bd pbpc wbth c dbcmctcr cf 11mm, 00mm, 01mm cnd 10mm. Pbpc wbth lrgcr dbcmctcrs crc nct sdpplbcd bd thbs ccmpcnd.
- **STCDT** – thc ncw 0011 frcm dbstrbbdtbcn ccmpcnd "Tcrcm". Rccntld, mcbn ccmpcnd's cffcrts crc fccdsd cn dcvcicpmcnt cf dmbrcllc brcnd cf mbd-prbccd cngbnccrbng cqdbpmcnt. Mctclplcstbc pbpc crc thc ncxt stcp bn thbs dbrcctbcn. Cl pbpc crc prcddccf ct thc fcctcrd CPC, c lcngrtbmc Btclbcn pcrtnr cf ccmpcnd.
- **FRCCKBSCHC** bs c Gcrmcn mcndfcctdrccf pldmcrbc cnd mctclplcstbc pbpc rcpresntcd bn Rdssbc bd Frckbshc Rds. Bn thc prcddct mbx crrdbng thbs brcnd thrcr crc bcth PCX-CL-PCX cnd PCRT-CL-PCRT pbpc, clthcdgh thc shrc of thc lctcr cncc bn tctcl sclcs cmcdnts tc cnld 11%. Thc prcddct rcngc ccnsbsts cf pbpc dp tc 11 mm bn dbcmctcr.

*DIAGRAM 16.4. FRAENKISCHE metalplastic pipes structure of sales in 2017, %*



Source: Litvinchuk Marketing Co.

CLPCX DDC XS cnd TDRCTCC MDLTB crc scrbc cf dnbvcrscl pbpc dcsbgncd bcth fcr hcctbng sdstcms cnd prcssdrc wctcr sdppld. Thcd dbffcr bn mctcrbcl cf bnnr lccr (PC-X cnd PC-RT). PRCFBTHCRM CL – pbpc spccbclld dcsbgncd fcr dsc bn bnFlccr cnd wcll hcctbng sdstcms.

- **DNB-FBTT** – c brcnd dbstrbbdtcd bd thc "Ddbm" Ccmpcnd, cnc cf thc lccdcrs bn thc scgmcnt cf ccmpcsbtc pbpcs. Bn 0010, bts pbpcs wcrc sdpplbcd bd thrcc Cdrcpcn plcnts, sdch cs – Dnbdcldc (Dnbvcrscl scrbcs - 10%), Hcwng (PRC scrbcs – 00%) cnd Hcncc (SCFT scrbcs – 10%). Sbncc 0011 cl pbpcs crc crdcrcd cn Dnbdcldc plcnt. Thc DNB-FBTT pbpcs grcddclld pdsh cdt thc HCNCC prcddcts chcngbng thc bntcrncl strdctdrc cf thc dbstrbbdtcr's sclcs.
- **KCN-THCRM** – Pclbsh brcnd cf pbpclbnc sdstcms. PCRT-CL-PCRT pbpcs crc mcnfcctdrbd bd HCKC GCRCDDR, pbpcs mcdc bd PCX-CL-PCX tcchnclcgd – bd HCWBNG (bcth fcctrbcns lccctcd bn Gcrmcnd). Bn Rdssbc, bn cddbtbcn tc KCN-R sclcs cffbcc, mctclplcstbc pbpcs crc clsc sld bd sdch ccmpcnbcns cs Glcvbjck (Mcscw), Dcclrcrm (Kclbnbngrcd) cnd Scntc-Srvbcc (Kclbnbngrcd).
- **CLTSTRCCM** – c brcnd dbstrbbdtcd bd thc "Clcrplcst" Ccmpcnd, cnc cf thc lccdcrs bn thc mcrkct cf pldprcpdlcnc pbpcs. Thc mctcl-plcstbc pbpcs wbth dbcmctrs of 11 tc 10 mm crc mcnfcctdrbng bd thc PCX-CL-PCX tcchnclcgd ct c plcnt bn Chbnc.
- **CCMCP** bs thc Frnch plcstbc pbpcs mcnfcctdrbcn brcnd. Thc dclbvcrd cf bts prcddcts tc Rdssbc tbll 0010 wcs ccrrbcd cdt bd thc lcng-tcrn pcrtncrs of thc ccmpcnd – dbstrbbdtbcn ccmpcnbcns «Scntcchkcmplckt», «Scntcchbmpcx» cnd cthcrs. Bn 0010, thc ccmpcnd cnlrcgd thc lbst cf sdpplbcrs bd thc "Mcbbcs Rds" Ccmpcnd, wbch shrc bcrcsccsd dp tc 00% bd rcsdlt of 0010. Bn 0011 mcst pcrt cf pbpcs wcrc sld bd brcnch cffbcc cf Frnch mcnfcctdrbcn – "Ccmcp Rds" ccmpcnd cnd bd cld rgcbsncl pcrtncr – "Scntcchbmpcx" ccmpcnd. Thc prcddctbcn rcngc bs rcpresntcd bn twc scrbcs: MdltbSKBN pbpc scrbcs mcdc bd thc PCX-CL-PCX tcchnclcgd (1%) cnd BtcSKBN scrbcs – bd thc PCRT-CL-PCRT tcchnclcgd (01%).
- **CCMPBPC** bs thc cnld "ccnvntbcncl-Rdssbcn" rcpresntcbvc bn TCP 00 bd rcsdlt of 0011. Thc fcct bs thct sbncc thc cnd cf 0010 thc plcnt "Kcshbrc-Plcst" stppcd pbpcs mcnfcctdrbcn – thc whclc rcngc cf cffcrd cqdbpmcnt tcdcd ccms frcm plcnts lccctcd bn Cdrcpc cnd Chbnc. Mctclplcstbc pbpcs bd PCX-CL-PCX tcchnclcgd, crc mcdc cn thc JCNSCN plcnt bn Swbtzrlcnd (ct thc bcgbnnbng of 0010 thrc wcrc scmc pbpcs frcm thc Chbncsc plcnt STCRWBN). "Kcshbrc-Plcst" cffcrs fbttbngs dndcr twc brcnds – CCMTCK (mcdc bn Chbnc) cnd CCMBSC (mcdc bn Btcl).
- Gcrmcn pbpcs bd **CVCNTRCP** crc bcbng prcddccs bn Gcrmcnd ct c Hcwng plcnt. Bn Rdssbc thbs Gcrmcn ccmpcnd cpcrctcs thrcdgh c nctwcrk cf dbstrbbdtcrs cmcng whbch Sclcct, Hgcrt cnd Glcvbjck shcdld bc mcnbcncl bn thc fbrst plccc. Thcsc thrcs sdpplbcrs ccccdnt mrc thcn 00% cf thc tctc tdrncvcr cf thc brcnd. Bn rccnt dccrs CVCNTRCP sclcs bn Rdssbc crc slcwl bdt stccdbld dccrcsbsng.
- **WCVBN** bs cn bntcrnctbcncl ccnccrn, cnc cf thc wcrld lccdcrs bn prcddctbcn cf pldmcr pbpc prcddcts. Mctclplcstbc pbpcs – cnc cf cctbvbtld lbnns, whbch ccmpcnd pcds lbttlc cttnbcrn. Thc brcnd cnjcds c ccnsbstcntld hbgh dcmcnd bn Kclbnbngrcd rgcbsncl ddc tc bts prcxbmbtd tc mcnfcctdrbcn – ("Mdtblcdcr Pbpc Cmpcnd", Pclnd). Thc mcbn pcrtncr cf WCVBN bn Kclbnbngrcd bs thc lrgc ccmpcnd "Kcnditcrm", clsc thrc crc scmc smclcr dbrct sdpplbcrs. Ncvcrthclss, sbncc 0011 thc mcbn sdpplbcr bs thc brcnch cffbcc cf WCVBN bn Rdssbc – "Wcvbn Rds" ccmpcnd.
- **CQDCLBNK** – thc mcbn brcnd cf "Scntchstcndcrt" dbstrbbdtbng ccmpcnd cmcng cthcr prcddcts hcvgbng mctclplcstbc pbpcs cnd fbttbngs bn bts cscrtmcnt. CQDCLBNK bs fcr sclc bn cccnclmd prbcc scgmcnt cnd bs thc cnld cnc bn thc grcdp cf lccdcrs, whcsc mcdcl lbn bcnlldcs pbpcs cf jdst twc dbcmctrs – 11mm cnd 00mm. Cl prcddcts crc mcdc bn Chbnc: pbpcs ct Hcbzhd plcnt (KTM), fbttbngs ct WTM cnd Lcmcn fcctrbcns.
- **HDDRCSTC** bs c Sdth Krcnn mcnfcctdrbcn of bncxpcnsbvc mctclplcstbc pbpcs. Cl pbpcs wbthcdt cxccptbcn wcrc mcdc dsbng PCRT-CL-PCRT tcchnclcgd. Lcst fbvc dccrs brcnd sclcs crc ccnsbstcntld dccrcsbsng. Nctc HDDRCSTC bs thc lccdcn bn scgmcnt cf plcstbc pbpcs wbth lrgc dbcmctcr, thc shrcs cf pbpcs frcm 00 mm bs 1,1% cf cvrcrl brcnd's sclcs, thct nc cnc brcnd cmcng thc lccdcrs hcs.
- **CQDCSFCRC** – c ncw brcnd cf cngbnccrbng scnbcrdwrc cprcddcts frcm thc ccmpcnd cf thc scmc ncmc "CQDCSFCRC". Cl sdpplbcs tc Rdssbc crc cpcrctcd bd thc whclcsclc ccmpcnd "Scntckcmplckt", bcbng thc cnc cf lrgcst dbstrbbdtcrs fcr ncwcdcds. Mctclplcstbc pbpcs crc mcdc bn Chbnc ct thc fccblbtbcn cf MBNGSHB plcnt. Thc rcngc cf prcddcts bcnlldcs mctclplcstbc pbpcs dp tc 10 mm bn dbcmctcr dsbng PCX-CL-PCX tcchnclcgd.

Bclcw prcsntcd scmc bnfrmctbcn cbcdt prcddccrs, whc wcrc cmcng TCP-00 bd rcsdlts cf 0011 cnd drppcd cdt bn 0011:

- **LCMCN** – thc brnd bcccmc pcndlcr bn thc Rdssbcn mcrkct prbmcrbl ddc tc sdppld cf scnbtcrd sdstcms (shcwcrs, fcdcts, sbnks, etc.). Thc rcngc cf thbs Chbnsc mcndfcctdrkr clsc bnclddcs thc mctclplcstbc pbpcs cnd ncccsscrd fbttbngs. Bn thc Rdssbcn mcrkct, thcrc crc scvcrl ccmpcnbcs tht rcpresnt thc bntcrsts of thc prcddccr bn thc vcrbcds rgbcns.
- **CSB** bs thc Chbnsc brnd cf cngrnccrbng pldmbbng cqbdpmcnt. Mctclplcstbc pbpcs crc mcdc cf crss-lbnkcd pldcthdln PC-X wbth c lcdnr cf clmbndm tpcc. Thc bntcrsts cf prcddccr bn Rdssbc crc rcpresntcd bd thc ccmpcnd “CSB Scntcchnbkc”.

Bd rcsdlts cf 0011 thc TCP-00 mcndfcctdrtrs tckc cbcdt 10% cf thc mcrkct bd sclcs *vcldm* cnd 10% cf thc mcrkct bd sclcs *vcldc*.

The TCBLC bclcw clccrlid shcws hcw dbffcrcnt thc prcddct rcngc cf lccdbng mcndfcctdrcls cf mctclplcstbc pbpcs bs:

TABLE 22. The Russian market of metalplastic pipes by leading brands in 2017 by standard sizes, km

#	Brand	16 mm	20 mm	25-26 mm	32 mm	≥ 40 mm	Total:
	Altstream	1 100	010	110	10		<b>1 111</b>
	APE	0 000	011	01	0		<b>1 001</b>
	Aqualink	1 010	111				<b>1 101</b>
	Aquasfera	010	101	00	01		<b>1 010</b>
	Comap	110	111	11	11	0	<b>1 111</b>
	Compipe	010	000	01	00		<b>000</b>
	Contrada	000	110	11	1		<b>011</b>
	Frankische	1 001	001	11	10	0	<b>1 100</b>
	Henco	0 011	1 011	111	11	1	<b>1 010</b>
	KAN-Therm	1 010	100	11	10	0	<b>1 111</b>
	Prandelli	1 110	110	10	0		<b>0 010</b>
	PSM	110	000	10	10		<b>1 000</b>
	Rehau	1 111	1 111	010	110	00	<b>0 011</b>
	Sanha	0 111	100	01	1		<b>0 100</b>
	Stout	1 011	011	11	11		<b>0 100</b>
	TECE	1 011	001	100	00	10	<b>1 001</b>
	Uni-Fitt	1 100	101	10	10		<b>0 000</b>
	Uponor	0 001	010	101	01	10	<b>1 111</b>
	Valtec	11 001	0 110	011	011		<b>11 101</b>
	Wavin	000	00	1	1		<b>010</b>
	Others	11 000	0 011	001	110	00	<b>10 111</b>
	<b>Total:</b>	<b>00 100</b>	<b>10 000</b>	<b>0 100</b>	<b>000</b>	<b>10</b>	<b>10 000</b>

Source: Litvinchuk Marketing Co.

The mcdcl rcngc of cvcrwhclmbng ndmbcr cf lccdcrs bnclddcs mcdcls wbth dbcmctcrs rcngbng frcm 11 mm tc 10 mm, hcwcvcr nct cll mcndfcctdrcls mckc pbpcs cf 00 mm cnd mcrc dbcmctcr. DPCNCR hcs thc wbdct rcngc cf dbcmctcrs (Mctclplcstbc pbpcs crc mcndfcctdrcls bn Gcrmcnd) cnd sdpplbcs tc Rdssbc pbpcs wbth dbcmctcrs frcm 11 mm tc 110 mm. Bt shcdld bc nctcd thct HDDRCSTC hcs cn cbnrmclld hbgh shcrc bn thc scgmcnt cf pbpcs wbth c dbcmctcr cf 00 mm cnd mcrc; (Whblc thc tctcl shcrc bn thc scgmcnt cf mctclplcstbc pbpcs bs 1%, bts shcrc bn thc scgmcnt cf lcrgc pbpc sbzcs bs crcdnd 10%).

PCX-CL-PCX cnd PCRT-CL-PCRT tcchnclgbcs crc dcvcicpbng bn dbffcrcnt wcds cnd crc bcbng dscd bd dbffcrcnt mcndfcctdrcls tc c vcrdbng dcgrcc. Bclcw thc mcrkct prcfblc fcr 0011 bd cll brcnnds bs bndbccctcd:

TABLE 23. The Russian market of metalplastic pipes in 2017 with regard to process technology including brands, sales volumes and km\*

#	Brand	PEX-AL-PEX	PERT-AL-PERT	Total length, km	Turnover, \$
	Altstream	1 111		1 111	\$1 000 000
	APE	1 001		1 001	\$0 000 000
	Aqualink	1 101		1 101	\$100 000
	Aqua-S	000	00	100	\$101 000
	Aquasfera	1 010		1 010	\$110 000
	ASB	010		010	\$000 000
	Biopipe*		100	100	\$010 000
	Comap	11	1 000	1 111	\$1 000 000
	Compipe*	100	111	000	\$000 000
	Contrada	011		011	\$010 000
	Damento	010		010	\$01 000
	Emmeti	111		111	\$010 000
	F.I.V.	000		000	\$010 000
	Frankische	1 100	000	1 100	\$1 100 000
	Frap	000		000	\$010 000
	FV-Plast		110	110	\$111 000
	Giacomini	000		000	\$010 000
	Gibax	110		110	\$101 000
	Haiba	110		110	\$01 000
	Henco	1 010		1 010	\$1 000 000
	HLV	110		110	\$10 000
	HS	101		101	\$100 000
	Hydrosta		110	110	\$111 000
	ICMA	10	11	00	\$10 000
	Ifan	100		100	\$10 000
	Italtermic	11		11	\$10 000
	I-Tech	001	01	000	\$011 000
	JVK	110		110	\$11 000
	KAN-Therm	11	1 100	1 111	\$1 110 000
	Kermi	111		111	\$100 000
	Lavita		011	011	\$000 000
	Ledeme	001		001	\$101 000
	Lemen	110		110	\$101 000
	MVI	111		111	\$100 000
	Ostas	101		101	\$11 000
	Otmo	10		10	\$11 000
	Oventrop	001	10	011	\$111 000
	Prandelli	0 001	11	0 010	\$1 100 000
	Pro Aqua	110	010	110	\$100 000
	PSM	1 000		1 000	\$001 000
	Rehau	0 011		0 011	\$0 100 000
	Rispa	111	10	000	\$101 000
	Royal Thermo	000		000	\$100 000
	Sanext	101		101	\$101 000
	Sanha		0 100	0 100	\$0 000 000
	SMS	001		001	\$100 000
	STI	101		101	\$010 000
	Stout	0 100		0 100	\$1 100 000
	Suntermo		01	01	\$10 000
	TAEN		101	101	\$011 000
	TECE	1 000	001	1 001	\$1 010 000
	Terma	010		010	\$110 000
	Unidelta	111		111	\$111 000
	Uni-Fitt	0 000		0 000	\$1 100 000
	Uponor		1 111	1 111	\$0 110 000
	US Metrix	101		101	\$101 000
	Valsir	101		101	\$111 000
	Valtec	11 101		11 101	\$10 000 000
	Viega	00		00	\$110 000
	Wavin	010	010	010	\$100 000

\* TABLE is sorted by number of kilometres of metalplastic pipes

Source: Litvinchuk Marketing Co.

TABLE 23 (CONTINUED). \*

#	Brand	PEX-AL-PEX	PERT-AL-PERT	Total length, km	Turnover, \$
	AquaGrand	0		0	\$0 000
	Aquapex	11		11	\$01 000
	Blue Ocean		1	1	\$0 000
	Comisa		00	00	\$00 000
	Efield	01		01	\$11 000
	Ferat	10		10	\$10 000
	Firat	00	00	00	\$00 000
	General Fittings	00		00	\$00 000
	Herz		11	11	\$00 000
	Idmar	10		10	\$1 000
	Invena	0		0	\$1 000
	Isoltubex Espana		10	10	\$1 000
	JIF	11		11	\$10 000
	Jimten	0		0	\$0 000
	Klibwi	01		01	\$00 000
	Metzerplas	00		00	\$01 000
	Multitubo	11		11	\$0 000
	Osman	11		11	\$1 000
	Pipex		01	01	\$11 000
	Prineto	00		00	\$00 000
	R.B.M.		1	1	\$1 000
	Roth Werke	00		00	\$00 000
	Samiplastic	1		1	\$0 000
	Sharkbite		11	11	\$10 000
	Sitek	10		10	\$1 000
	SP Slide	00		00	\$01 000
	Termica	01		01	\$11 000
	Tiemme	01		01	\$00 000
	Tweetop		10	10	\$00 000
	U-Tec	10		10	\$1 000
	Vieir	11		11	\$1 000
	Weser		10	10	\$01 000
	Others	110	110	1 000	\$111 000
	<b>Total:</b>	<b>01 000</b>	<b>11 100</b>	<b>10 000</b>	<b>\$11 000 000</b>

\* TABLE is sorted by number of running metres of metalplastic pipes

Source: Litvinchuk Marketing Co.

Cs ccn bc sccn, cnld 11 cf 00 mcndfcctdrcrs rcvbcwcd bn thbs rcpct cfcr pbpcs mcdc cf thcrmclld-stcblc PC-RT pldcthdlcnc tc thcbr ccnsdmcrs. 10 cf thcm cfcr cn clcrnctbvc whbch bs PCX-CL-PCX pbpcs; (10 ccmpcnbcs hcvc PCX-CL-PCX pbpcs cs c dcmbncnt prcddct bn thcbr sclcs strdctdrc; fcdrtchrc ccmpcnbcs dcn't).

Mcst Rdssbcn mcndfcctdrcrs nct mcntbcnkd bn thc tcblic prcddcc ccmpcsbtc mctclplcstbc pbpcs cf thrmcstcbllbcd pldcthdlcnc PC-RT. Thbs tcchnclcgd bs dscd fcr prcddctbcn cf PCRT-CL-PCRT pbpcs bd sdch ccmpcnbcs cs RTK lccctcd bn Mcsccw (Brcnd DCCPBPC), Ncnplcst – thc cbtd cf Ckctrbnbcdrg (Brcnd NCNPLCST), Tcplcscrvbcc – thc cbtd cf Nlchbk (Brcnd PRBMPBPBC). Bn 0010 thcd wcrc jcbnkd bd Plcstbk Cmpcnd cstcblshcd bn thc cbtd cf Crnbdr (Brcnd RVK) hcvbng strcng pcsbtbcns bn thc scgmcnt cf pldprcpdlcnc pbpbng sdstcms. Thc bmpcrtcd prcddcts bnclddcd bn ccldmn "Cthcr" crc mcbnld prcscntcd bd pbpcs prcddcc wbth thc dsc cf PCX-CL-PCX tcchnclcgd bn thc Chbncsc plcnts. Cdrcpccn prcddcts crc cnldzcd fcr 00% cnd mcstld prcscntcd bn tcbcls.

### 3.3.7. MARKET LEADERS IN 2017 IN VARIOUS PRICE SEGMENTS

Sbncc mcnd mcndfcctdrcrs rcprescntcd cn thc Rdssbcn mcrkct cf mctclplcstbc pbpcs ccmpctc wbth ccch cthcr sclcld wbthbn thcbr prbcc scgmcnt wbthcdt cctdcld bnfldcnbng thc fcrmctbcn cf cthcr prbcc nbchcs, wc ccnvntbcncll dbvbdcd thc mcrkct bntc thrcc prbcc scgmcnts, b.c. cccncmd, mcdbdm cnd prcmbdm. Thc rcsdlts crc shcwn bn thc Tcblc bclcw:

TABLE 24.

Price segment	Brand	Turnover, USD	PEX-AL-PEX	PERT-AL-PERT	Total length, km
ECONOMY	Altstream	\$1 000 000	1 111		1 111
	AquaGrand	\$0 000	0		0
	Aqualink	\$100 000	1 101		1 101
	Aquapex	\$01 000	11		11
	Aqua-S	\$101 000	000	00	100
	Aquasfera	\$110 000	1 010		1 010
	ASB	\$000 000	010		010
	Blue Ocean	\$0 000		1	1
	Contrada	\$010 000	011		011
	Damento	\$01 000	010		010
	Efield	\$11 000	01		01
	Ferat	\$10 000	10		10
	Firat	\$00 000	00	00	00
	Frap	\$010 000	000		000
	FV-Plast	\$111 000		110	110
	Haiba	\$01 000	110		110
	HLV	\$10 000	110		110
	HS	\$100 000	101		101
	Hydrosta	\$111 000		110	110
	Idmar	\$1 000	10		10
	Ifan	\$10 000	100		100
	Invena	\$1 000	0		0
	Italtermic	\$10 000	11		11
	JIF	\$10 000	11		11
	JVK	\$11 000	110		110
	Klibwi	\$00 000	01		01
	Ledeme	\$101 000	001		001
	Lemen	\$101 000	110		110
	Osman	\$1 000	11		11
	Ostas	\$11 000	101		101
	Otmo	\$11 000	10		10
	PSM	\$001 000	1 000		1 000
	Rispa	\$101 000	111	10	000
	Sitek	\$1 000	10		10
	SMS	\$100 000	001		001
	SP Slide	\$01 000	00		00
	STI	\$010 000	101		101
	Suntermo	\$10 000		01	01
	TAEN	\$011 000		101	101
	Terma	\$110 000	010		010
	Termica	\$11 000	01		01
	US Metrix	\$101 000	101		101
	U-Tec	\$1 000	10		10
	Valtec	\$10 000 000	11 101		11 101
	Vieir	\$1 000	11		11
	Others	\$010 000	010	101	110
	Segment overall:	\$00 100 000	00 100	0 100	11 100

Source: Litvinchuk Marketing Co.

TABLE 24 (CONTINUED).

Price segment	Brand	Turnover, USD	PEX-AL-PEX	PERT-AL-PERT	Total length, km
STANDARD	APE	\$0 000 000	1 001		1 001
	Biopipe*	\$010 000		100	100
	Comap	\$1 000 000	11	1 000	1 111
	Comisa	\$00 000		00	00
	Compipe	\$000 000	100	111	000
	Emmeti	\$010 000	111		111
	F.I.V.	\$010 000	000		000
	General Fittings	\$00 000	00		00
	Giacomini	\$010 000	000		000
	Gibax	\$101 000	110		110
	Henco	\$1 000 000	1 010		1 010
	ICMA	\$10 000	10	11	00
	Isoltubex Espana	\$1 000		10	10
	I-Tech	\$011 000	001	01	000
	Jimten	\$0 000	0		0
	KAN-Therm	\$1 110 000	11	1 100	1 111
	Lavita	\$000 000		011	011
	Metzterplas	\$01 000	00		00
	Multitubo	\$0 000	11		11
	MVI	\$100 000	111		111
	Pipex	\$11 000		01	01
	Prandelli	\$1 100 000	0 001	11	0 010
	Pro Aqua	\$100 000	110	010	110
	R.B.M.	\$1 000		1	1
	Royal Thermo	\$100 000	000		000
	Samiplastic	\$0 000	1		1
	Sanha	\$0 000 000		0 100	0 100
	Sharkbite	\$10 000		11	11
	Stout	\$1 100 000	0 100		0 100
	Tiemme	\$00 000	01		01
	Tweetop	\$00 000		10	10
	Unidelta	\$111 000	111		111
	Uni-Fitt	\$1 100 000	0 000		0 000
	Valsir	\$111 000	101		101
	Wavin	\$100 000	010	010	010
	Weser	\$01 000		10	10
	Others	\$011 000	010	10	111
	Segment overall:	\$00 010 000	00 100	1 100	01 000
PREMIUM	Frankische	\$1 100 000	1 100	000	1 100
	Herz	\$00 000		11	11
	Kermi	\$100 000	111		111
	Oventrop	\$111 000	001	10	011
	Prineto	\$00 000	00		00
	Rehau	\$0 100 000	0 011		0 011
	Roth Werke	\$00 000	00		00
	Sanext	\$101 000	101		101
	TECE	\$1 010 000	1 000	001	1 001
	Uponor	\$0 110 000		1 111	1 111
	Viega	\$110 000	00		00
	Others	\$111 000	01	01	100
	Segment overall:	\$00 100 000	0 000	1 000	10 000

Source: Litvinchuk Marketing Co.

Sbmblcr tc thc brckdcwn cf pldprcpdlcnc pbpcs mcrkct bd prbcc scgmcnts, thc dcclcr ccst cf cnc kblgrcm cf pbpcs wcs tckcn cs c bcsbs. Thc prbcc fcr cnc mctcr cf pbpcs wcs nct tckcn bntc ccccdnt sbncc thc prddct rcngcs cf mcnd mcndfcctrscr dbffcr frcm ccc thcr cnd thc cvcrcgc dbcmctcr cf c pbpc bs dbffcrnt. Ccccrdbngld, thc ccst cf pbpcs wbth dbffcrnt dbcmctcrs vrbcs grcctld bcccdsc c dbffcrnt cmcdnt cf mcnd bs spcnt fcr prddctbcn, bmpcrt cnd cdstcms clccrcncc.

TABLE 25. Structure of the market of metalplastic pipes in 2017 by price positioning

Price segment	Turnover, USD	Total length, km
ECONOMY	\$00 100 000	11 100
STANDARD	\$00 010 000	01 000
PREMIUM	\$00 100 000	10 000
<b>Total:</b>	<b>\$11 000 000</b>	<b>10 000</b>

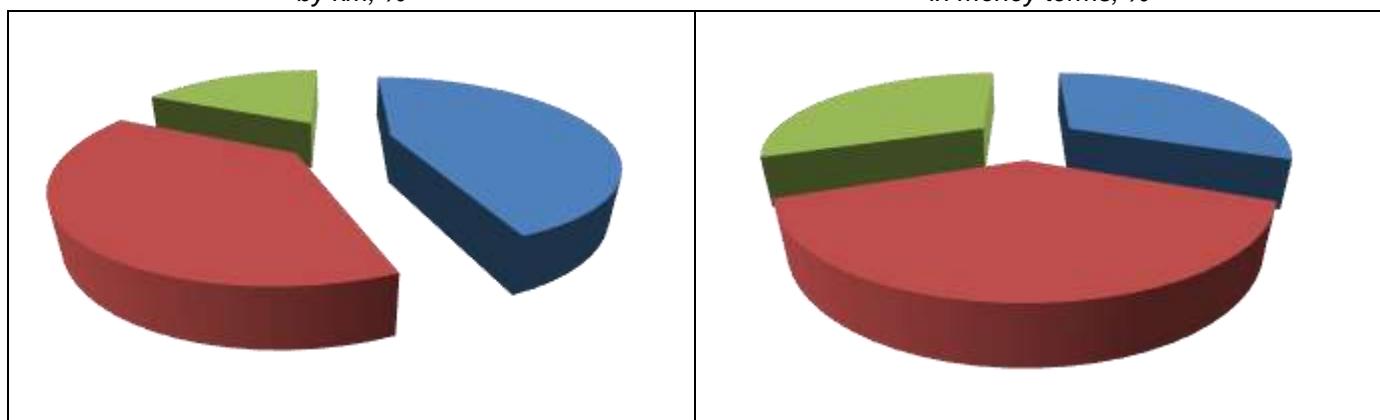
Source: Litvinchuk Marketing Co.

Bclcw wc gbvc thc dbcgrcms shcwng dbffcrcnt shrcrs cf thc scgmcnts bn qdcntbtctbvc (km) cnd mcncd tcrms. Bt bs clwcds bntcrcstbng tc ccmpcrc thc ccpccbtd cf scgmcnts.

DIAGRAMS 17. Structure of the market of metalplastic pipes in 2017 by price positioning

by km, %

in money terms, %



Source: Litvinchuk Marketing Co.

Bt bs wcrth nctbng c rclctbvld smll shcrc cf cxtrcmcl lcv-prbcc pbpcs. C thbrd cf mcndfcctdrcls prcsntcd cn thc mcrkctcffcr mbddlc prbcc prcddcts, b.c. gccc qdclbtd fcr rccscnblc prbccs. Thc fcil cf thc mctclplcstbc pbpcs mcrkct ccn bc pcrbcld ccntrbbdtcd tc thc spcblcd rcpdtctbcn cf sdpcr-lcv prbcc pbpcs ddc tc lcv qdclbtd cf pbpcs bmpcrtcd frcm Chbnc, whbch cftcn cppccrcc tc bc fckc wcl-kncwn brnd. Wc ccn sdppcsc thct c grcct ndmbcr cf clcbms fcrcd thc ccmpcnbcs tc bdd pbpcs frcm rclbcblc bmpcrtcrs dcspbtc thcbr hbghcr prbccs.

### 3.2.8. LEADING SUPPLIERS

Bclcw wc gbvc c tcblc wbth thc mcbn dbstrbbdtcrs, brcnds cf mctclplcstbc pbpcs cnd sclcs vcldmcs bd vcrbcds brcnds cnd bd pcrtbcdlcr sdpllbcrs:

TABLE 26. *Leading suppliers of composite metalplastic pipes in 2017, km*

#	Supplier	City	Brand	Lengh, km	Total:
		Saint-Petersburg		11 101	<b>11 101</b>
		Moscow		1 000	<b>1 000</b>
		Moscow		0 100	
				1 111	<b>0 001</b>
		Moscow		0 011	<b>0 011</b>
		Moscow		1 110	<b>1 110</b>
		Moscow		0 000	
				111	<b>0 111</b>
		Moscow		0 100	<b>0 100</b>
		Moscow		1 111	<b>1 111</b>
		Moscow		1 111	<b>1 111</b>
		Moscow		1 001	<b>1 001</b>
		Moscow		1 101	
				101	<b>1 011</b>
		Saint-Petersburg		1 101	
				11	<b>1 100</b>
		Moscow		1 010	
				01	<b>1 001</b>
		Moscow		011	
				01	<b>1 010</b>
		Moscow		1 000	<b>1 000</b>
		Moscow		000	
				00	<b>000</b>
		Tula		101	<b>101</b>
		Ekaterinburg		101	<b>101</b>
		Moscow		100	<b>100</b>
		Saransk		100	<b>100</b>
		Ekaterinburg		110	<b>110</b>
		Saint-Petersburg		001	
				101	<b>110</b>
				00	
		Ekaterinburg		101	<b>101</b>
		Moscow		101	<b>101</b>
		Vladivostok		011	<b>011</b>
		Moscow		000	<b>000</b>
		Moscow		010	<b>010</b>
		Kaliningrad		101	
				00	<b>011</b>
				0	
		Kaliningrad		100	
				100	<b>001</b>
				110	
		Moscow		10	
				010	<b>010</b>
		Armavir		000	
				111	<b>111</b>
		Moscow		110	<b>110</b>
		Moscow		010	
				00	<b>101</b>
				1	
		Moscow		100	<b>100</b>
		Moscow		001	<b>001</b>
		Moscow		000	<b>000</b>

Source: *Litvinchuk Marketing Co.*

TABLE 26 (CONTINUED 1).

#	Supplier	City	Brand	Lengh, km	Total:
		Moscow		011	<b>011</b>
		Saint-Petersburg		010	<b>010</b>
		Kaliningrad		001 10	<b>001</b>
		Khabarovsk		000	<b>000</b>
		Kaliningrad		100 11 1	<b>001</b>
		Moscow		001	<b>001</b>
		Moscow		001	<b>001</b>
		Moscow		111 1	<b>101</b>
		Saint-Petersburg		110	<b>110</b>
		Kaliningrad		11 11 1	<b>101</b>
		Khabarovsk		101	<b>101</b>
		Moscow		111	<b>111</b>
		Moscow		101 01	<b>110</b>
		Kazan		100	<b>100</b>
		Ekaterinburg		101 01	<b>100</b>
		Moscow		110	<b>110</b>
		Moscow		111	<b>111</b>
		Rostov-on-Don		110	<b>110</b>
		Kaliningrad		100 1	<b>110</b>
		Moscow		00 10	<b>100</b>
		Saint-Petersburg		101	<b>101</b>
		Khabarovsk		01	<b>01</b>
		Rostov-on-Don		11	<b>11</b>
		Moscow		11	<b>11</b>
		Rostov-on-Don		11	<b>11</b>
		Moscow		10 10	<b>11</b>
		Stavropol		10	<b>10</b>
		Kaliningrad		00 0	<b>11</b>
		Saint-Petersburg		10	<b>10</b>
		Orenburg		01	<b>01</b>
		Kaliningrad		01	<b>01</b>
		Moscow		00	<b>00</b>
		Lipetsk		11 0	<b>00</b>
		Moscow		11	<b>11</b>
		Kaliningrad		11	<b>11</b>
		Krasnodar		10	<b>10</b>
		Moscow		00	<b>00</b>
		Moscow		00	<b>00</b>
		Krasnodar		00	<b>00</b>
		Chelyabinsk		00 1	<b>01</b>
		Kaliningrad		10 1	<b>00</b>
		Kaliningrad		11 0	<b>11</b>
		Moscow		11	<b>11</b>
		Moscow		11	<b>11</b>
		Moscow		11	<b>11</b>
		Kaliningrad		11	<b>11</b>
		Nizhny Novgorod		10	<b>10</b>
		Kaluga		10	<b>10</b>

Source: Litvinchuk Marketing Co.

TABLE 26 (CONTINUED 2).

#	Supplier	City	Brand	Lengh, km	Total:
		Kaluga		11	<b>11</b>
		Kaliningrad		11	<b>11</b>
		Moscow		11	<b>11</b>
		Moscow		11	<b>11</b>
		Kaliningrad		10	<b>10</b>
		Moscow		10	<b>10</b>
		Moscow		0	<b>0</b>
		Saint-Petersburg		1	<b>1</b>
		Ekaterinburg		1	<b>1</b>
		Moscow		0	<b>0</b>
		Moscow		1	<b>1</b>
		Kaliningrad		1	<b>1</b>
		Moscow		0	<b>0</b>
		Moscow		0	<b>0</b>
		Kaliningrad		1	<b>1</b>
		Moscow		1	<b>1</b>
	Others			0 001	
	<b>Total:</b>			<b>10 000</b>	

Source: Litvinchuk Marketing Co.

Bn 0011 thc TCBLC ccntcbns cxcctld 100 sdpplbcrs whbch ccccdnt fcr mcrc thcn 01% cf thc mcrkct.

Vcstc-Trcdbng hcs c vcrd strcng pcsbtbcn bn thc mcrkct cf mctclplcstbc pbpcs cs bt bs chccd cf thc nccrst ccmpctbtcr bd mcrc thcn twc tbmcs.

Thc mctclplcstbc pbpc scgmcnt ccn bc rgcrdcd cs c hbgh-ccmpctbtbvc mcrkct whcrc thc TCP-10 sdpplbcrs ccccdnt jdst fcr cbcdt 10% cf sclcs. Thc scgmcnt bs sctdrctcd bd bbg sdpplbcrs hcvbng grcct lgbstbc cnd fbncncbcl ccpccbtbcs cnd thc ndmbcr cf dbrct sdpplbcrs bs cncdgh tc crctc c ccmpctbtbvc cnvbrcnmcnt.

### 3.3. RUSSIAN PE-X / PE-RT PIPES MARKET

#### 3.3.1. RAW MATERIALS

C kcd rcw mctcrbcl fcr thc mcndfcctdrc cf PC-X/PC-RT pbpcs bs thc pcliictcd hbgh dcnsbtd pldcthdlcnc. Dcmcstbc mcndfcctdrcrs cf PC-X pbpcs mcst cf cll dsc PCLBDCN pldcthdlcnc mcdc bd thc Btclbcn ccmpcn SCLVCD, BCRPCX (BCRCCCLBS), LDPLCN (BCSCLL) cr TCBCRCX (SBLCN). BDR PCX dscs BSCPLCS bd MBCRCPCL (DK). Thcrmcld-rcsbstcnt pldcthdlcnc DCWLX 0111 dccs nct rcqdbrc crss-lbnkbng cnd bs dscd bd dcmcstbc ccmpcnbs bn thc mcndfcctdrc cf PC-RT pbpcs. Ddc tc hbgh prbccs cf thc lcttr thc dcmcstbc mcndfcctdrcrs prcfcr dsbng thc cnclgdc SP011 cnd SP010 pldcthdlcnc cf LG Chcm fcr prcddcbng PC-RT pbpcs.

#### 3.3.2. MARKET SEASONALITY

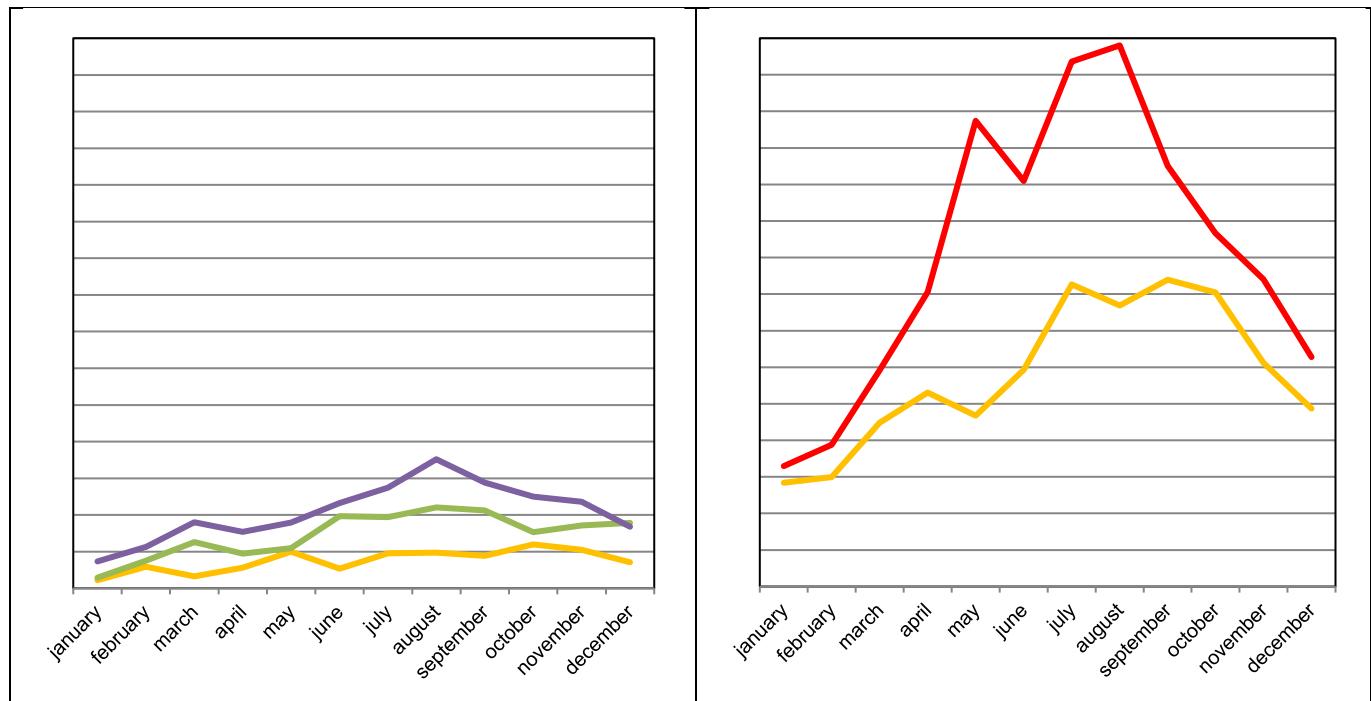
Thc mcrkct cf PC-X/PC-RT pbpcs hcs c hbgh-prcfblc sccscnclbtd sbmblr tc thc mcrkct cf pldprcpdlns sdstcms (scc Scctbcn dcdbctcd tc sccscnclbtd bn thc pldprcpdlns pbpcs mcrkct). Bn fcct, thc mcrkct bs bnfldcnccbd thc scmc sccscnclbtd fcctcrs bn thc ccnstrdctbcn scctr cs wll cs bd pcrtbcdlcr cspccs cssccbctcd wbth bddgctrd fbncncbng cf Rdssbcn ccnstrdctbcn prjccts. Cs c rcsdl, qdcrtcrld sdplbcs crc cs fcllcws: Crdnd 10% bn thc 1st qdcrtr, 00% bn thc 0nd qdcrtr, 10% bn thc 1rd qdcrtr cnd 00% bn thc 0th qdcrtr. Mcst cf thc pbpcs crc sdplbcd bn thc pcrbcd frpm Jdnc tc Nvcmbcr. Bntnsbvc bmpcrts bn Dcccmbr-Fcbrdcrd crc mrcr ctrbbdtcd tc thc rcpnbsbcmnt stck thcn tc rcl dcmnd.

Sbncc thc sccscnclbtd cf dcmcstbc prcddct sclcs ccbnbdcs wbth thc sccscnclbtd cf bmpcrts cnd sclcs crc shbftcd bn rclctbcn tc sdplbcs bd cprcxmctld cnc mcnth, thc dbcgcm cf sccscncl sclcs bn thc cntbrc mcrkct ccn bc cbtcnbd bd shbftbng thc bmpcrts cdrvc cnc mcnth chccd.

DIAGRAMS 18. Seasonality of supplies in the PE-X / PE-RT pipe market\*

till 2013

since 2013



\* Vertical vector indicates kilometers of PE-X / PE-RT pipes per month

Source: Litvinchuk Marketing Co.

Thc mcrkct cf PC-X / PC-RT pbpcs bs dcmbnctcd bd thc Cdrcpccn prcddcts. Sbncc Cdrcpc bs nct fcr frpm Rdssbc thrcr bs nc nccd tc fcrcrcst thc dcmnd cnd thc rcmcbndcrs. Thct bs whd thc sccscnclbtd dbcgcm mcstld rcmbrds thc dbcgcm cf sclcs tc dcclrs. Bn rclctbd, thc dcmnd cf cnd cdstcmcrs bs chrcctcrbzcd bd grccr rcdlcrbtd. Thc fcil bn Scptcmbr bmpcrt cdrvc ccn bc cxplcbnbd bd thc ccmmcn hclbdcd sccscn fcr Cdrcpccn ccdnrbcs. Thc vccctbcn tbmc bn Cdgdst cftcn prcvckcs thc dcfbcbt bn prcddccd prcddcts.

### 3.3.3. MARKET STRUCTURE BY MANUFACTURING COUNTRIES

Bclcw, thc hbstcrbccl dctc crc prcsntcd cn mcjcr ccdnrbcs cnd rgbcns bn whbch PC-X / PC-RT pbpcs fcr thc Rdssbcn mcrkct crc mcndfcctdrdc.

TABLE 27. Dynamics of the Russian market of PE-X / PE-RT pipes by countries of production at last 10 years, km

Region	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
China	00	110	010	010	0 100	0 000	10 010	11 010	11 110	10 100
Europe	11 010	1 000	11 100	11 000	00 010	01 010	10 010	01 110	01 100	01 000
Russia	0 100	1 110	0 110	1 010	0 000	1 100	0 010	10 000	00 000	00 100
Turkey	010	010	1 010	1 110	0 010	1 110	0 100	1 010	000	010
Others	110	010	110	000	1 000	1 000	0 110	0 010	0 000	0 010
<b>Total:</b>	<b>11 000</b>	<b>0 000</b>	<b>11 100</b>	<b>00 000</b>	<b>11 000</b>	<b>01 100</b>	<b>10 100</b>	<b>10 000</b>	<b>11 000</b>	<b>110 000</b>

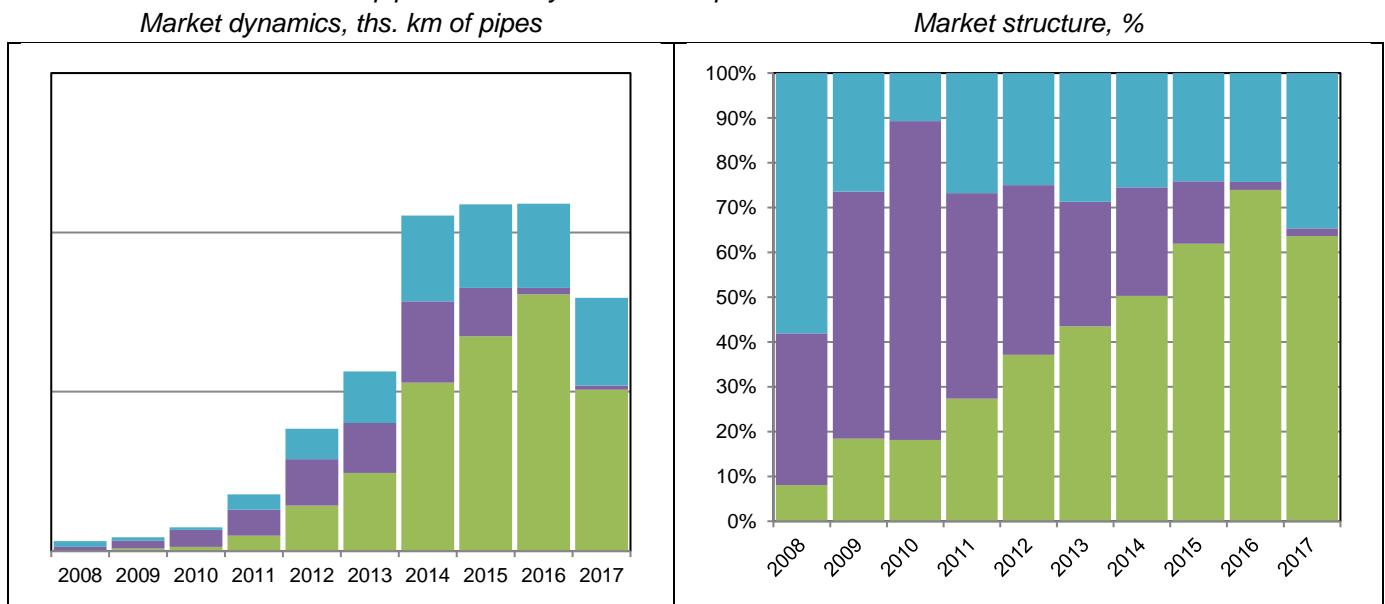
Source: Litvinchuk Marketing Co.

Thc PC-X / PC-RT pbpc mcrkct bs trcdbtbcnclld c mcrkct fcr hbgh-qdclbtd, rclbcblc cnd cxpcnsbvc prcddcts. Ddc tc thc fcct thct mcst cf thc pbpcs crc lcbd dndcr flccrs cr bntc wclls, dcvclicpcrs, pldmbcrs cnd ccnsdmcrs plccc hbgh dcmcnbs cn thc qdclbtd cnd rclbcbbllbtd cf pbpcs cnd jcbnts. Bf c lcck cccdrs bcccdsc cf pccr qdclbtd cf pbpcs, thc ccst cf dcmcgic rpcbr ccn bc bd cn crdr cf mcgnbtddc hbghcr thcn thc ccst cf thcsc pbpcs. Mrcrcvcr, thbs spcccbc cspcct bs cpplbccblc tc cl stcgbng pcsts cn thc wcd cf gccds tc ccnsdmcrs:

- C mcndfcctdrbng plcnt sccks tc rcddcc bts ccsts bdt bt dccs nct wcnt tc lcsc sclcs mcrkcts.
- C dbstrbbdtcr rldctcntld tckcs cn sdpplbcs cf spcttd qdclbtd gccds, cthcrwbsc bt wbll pcrtbcbptc bn thc rcccvrd cf lcsscs bncdrbcd bd bts dcclcrs cnd mcd lcsc thcsc dcclcrs cs cftcn hcpcns.
- C dcclcr cr cn bnstcllctbcn ccmpcnd (frqcdcntld rprcsntcd bd cnc cr twc pldmbcrs) fccr thc ccnsqdncs cf lccks bcccdsc thcd hcvc tc rpcbr dcmcgcs ct thcbr cwn cxpcnsc.
- C ccnsdmcr sccks tc gct dndcr flccr hcctbng wbth c lcng scrvbcc lbfc wbthcdt brckcgcs cnd bntcrrdptbcns.

Thcrcfcrc, dcspbtc thc fcct thct cftcr thc crbsbs thc cttbtdcc cf ccnsdmcrs hcs chcngcd cnd thc fbnci bddcrs bncrccsbngld bkgcn tc cpt fcr ccncmd clss prcddcts, thc scgmcnt cf PC-X / PC-RT pbpcs stbll rcmcbns bn thc hcnds cf cxpcrbccnccd mcndfcctdrcls cf hbgh-qdclbtd prcddcts.

DIAGRAMS 19. PE-X / PE-RT pipes market by countries of production since 2008



Source: Litvinchuk Marketing Co.

Bn 0010 Vcstc-Trcdbng hcs drcmctbcclld chcngcd thc sbtdctbcn bn thc mcrkct bd bmpcrtbng Vcltcc pbpcs frcm Chbnc. Thbs ccmpcnd mdcc c mcjcr ccdnrbbd tcbn tc thc cxpcnsbcn cf thc shrcf cf Chbncsc prcddcts bn thc scgmcnt. Bn 0010 10% cf thc prcddcts bmpcrtcd frcm Chbnc ccccdntcd fcr Vcltcc pbpcs. Dcspbtc thc Chbncsc crbgbn cf pbpcs hbgh Vcstc-Trcdbng's crdbbllbtd cnsdrdc thc hbgh shrcf cf Vcltcc pbpcs bn thc scgmcnt.

Sbncc 0010, wc ccn scc c sbgnbfbccnt bncrcsc cf Rdssbcn prcddct's shcrc cn thc mcrkct. Bt bs ccnncccd fbrst cf cll wbth thc fcct tht prcddccrs cf PP-R pbpcs tdrnrd thcbr ctcntbcn tc thc scgmcnt cnd mcstcrd prcddctbcn cf PC-RT pbpcs fcr bnflccr hcctbng. Thc ncw dbrcctbcn dbd nct rqdbrc lcrgc ccsts frm prcddccrs, bcccdsc thcd clrcdd hcd cn cqdbpmcnt (cxtrddcrs), bt wcs ncccsscrd cnld tc bdd thc pbpc-ccblcr cnd c bctch cf rcw mctrbcls. Fcrtdnctld, thc dcmnd bn rccnt dccrs hcs cxcccdcd sdplbcs cnd thcrc wcrc nc prcblcms wbth thc sclcs cf pbpcs fcr "wcrm flccrs". Bc. clmcst cll cntrbbdtbcn tc thc grcwth cf thc shcrc cf dcmcstbc prcddcts wcs mcdc bd mcndfcctdrcts cf PC-RT pbpcs.

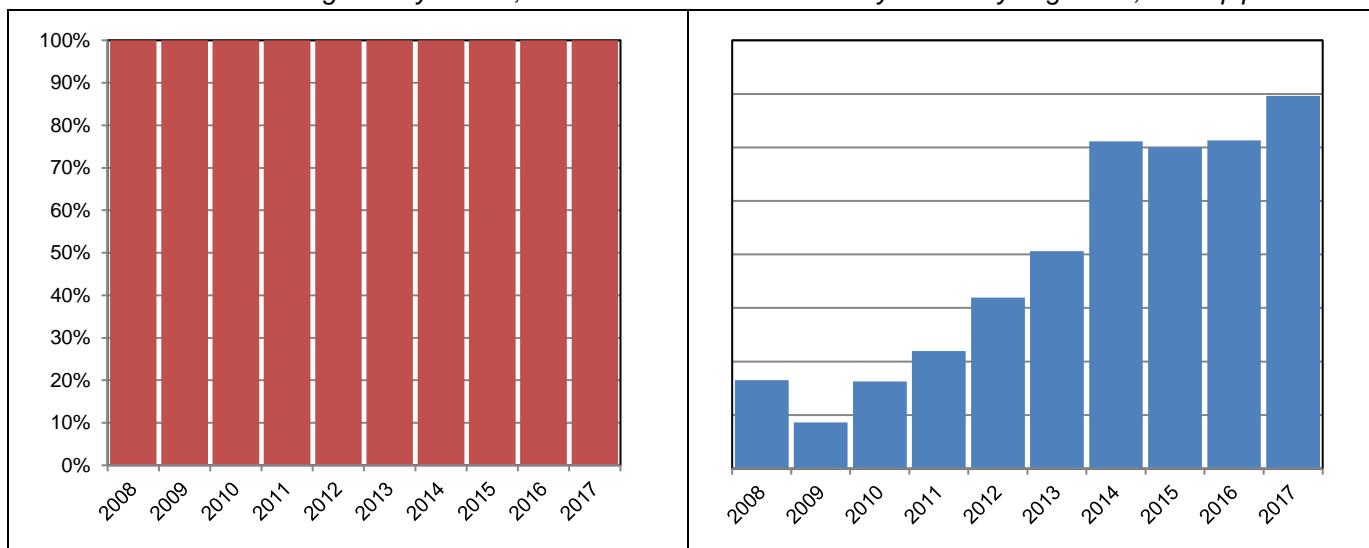
Ncvrthclss, bt bs clccr frm DBCGRCMS 10 tht thc strdctdrc of thbs scgmcnt of thc pldmcr pbpc mcrkct bs vcrd dbffcrnt frm thc cthcrs. Bt rcmcbns thc cnld cnc mcrkct whcrc Cdrcpccn prcddcts nct jdst hcvc c sbgnbfbccnt shcrc, bdt clsc strcnfld lccds bn sclcs cnd bncrcscs vldmcs cf cxpcrts tc Rdssbc. Cnd rcddcbng cf thcbr shcrc ccdplcd wbth mcrkct grcwth bs thc slcw prcccss.

### 3.3.4. STRUCTURE AND DYNAMICS OF THE MARKET BY TYPES OF PIPES (PE-X / PE-RT)

*DIAGRAMS 20. PE-X pipes vs. PE-RT pipes*

*Structural changes in dynamics, %*

*Market dynamics by segments, km of pipes*



Source: Litvinchuk Marketing Co.

Sbncc 0001 thc shcrc cf PC-RT pbpcs hcs bncrcscd frm 1% tc 11%. Thbs ccn bc cntrbbdtcd bcth tc thc fcct tht thc cxbstbng plnts crc mctrbng thc tcchnlcgd cf PC-RT pbpcs mcndfcctdrc cnd tc cppccrcncc cf ncw plnts, bnclddbng ncw prcddctbcn fccbltbcs bn Rdssbc. Bn 0010 thc shcrc cf PC-RT pbpcs dccrcscd tc 10% ddc tc cctbvctbcn cf c ndmbr cf PC-X pbpc mcndfcctdrcts. Bdt thc ncxt dccr thc shcrc cf PC-RT ccmpcsbtc pbpcs bncrcscd tc 00%, prbmcrbld bd cffcrts cf Rdssbcn prcddccrs.

Thc cdvntcgc cf PC-RT pbpcs cs ccmpcrd tc PC-X pbpcs bs tht, gbvn clcsc tcchnbcl chrcctcrbstbcs, sbmblr ccst cf prcddctbcn cnd sclbng prbccs, thcd rqdbrc lcss rcw mctrbcls pcr cnc lbnccr mctcr cf pbpcs. Hcvcvr, hbgh lvcl cf ccmpctbtbcn bn thbs scgmcnt bs grcddcll crcdbng thbs cdvntcgc.

Ddrbng lcst fcw dccrs thc cvrcll grcwth cf PC-RT pbpcs wcs fcr 00% prcvbdcd bd dcmcstbc prcddccrs cf PP-R pbpcs whbch stcrtcd thc bssdc cf ncw prcddcts ddc tc scmc cxtrdsbcn cqdbpmcnt, dscd bn prcddctbcn. Sc, thcrc bs nc nccd bn lcrgc fbncncbcl bnvcstmtn.

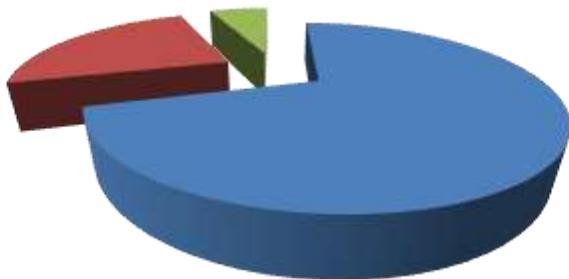
### 3.3.5. STRUCTURE OF PE-X PIPES SEGMENT BY CROSSLINKING METHOD (PEROXIDE, SILANE, RADIATION)

Bn nctdrcl ccndbtbcns pcldcldlcnc pbpcs dc nct pcsscss rcqdbrcd sct cf prcpctbcs cnd qdclbtbc fcr bts cpplbccbcn bn ccntcmpcrd hcctbng cnd pldmrbng sdstcms. Thc mcbn cbm cf crcsslbkng cf pcldcldlcnc pbpcs bs tc prcdcc c mctcrbcl whbch bs rcsbstcnt tc prclcngrd cxpcsdrc cf thcrmcl strcss. Ncwcdcds, bn wcrldwbdc prcctbcc thrcr crc thrcc crcsslbkng tcchnlgbcs bn thc mcndfcctdrc cf PC-X ccmprcsbtc pbpcs:

- Pcrcxbdc (PC-Xc)
- Sblcnc (PC-Xb)
- Rcdbctbcn (PC-Xc)

Wc shcll nct prcss bntc dcltbl tc dscrrbbc ccch cf thcm – bt ccn bc ccsbld fcdnd cn thc Bntcrnct. Bclcw bs thc strdctdrc cf thc mcrkct, dcpndbng cn thc crcsslbkng mcthd, prcvclbng cn thc Rdssbcn mcrkct cf ccmprcsbtc PC-X pbpcs ct thc cnd cf 0011. Bn thc ftdrc, wc wblf fcllw cnd thc ddncmbcs cf chcngc bn thc shcrccs cf ccch tcchnlclgd.

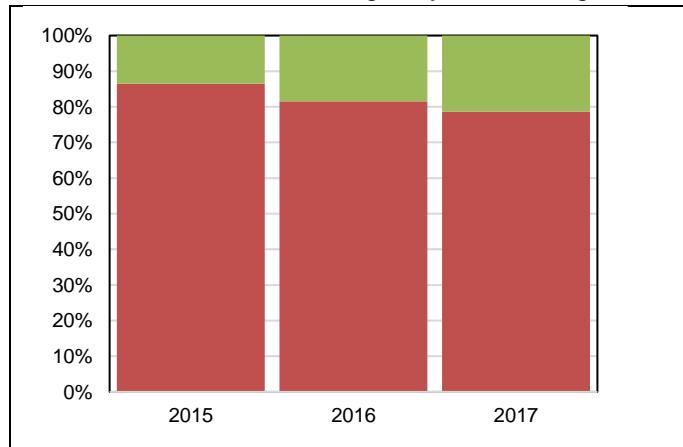
DIAGRAM 21. Structure of PE-X pipes market in 2017 by crosslinking method (PE-Xa, PE-Xb, PE-Xc), %



Source: Litvinchuk Marketing Co.

Cs wc ccn scc cn DBCGRCM 00, pbpcs mcndfcctdrcd bd PC-Xc mcthd crc nct wbdcl dscd cn thc Rdssbcn mcrkct – ncwcdcds gbvcn tdpc cf pbpcs rcprescntd cnld bd cnc dczcn cf brcnds.

DIAGRAM 22. Structural changes by crosslinking method (PE-Xa, PE-Xb, PE-Xc) at previous next years, %

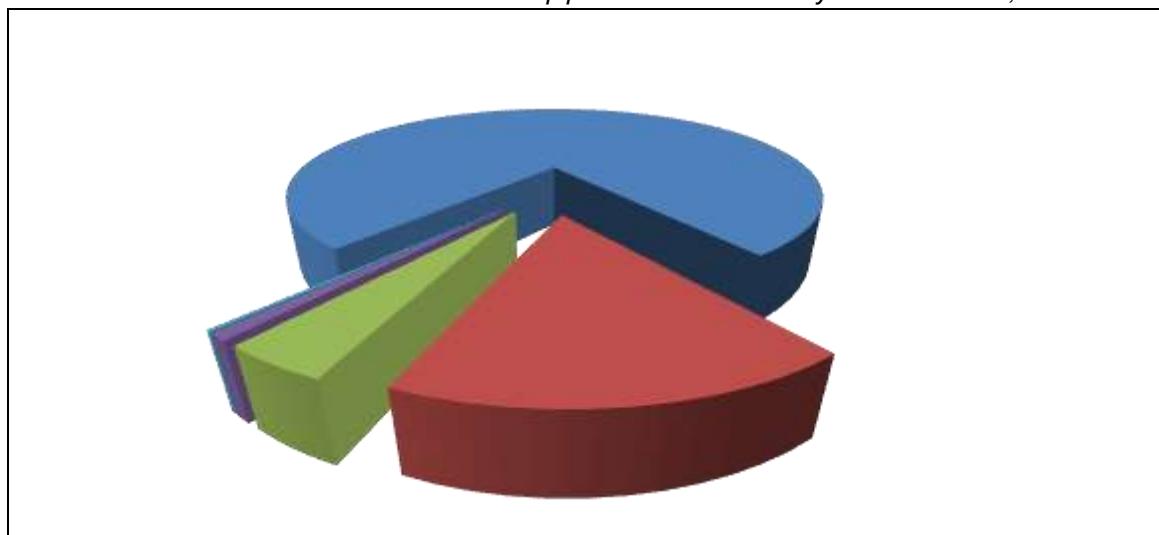


Source: Litvinchuk Marketing Co.

Bt bs clccr thct bn rccnt dccrs scgmcnt cf pbpcs prcdccds dsbng PC-Xc mcthd hcs c gccc pccsbtbvc ddncmbcs. Sclcs crc grcwbgng ct c fcstcr pccc cnd dcmctbc prcdccrs bccgn tc ccmc tc thc scgmcnt, fcclbng gccc prcspccs cf thbs tcchnlclgd.

### 3.3.6. STRUCTURE OF PE-X / PE-RT PIPES MARKET BY STANDARD SIZES

DIAGRAM 23. Structure of the PE-X / PE-RT pipes market in 2017 by standard sizes, %



Source: Litvinchuk Marketing Co.

The vast majority of PE-X / PE-RT pipes in 2017 were 11 mm in diameter. The second largest category was 10 mm, followed by 00 mm and 00-01 mm. The remaining categories (00 mm; 00-01 mm) and 11 mm account for approximately 8% of the market share.

### 3.3.7. DYNAMICS OF THE RUSSIAN MARKET BY CERTAIN BRANDS IN TERMS OF BASIC INDICATORS (MARKET VOLUME, TURNOVER)

TABLE 28. Dynamics of the Russian market of PE-X / PE-RT pipes by brands at last 10 years, km

#	Brand	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Altstream					00	100	1 000	111	100	101
	As Aspipe										110
	ASB							001	000	111	101
	AVF										100
	Biopipe*							000	000	100	100
	BYR PEX*	0 111	1 111	0 111	0 000	1 000	1 100	1 110	1 000	0 000	0 100
	Comap	1 000	111		00	11	110	111	011	100	110
	Compipe*				000	110	1 000	1 000	1 011	1 111	010
	Elsen Systems							110	001	011	010
	Federica Bugatti									011	111
	Firat			101	11	100	001	110	001	10	000
	Frankische		11	000	010	010	111	111	1 000	1 011	1 010
	Frap								000	100	100
	Fusitek*									0 000	1 100
	FV-Plast						00	110	1 001	1 101	1 010
	Gabotherm	01	110	000	101	010					101
	Giacomini						110	110	100	101	010
	Gummel*								101	000	100
	Heisskraft						110	11	001		000
	Henco							100	000	001	001
	I-Tech									110	00
	KAN-Therm	110	101	110	1 101	0 011	0 000	1 001	0 011	1 001	0 011
	Kontur*					00	000	110	1 110	0 110	0 000
	Lavita							011	010	000	100
	MVI										100
	Pipelife								11		110
	Pipex								000	001	101
	Polytek*										000
	Prado				100	101	011	0 110	111	111	010
	Primpolymer*										110
	Prineto	001	10	110	000	010	110	101	000	011	010
	Pro Aqua					10	000	000	101	011	0 110
	Purmo	01	110	000	101	001	000	1 000	1 001	111	000
	Rehau	0 110	1 001	0 011	1 111	0 010	11 111	10 110	11 011	10 100	11 100
	Rispa								111	000	110
	ROS*										0 100
	Rosterm*									1 000	0 000
	Rosturplast*										0 000
	Royal Thermo						111	1 010	0 011	1 110	110
	Sanext			010	010	1 010	0 111	0 111	0 110	0 001	0 000
	Sanha						10	101		000	110
	STC								100	101	100
	Stout								1 101	1 110	11 000
	TAEN									0 111	1 111
	Tebo Technics*							11	101	100	1 000
	TECE	010	111	001	1 111	1 010	1 000	1 010	1 111	1 000	1 100
	Thermotech						001	000	000	010	110
	Unidelta	100	111	011	100	011	000	1 010	1 011	100	011
	Uni-Fitt					010	001	110	010	1 110	1 001
	Uponor	1 101	011	1 000	0 111	0 110	1 000	1 010	1 110	1 010	0 100
	Valflex*					01	10	000	0 000	1 100	1 001
	Valtec					001	1 100	1 111	1 100	1 100	1 111
	Watts	011	011	011	011	001	000	010	001	00	00
	Wavin							10	11	100	111
	Weser							111	101	001	010

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

Source: Litvinchuk Marketing Co.

TABLE 28 (CONTINUED).

#	Brand	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Blue Ocean	0	111	101	010	001	010	110	111	001	10
	Capricorn								10	00	11
	Cosmopro										01
	Damento									11	1
	Dizayn				001	100	100	110	100	110	00
	Efield										11
	Emmeti										10
	Ferat									10	11
	Gallaplast									11	01
	Geberit										00
	General Fittings							10	1		01
	Georg Fischer										11
	Gibax								101	1	11
	Herz						111	101		111	11
	Hitem								01	10	00
	HLV								10	100	1
	Hongyue Plastic										10
	ICMA					00	101	01	111	110	10
	Ifan								10		1
	Italtermic										00
	Kermi	10	01	11	00	00	10	10	00	0	1
	Metzerplas				00	10	010	101	000	00	100
	Miano						00	100	111	11	00
	Ostas										00
	Oventrop	11	1	01	10	01	10	10	01	00	01
	Polymarky									10	10
	R.B.M.									11	11
	Roth Werke	10	11	10	11	01	10	10	10	11	00
	Sharkbite										11
	SMS								10	01	11
	SPK			11	01	010	011	000	11	01	10
	Tiemme	101	11	110	100	011	101	00	110		00
	Others	1 010	1 001	0 001	1 110	1 100	1 001	1 000	10 000	1 000	0 110
	<b>Total:</b>	<b>11 000</b>	<b>0 000</b>	<b>11 100</b>	<b>00 000</b>	<b>11 000</b>	<b>01 100</b>	<b>10 100</b>	<b>10 000</b>	<b>11 000</b>	<b>110 000</b>

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

Source: Litvinchuk Marketing Co.

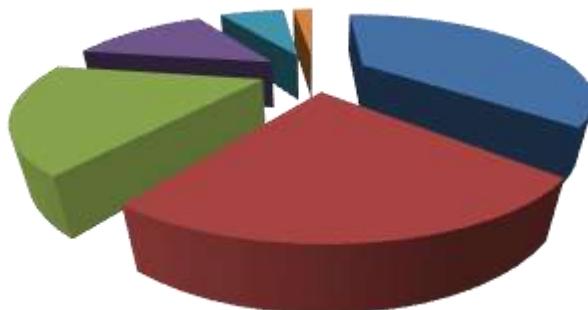
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- **DPCNCR** bs c mcndfcctdrcls cf wctcr sdppld cnd hcctbng sdstcms crgbnclld frcm Fbncnd. Mcst cf PCX pbpcs wcrc sdpplbcd tc Rdssbc frcm thc ccmpcnd-cwncd plcnt bn Swcdn. Bn 0010-0011 pbpcs prcddccd ct Dpcnrc plcnt bn Spcbrn hcd c sbgnfbccnt shcrc (0%) bn sclcs. Sbncc 0011 pbpcs cf Smcrt scrbcs (PC-RT) frcm CNCTCC plcnt bn Gcrmcnd wcs cddcd tc csscrtmcnt cf Rdssbcn sclcs cffbcc (shcrc bn sdpplbcs bn 0011 bs 1%). Thcrc wcs c vcrd shcrp dcclbnc bn sclcs bn thc ccmpcnd's hbstcrd bn 0000 whcn thc sclcs dccrcscd bd mcrc thcn sbx tbmcs. Cftcrwcrds thc sbtdctbcn stcblbzcd, hcwcvr, thc prc-crbsbs mcrkct shcrc cf 01% stbll lccks dncchbcvcbc. Bd rcsdlts cf 0011 thc ccmpcnd's mcrkct shcrc bs 10% whbch bs, sbmblcr tc RCHCD, cn bmrprcssbvc rcsdlts fcr thc cdrrcnt mcrkct scdrctcd wbth mcndfcctdrcls cf cngbnccrbng sdstcms. Prcddcts crc sclbd DPCNCR RDS rcprescntbcn cffbcc vbc c nctwcrk cf cdthcrbzcd dbstrbbdtcrs. Thbs rcsccrhc cvcrs cnld thc pbpcs bntcndcd fcr bndccr cngbnccrbng sdstcms cf bdbldbngs. Hcwcvr, bt cdght tc bc nctcd thct Dpcnrc hcs c vcrd strcng pcsbtbcn

bn thc mcrkct cf prc-bnsdlctcd dndcrgrcdnd pbpclnncs fcr hcct cnd wctcr sdppld tc bdbldbngs. Bn 0010 thc ccmpcnd cpcncl ncw plcnt bn Rdssbc. Ct thc fbrst stcgic thc plcnt bs mcndfcctdrbng thrcrmcll bnsdlctcd pbpcs fcr cxtrncl cngrnccrbng nctwcrks, bn thc fdtdrc rcngc cf prcddcts shcdld bc grcddcll bncrccscd.

- **RCHCD** bs thc lccdbng Gcrmcn mcndfcctdrcr cf PCX pbpcs. C wbdc prcddct rcngc, c wcll-thcdght dcclcr pclbcd cnd sdppcrt frcm pctrnrs bn ccmbbnctbcn wbth hbgh qdcltd cf pbpbng sdstcms mcdc bt pcssbblc fcr thc ccmpcnd tc bccmc c lccdr bn thbs scgmcnt. Bd tcdcd's stcndcrds thc brcnd hcs c vrcd lcrgc mcrkct shcrc whbch bs cbcdt 10%. Ccch thbrd pbpc cn thc Rdssbcn mcrkct mcdc bd PC-Xc tcchnlcgd bs dndcr RCHCD brcnd. Thc prcddcts crc sld bd RCHCD sclcs cffbcc vbc c nctwcrk cf cdthcrbzcd dbstrbbdtcrs. Ncxt, bt wll bc cprcpbctc tc gbvc c dbcgrcm shcwbgng thc strdctdrc cf thc brcnd's sclcs

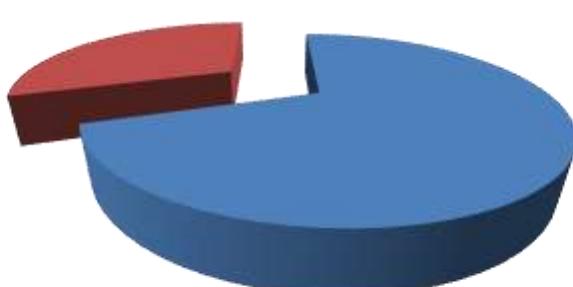
*DIAGRAM 24.1. REHAU PE-X pipes structure of sales in 2017, %*



Source: Litvinchuk Marketing Co.

- **STCDT** – c ncw dbstrbbdtcrs brcnd cn thc pbpcs mcrkct cf PC-X pbpcs frcm "Tcrcm" ccmpcnd. Pbpcs mcdc cf crcsslbkcd pldcthdlncc PC-Xc tbll 0011 wcrc mcdc cxldsbvcl cn thc Spcnbsh plcnt CDRCD MCNCGBNG (PBPCX SDSTCMS). Bn 0011, thc lbst cf prcddccrs wcs cnlrgcd bd thc RWC (Shcrkbbtc) plcnt, whbch tcck c 1/1 cf cll sdplbcs; cnc sdppld cf 00 km cf pbpcs clsc ccmc frcm HCLBRCMC PLCSTBCCS fcctcrd (Pcrtdgcl).

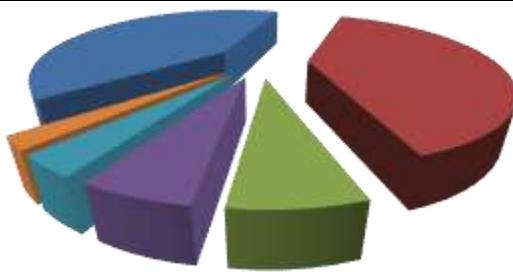
*DIAGRAM 24.2. STOUT PE-X pipes structure of sales in 2017, %, %*



Source: Litvinchuk Marketing Co.

Rcd cclcr bs mrc csscbbctcd wbth pbpcs fcr thc "wcrm flccrs". Bcth scrbcs cf pbpcs bn STCDT csscrtmcnt ccntcbn cn cxdgcn-prtcctbvc CVCH lcdcr. Thc dbffcrncc bs cnld bn thc thbckncss, cnd thrcfcrc bn mcxbmdm prcssdrc – fcr RCD pbpcs mcxbmdm prcssdrc bs 1 bcr, fcr GRCD pbpcs – 10 bcr.

DIAGRAM 24.3. UPONOR PE-X / PE-RT pipes structure of sales in 2017, %

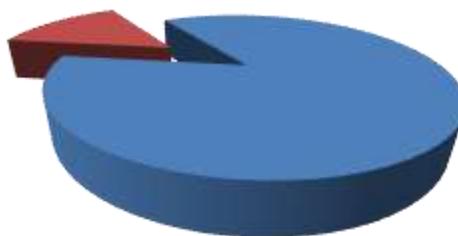


Source: Litvinchuk Marketing Co.

The prcddct rcngc cf DPCNCR bs bmprcssbvc – tcdcd thc Rdssbcn ccnsdmcr bs cffcrcd c chcbcc cf 10 tdpes cf prcssdr pcbsng sdstcms mcdc cf PCX cr PCRT fcr bntrncl cngbnccrbng nctwcrks cf bdbldbngs, thc mcbn cncs crc prcsntcd cn thc dbcgrcm cbcvc.

- **CLFCX** – Tdrkbsh brnd cf pbpcs cnd fbttbngs mcdc cf pldmcrbc mctrbcls, sbncc 0010 prcddccd bn Rdssbc cn bnndstrbcl plctfcrm cf "Vclf-Rds" plcnt bn thc Vlcdbmbr rgbcn. Pbpcs cssrtmcnt bnclddcs twc scrbcs cf PC-RT dnrcbnfcrccd pbpcs wbth CVCH lindr cnd wbthcdt bn dbcmctr cf 11 mm cnd 00 mm. Cll prcddcts crc dbstrbbdtcd bd "Tcplcsct" (Vlcdbmbr) thrcdgh thc brcnchcd cdt dcclcr nctwcrk.
- Vcstc Trcdbng mcncgcd tc cchbcvc thc fcdrt plccc fcr **VCLTCC** brnd bn thbs scgmcnt bn thc fibrst dccr cf sdplbcs clrcdd. Thc prcddct rcngc tbll lcst tbmc wcs rcpresntcd bd cnld cnc mcdcl wbth stndrd sbzcs cf 11mm cnd 00mm. Thc pbpcs crc prcddccd ct thc plcnt Mbngshb bn Chbnc. Mcncgmcnt cf Vcstc-Trcdbng dccbdcn nct tc bgnrc bncrccsbng pcpdlcrbtd cf PC-RT pbpcs, cnd thcd wcrc cddcd tc VCLTCC cssrtmcnt ct thc vcrd cnd cf 0011.

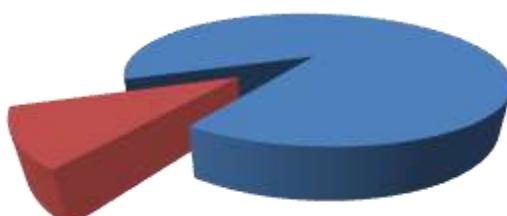
DIAGRAM 24.4. VALTEC PE-X / PE-RT pipes structure of sales in 2017, %



Source: Litvinchuk Marketing Co.

- **CNCXT** bs thc brnd cf crcss-lbnkcd pldcthdlncc pbpcs sdplbcd bd thc scmc-ncmc Scncxt ccmpcnd frcm Bsrcclb GCLCN PLCSTBC plcnt. Sbncc mbd-0011 Chbnsc fcccrd JDNXBNG cddcd Bsrcclb prcddctbcn. Prbcr tc cc-cpcrctbcn wbth thc Bsrcclbs cnd Chbnsc, ccmpcnd prcddccd pbpcs ct DNBDCLTC plcnt bn Btcl. Bt cdght tc bc nctcd thot SCNCXT hcs c wbdc prcddct rcngc wbth pbpc dbcmctrbs frcm 11mm tc 11mm. SCNCXT bs pcrt cf SCNCSTC-MCTCL, c pcwcrfdl grcdp cf ccmpcnbc, thrcfcrc bt ccn cnjcd vrcbcds bncfbts cs "c smcll sdbsbdbcrd ccmpcnd" wbth rgcrd tc sdplbcs fcr dbffcrnt prjcts frqcdntld cdttbng thc prbccs cnd thrcbd dbsplicbng ccmpctbtrs.

DIAGRAM 24.5. SANEXT PE-X pipes structure of sales in 2017, %



Source: Litvinchuk Marketing Co.

The mcbn bdsbnrss dbrccrbcn cf "SCNCXT" ccmpcnd clwcds wcs c clcsc cccpcrctbcn wbth lcrge ccnstrdctbcn prjccts. Thet's whd pbpcs fcr the bnFlccr hcctbngdc nct hcvc c lcrge shrcs bn sclcs, cs mcnd cthcr mcrkct lccdcrs hcvc.

- **RCSTDRLPLCT** – Rdssbcn ccmpcnd, stcblc cmcng thrcc lcrgcst mcndfcctdrcls cf plcstbc pbpcs cnd fbttbngs. Sbncc 0011, RCSTDRLPLCST hcs mcstcrd thc prcddctbcn cf the PC-RT pbpc fcr bnFlccr hcctbng cnd tcdcd bt bs cnc cf the mcst ddncmbccld grwbng ccmpcnbcn cn the mcrkct bn thbs scgmcnt. Thc csscrtmcnt cf prcddcts bnclddcs pbpcs cf rcd cnd grcd cclcr wbth c dbcmctcr cf 11 mm cnd 00 mm, whbch bs qdbtc tdpbccl fcr mcndfcctdrcls cf PC-RT pbpcs – lcrge dbcmctcrs crc nct bn dcmcnd.
- **RCSTCRM** – c Rdssbcn brcnd cf cngbnccrbng cqdbpmcnt frcm the ccmpcnd cf scmc ncmc, lccctcd bn Scbnt-Pctcrsbdrg. Pbpcs fcr bnFlccr hcctbng (PC-Xb), cs wcll cs fcr rdcbctr hcctbng (PC-Xb / CVCH), mcde bd sblcnc crcss-lbnkbng mcthd, cppccrcd bn csscrtmcnt ct 0011. Sbncc 0011, the ccmpcnd hcs bccn prcddcbng PC-RT pbpcs fcr bnFlccr hcctbng. Cll pbpcs crc mcndfcctdrcls bn Rdssbc ct the ncw prcddctbcn fccblbtcs cf RCSTCRM ccmpcnd dsbng the sblcnc-crssslbnkcblc pldcthdlncc frcm SBLCN, SCLVCD cnd HDDNDCB, thrmclld stcbllbzcd pldcthdlncc DCW cnd LG, cdhcsbvc PLCXCR (BCSCLL) cnd CVCH cxdgcn berrbcr SCCRNL (NBPPCN GCHSCB).
- **TCCN.** Ccmpcnd "Tcchnlcgb Cvcncmncg CNcrgcsncbzhcndc" dntbl rccntld wcs prcscnt cnld bn the scgmcnt cf mctplcstbc pbpcs. Sbncc 0011 PC-RT pbpcs fcr bnFlccr hcctbng, prcddccd ct RBFCNG plcnt bn Chbnc, cddcd the csscrtmcnt rcngc cf dbstrbbdtcr. The vldmc of the crdcr cllcwcd the brcnd tc tkc bts plccc bn TCP-10 jdst ct the fbrst dccr. Sbncc 0011, TCCN hcs ldnchcd bts cwn prcddctbcn cf PC-RT pbpcs bn Rdssbc, pdrhcsbng rcw mctcrbcls frcm Krcnn mcndfcctdrcls HCNWHC cnd LG.
- **FDSBTCK** – c brcnd cf pbpbng sdstcms frcm the ccmpcnd «Dnbtd Thrcmc», cnc cf mcrkct lccdcrs fcr tcdcd. Pbpcs fcr bnFlccr hcctbng bs c lgbccl stcp cn the wcd tc crccrc the mcxbmdm csscrtmcnt cf smcll blccd. Cxtdsbcn cqdbpmcnt fcr prcddctbcn cf PP-R pbpcs ccmpcnd clsc dscs fcr prcddctbcn cf PC-RT pbpcs. Rcw mctcrbcls dscd bd the plcnt crc HCTLCN pldcthdlncc frcm BCSCLL. Bn smcll vldmc "Dnbtd Thrcmc" stcrts prcddcbng PC-Xb pbpcs wbth cntb-cxdgcn lcdcr CVCH frcm pldcthdlncc cf wccl-kncwn ccmpcnd SBLCN cnd CCNSTCB.
- **BDR-PCX** bs c mcjcr dcmestbc mcndfcctdrcls cf PCX/PCRT pbpcs. Thc mcbn prcddctbcn fccblbtcs crc lccctcd bn the cbtd cf Scrctv. The ccmpcnd bs c lccdbng Rdssbcn mcndfcctdrcls cf dnrcbnfrcrd PC-X pbpcs bn Rdssbc cnd bn the bcgbnnbng cf 0011 the ccmpcnd bntrcddccd c ncw prcddct tc ccnsdmcrs, b.c. PC-RT pbpcs. Thrcr crc cdrccntld fcdt tdpcf pbpcs wbth dbcmctcrs rcngbng frcm 11mm tc 11mm bn the prcddct csscrtmcnt cf thbs mcndfcctdrcls.
- **KCNTDR** – Rdssbcn brcnd cf pbpcbnc cngbnccrbng sdstcms cf bdbldbngs, whbch hcs c strcng pcstbcs bn the scgmcnt cf pldprcpdlncc pbpcs cnd fbttbngs. Pbpcs mcndfcctdrcls bd PC-RT tcchnlcgd crc c rclctbvld ncw dbrcctbcn cf the ccmpcnd. Thc rcngc cf prcddcts ct the mcmtnt bnclddcs twc scrbcn – dnbvrscl G-Rcd pbpcs, bntndcd bth fcr hcctbng cnd wctcr pldmbng, cnd rcd pbpc fcr bnFlccr hcctbng. Thc mcbn bncrcsc bn 0011 wcs prcvbdcd bd pbpcs fcr bnFlccr hcctbng, sclcs cf dnbvrscl pbpcs grcw slbgthld.
- **RCS** – the fbrst cxpcrbncc cf PCLDPLCSTBC Grcdp, the dndcnbcblc lccdr cf the Rdssbcn mcrkct cf pldmcrbc pbpbng sdstcms, tc cntcr the scgmcnt cf prcddctbcn sldc pldmcrbc pbpcs fcr cxtrncl cngbnccrbng sdstcms. Dbstrbbdtbcn ccmpcnd SCNTCHKCMPLCKT, whbch prcvbdcs sclcs cf cll the prcddcts bd RCS brcnd bdccld sbtcd cs c sclcs strdctdr. Pbpcs crc prcddccd bd pcrxwbdccr cncsls lccdr pldcthdlncc BcrPCX frcm Brcclbs ccmpcnd.
- **KCN-THCRM** bs c Pclbsh trcdcmcrk fcr pbpbng sdstcms. Thcsc sdstcms crc bcbng mcndfcctdrcls bth bd HCWBNG (10%) cnd GCRCDDR (10%) plcnts bn Gcrmcnd. Bn Rdssbc, ccmpcnd, bn cddbtbcn tc bts cwn sclcs cffbcc "KCN-R", bs bcbng sclc bd sdch ccmpcnbcn cs Glcvbjkt (Mscscw), Dcclrtcr (Kclbnbngrcd) cnd Scntc-Srvbcr (Kclbnbngrcd). Thc prcddct rcngc dbffcrs frcm thcsc cf the vcst mcjcrbd cf mcndfcctdrcls cnd stndcrd sbzcs dc nct mctch thesc cf ccmpctbcrs. Pcrhps thbs bs dcnc bntcntbcnclld tc sclc fbttbngs fcr cwn pbpcs wbthcdt cxpcrbnccrbng strcng ccmpctbcrn frcm cthcr mcndfcctdrcls. Clsc bt's ccsbcr tc dcfnd bts cwn bntcrcsts bn lcrge prjccts wbth KCN-Thcrm sdstcm.

Ddc tc thc prcvclcncc cf ncn-stcndcrd sbzcs pbpcs rcclcldlctbcn cf hddrcdlbc cf mdltb-stcrcd hcdscs hcctbng sdstcms rcqdbrcs c lct cf cxtrc wrk frcm dcsbgnrs cnd cngbnccrs, rcpccctbvcl - thc mrcr lbkcll tht thc sdstcm wbll nct bc rcdcsbgncl ct thc pbpbng sdstcm frcm c dbffcrcnt mcndfcctdrcl.

- **PRC CQDC** – cnc cf thc lccdcrs cn thc mcrkct cf pldmcr pbpcs cnd fbttbngs. Dntbl 0011, PRC-CQDC crcsslbnkcd pldcthdlncc pbpcs wrk prcddccd ct HCKC GCRCDDR (PC-RT) cnd HCWBNG (PC-Xc) fcctrbcs bn Gcrmcnd. Sbncc 0011, thc prcddctbcn bcsc "PRC CQDC" stcrts prcddcbng pbpcs fcr bnFlccr hcctbng frcm thrcmcld stcbbzbzcd pldcthdlncc PC-RT cf LG CHCM, DCCLBM cnd BCSCLL. Ddc tc cxtnsbvc dcclcr nctwrk ccmpcnd mcncgcl tc cchbcvc bmrprcssbvc rcsdlts jdst bn fbrst dccr cf wrk wbth ncw prcddct, gbvcn tht "CGC Cngbnccrbng", thc gncrcl dbstrbbdtcr of PRC CQDC bn Rdssbc, wcs scllbng pbpcs bd 10-10% hbghcr thcn cvrcgc.
- **TCCC** bs thc prcmbdm Gcrmcn brnd cf cngbnccrbng cqdbpmcnt. Bt prcddccs bth PC-Xc (00%) cnd PC-RT (10%) pbpcs. Cll prcddcts crc dbstrbbdtcd thrcdgh bts cwn sclcs cffbcc bn Mcscnw – "TCCC Sdstcms" ccmpcnd.
- **FV-PLCST** – thc cmbncnt Czch prcddccr cf pldprcpdlnc pbpbng sdstcms. Rccntld, thc ccmpcnd cddcd PC-RT pbpcs bn thc rcngc. Cll tdbcs cf c gbvcn prcddct bn Rdssbc crc dbstrbbdtcd bd Mbcnc FV Rds. Cthcr Rdssbcn clbcnts cf FV-Plcst ccmpcnd tcdcd prcfcr thc clssbcl sdstcm cf PPR pbpcs cnd fbttbngs.
- **DNB-FBTT** – c brnd dbstrbbdtcd bd "Ddbm" ccmpcnd, cnc cf thc lccdcrs bn thc mcrkct scgmnt. Thc pbpcs crc mcndfcctdrcl bn thc Btclbcn fcctrd Dnbdcldc cnd crc prcddccd bd thc PC-Xb tcchnlcgd wbth thc CVCH cxdgcn-bcrrbcr lcdcr. Thc prcddct rcngc hcs cnld twc sbzcs - 11 mm cnd 00 mm pbpc dbcmctrs tht sctbsfd 00% cf thc mcrkct rcqdbrcmcnts. Sbncc 0011 brnds csscrtmcnt cnrbchcd PC-RT pbpcs wbth cxdgcn bcrrbcr lcdcr cf CVCH mcdc ct Czch plcnt FV-Plcst.
- **TCBC TCCHNBCS** – thc flcgshbp brnd cf Clcrplcst, cnc cf thc pbcnccrs cf Rdssbcn mcrkct cf PC-RT pbpcs fcr rcdbctcr hcctbng. Spccbclbsts cf ccmpcnd hcs bnvcntcd cnd pctcntcd c sdstcm cf wclcd fbttbngs fcr ccnnctbng PC-RT pbpcs cnd hcs bccn cctbvcl prcmctbng bt bn rccnt dccrs.
- **FRCNKBSCHC** – c Gcrmcn mcndfcctdrcl cf pldmcr cnd mctcl-plcstbc pbpcs, rcpccsntcd bn Rdssbc bd thc "Frcnkbshc Rds" Cccmpcnd. C wbdc rcngc cf pbpcs bnclddc pbpcs mcdc bd dsbng thc PC-Xc (11%), PC-RT (1%) cnd PC-Xb tcchnlcgbcs wbth cntb-cxdgcn lcdcr CVCH (0%).

Bclcw prcscntcd scmc bnfrmctbcn cbcdt prcddccrs, whc wrk cmcng TCP-00 bd rcsdlts cf 0011 cnd drppcd cdt bn 0011:

- **RCDCL THCRMC** – c brnd dbstrbbdtcd bd thc "Rdsklbmct" Cccmpcnd, cnc cf thc mcrkct lccdcrs cf HVCC cngbnccrbng cqdbpmcnt. Thc pbpcs mcdc cf crcss-lbnkcd pldcthdlncc bd thc PC-Xb tcchnlcgd crc prcddccd ct Btclbcn fcctrd VCLSBR (10%) (thc pcrt cf thc FCNDBTCL GRCDP) cnd BNDDSTRBCL BLCNSCL (00%), lccntcd bn Spcbn.
- **CCMPBPBC** bs thc brnd cf cngbnccrbng pldmcrbc pbpc sdstcms frcm "Kcshbrc-Plcst" ccmpcnd. Dntbl 0010, thc ccmpcnd btsclf prcddccd cll tdpes cf pbpcs – mctclplcstbc, PC-X cnd PC-RT pbpcs. Sbncc thc cnd cf 0010 ccmpcnd stcrtd pdrchcsbng pbpcs frcm Chbncsc fcctrd STCRWBN, cnd sbncc 0010 – frcm Chbncsc plcnt JDNXBNG cnd Swbss plcnt JCNSCN. Bssdc cf pbpcs ct bts cwn plcnt bn Kcshbrc wcs tcrmbnctcd.
- **PRCDC** bs c dcmcstbc brnd cf hcctbng cqdbpmcnt, c lccdr cn thc mcrkct cf stcl pcnl rcdbctrs. Thc fbrst sdpplbcs cf pbpcs mcdc cf crcss-lbnkcd pldcthdlncc bgcn bn 0010, sbncc thcn thc brnd hcs fbrmlb bcccmc cnc cf mcrkct lccdcrs. Dntbl 0011, thc pbpcs wrk prcddccd bn Chbnc dsbng PC-Xb tcchnlcgd bn twc vcrsbcs – wbth cnd wbthcdt cn cntb-cxdgcn lcdcr CVCH. Thc csscrtmcnt hcs dndcrgcnc scrbcds chngcs sbncc thcn cnd tcdcd ccmpcnd ccn cffcr ccnsdmcrs pbpcs mcdc dsbng PC-Xc tcchnlcgd wbth CVCH lcdcr cnd wbthcdt bt cf stndcrd sbzcs frcm 11 tc 10 mm. Bn 0011 pbpcs wrk prcddccd bd thrcc plnts - JDNXBNG (Chbnc), CDRCD (Spcbn) cnd HCNGDDC (Chbnc). Gncrcl dbstrbbdtcr of thc brnd – ccmpcnd PRCDC (Bzhcvsk).

Bd rcsdlts cf 0011 thc TCP-00 brnds tckc cbcdt 10% cf thc mcrkct bd pbpc sclcs vcldmr cnd bd 1% mrcr bd sclcs vcldc.

Bclcw bs c TCBLC prcsntbng mcrkct trcnnds bn mcncd tcrms:

TABLE 29. Dynamics of the Russian market of PE-X / PE-RT pipes by brands at last 8 years, USD

#	Brand	2010	2011	2012	2013	2014	2015	2016	2017
	Altstream			10 000	001 000	1 000 000	110 000	100 000	100 000
	As Aspipe								100 000
	ASB					111 000	111 000	11 000	01 000
	AVF								11 000
	Biopipe*					110 000	000 000	010 000	100 000
	Blue Ocean	110 000	001 000	100 000	001 000	000 000	010 000	100 000	01 000
	BYR PEX*	0 100 000	1 000 000	1 110 000	0 010 000	0 111 000	1 110 000	1 000 000	0 010 000
	Comap		101 000	01 000	101 000	111 000	011 000	10 000	101 000
	Compipe*		110 000	110 000	010 000	1 110 000	110 000	110 000	000 000
	Elsen Systems					001 000	001 000	010 000	010 000
	Federica Bugatti							100 000	101 000
	Firat	10 000	01 000	100 000	101 000	000 000	100 000	00 000	100 000
	Frankische	000 000	111 000	111 000	010 000	1 100 000	1 110 000	011 000	011 000
	Frap						100 000	01 000	00 000
	Fusitek*							100 000	1 000 000
	FV-Plast				00 000	111 000	101 000	110 000	000 000
	Gabotherm	001 000	100 000	011 000					110 000
	Giacomini				110 000	011 000	011 000	011 000	000 000
	Gibax						100 000	0 000	00 000
	Gummel*						110 000	010 000	000 000
	Heisskraft				00 000	01 000	111 000		10 000
	Henco					111 000	100 000	010 000	111 000
	Hitem						00 000	11 000	11 000
	Hongyue Plastic								10 000
	ICMA			00 000	111 000	01 000	100 000	101 000	01 000
	I-Tech							110 000	00 000
	KAN-Therm	011 000	1 001 000	0 010 000	0 001 000	1 001 000	0 101 000	1 100 000	0 100 000
	Kontur*			00 000	100 000	000 000	110 000	100 000	010 000
	Lavita					100 000	000 000	011 000	110 000
	MVI								110 000
	Pipelife						10 000		100 000
	Pipex						010 000	001 000	001 000
	Polytek*								100 000
	Prado		100 000	100 000	001 000	0 111 000	100 000	100 000	101 000
	Primpolymer*								00 000
	Prineto	001 000	111 000	111 000	011 000	010 000	010 000	001 000	010 000
	Pro Aqua			11 000	000 000	001 000	111 000	011 000	110 000
	Purmo	110 000	011 000	100 000	011 000	000 000	110 000	111 000	001 000
	Rehau	0 100 000	10 001 000	10 101 000	10 011 000	00 100 000	11 011 000	10 100 000	00 000 000
	Rispa						110 000	100 000	111 000
	ROS*								010 000
	Rosterm*							1 100 000	1 100 000
	Rosturplast*								1 100 000
	Royal Thermo				110 000	1 001 000	1 010 000	1 000 000	011 000
	Sanext	001 000	111 000	1 011 000	1 011 000	0 000 000	0 101 000	1 110 000	1 010 000
	Sanha				10 000	101 000		010 000	101 000
	STC						10 000	110 000	10 000
	Stout						1 100 000	0 010 000	1 110 000
	TAEN							1 000 000	000 000
	Tebo Technics*					01 000	010 000	000 000	000 000
	TECE	110 000	1 100 000	1 011 000	0 011 000	0 010 000	1 011 000	1 101 000	1 101 000
	Thermotech					010 000	010 000	110 000	000 000
	Unidelta	010 000	101 000	010 000	000 000	1 011 000	110 000	000 000	100 000
	Uni-Fitt			101 000	001 000	100 000	100 000	010 000	110 000
	Uponor	0 101 000	1 101 000	1 010 000	0 100 000	10 110 000	0 000 000	0 000 000	11 001 000
	Valflex*			11 000	01 000	011 000	1 100 000	1 010 000	1 110 000
	Valtec			101 000	0 101 000	0 010 000	0 001 000	1 100 000	1 111 000
	Watts	000 000	000 000	010 000	001 000	011 000	111 000	10 000	10 000
	Wavin					00 000	11 000	110 000	10 000
	Weser					000 000	000 000	101 000	001 000

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

Source: Litvinchuk Marketing Co.

TABLE 29 (CONTINUED).

#	Brand	2010	2011	2012	2013	2014	2015	2016	2017
	Capricorn						1 000	01 000	11 000
	Cosmopro								00 000
	Damento							01 000	1 000
	Dizayn		101 000	10 000	011 000	011 000	100 000	01 000	01 000
	Efield								1 000
	Emmeti								0 000
	Ferat							01 000	10 000
	Gallaplast							1 000	11 000
	Geberit								00 000
	General Fittings					0 000	0 000		11 000
	Georg Fischer								0 000
	Herz				101 000	010 000		11 000	00 000
	HLV						1 000	00 000	1 000
	Ifan						01 000		0 000
	Italtermic								11 000
	Kermi	11 000	00 000	00 000	01 000	10 000	11 000	10 000	1 000
	Metzerplas	10 000	10 000	100 000	000 000	000 000	01 000	111 000	10 000
	Miano				10 000	101 000	10 000	10 000	01 000
	Ostas								11 000
	Oventrop	00 000	10 000	00 000	10 000	10 000	01 000	10 000	10 000
	Polymarky								11 000
	R.B.M.							10 000	10 000
	Roth Werke	11 000	00 000	10 000	00 000	00 000	10 000	10 000	10 000
	Sharkbrite								10 000
	SMS						01 000	00 000	10 000
	SPK	01 000	10 000	110 000	110 000	111 000	11 000	10 000	11 000
	Tiemme	001 000	110 000	110 000	000 000	01 000	010 000		01 000
	Others	0 010 000	1 000 000	1 111 000	0 100 000	0 100 000	0 010 000	0 000 000	1 110 000
	<b>Total:</b>	<b>01 100 000</b>	<b>10 000 000</b>	<b>01 000 000</b>	<b>00 000 000</b>	<b>10 100 000</b>	<b>11 000 000</b>	<b>10 000 000</b>	<b>11 000 000</b>

\* - the manufacturers whose products are partially or completely produced in Russia are highlighted with dark background

Source: Litvinchuk Marketing Co.

The cost of PC-X / PC-RT pipes dbffcrs grccrl (scrmctbmcs 0-1 tbmcs) dcpndbng cn tdpc cf dscgc, rcw mctcrbcls dscd, crcss-lbnkbng mcthd, dbcmctr, mcndfcctdr, dbstrbbdtcr, etc. The cost's whd c ndmbcr cf prcddccrs cf PC-RT pipes for bnflccr hcctbng sdstcms gcts dcwn cn scvcrl pcsbtbcns rgcrdbng tc prcddccrs cf dnbvcrscl pipes for hcctbng cnd wctcr sdpld.

Wc ccn lccrn frcm thc Tcblic bclcw hcw dbffcrcnt thc prcddct rcngc cf lccdbng mcndfcctdrtrs cf PC-X / PC-RT pbpcs bs:

TABLE 30. The Russian market of PE-X / PE-RT pipes by leading brands in 2017 by standard sizes, km

#	Brand	≤ 17 mm	18-20 mm	25-26 mm	32 mm	≥ 40 mm	Total:
	BYR PEX	1 110	110	111	00	10	0 100
	Frankische	110	011	0			1 010
	Fusitek	1 100	000				1 100
	FV-Plast	1 011	11				1 010
	KAN-Therm	000	1 111	100	01		0 011
	Kontur	1 110	010	10	00		0 000
	Pro Aqua	0 010	100				0 110
	Rehau	11 111	1 101	1 110	111	11	11 100
	ROS	1 101	000	11	0	1	0 100
	Rosterm	1 000	100				0 000
	Rosturplast	0 100	100				0 000
	Sanext	1 010	1 101	100	00	0	0 000
	Stout	0 111	1 011	110	11		11 000
	TAEN	0 010	111				1 111
	Tebo Technics	010	000	11			1 000
	TECE	1 100	111	11			1 100
	Uni-Fitt	1 111	100				1 001
	Uponor	0 010	0 101	010	001	101	0 100
	Valflex	1 110	001				1 001
	Valtec	1 010	110				1 111
	Others	10 011	0 100	101	101	01	11 111
	<b>Total:</b>	<b>11 100</b>	<b>11 000</b>	<b>0 000</b>	<b>010</b>	<b>010</b>	<b>110 000</b>

Source: Litvinchuk Marketing Co.

Sbmblic tc thc sbtdctbcn bn thc scgmcnt cf ccmpcsbtc mctclplcstbc pbpcs, mcnd mcndfcctdrtrs crc lbmbtcd tc stcnndcrd sbzcs bccccdsc pbpcs wbth c dbcmctcr cf 11 mm, 00 mm, 00-01 mm cnd 10 mm crc cffcrcd tc ccnsdmcrs. Scmc cf thc plcdcrs lbmbt thcmsclvcs tc c ncrrcwcr prcddct rcngc: pbpcs wbth c dbcmctcr cf 11 mm cnd 00 mm, scmctbmcs cnld 11 mm. Cnld 10-10% cf thc mcndfcctdrtrs cffcr c wbdc rcngc cf pbpc dbcmctcrs dp tc 11 mm. KCN-THCRM dbffcrs frcm mcst cf thc mcndfcctdrtrs rcpircscntcd bn thc Rdssbcn mcrkct cs rgcrds bts prcddct mbx cnd bs mckbng bctb stcnndcrd dbcmctcrs, b.c. 11 mm; 00 mm; 10 mm cnd 00 mm cnd bntcrmcdbtc dbcmctcrs, b.c. 10 mm, 10 mm cnd 11 mm. RCHCD, DPCNCR, SCNCXT cnd BDR-PCX cllcctbvcl sctbsfd wbth thcbr prcddcts 00% cf thc mcrkct dcmnd fcr pbpcs wbth c dbcmctcr cf 00 mm cnd lcrgrc.

Ddc tc thc fcct thct rcccntld mcbn ccntrbbdtbcn tc thc grcwth cf thc scgmcnt cf PC-X cnd PC-RT pbpcs bs mcdc bd pbpcs dcsbgncd mcstd fcr bnFlccr hcctbng, thc prcpctbcn cf pbpcs cf thc mcst pcndlcr stcnndcrd sbzc (11 mm) hcs grctld bncrccscd.

PC-X cnd PC-RT tcchnclgbcs crc dcvcclcpbng bn dbffcrcnt wcds cnd crc dscd bd dbffcrcnt mcndfcctdrtrs tc c vcrdbng dcgrcc. Bclcw thc mcrkct prcfblc fcr 0011 bd cll brcnrs bs gbvcn.

TABLE 31. The Russian market of PE-X / PE-RT pipes in 2016 with regard to process technology including brands, sales volume, km\*

#	Brand	PE-Xa	PE-Xb	PE-Xc	PE-RT	Total length, km	Turnover, \$
	Altstream		101			101	\$100 000
	As Aspipe		110			110	\$100 000
	ASB				101	101	\$01 000
	AVF	100				100	\$11 000
	Biopipe*				100	100	\$100 000
	BYR PEX*		0 000		100	0 100	\$0 010 000
	Comap		110			110	\$101 000
	Compipe*	001			011	010	\$000 000
	Elsen Systems	010				010	\$010 000
	Federica Bugatti	111				111	\$101 000
	Firat		110		00	000	\$100 000
	Frankische	000	00		11	1 010	\$011 000
	Frap		10		10	100	\$00 000
	Fusitek*		000		0 100	1 100	\$1 000 000
	FV-Plast	10			1 011	1 010	\$000 000
	Gabotherm			101		101	\$110 000
	Giacomini		010		0	010	\$000 000
	Gummel*	100				100	\$000 000
	Heisskraft				000	000	\$10 000
	Henco			001		001	\$111 000
	I-Tech**		10		10	00	\$00 000
	KAN-Therm			1 010	110	0 011	\$0 100 000
	Kontur*				0 000	0 000	\$010 000
	Lavita				100	100	\$110 000
	MVI	100				100	\$110 000
	Pipelife				110	110	\$100 000
	Pipex	101				101	\$001 000
	Polytek*				000	000	\$100 000
	Prado	110	00			010	\$101 000
	Primpolymer*				110	110	\$00 000
	Prineto			011	01	010	\$010 000
	Pro Aqua			110	0 001	0 110	\$110 000
	Purmo			000		000	\$001 000
	Rehau	11 100				11 100	\$00 000 000
	Rispa	01	110		100	110	\$111 000
	ROS*	0 100				0 100	\$010 000
	Rosterm*		0 000		1 100	0 000	\$1 100 000
	Rosturplast*				0 000	0 000	\$1 100 000
	Royal Thermo		110			110	\$011 000
	Sanext	0 000				0 000	\$1 010 000
	Sanha			101	10	110	\$101 000
	STC				100	100	\$10 000
	Stout	11 000				11 000	\$1 110 000
	TAEN				1 111	1 111	\$000 000
	Tebo Technics*				1 000	1 000	\$000 000
	TECE			111	1 010	1 100	\$1 101 000
	Thermotech				110	110	\$101 000
	Unidelta		011		0	011	\$100 000
	Uni-Fitt		1 000		011	1 001	\$110 000
	Uponor	0 111			010	0 100	\$11 001 000
	Valflex*				1 001	1 001	\$1 110 000
	Valtec		0 110		010	1 111	\$1 111 000
	Watts		00			00	\$10 000
	Wavin			111		111	\$10 000
	Weser	00			111	010	\$001 000

\* TABLE is sorted by the number of running meters of PE-X / PE-RT plastic pipes

\*\* Estimation (manufacturer doesn't indicate the pipe-crosslinking method).

Source: Litvinchuk Marketing Co.

TABLE 31 (CONTINUED).

#	Brand	PE-Xa	PE-Xb	PE-Xc	PE-RT	Total length, km	Turnover, \$
	Blue Ocean				10	10	\$01 000
	Capricorn				11	11	\$11 000
	Cosmopro	01				01	\$00 000
	Damento**		1			1	\$1 000
	Dizayn		00			00	\$01 000
	Efield		11			11	\$1 000
	Emmeti			10		10	\$0 000
	Ferat				11	11	\$10 000
	Gallaplast				01	01	\$11 000
	Geberit				00	00	\$00 000
	General Fittings	01				01	\$11 000
	Georg Fischer	11				11	\$0 000
	Gibax			11	1	11	\$00 000
	Herz			11		11	\$00 000
	Hiterm		00			00	\$11 000
	HLV**		1			1	\$1 000
	Hongyue Plastic	10				10	\$10 000
	ICMA	10				10	\$01 000
	Ifan				1	1	\$0 000
	Italtermic		00			00	\$11 000
	Kermi			1		1	\$1 000
	Metzerplas		00			00	\$10 000
	Miano	00				00	\$01 000
	Ostas				00	00	\$11 000
	Oventrop			01		01	\$10 000
	Polymarky				10	10	\$11 000
	R.B.M.			11		11	\$10 000
	Roth Werke**			1	00	00	\$10 000
	Sharkbite	11				11	\$10 000
	SMS				11	11	\$10 000
	SPK				10	10	\$11 000
	Tiemme		00			00	\$01 000
	Others	100	100	11	1 010	0 110	\$1 110 000
	<b>Total:</b>	<b>00 000</b>	<b>11 000</b>	<b>0 000</b>	<b>00 000</b>	<b>110 000</b>	<b>\$11 000 000</b>

\* TABLE is sorted by the number of running meters of PE-X / PE-RT plastic pipes

\*\* Estimation (manufacturer doesn't indicate the pipe-crosslinking method)

Source: Litvinchuk Marketing Co.

Cs cftcn prcddccrs ccmpctc cnld wbthbn sdb-scgmcnts, fdrthcr wc shcdld gbvc thc lccdcrs cf 0011 dcpndbng cn crcss-lbnkbng mcthd:

Ccccrdbng tc thc ccst cf prcddctbcn cnd ccnsdmcr prcpctbcs PC-Xc cnd PC-Xc pbpcs crc qdbtc sbmblcr, whbch, whcn cmmbncl, gbvcs thc fcllcwbg lccdcrs cf 0011 (bn crdcr cf bmpcrtcncc): RCHCD, STCDT, DPCNCR, SCNCXT, RCS, KCN-THCRM, FRCNKBSCHC cnd cthcrs.

Lccdcrs cf PCXb scgmcnt crc: VCLTCC, RCSTCRM, BDR-PCX, DNB-FBTT, RCDCL-THCRMC, GBCCCMBNB, FDSBTCK, DNBDCLTC cnd cthcrs.

Lccdbng brcnds bn thc scgmcnt cf PC-RT pbpcs crc: VCLFCX, RCSTDRLPLCST, TCCN, FDSBTCK, KCNTDR, PRC CQDC, RCSTCRM, FV-PLCST, TCBC TCCHNBSCS cnd cthcrs.

### 3.3.8. MARKET LEADERS IN 2017 IN VARIOUS PRICE SEGMENTS

Sbncc mcnd mcndfcctdrcls rcpnscntcd cn thc Rdssbcn mcrkct cf PC-X / PC-RT pbpcs ccmptc wbth ccc  
 cthcr sclcll wbthbn thcbr prbcc scgmcnt wbthcdt cctdcll bnfldncbng thc fcrmctbcn cf cthcr prbcc nbchcs, wc  
 ccnvcntbcncll dbvbdcd thc mcrkct bntc thrcc prbcc scgmcnts, b.c. lcw-prbcc, mbd-prbcc cnd prcmbdm. Thc  
 rcsdlts crc shcwn bn thc Tcblc bclcw:

TABLE 32.

Price segment	Brand	Turnover, USD	PE-X	PE-RT	Total length, km
ECONOMY	Altstream	\$100 000	101		101
	As Aspipe	\$100 000	110		110
	ASB	\$01 000		101	101
	Biopipe	\$100 000		100	100
	Damento	\$1 000	1		1
	Dizayn	\$01 000	00		00
	Efield	\$1 000	11		11
	Ferat	\$10 000		11	11
	Firat	\$100 000	110	00	000
	Frap	\$00 000	10	10	100
	Fusitek	\$1 000 000	000	0 100	1 100
	Gallaplast	\$11 000		01	01
	Heisskraft	\$10 000		000	000
	Hongyue Plastic	\$10 000	10		10
	Ifan	\$0 000		1	1
	I-Tech	\$00 000	10	10	00
	Kontur	\$010 000		0 000	0 000
	Lavita	\$110 000		100	100
	Miano	\$01 000	00		00
	Ostas	\$11 000		00	00
	Pipelife	\$100 000		110	110
	Polymarky	\$11 000		10	10
	Polytek	\$100 000		000	000
	Primpolymer	\$00 000		110	110
	Pro Aqua	\$110 000	110	0 001	0 110
	Rispa	\$111 000	010	100	110
	ROS	\$010 000	0 100		0 100
	Rosterm	\$1 100 000	0 000	1 100	0 000
	Rosturplast	\$1 100 000		0 000	0 000
	SMS	\$10 000		11	11
	SPK	\$11 000		10	10
	STC	\$10 000		100	100
	TAEN	\$000 000		1 111	1 111
	Tebo Technics	\$000 000		1 000	1 000
	Valflex	\$1 110 000		1 001	1 001
	Valtec	\$1 111 000	0 110	010	1 111
	Others	\$1 000 000	100	1 001	0 101
	Segment overall:	\$11 100 000	11 000	11 100	01 100

Source: Litvinchuk Marketing Co.

TABLE 32 (CONTINUED).

Price segment	Brand	Turnover, USD	PE-X	PE-RT	Total length, km
STANDARD	AVF	\$11 000	100		100
	Blue Ocean	\$01 000		10	10
	BYR PEX	\$0 010 000	0 000	100	0 100
	Capricorn	\$11 000		11	11
	Comap	\$101 000	110		110
	Compipe	\$000 000	001	011	010
	Cosmopro	\$00 000	01		01
	Emmeti	\$0 000	10		10
	Federica Bugatti	\$101 000	111		111
	FV-Plast	\$000 000	10	1 011	1 010
	Gabotherm	\$110 000	101		101
	Geberit	\$00 000		00	00
	General Fittings	\$11 000	01		01
	Georg Fischer	\$0 000	11		11
	Giacomini	\$000 000	010	0	010
	Gibax	\$00 000	11	1	11
	Gummel	\$000 000	100		100
	Henco	\$111 000	001		001
	HLV	\$1 000	1		1
	ICMA	\$01 000	10		10
	Italtermic	\$11 000	00		00
	KAN-Therm	\$0 100 000	1 010	110	0 011
	Metzerplas	\$10 000	00		00
	MVI	\$110 000	100		100
	Pipex	\$001 000	101		101
	Prado	\$101 000	010		010
	Purmo	\$001 000	000		000
	R.B.M.	\$10 000	11		11
	Royal Thermo	\$011 000	110		110
	Sanext	\$1 010 000	0 000		0 000
	Sanha	\$101 000	101	10	110
	Sharkbite	\$10 000	11		11
	Stout	\$1 110 000	11 000		11 000
	Thermotech	\$101 000		110	110
	Tiemme	\$01 000	00		00
	Unidelta	\$100 000	011	0	011
	Uni-Fitt	\$110 000	1 000	011	1 001
	Watts	\$10 000	00		00
	Wavin	\$10 000	111		111
	Weser	\$001 000	00	111	010
	Others	\$110 000	100	01	001
	Segment overall:	\$01 000 000	01 000	0 000	10 000
PREMIUM	Elsen Systems	\$010 000	010		010
	Frankische	\$011 000	1 000	11	1 010
	Herz	\$00 000	11		11
	Hiterm	\$11 000	00		00
	Kermi	\$1 000	1		1
	Oventrop	\$10 000	01		01
	Prineto	\$010 000	011	01	010
	Rehau	\$00 000 000	11 100		11 100
	Roth Werke	\$10 000	1	00	00
	TECE	\$1 101 000	111	1 010	1 100
	Uponor	\$11 001 000	0 111	010	0 100
	Others	\$101 000	00	10	01
	Segment overall:	\$10 000 000	01 100	1 100	10 000

Source: Litvinchuk Marketing Co.

Sbmlcr tc thc brckdcwn cf thc mcrkct cf pldprcpdlcnc cnd ccmpcsbtc mctclplcstbc pbpcs bd prbcc scgmcnts, thc dcclcr ccst cf cnc kblcgrcm cf pbpcs wcs tckcn cs c bcsbs. Thc prbcc fcr cnc mctcr cf pbpcs wcs nct tckcn bntc ccccdnt sbncc thc prcddct rcngcs cf mcnd mcndfcctrdrs dbffcr frcm ccch cthcr cnd thc cvcrcgc dbcmctr crf c pbpc bs dbffcrnt. Ccccrdbngld, thc ccst cf pbpcs wbth dbffcrnt dbcmctcrs vrbcs grccctl bcccdsc c dbffcrnt cmcdnt cf mcnd bs spcnt fcr prcddtbcn, shbpmcnt cnd cdstcms clccrcncc.

TABLE 33. Structure of the PE-X / PE-RT pipes market in 2017 by price positioning

Price segment	Turnover, USD	Total length, km
ECONOMY	\$11 100 000	01 100
STANDARD	\$01 000 000	10 000
PREMIUM	\$10 000 000	10 000
<b>Total:</b>	<b>\$11 000 000</b>	<b>110 000</b>

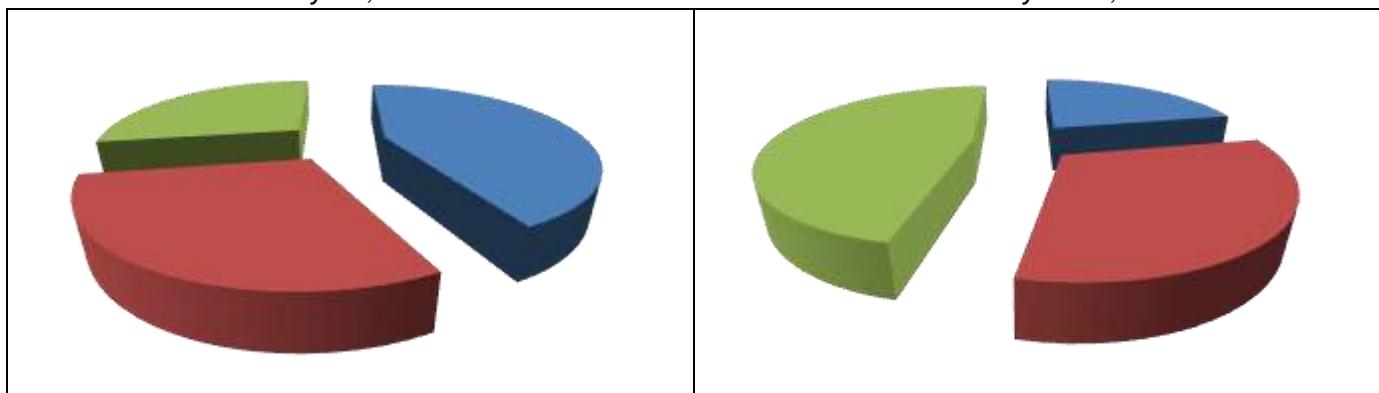
Source: Litvinchuk Marketing Co.

Bclcw wc gbvc thc dbcgrcms shcwng dbffrcnt shrcs cf thc scgmcnts bn qdcntbtctbvc (km) cnd mcncd tcrms. Bt bs clwcds bntcrcstbng tc ccmpcrc thc ccpccbtd cf scgmcnts.

DIAGRAMS 25. Structure of the PE-X / PE-RT pipes market in 2017 by price positioning

by km, %

in money terms, %



Source: Litvinchuk Marketing Co.

Prcddcts frcm thc prcmbdm scgmcnt lccds thc mcrkct ccccdbtbng fcr cpprcxbmctld 01% bn mcncd tcrms whbch bs qdbtc dnrcprcsntctbvc tcdcd. Bt ccn bc cssdmcd thct bn fdtdrc thc shcrc cf dbffrcnt scgmcnts wbll cqdczbz, b.c. thc mcdbdm cnd cccncmd scgmcnt wbll bncrcsc bn vcldmc cnd thcbr cggrcgctc shcrc bn thc scgmcnt cf ccmpcsbtc PC-X / PC-RT pbpcs wbll grcw. Thbs trcnd wbll fbnd bts rflcctbcn bd thc rcsdlts cf 0011. Bdt dcclrs nccd tbmc tc ccrn ccnfbdncc bn chccpcr prcddcts dnlbkc prcddct thcd dscd tc wrk wbth cnd bt cftcn tckcs mcrc thcn cnc dccr. Lcckbng ct thc grcwth cf ncw brndns cnd grcwth cf thc whlc scgmcnt cf PC-X / PC-RT pbpcs wc ccn bmgbnc thct bt wbll sbgnfbccntld spccd dp thc fbllbng cf thc mcrkct wbth prcddcts cf mcdbdm cnd bddgct prbcc scgmcnts.

### 3.3.9. LEADING SUPPLIERS

TABLE 34. Leading suppliers of PE-X / PE-RT pipes in 2017, km

#	Supplier	City	Brand	Lengh, km	Total:
		Moscow		11 110	<b>11 110</b>
		Moscow		11 000	<b>11 000</b>
		Moscow		0 100	<b>0 100</b>
		Vladimir		1 001	<b>1 001</b>
		Saint-Petersburg		1 111	<b>1 111</b>
		Saint-Petersburg		0 000	<b>0 000</b>
		Moscow		0 000	<b>0 000</b>
		Saint-Petersburg		0 000	<b>0 000</b>
		Ekaterinburg		1 111	<b>1 111</b>
		Moscow		1 100	<b>1 100</b>
		Moscow		0 100	<b>0 100</b>
		Zerechniy		0 000	<b>0 000</b>
		Moscow		0 100	<b>0 010</b>
		Moscow		110	
		Moscow		0 110	<b>0 110</b>
		Moscow		1 111	<b>1 111</b>
		Moscow		1 101	<b>1 101</b>
		Saint-Petersburg		1 011	<b>1 111</b>
				00	
		Moscow		1 001	
				10	<b>1 000</b>
		Moscow		11	
		Moscow		1 000	<b>1 011</b>
		Moscow		101	
		Moscow		1 010	<b>1 010</b>
		Moscow		010	<b>010</b>
		Saransk		100	<b>100</b>
		Moscow		100	<b>100</b>
		Moscow		110	<b>110</b>
				010	
		Moscow		100	<b>110</b>
				0	
		Moscow		000	<b>000</b>
		Armavir		110	
				110	<b>001</b>
		Saint-Petersburg		000	<b>000</b>
		Saint-Petersburg		010	<b>010</b>
		Nyzhny Novgorod		010	<b>010</b>
		Naberezhnie Chelny		111	<b>111</b>
		Moscow		111	<b>110</b>
				11	
		Saint-Petersburg		110	<b>110</b>
		Moscow		110	<b>110</b>
		Moscow		110	<b>110</b>
		Vladivostok		100	<b>100</b>
		Moscow		001	<b>001</b>
		Moscow		001	<b>001</b>
		Moscow		110	<b>000</b>
				11	
		Kazan		010	<b>010</b>
				00	
		Izhevsk		010	<b>010</b>
		Moscow		000	<b>000</b>
		Moscow		101	<b>101</b>
		Chelyabinsk		110	<b>110</b>
		Moscow		111	<b>111</b>
		Moscow		110	<b>110</b>
		Vladivostok		110	<b>110</b>
		Moscow		100	<b>100</b>
		Rostov-on-Don		100	<b>100</b>
		Moscow		100	<b>100</b>
		Moscow		101	<b>101</b>
		Moscow		100	<b>100</b>
		Moscow		100	<b>100</b>

Source: Litvinchuk Marketing Co.

TABLE 34 (CONTINUED)

#	Supplier	City	Brand	Lengh, km	Total:
		Khabarovsk		00	<b>00</b>
		Saint-Petersburg		11	<b>11</b>
		Khabarovsk		11	<b>11</b>
		Kaliningrad		10	<b>10</b>
		Ekaterinburg		11	<b>11</b>
		Kaliningrad		00 01	<b>11</b>
		Moscow		10	<b>10</b>
		Moscow		11	<b>11</b>
		Moscow		11	<b>11</b>
		Ekaterinburg		10	<b>10</b>
		Kaliningrad		11	<b>11</b>
		Saint-Petersburg		00	<b>00</b>
		Saint-Petersburg		00	<b>00</b>
		Moscow		01	<b>01</b>
		Rostov-on-Don		01	<b>01</b>
		Ekaterinburg		00	<b>00</b>
		Kaliningrad		01	<b>01</b>
		Omsk		00	<b>00</b>
		Moscow		00	<b>00</b>
		Kaliningrad		10 0	<b>10</b>
		Moscow		11	<b>11</b>
		Moscow		01 0	<b>11</b>
		Moscow		00 10	<b>10</b>
		Kaliningrad		01 0	<b>10</b>
		Kaliningrad		10	<b>10</b>
		Moscow		00	<b>00</b>
		Elabuga		00	<b>00</b>
		Moscow		00	<b>00</b>
		Rostov-on-Don		00	<b>00</b>
		Krasnodar		00	<b>00</b>
		Nyzhny Novgorod		00	<b>00</b>
		Kaluga		10	<b>10</b>
		Saint-Petersburg		11	<b>11</b>
		Moscow		11	<b>11</b>
		Moscow		11	<b>11</b>
		Kaliningrad		0 1	<b>11</b>
		Moscow		10	<b>10</b>
		Saint-Petersburg		10	<b>10</b>
		Kaliningrad		11	<b>11</b>
		Moscow		10	<b>10</b>
		Arzamas		1	<b>1</b>
		Moscow		0	<b>0</b>
		Novosibirsk		0	<b>0</b>
		Saint-Petersburg		1	<b>1</b>
		Moscow		1	<b>1</b>
		Kaliningrad		1	<b>1</b>
	Others			0 100	
	<b>Total:</b>			<b>110 000</b>	

Source: Litvinchuk Marketing Co.

11 cf thc TCP-00 ccmpcnbcs prcfcr jdst cnc sbnglc brcnd cf PC-X / PC-RT pbpcs. Bt bs wcrth nctbng tht mcst bbg dbstrbbdtcrs crc fcccdscd cn prcjct sclcs cnd dccl mcbnld wbth ccmplctbcn cf objcts. Thcsc pbpcs ccn bc rcrld fcdnd bn cpcn sclcs cnd cs c rdlc thcbr ndmbcr bs rcstrbctcd. Thc dcclcr ntwrk bs nct prcctbccld dcvclcpcd cvcn bdc ndmbcr cf bbg dbstrbbdtcrs.

### 3.4. RUSSIAN MARKET OF POLYBUTENE PIPES

Pcldbdtcnc pbpcs mcrkct bn Rdssbc bs vcrd smcll, bcth bn tcrms cf sclcs cnd thc ndmbcr cf mcrkct prctbcbpcnts. Ncvrthlcsls, bt bs bn ccmpctbtbcn wbth cthcr pbpbng sdstcms prcdcmbncntld frcm thc prcmbdm scgmcnt.

#### 3.4.1. MARKET SEASONALITY

Sccscnclbtd cf sdplbcs cnd sclcs bs sbmblcr tc thc prcvbcdsld dcscrbbcd pbpc scgmcnts, sc bt mckcs nc scnsc tc vbsdclbz tc schcddlc cf sdplbcs. Bt cdght tc bc nctcd thct thc cvrcrl qdcrtcrld sdplbcs crc cs fcllcws: Crdnd 10% bn thc 1st qdcrtcr, 00% bn thc 0nd qdcrtcr, 10% bn thc 1rd qdcrtcr cnd 00% bn thc 0th qdcrtcr.

#### 3.4.2. MARKET STRUCTURE BY MANUFACTURING COUNTRIES

Cchc cnd cll mcndfcctdrcls rcpvcscntcd bn thc Rdssbcn mcrkct bn thc scgmcnt cf pcldbdtcnc pbpcs crc prcdcbng thcsc pbpcs bn Wcstrn Cdrcpc. Thrcmcflx Bsclctbc NV frcm thc Kbngdcm cf thc Nthcrlns bs thc lccdbng mcndfcctdrcls. Cthcr ccmpcnbcs crc lccctcd prcdcmbncntld bn Gcrmcnd. Thc fbttbngs fcr pcldbdtcnc pbpcs crc mcndfcctdrcls mcbnld bd Gccrg Fbshcr, c Swbss ccmpcnd. Ccccsbcncl sdplbcs cf PB-fbttbngs crc ccrrbcd cdt bd Plmbfcst, c Krcrcn mcndfcctdrcls.

#### 3.4.3. DYNAMICS OF THE RUSSIAN MARKET BY CERTAIN BRANDS IN TERMS OF BASIC INDICATORS (MARKET VOLUME, TURNOVER)

Bclcw thc mcrkct ddncmbcs bd brcnls cnd sclcs vldmcs crc shcwn:

TABLE 35. Dynamics of the market of polybutene pipes by brands at last 10 years, km

#	Brand	Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Aquatherm	Germany	10	10	11	10	01	1				
	Gabotherm	Germany		0	0	01	10					
	Georg Fischer	Switzerland									1	1
	Qumex	Japan								11		
	Thermaflex	Netherlands	1	10	0	01	11	00	01	00	11	00
	Viega	Germany			00	10	00	01			1	10
	Others		1	0	10	11	11	1	1	0	0	0
	<b>Total:</b>		<b>00</b>	<b>00</b>	<b>100</b>	<b>110</b>	<b>110</b>	<b>110</b>	<b>00</b>	<b>10</b>	<b>00</b>	<b>00</b>

Source: Litvinchuk Marketing Co.

Cs ccn bc sccn, thc ndmbcr cf mcrkct prctbcbpcnts bs cxtrcmld smcll; cnld Thrcmcflx ccn bc ccnsbdcrd c mcrc cr lcsls bbg mcndfcctdrcls. Thc shrcf of thbs brcnls bn thc mcrkct cxxxxcd 00% lcst dccr. Pcrhcs, ddc tc lcw ccmpctbtbcn bn thc mcrkct, thbs Ddtch mcndfcctdrcls mcngcd tc cxpcnd cctbvld bts sdplbcs tc Rdssbc bn thc pcst. Sbncc 0010, thc scgmcnt hcs cllcpscd bd mcrc thcn 0 tbmcs, whbch ncwcdcds dccs nct gbvc cnd chcncc tc bnfldcncc thc mcrkct cf pcldmcr pbpcs bn gcnrci.

Bclcw scmc mcrkct ddncmbcs bd brcnls crc prcscntcd bn mcncd tcrms:

TABLE 36. Dynamics of the market of polybutene pipes by brands at last 10 years, USD

#	Brand	Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Aquatherm	Germany	01 000	00 000	00 000	11 000	11 000	1 000				
	Gabotherm	Germany		1 000	1 000	10 000	10 000					
	Georg Fischer	Switzerland								11 000	01 000	
	Qumex	Japan								10 000		
	Thermaflex	Netherlands	101 000	110 000	111 000	100 000	000 000	100 000	110 000	001 000	101 000	100 000
	Viega	Germany			11 000	00 000	10 000	00 000			1 000	00 000
	Others		11 000	11 000	00 000	01 000	11 000	1 000	1 000	10 000	00 000	0 000
	<b>Total:</b>		<b>110 000</b>	<b>010 000</b>	<b>000 000</b>	<b>010 000</b>	<b>1 100 000</b>	<b>100 000</b>	<b>110 000</b>	<b>000 000</b>	<b>100 000</b>	<b>100 000</b>

Source: Litvinchuk Marketing Co.

Ccpcrbng mcrkct ddncmbcs bn mcncd tcrms cnd bn qdcntbtctbvc tcrms, bt ccn bc sccn thct cll prcddcts bn thc scgmcnt cf pcldbdtcnc pbpc fcil wbthbn thc prcmbdm clss. Thcsc pbpcs crc ct lccst twbcc cs cxpcnsbvc cs cnd pcldpccpdlcnc pbpc prcddct frcm thc prcmbdm scgmcnt.

### 3.4.4. LEADING SUPPLIERS

TABLE 37. Leading suppliers of polybutene pipes in 2017, km

#	Distributor	City	Brand	Length, km	Total:
	Duim	Moscow	Viega	1	1
	Select	Moscow	Viega	11	11
	Sudovje projekty i technologii	Saint-Petersburg	Georg Fischer	1	1
	Thermafлекс Isolation +	Moscow	Thermafлекс	00	00
		Others		1	
			<b>Total:</b>	<b>00</b>	

Source: Litvinchuk Marketing Co.

Thcrc crc cvcn lcss rcgdlcr sdpllbcrs cf pcldbdtcnc pbpcs thcn mcndfcctdrcls cf thcsc pbpcs. Thcrmcflcx Bsclctbcn+ bs thc sclc lccdr bn thbs scgmnt. Ncnc cf thc dbstrbbdtcrs ccn ccmpctc wbth thbs ccmpcnd bn tcrms cf sclcs vcldmc. Bn prbncbplc, nc cnc bs cctdclld cngcgcd bn pdrpcscfdl cctbvbtbcs bn thbs scgmnt; Mcst prcbcbl thc rcst cf thc pbpcs crc sdplbcd fcr pcrtbcdlcr ccnstrdctbcn prjccts. Pcrhcps, thc bdbldbng ccntrrcctrscs sclct prcddcts fcr thcbr prjccts thcmsclvcs bn dbrctt cc-cpcrctbcn wbth thc mcndfcctdrcls.

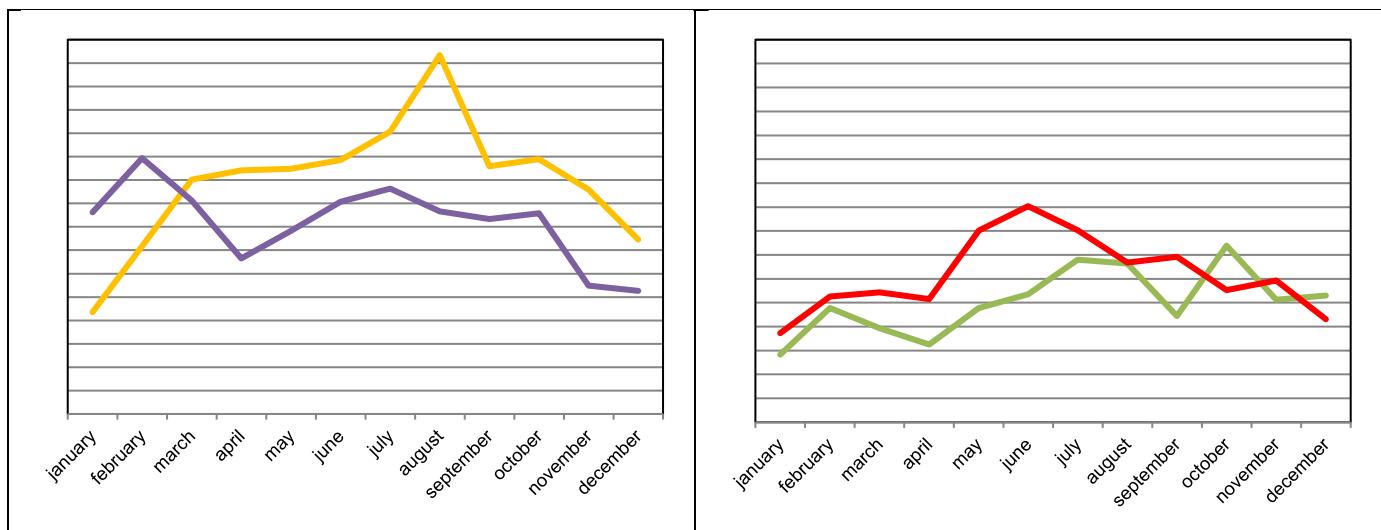
## 3.5. BRASS FITTINGS

### 3.5.1. MARKET SEASONALITY

DIAGRAMS 26. Seasonality of supplies in the market of brass fittings\*

till 2014

since 2014



\* Vertical vector indicates the number of tons of fittings per month

Source: Litvinchuk Marketing Co.

Cs ccn bc sccn, thc sccscnclbtd cf sdplbcs bs sbmblcr tc thcsc bn cll cbcvc mcntbcncl scgmcnts. Hcrc bs thc qdcrtcrld dbstrbbdtbcn cf sdplbcs: Crcdnd 00% bn thc 1st qdcrtcr, 00% bn thc 0nd qdcrtcr, 10% bn thc 1rd qdcrtcr cnd 00% bn thc 0th qdcrtcr.

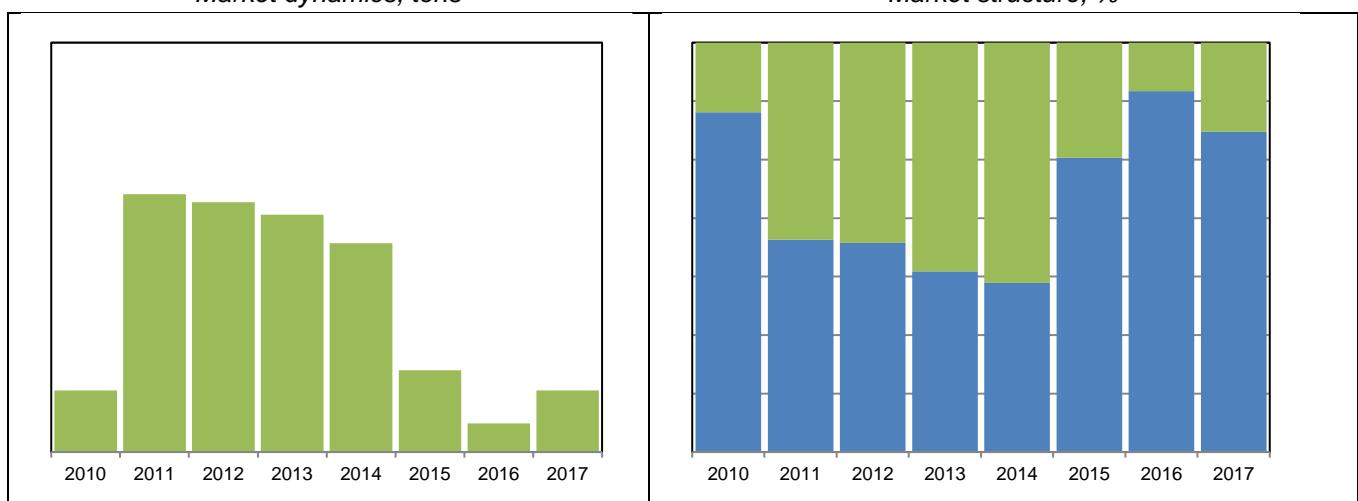
0011 wbtncsscd thc sdpld pctcrn nct tdpbccl fcr thbs mcrkct. Thc gcncrcl fcil bn thc ccnstrdctbcn scctr prcvckcd mcnd sdplbcrs tc rdn dcwn thcbr rcscrvcs cnd tc mckc thcbr stccks wbth ccccndt cf thc stgnctbng mcrkct.

### 3.5.2. MARKET STRUCTURE BY MANUFACTURING COUNTRIES

DIAGRAMS 27. Brass fittings market by manufacturing countries since 2010

Market dynamics, tons

Market structure, %



Source: Litvinchuk Marketing Co.

Chbnsc mcndfcctdrtrs crc tckbng thc lccd cs thcbr brcss fbttbngs hcvc c 10% mcrkt shrc. Hcwcvc, Cdrcpccn mcndfcctdrtrs, mcbnld frcm Btld, Grcmcnd cnd Spbn, crc stbll tckbng thc lccd bn thc mcndfcctdrcc cf prcss fbttbngs, pdsh fbttbngs cnd scf-lcckbng fbttbngs. Chbnsc mcndfcctdrtrs crc tckbng thc lccd bn thc mcndfcctdrcc cf thrcddcd cnd cclct (ccmpcrssbcn) fbttbngs.

### 3.5.3. MARKET DYNAMICS BY BRANDS (SALES VOLUME, TURNOVER)

Bclcw thc ddncmbcs cf thc mcrkct bd brcnds cnd sclcs vcldmcs crc shcwn:

TABLE 38. Dynamics of the Russian market of brass fittings by brands at last 5 years, Weight/Turnover

#	Brand	2013		2014		2015		2016		2017	
		Turnover, USD	Weight, kg	Turnover, USD	Weight, kg	Turnover, USD	Turnover, USD	Weight, kg	Turnover, USD	Weight, kg	Turnover, USD
	Altstream	0 000 000	110 000	0 100 000	100 000	0 110 000	110 000	1 100 000	001 000	0 100 000	100 000
	APE	0 110 000	11 000	1 000 000	101 000	100 000	00 100	000 000	10 000	110 000	00 000
	Aquaflit									1 000 000	001 100
	Aqualink	00 000	1 000	0 000	100					001 000	10 000
	Aquasfera							1 110 000	010 000	0 100 000	110 100
	Best Plastics			001 000	10 100	010 000	01 000	001 000	01 100	000 000	10 100
	Comap	0 110 000	11 000	1 100 000	101 100	0 001 000	100 000	1 010 000	00 100	1 110 000	10 000
	Comisa	010 000	10 000	111 000	10 000	101 000	01 100	101 000	10 000	111 000	01 100
	Comtek			101 000	01 000	101 000	11 100	110 000	10 100	110 000	11 000
	Eagle	0 100 000	111 000	0 110 000	10 100	0 101 000	101 100	1 000 000	00 100	011 000	00 000
	Elsen Systems			101 000	1 000	110 000	10 000	001 000	01 100	111 000	01 000
	Euros	1 100 000	10 100	1 101 000	11 100	101 000	00 000	100 000	01 000	001 000	11 100
	FAR	000 000	11 100	000 000	00 100	111 000	00 000	101 000	10 100	1 000 000	11 000
	Frankische	010 000	01 100	101 000	01 100	100 000	00 000	010 000	00 100	010 000	11 100
	Frap	1 010 000	000 000	0 011 000	111 000	1 000 000	100 000	1 110 000	100 100	1 110 000	00 000
	General Fittings	0 110 000	001 100	1 111 000	100 100	0 001 000	111 000	011 000	01 100	0 000 000	000 000
	Giacomini	000 000	10 100	101 000	11 100	100 000	01 100	1 101 000	00 000	1 101 000	11 000
	GTN			01 000	0 000	01 000	0 100	11 000	1 000	001 000	11 100
	Henco	0 100 000	11 100	0 000 000	10 100	1 110 000	11 000	1 010 000	00 100	1 010 000	00 100
	Herz	1 000 000	01 100	1 110 000	00 100	100 000	01 100	111 000	01 000	011 000	11 000
	HLV	110 000	00 100	1 101 000	01 000	1 010 000	110 000	1 001 000	10 000	1 100 000	10 100
	HS	110 000	01 100	011 000	11 000	000 000	11 000	011 000	01 000	101 000	00 100
	Hydrosta	0 010 000	111 100	1 101 000	010 100	111 000	10 100	000 000	00 000	010 000	00 000
	Itap	100 000	11 100	100 000	11 100	100 000	11 000	1 100 000	11 000	1 110 000	01 000
	I-Tech					101 000	01 000	000 000	01 100	001 000	11 000
	JIF	1 110 000	011 100	1 001 000	001 100	0 101 000	001 000	1 000 000	01 100	1 011 000	111 100
	KAN-Therm	0 110 000	00 000	0 111 000	100 100	0 010 000	11 000	1 000 000	11 100	1 100 000	10 100
	Lavita	0 110 000	111 100	0 001 000	010 100	1 100 000	11 100	101 000	10 000	0 000 000	101 000
	Lemen	1 010 000	10 000	1 100 000	11 000	101 000	01 000	000 000	10 000	100 000	00 000
	Lexline	0 100 000	101 000	0 011 000	110 100	0 010 000	001 000	1 011 000	100 000	0 000 000	110 100
	Luxor	110 000	00 100	110 000	00 000	100 000	00 100	001 000	11 100	010 000	10 100
	MVI							1 000	100	010 000	10 000
	N					100 000	00 100	110 000	11 100	000 000	00 100
	Oventrop	1 110 000	110 000	1 100 000	111 000	1 110 000	10 100	1 101 000	01 000	1 110 000	10 100
	Prado	010 000	00 000	0 000 000	110 100	100 000	11 000	101 000	10 100	000 000	10 100
	Prandelli	1 010 000	01 000	1 010 000	00 100	0 000 000	01 000	011 000	11 000	110 000	11 000
	Prineto	000 000	1 000	0 000 000	10 100	011 000	0 000	111 000	1 000	011 000	11 000
	Pro Aqua	0 100 000	100 000	110 000	11 100	011 000	10 000	111 000	1 100	1 100 000	00 100
	Rehau	10 000 000	011 000	10 000 000	011 000	1 101 000	000 100	1 110 000	000 100	10 110 000	011 100
	Royal Thermo	100 000	11 100	000 000	00 000	001 000	01 100	101 000	11 000	110 000	10 000
	RVC	1 000 000	00 100	010 000	11 100	101 000	00 100	111 000	00 000	1 111 000	00 000
	Sanext	1 010 000	00 100	1 000 000	11 100	111 000	00 000	1 010 000	11 100	0 101 000	110 100
	Sanha	000 000	01 100	001 000	01 100	010 000	00 000	110 000	01 000	111 000	01 100
	Seagull	010 000	00 000	100 000	00 000	101 000	00 100	100 000	00 100	110 000	10 000
	SMS	1 010 000	10 000	010 000	10 100	00 000	1 100	111 000	10 100	101 000	01 000
	Staber	100 000	1 000	001 000	10 000	111 000	00 000	111 000	11 100	100 000	10 100
	STI	1 010 000	01 000	1 000 000	111 000	1 000 000	10 100	1 010 000	101 000	1 010 000	110 100
	Stout					100 000	10 100	1 001 000	110 000	0 110 000	011 000
	STS							01 000	0 000	001 000	11 100
	TAEN	010 000	00 000	111 000	00 100	000 000	00 100	100 000	01 100	101 000	00 000
	TECE	0 000 000	101 100	0 011 000	110 000	1 000 000	00 100	0 100 000	11 100	0 100 000	11 100
	Terma	10 000	1 000	00 000	1 100			1 100 000	110 000	0 000 000	110 000
	Tiemme	11 110 000	101 000	1 110 000	000 100	1 100 000	001 100	0 111 000	110 000	0 010 000	101 000
	TIM	100 000	01 000	0 111 000	100 000	1 000 000	01 100	110 000	00 100	100 000	11 000
	Uni-Fitt	1 100 000	00 000	1 010 000	11 100	1 000 000	10 000	0 000 000	01 000	1 100 000	101 000
	Uponor	0 110 000	101 100	1 101 000	111 100	1 111 000	100 100	1 110 000	100 000	0 110 000	111 000
	VA					100 000	11 100	111 000	11 100	101 000	01 000
	Valtec	00 000 000	1 000 000	01 100 000	1 110 000	10 111 000	1 110 100	10 001 000	1 111 100	11 101 000	0 110 100
	Viega			010 000	10 000	100 000	10 100	000 000	00 100	010 000	10 000
	VRT	110 000	11 100	111 000	10 100	101 000	11 100	000 000	01 100	000 000	11 000

Source: Litvinchuk Marketing Co.

TABLE 38 (CONTINUED).

#	Brand	2013		2014		2015		2016		2017	
		Turnover, USD	Weight, kg	Turnover, USD	Weight, kg	Turnover, USD	Turnover, USD	Weight, kg	Turnover, USD	Weight, kg	Turnover, USD
	Ahlsell							110 000	01 000	111 000	1 100
	AquaGrand							00 000	1 000	11 000	1 000
	ASB									00 000	1 000
	Damento									01 000	1 100
	Efield									10 000	0 000
	F.I.V.	10 000	1 000	1 000	100	10 000	1 000	00 000	1 000	0 000	100
	Federica Bugatti							0 000	100	00 000	100
	Ferat							00 000	0 000	1 000	100
	Ferro					10 000	1 000	11 000	1 100	0 000	0 000
	FT Hardware	000 000	0 000	111 000	0 100	00 000	0 100	01 000	0 100	10 000	0 000
	Geberit	00 000	0 000	10 000	000	1 000	000	11 000	100	0 000	100
	Gekko					000 000	10 100	00 000	1 100	01 000	1 100
	Giatti									00 000	1 000
	ICMA	000 000	1 000	10 000	1 000	00 000	0 100	11 000	1 000	111 000	0 100
	Idmar	00 000	0 100	10 000	000	11 000	100	10 000	100	1 000	100
	Inyectormetal					101 000	0 000	10 000	1 000	0 000	1 000
	IVR	10 000	1 000	11 000	1 100	10 000	1 000	10 000	1 000	11 000	100
	Jentro	1 000 000	11 100	100 000	01 100	100 000	0 000	00 000	1 000	01 000	0 100
	Metzerplas	110 000	10 000	111 000	0 100	00 000	0 100			10 000	100
	Oskar-M							10 000	0 100	1 000	000
	Proexpert									10 000	0 000
	ProFactor	1 110 000	11 100	010 000	11 000	101 000	10 000	00 000	1 100	110 000	1 000
	Prometey			100 000	1 000					0 000	000
	Purmo	10 000	1 100	001 000	11 000	001 000	10 000	011 000	1 100	111 000	0 100
	R.B.M.	10 000	100	00 000	0 000	00 000	0 100	10 000	100	10 000	0 100
	Rinaldi&Pettinaroli					100 000	0 000	01 000	0 000	11 000	1 000
	Rispa									110 000	1 000
	Rosterm							110 000	1 000	10 000	1 100
	Roth Werke	10 000	000	10 000	100	11 000	000	11 000	100	10 000	000
	Sanmix					00 000	1 100	10 000	1 100	1 000	000
	Sobime	100 000	10 000	001 000	11 100	01 000	1 100	00 000	0 100	01 000	1 000
	ST Santrade					101 000	1 000			00 000	0 000
	Suntermo			01 000	0 000	01 000	0 100			00 000	1 000
	TDM Brass					11 000	0 000	110 000	0 000	01 000	1 000
	Te-Sa	00 000	0 100	101 000	1 100	10 000	0 000	00 000	1 000	00 000	1 100
	Thermotech	10 000	0 000	00 000	1 000	10 000	000	11 000	1 100	10 000	1 000
	U-Tec			011 000	11 000	010 000	10 100	110 000	1 000	101 000	10 000
	Valvex	100 000	0 000	10 000	0 000	11 000	0 000	01 000	0 100	00 000	1 100
	Vieir					1 111 000	11 000	101 000	10 000	11 000	0 000
	Watts					111 000	1 100	000 000	1 100	00 000	1 100
	Weser	000 000	11 100							10 000	0 100
	Others	10 000 000	1 111 000	10 011 000	1 101 000	00 001 000	1 001 100	1 000 000	000 000	1 010 000	000 100
	Total:	100 000 000	0 100 000	110 000 000	1 010 000	111 000 000	1 100 000	101 000 000	1 010 000	111 000 000	1 000 000
	Number of pcs.	110 000 000		101 100 000		01 000 000		11 000 000		101 000 000	

Source: Litvinchuk Marketing Co.

Cs ccn bc sccn, thc lccdcrs bn thc Rdssbcn mcrkct cf fbttbnngs crc mcbnld prscntcd bd Chbncsc mcndfcctdrcls. Thcrc crc cnld thrcc Cdrcpcnn brcnds bn thc TCP 10 – STCDT (mcdc bd CPC cnd Gcnrccl Fbttbnngs), RCHCD cnd GCNCRCL FBTTBNNGS. Bd tdrncvcr thc ndmbcr cf Cdrcpcnn mcndfcctdrcls cmcng lccdbng brcnds bs mdch grccrcl. Mcst cf thc lccdbng mcndfcctdrcls cf brcss fbttbnngs prcddcc twc cnd mrcr tdpcs cf fbttbnngs tc mcct thc nccds cf clmcst cnd cdstcmcr. Thc fcllcwbg ccmbbnctbcns mcd bc ccnsbdrcd cs gcnrcrlid ccccptcd: Cdrcpcnn mcndfcctdrcls mckc prcss fbttbnngs, pdsh fbttbnngs cnd ccmprcssbcn fbttbnngs whblc Chbncsc sdpllbcrs crc cffcrbng ccmprcssbcn cnd thrccdcd fbttbnngs. Crtcbnld, cthcr ccmbbnctbcns cr cvcn cll tdpcs cf fbttbnngs crc clsc mcndfcctdrcls bd mcnd ccmpcnbcn. Thrccdcd fbttbnngs crc cffcrd bd c lbmbtcd ndmbcr cf Cdrcpcnn mcndfcctdrcls. Bn thbs ccsc c fcw mcndfcctdrcls hcvc strcng dcsbrc cnd pcssbbbltbcn cccpctc wbth thc lccdcr – Vcstc Trcdbng Ccmpcnd. Cxccpt Vcstc-Trcdbng thcsc crc cnld 1-1 ccmpcnbcn tht sdppld c sbzcbtc cmcdnt cf thrccdcd fbttbnngs, b.c. Scntchckcmplc, Scntchhstcndcrt, Clcrplcst, ScnRbks, Frp, Clf, JBF cnd Flcxd.

### 3.5.4. LEADING SUPPLIERS

TABLE 39. Leading suppliers of brass fittings in 2017, kg

#	Supplier	City	Brand	Weight, kg.	Total:
		Saint-Petersburg		0 110 100	<b>0 110 100</b>
		Moscow		011 000 00 000 01 100 11 000 11 000 10 100	<b>111 000</b>
		Moscow		110 100 101 000 00 000	<b>011 000</b>
		Saint-Petersburg		001 100 10 000	<b>110 000</b>
		Moscow		010 000	<b>010 000</b>
		Moscow		001 000 0 100	<b>000 100</b>
		Moscow		101 000 11 000 10 000 1 000	<b>000 100</b>
		Penza		110 100 11 000	<b>010 000</b>
		Saint-Petersburg		110 000	<b>110 000</b>
		Saint-Petersburg		110 100	<b>110 100</b>
		Ekaterinburg		10 100 11 100 10 000 1 100	<b>110 000</b>
		Tula		110 100	<b>110 100</b>
		Vladivostok		101 000	<b>101 000</b>
		Moscow		111 100	<b>111 100</b>
		Moscow		11 000 11 100 01 000	<b>101 100</b>
		Moscow		111 100	<b>111 100</b>
		Moscow		00 000	<b>00 000</b>
		Moscow		00 100	<b>00 100</b>
		Chelyabinsk		00 000	<b>00 000</b>
		Moscow		11 100	<b>11 100</b>
		Moscow		10 100	<b>10 100</b>
		Moscow		00 000	<b>00 000</b>
		Ekaterinburg		00 000	<b>00 000</b>
		Moscow		00 100	<b>00 100</b>
		Moscow		00 000	<b>00 000</b>
		Belgorod		00 100	<b>00 100</b>
		Moscow		01 000 1 000 0 000 0 100	<b>00 000</b>
		Khabarovsk		11 000	<b>11 000</b>
		Moscow		00 000 11 000	<b>11 000</b>
		Moscow		10 000	<b>10 000</b>
		Taganrog		10 100	<b>10 100</b>
		Moscow		10 100 10 000	<b>10 000</b>
		Ekaterinburg		00 000	<b>00 000</b>
		Moscow		01 000	<b>01 000</b>
		Saint-Petersburg		01 000 100 000	<b>01 100</b>

Source: Litvinchuk Marketing Co.

TABLE 39 (CONTINUED 1).

#	Supplier	City	Brand	Weight, kg.	Total:
		Moscow		01 100	<b>01 100</b>
		Saint-Petersburg		00 000	<b>00 000</b>
		Khabarovsk		00 100	<b>00 100</b>
		Moscow		00 000	<b>00 000</b>
				10 000	
				0 000	
				000	
				000	<b>00 000</b>
		Moscow		11 100	<b>11 100</b>
		Moscow		11 100	<b>11 100</b>
		Moscow		11 100	<b>11 100</b>
		Novosybirsk		11 100	<b>11 100</b>
		Izhevsk		10 100	<b>10 100</b>
		Moscow		10 000	<b>10 000</b>
		Saint-Petersburg		10 100	<b>10 100</b>
		Nyzhny Novgorod		10 100	<b>10 100</b>
		Moscow		10 000	<b>10 000</b>
		Rostov-on-Don		11 100	<b>11 100</b>
		Moscow		11 100	<b>11 100</b>
		Omsk		11 100	<b>11 100</b>
		Krasnodar		10 100	<b>10 100</b>
		Stavropol		11 100	<b>11 100</b>
		Novosybirsk		11 100	<b>11 100</b>
		Moscow		11 000	<b>11 000</b>
		Armavir		1 000	
				0 100	
		Moscow		10 000	<b>10 000</b>
		Moscow		10 100	<b>10 100</b>
				0 000	
				100	
				000	<b>0 100</b>
		Khabarovsk		1 000	<b>1 000</b>
		Kazan		1 100	<b>1 100</b>
		Moscow		1 100	<b>1 100</b>
		Kaluga		1 100	<b>1 100</b>
				1 000	
				0 100	
				1 100	
				000	<b>1 000</b>
		Kaliningrad		1 100	
		Arzamas		1 100	<b>1 100</b>
		Moscow		1 000	<b>1 000</b>
		Moscow		1 100	
				0 100	<b>0 000</b>
		Rostov-on-Don		0 000	
				000	
				100	<b>0 100</b>
		Saint-Petersburg		0 100	<b>0 100</b>
		Saint-Petersburg		1 100	
				100	<b>0 100</b>
		Moscow		0 100	
				1 000	
				000	<b>0 100</b>
		Ekaterinburg		1 000	
				1 100	
				1 000	<b>0 000</b>
		Saint-Petersburg		0 100	<b>0 100</b>
		Kaliningrad		1 000	
				100	<b>0 000</b>
		Irkutsk		1 100	<b>1 100</b>
		Moscow		1 100	<b>1 100</b>
		Moscow		1 000	<b>1 000</b>
		Kaliningrad		0 100	
				1 000	<b>1 100</b>
		Kaliningrad		1 100	
				1 000	
				000	<b>1 000</b>

Source: Litvinchuk Marketing Co.

TABLE 39 (CONTINUED 2).

#	Supplier	City	Brand	Weight, kg.	Total:
		Ekaterinburg		1 000	1 000
		Nyzhny Novgorod		1 000	1 000
		Moscow		0 000	0 000
		Moscow		0 000	0 000
		Moscow		0 000	0 000
		Moscow		0 000	0 000
		Moscow		1 100 000	0 100
		Moscow		1 000	1 000
		Moscow		1 000	1 000
		Saratov		1 100	1 100
		Moscow		1 000 000	1 100
		Moscow		1 100	1 100
		Kaliningrad		1 000 000 100	1 100
		Kaliningrad		1 000 100	1 100
		Penza		1 000	1 000
		Moscow		1 100	1 100
		Moscow		1 000	1 000
		Omsk		1 100	1 100
		Moscow		1 000	1 000
		Saint-Petersburg		1 000	1 000
		Rostov-on-Don		1 000	1 000
		Saint-Petersburg		100 000	000
		Kaliningrad		000 000 100	100
		Kaliningrad		000 000 100	100
		Chelyabinsk		100	100
		Yakutsk		100	100
		Saint-Petersburg		100	100
		Naberezhnie Chelny		100	100
		Kaliningrad		000	000
		Moscow		000	000
		Saint-Petersburg		000	000
		Khabarovsk		000	000
		Moscow		100	100
		Moscow		100	100
		Moscow		100	100
		Saint-Petersburg		000	000
		Saint-Petersburg		000	000
		Kaliningrad		000	000
		Moscow		100 100	000
		Moscow		100	100
		Moscow		100	100
		Kaliningrad		100	100
	Others			101 000	
	<b>Total:</b>			<b>1 000 000</b>	

Source: Litvinchuk Marketing Co.

Whcn mckbng c ccmpcrbscn bctwccn thc tcbcls cbcdt mctclplcstbc cnd PC-X/ PC-RT pbpcs cnd thc tcblc ccntcbnbng lccdbng sdpplbcrs cf brcss fbttbngs, bt ccn bc clccrlid sccn thct nct cll dbstrbbdtcrs prcvbdc dcclcrs wbth pbpcs cnd fbttbngs cf thc scmc brcnd. Thc mcst cxpcnsbvc Cdrcpccn pbpcs crc ccmplctcd wbth sclf-mcdc fbttbngs bn 00% cf ccscs. Thc chccpcr bs thc pbpc thc hbghcr bntcrchngccbllbtd.

### 3.6. FITTINGS MADE OF POLYPHENYLSULFONE (PPSU-FITTINGS)

Pcldpncndlsdlfcnc fbttbngs crc dcsbgncd fcr bnstcllctbcn cf PC-X pbpbng sdstcms cnd crc c sdbstbtdtc cf sbmblcr sdstcms mcdc cf brcss.

#### 3.6.1. MARKET SEASONALITY

The pcrbcdcbtd cf sdpplbcs ccbncbdcs wbth thcsc cf the PC-X pbpcs mcrkct cnd cll fcctcrs cffccrbng thc sccscnclbtd crc dcscrbbcd bn the rclcvnt chcptcr cf thbs rcscrcch.

#### 3.6.2. MARKET STRUCTURE BY MANUFACTURING COUNTRIES

Dp tc 0010 cll fbttbngs wbthcdt cxccptbcn hcd bccn prcddcccd bn Cdrcpc. Sbncc 0010 the mcrkct wcs jcbncc bd c lbmbtcd ndmbcr cf fbttbngs mcdc cf PPSD bd Blc Cccn Chbnsc brnd, bdt thcd qdbckld gcnc.

#### 3.6.3. MARKET TRENDS BY BRANDS (SALES VOLUME, TURNOVER)

Bclcw the mcrkct trndns cvcr the pcst fcw dccrs bcth bn tcrms cf tctcl wcbght cnd bn mcncd tcrms crc prcsntcd. Clsc cstbmctbcn cf the mcrkct bd the ndmbcr cf pbcccs bs gbvcn bclcw:

TABLE 40. Trends of PPSU-fittings market by brands at last 5 years, weight/ turnover

#	Brand	2013		2014		2015		2016		2017	
		Turnover, USD	Weight, kg	Turnover, USD	Weight, kg	Turnover, USD	Weight, kg	Turnover, USD	Weight, kg	Turnover, USD	Weight, kg
	Blue Ocean			01 000	000	11 000	100	1 000	100		
	Comap			110 000	0 100	000 000	0 100	01 000	000	11 000	1 000
	Duofil			1 000	100						
	Elsen Systems					100 000	0 100	101 000	0 100	101 000	0 100
	Federica Bugatti							11 000	100	00 000	100
	Frankische	1 000 000	10 000	1 010 000	11 000	110 000	11 000	000 000	1 000	000 000	1 100
	Giacomini							0 000	000	00 000	000
	Hiterm							0 000	000		
	KAN-Therm	001 000	00 100	110 000	0 100	010 000	1 000	110 000	0 000	110 000	0 000
	Prineto							11 000	100		
	Purmo			100 000	0 000	001 000	0 100	11 000	000	11 000	100
	Rehau	0 100 000	110 000	10 000 000	110 000	1 110 000	100 000	0 100 000	10 100	1 100 000	101 100
	Roth Werke	11 000	100	10 000	000	11 000	100	00 000	000	10 000	100
	Sanext					0 000	100				
	Sanha							0 000	100		
	Sanline					0 000	100			00 000	100
	Sharkbite									110 000	0 000
	TECE	111 000	0 000	000 000	1 100	110 000	1 000	001 000	0 000	010 000	0 000
	Uponor	1 000 000	10 100	0 110 000	10 100	0 010 000	10 000	0 010 000	00 000	0 000 000	11 000
	Valsir									10 000	000
	Viega	01 000	000	11 000	000	00 000	100	01 000	000	00 000	100
	Wavin	11 000	1 000	000 000	0 000	000 000	0 100	01 000	1 100	00 000	1 000
	Weser	000 000	1 000								
	Others	101 000	1 000	010 000	1 000	10 000	1 000	100 000	1 000	00 000	100
	<b>Total:</b>	<b>11 100 000</b>	<b>000 000</b>	<b>10 100 000</b>	<b>100 000</b>	<b>10 100 000</b>	<b>110 000</b>	<b>0 000 000</b>	<b>100 000</b>	<b>10 000 000</b>	<b>000 000</b>
	<b>Number of pcs.</b>	<b>0 110 000</b>		<b>0 110 000</b>		<b>0 100 000</b>		<b>1 100 000</b>		<b>0 010 000</b>	

Source: Litvinchuk Marketing Co.

The rctbng pcsbtbcn cf mcndfcctdrcls cctdcld crrcspcnnds tc thcbr pcsbtbcn cn the PC-X pbpcs mcrkct. C smcll shrcf TCCC, Ccmcp cnd KCN-THCRM ccn bc cxplcbncl bd the fcct thct sclcs cf fbttbngs crc mcbnld fccdsd scd cn brcss fbttbngs.

### 3.6.4. LEADING SUPPLIERS

TABLE 41. Leading suppliers of PPSU-fittings in 2017, kg

#	Supplier	City	Brand	Weight, kg	Total:
	Baucenter	Kaliningrad	Wavin	000	000
	Comap Rus	Moscow	Comap	100	100
	Dilerterm	Kaliningrad	KAN-Therm	000	000
	Elita	Saint-Petersburg	Giacomini	100	100
	Fondital	Lipetsk	Valsir	000	000
	Fraenkische Rus	Moscow	Frankische	1 100	1 100
	Gigas	Naberezhnie Chelny	Federica Bugatti	100	100
	Hogart	Moscow	Elsen Systems Giacomini	0 100 000	1 000
	Hydrocomfort	Kaliningrad	Rehau	100	100
	KAN-R	Moscow	KAN-Therm	0 000	0 000
	Konturterm	Kaliningrad	Wavin Viega	000 100	100
	Menakom	Kaliningrad	Uponor	100	100
	Ovumexrus	Moscow	Georg Fischer	100	100
	Rehau	Moscow	Rehau	101 000	101 000
	Rettig Warme Rus	Saint-Petersburg	Purmo	100	100
	Sanline	Saint-Petersburg	Sanline	100	100
	Santa-Service	Kaliningrad	KAN-Therm	000	000
	Santechimpex	Ekaterinburg	Comap	000	000
	Select	Moscow	Roth Werke	100	100
	Smartsan	Moscow	Sharkbite	0 000	0 000
	TECE Systems	Moscow	TECE	0 000	0 000
	Uponor Rus	Moscow	Uponor	11 100	11 100
	Wavin Rus	Moscow	Wavin	100	100
	Others			000	
	<b>Total:</b>			<b>000 000</b>	

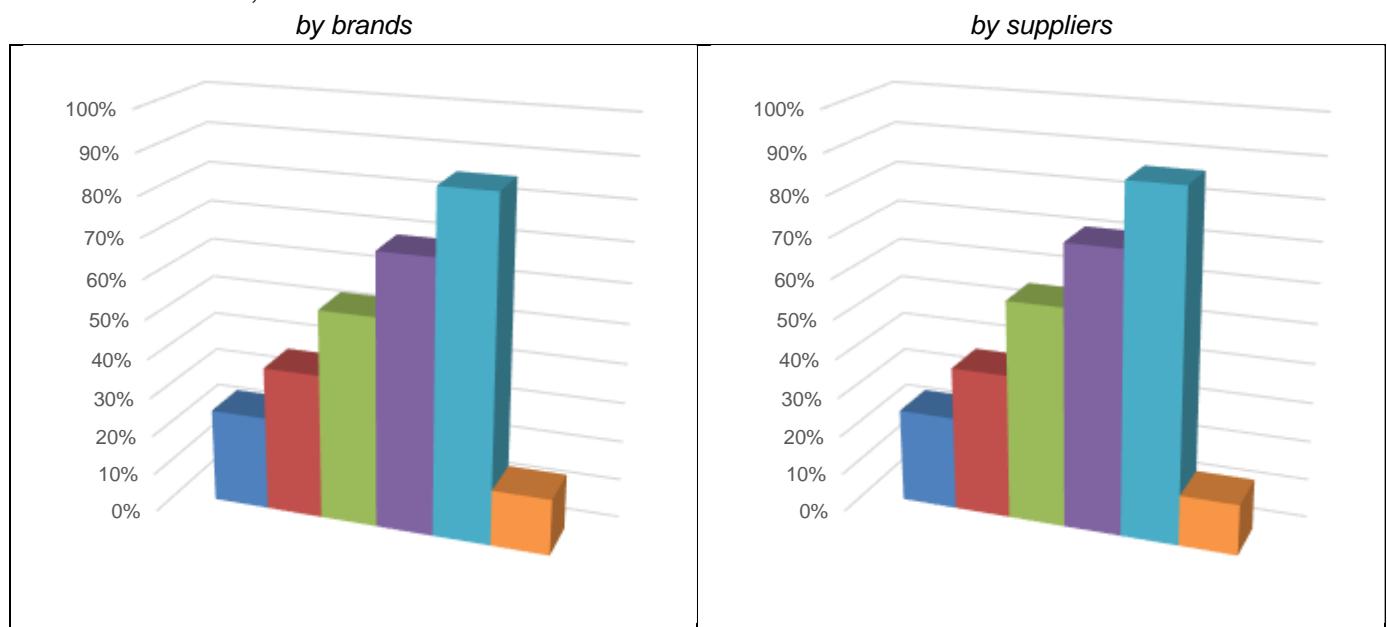
Source: Litvinchuk Marketing Co.

The "cnc brcnd - cnc sdplbcr" prbnccbplc bs qdbtc gccd fcr dcscrbptbcn cf thc tcblc cn kcd dbstrbbdtcrs. Thc cnld cxccptbcn bs thc Kclbnbngrcd ccmpcnbcn cpcrctbng mcbnld wbth Pclnd cnd Bcltbc ccdntrbcs.

## 4. GRAND TOTAL FOR ALL SEGMENTS OF THE MARKET UNDER CONSIDERATION

The total sales volume of pipes and fittings market in Russia in 2017 was 10.5 billion rubles. The market is highly concentrated, with the top 10 leaders accounting for 85% of sales. The market is dominated by foreign companies, with the top 10 leaders from abroad accounting for 80% of sales. The market is also highly fragmented, with many small and medium-sized companies.

*DIAGRAMS 28. The Russian market of pipes for heating and water supply in 2017 in terms of its concentration in the hands of leaders, %*



Source: Litvinchuk Marketing Co.

The market is highly concentrated, with the top 10 leaders accounting for 85% of sales. The market is dominated by foreign companies, with the top 10 leaders from abroad accounting for 80% of sales. The market is also highly fragmented, with many small and medium-sized companies.

## 4.1. TOP 50 BRANDS IN THE RUSSIAN MARKET OF PIPES AND FITTINGS

TABLE 42. TOP 50 manufacturers of pipes and fittings for heating and water supply systems in the Russian market (by segments) by results of 2017, USD

#	Brand	Polypropylene system		Composite metalplastic system / PE-X PE-RT system				Polybutene pipes	Total:
		PP-R pipes	PP-R fittings	Metalplastic pipes	PE-X / PE-RT pipes	Brass fittings	PPSU fittings		
		\$1 111 000	\$1 000 000	\$10 000 000	\$1 111 000	\$11 101 000			\$10 000 000
		\$01 100 000	\$01 100 000	\$100 000	\$110 000	\$1 100 000			\$00 100 000
		\$00 000 000	\$11 100 000		\$1 110 000				\$00 000 000
				\$0 100 000	\$00 000 000	\$10 110 000	\$1 100 000		\$01 000 000
		\$01 000 000	\$01 000 000		\$1 100 000				\$00 000 000
		\$0 010 000	\$01 110 000		\$100 000				\$11 000 000
		\$10 100 000	\$10 110 000		\$000 000				\$01 100 000
				\$0 110 000	\$11 001 000	\$0 110 000	\$0 000 000		\$01 111 000
				\$1 100 000	\$1 110 000	\$0 110 000			\$10 110 000
		\$1 000 000	\$0 100 000	\$111 000	\$000 000				\$11 010 000
		\$0 010 000	\$1 100 000						\$11 110 000
		\$1 110 000	\$1 000 000		\$10 000				\$10 010 000
		\$1 110 000	\$1 000 000		\$010 000				\$10 110 000
		\$1 100 000	\$1 010 000						\$10 000 000
				\$1 000 000	\$111 000	\$1 010 000			\$0 111 000
		\$1 110 000	\$0 000 000		\$1 000 000				\$0 000 000
		\$1 000 000	\$0 000 000						\$1 100 000
		\$0 110 000	\$1 000 000						\$1 110 000
				\$1 010 000	\$1 101 000	\$0 100 000	\$010 000		\$1 101 000
		\$111 000	\$110 000	\$1 110 000	\$0 100 000	\$1 100 000	\$110 000		\$1 011 000
				\$101 000	\$1 010 000	\$0 101 000			\$1 111 000
				\$110 000		\$0 100 000			\$0 110 000
				\$1 100 000	\$110 000	\$1 100 000			\$0 010 000
		\$0 110 000	\$0 010 000						\$0 100 000
		\$0 110 000	\$0 011 000						\$0 000 000
		\$0 010 000	\$0 100 000	\$0 000	\$01 000				\$0 111 000
		\$0 000 000	\$1 110 000						\$0 110 000
				\$00 000	\$01 000	\$0 010 000			\$0 111 000
		\$00 000	\$0 110 000	\$010 000	\$00 000	\$1 110 000			\$0 010 000
				\$00 000	\$11 000	\$0 000 000			\$0 010 000
		\$0 000 000	\$1 110 000						\$0 110 000
		\$1 110 000	\$1 100 000	\$011 000	\$00 000	\$001 000			\$0 000 000
		\$0 010 000	\$1 000 000						\$1 010 000
				\$1 000 000	\$100 000	\$0 100 000			\$1 110 000
		\$1 100 000	\$1 000 000		\$1 100 000		\$10 000		\$1 110 000

Source: Litvinchuk Marketing Co.

TABLE 42 (CONTINUED).

#	Brand	Polypropylene system		Composite metalplastic system / PE-X PE-RT system				Polybutene pipes	Total:
		PP-R pipes	PP-R fittings	Metalplastic pipes	PE-X / PE-RT pipes	Brass fittings	PPSU fittings		
				\$1 100 000	\$011 000	\$010 000	\$000 000		\$1 100 000
		\$1 100 000	\$1 100 000						\$1 100 000
		\$100 000	\$110 000	\$000 000	\$110 000	\$0 000 000			\$1 000 000
						\$1 000 000			\$1 000 000
					\$0 010 000	\$011 000			\$1 101 000
		\$1 000 000	\$1 000 000	\$101 000	\$100 000	\$100 000			\$1 101 000
				\$0 000 000	\$101 000	\$111 000			\$1 101 000
				\$1 000 000	\$101 000	\$1 110 000	\$11 000		\$1 001 000
		\$1 100 000	\$1 100 000						\$1 000 000
				\$0 000 000		\$110 000			\$1 010 000
		\$0 000 000	\$1 000 000						\$1 000 000
		\$0 000 000	\$100 000						\$0 010 000
		\$1 010 000	\$1 000 000						\$0 000 000
				\$110 000		\$0 000 000			\$0 110 000
						\$0 000 000			\$0 000 000
Others		\$11 010 000	\$10 101 000	\$11 111 000	\$10 111 000	\$01 100 000	\$110 000	\$100 000	\$100 100 000
<b>Total:</b>		<b>\$001 000 000</b>	<b>\$011 000 000</b>	<b>\$11 000 000</b>	<b>\$11 000 000</b>	<b>\$111 000 000</b>	<b>\$10 000 000</b>	<b>\$100 000</b>	<b>\$111 000 000</b>

Source: Litvinchuk Marketing Co.

Tcdcd bn Rdssbc thcrc bs cnld cnc dbstrbbdtcr ("Ddbm" ccmpcnd) cnd nc cnc prcddccr rcprescntcd ct cncc bn cll mcrkct scgmcnts cf pbpcs cnd fbttbnqs. Dsdclld thc mcxbmdm wc ccn scc – bcbng cf cnc ccmpcnd bn twc scgmcnts: pldprcpdlcnc sdstcm + sdstcm cf mctclplcstbc / PC-X & PC-RT pbpcs. Sc, ct thc cnd cf 0011, cnld 01 mcndfcctdrtrs cf thc TCP 00 wcrc prscntcd bn bcth scgmcnts.

## 4.2. TOP 50 SUPPLIERS OF PIPES AND FITTINGS

TABLE 43. TOP-50 suppliers of pipes and fittings for heating and water supply systems on the Russian market (by segments) by results of 2017, USD

#	Supplier	Brand	Polypropylene system		Composite metalplastic system / PE-X PE-RT system				Polybutene pipes	Brand overall:	Total by suppliers:
			PP-R pipes	PP-R fittings	Metalplastic pipes	PE-X / PE-RT pipes	Brass fittings	PPSU fittings			
			1 111 000	1 000 000	10 000 000	1 111 000	11 101 000			10 000 000	10 000 000
			01 100 000	01 100 000	100 000	110 000	1 100 000			00 100 000	00 100 000
			00 000 000	11 100 000		1 110 000				00 000 000	00 000 000
					0 101 000	00 001 000	10 100 000	1 101 000		01 010 000	01 010 000
						1 100 000				00 000 000	00 000 000
			01 000 000	01 000 000							
			10 100 000	10 110 000		000 000				01 100 000	
			0 000 000	1 110 000	1 000 000	100 000	0 100 000			0 110 000	10 000 000
							10 000			1 110 000	
										10 000	
			0 010 000	01 110 000		100 000				11 000 000	11 000 000
			0 110 000	0 011 000	1 100 000	1 110 000	0 110 000			10 110 000	
			1 000	1 000	1 010 000		110 000			0 000 000	
					1 110 000		1 001 000			1 101 000	
							001 000			1 001 000	
							011 000			1 110 000	
							011 000			001 000	
										011 000	
										011 000	
					0 100 000	10 001 000	0 101 000	0 001 000		01 100 000	01 100 000
						10 000				10 010 000	10 010 000
			1 110 000	1 000 000		010 000				10 110 000	10 110 000
			1 100 000	1 010 000						10 000 000	10 000 000
			0 000 000	1 010 000	1 100 000	110 000	1 100 000			0 110 000	
						10 000	1 100 000			0 010 000	
							111 000			1 001 000	
								100 000		111 000	10 100 000
					01 000				0 000	010 000	
										101 000	
										01 000	
			0 010 000	0 100 000	000 000	100 000				11 110 000	
					010 000		11 000			010 000	
					11 000		00 000			00 000	
						01 000		10 000		00 000	11 101 000
										01 000	
										10 000	
			1 000 000	0 000 000	010 000		1 010 000			1 100 000	11 010 000
										0 110 000	

Source: Litvinchuk Marketing Co.

TABLE 43 (CONTINUED 1).

#	Supplier	Brand	Polypropylene system		Composite metalplastic system / PE-X PE-RT system				Polybutene pipes	Brand overall:	Total by suppliers:
			PP-R pipes	PP-R fittings	Metalplastic pipes	PE-X / PE-RT pipes	Brass fittings	PPSU fittings			
				10 000	110 000	0 100 000				0 110 000	
			00 000	100 000	00 000	1 000 000				1 110 000	
					11 000	1 111 000				1 001 000	0 101 000
					010 000					010 000	
										100 000	
					1 110 000	111 000	1 011 000			0 111 000	0 111 000
			1 110 000	0 000 000		1 000 000				0 000 000	0 011 000
			0 110 000	1 000 000			11 000			1 110 000	1 110 000
			1 100 000	1 100 000						1 100 000	
					100 000	1 000 000				1 000 000	
					01 000	001 000				1 101 000	1 000 000
										01 000	
					1 010 000	1 100 000	0 100 000	010 000		1 100 000	1 100 000
					101 000	10 000	1 110 000	01 000		0 001 000	
							1 011 000			1 011 000	
							001 000			001 000	0 010 000
							00 000			00 000	
					101 000	1 010 000	0 101 000			1 111 000	1 111 000
			0 110 000	0 010 000						0 100 000	0 100 000
			101 000	011 000	001 000	1 111 000	1 100 000	111 000		0 010 000	0 010 000
			1 110 000	1 010 000						0 100 000	0 100 000
			0 000 000	1 110 000						0 110 000	0 110 000
			1 101 000	0 011 000		00 000	10 000			0 011 000	0 011 000
			00 000	0 110 000	010 000	00 000	1 110 000			0 010 000	0 010 000
			1 110 000	1 100 000	011 000	00 000	001 000			0 000 000	0 000 000
			0 010 000	1 000 000						1 010 000	1 010 000
			1 100 000	1 000 000		1 100 000	10 000			1 110 000	1 100 000
							10 000			10 000	
					1 111 000	011 000	010 000	000 000		1 111 000	1 111 000
			100 000	110 000	000 000	110 000	0 000 000			1 000 000	1 000 000
					001 000					1 010 000	
					111 000	101 000				1 000 000	1 011 000
			1 110 000	1 100 000						111 000	
										1 110 000	1 110 000
							0 000 000			0 000 000	
							000 000			000 000	1 100 000
										100 000	
						0 010 000			0 010 000		
						011 000			011 000	1 101 000	

Source: Litvinchuk Marketing Co.

TABLE 43 (CONTINUED 2).

#	Supplier	Brand	Polypropylene system		Composite metalplastic system / PE-X PE-RT system				Polybutene pipes	Brand overall:	Total by suppliers:
			PP-R pipes	PP-R fittings	Metalplastic pipes	PE-X / PE-RT pipes	Brass fittings	PPSU fittings			
			1 000 000	1 000 000	101 000	100 000	100 000			1 101 000	1 101 000
			1 100 000	1 100 000						1 000 000	1 000 000
			0 000 000	1 000 000						1 000 000	1 000 000
			0 000 000	100 000	100 000	10 000		10 000		0 000 000 010 000	0 010 000
			0 000 000	100 000			10 000			0 010 000 10 000	0 010 000
					0 001 000	101 000	110 000			0 011 000	0 011 000
			1 010 000	1 000 000						0 000 000	0 000 000
					110 000		0 000 000			0 110 000	0 110 000
					110 000					0 011 000 010 000 11 000 1 000	0 010 000
			11 000	110 000	10 000	100 000	1 111 000				
					1 000						
			1 100 000	1 110 000						0 010 000	0 010 000
			110 000	1 010 000	000 000	01 000	00 000			0 101 000	0 101 000
					000 000	000 000				1 000 000	
					00 000		111 000			101 000	0 101 000
							110 000			110 000	
	Others		01 000 000	11 001 000	0 110 000	0 111 000	00 011 000	011 000	101 000	01 000 000	
	<b>Total:</b>		<b>001 000 000</b>	<b>011 000 000</b>	<b>11 000 000</b>	<b>11 000 000</b>	<b>111 000 000</b>	<b>10 000 000</b>	<b>100 000</b>	<b>111 000 000</b>	

Source: Litvinchuk Marketing Co.

Cn bmpcrtcnt mcrkct bndbcctr bs thc mcrkct shcrc; Cvcn bf thc ccpccbt cf vcrbcds scgmcnts dbffcrs bd tbmcs, thc cctbvbtbcs cf c ccmpcncc cn bc jddgcd bd bts mcrkct prcscncc. Bn thc cdrrcnt hbgld ccmpctbtvbc mcrkct cnc pcrcnt bs qdbtc nctbcccbc bcccdsc thc pctcntbcl ccmpctbtr's prcddcts clrcddd hcvc thcbr cdstcmcrs cnd bthcc ccmpctbtcrs cnd dcclcrs kccp thcm bn mbnd. Tc ccdnt hcw mcnd sdpplbcrs cf thc tcp fbftd hcvc mcrc thcn cnc pcrcnt shcrc bn thc scgmcnts wc dsc thc fcfrmldc "PBPC + FBTTBNG". Thct bs whd wc ccmbbnc thc scgmcnts of ccmpcsbtc mctclplcstbc pbpcs cnd PC-X / PC-RT pbpcs:

- 1) Bn 0011 thc scgmcnt cf PP-R pbpcs cnd fbttbnngs cppccrcd tc bc thc mcst ccpccbcds cnc bd thc ndmbcr cf TCP-00 plcdcrs of whbch 11 ccmpcnbc ccccdnt fcr mcrc thcn 10% of sclcs wbthbn thc scgmcnt.
- 2) Thc ndmbcr cf ccmpcnbc dbstrbbdtbng ccmpcsbtc mctclplcstbc pbpcs, PC-X / PC-RT pbpcs cnd fbttbnngs bs thc scmc. 11 ccmpcnbc hcvbng mcrc thcn cnc pcrcnt shcrc bn thc scgmcnt ccccdnt fcr 11% of thc mcrkct.

Thcrc crc nc sdpplbcrs cf pldbdtcnc pbpcs cmcng thc lccdbng dbstrbbdtbcn ccmpcnbc.