Research Group

InfoMine

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Oil-Well Cement Market Research in Russia

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Summary

Report dwells on the review of oil-well cement market in Russia. The report is prepared on the basis of study and analysis of data of Federal Service of State Statistics of Russia (Rosstat), Federal Customs Service of Russia, Russian domestic railage statistics (JSC RZhD data), reports of companies, data of regional mass-media and web-sites of producers and consumers of oil-well cement, as well as "InfoMine" database. The report consists of 58 Pages, including 35 Tables, 10 Figures and Appendix.

The first Section of the report presents current classifications of oil-well cements, statistics of the product production for the period of 2000 - 9 months of 2007. Description of current standing of company-producers of oil-well cements, including data on specifications of the products, volumes and flows of their supplies are given, as well as analysis of regional structure of oil-well cement of production in Russia.

The second Section of the report dwells on the analysis of foreign trade operations of oil-well cement Russian enterprises. It presents data on volumes of the supplies in bulk and in money terms for the main exporters and importers of the product and estimation of regional structure of the supplies.

The third Section dwells on estimation of oil-well cement domestic consumption in Russia. The Section presents oil-well supply-demand balance in 2000-2007, estimation of regional structure of the product consumption. Besides data on volumes of the product supplies to the largest consumers by railway transport are given. In addition description of the largest Russian company-consumers of oil-well cement is presented here,

The fourth Section dwells on price analysis. It presents data on changes of prices on oil-well cement of some Russian producers of the products for the period of 2005 - 2007, dynamics of oil-well cement export-import prices, and of the market price conjuncture up to 2015.

The fifth Section of the report describes current tendencies of oil-well cement market development and presents forecast of production and consumption of the product in Russia up to 2015.

Appendix presents contact information on leading Russian oil well cement producers

1. Oil well cement manufacture in Russia

1.1. Oil well cement classification and production quality standards

Oil well cement is a version of portlandcement made by joint thin grinding of clinker, plaster and special additives. It is used as cement grout containing 40-50% of water. Oil well cement is mainly used for oil and gas chinks cementation.

According to the GOST 1581-96 specification of "Oil well portlandcement" standardized composition of cements can be subdivide into the following types:

I - oil well portlandcement straight;

I-G - oil well portlandcement straight with the normalized specifications with water-cement ratio 0,44;

I-H - oil well portlandcement straight with the normalized specifications with water-cement ration 0,38;

II - oil well portlandcement with mineral additives;

III - oil well portlandcement with the special additives regulating density of cement grout.

By cement grout density the cement of type III is subdivided as follows:

- Light (L);
- Weighted (W).

By application temperature the cements of types I, II and III are subdivided into the cements intended for:

- Low and normal temperatures 15°-50° C;
- Moderate temperatures 51°-100° C;
- Elevated temperatures 101°-150° C.

By sulphateresistance cements are subdivided as follows:

a) Types I, II, III

- conventional (no sulphateresistance requirements);
- sulphateresistant (SR);

b) Types I-G and I-H

- High sulphateresistance (HS-1);
- Average sulphateresistance (AS-2).

The standardized composition of all types of cements is to meet the values specified in Tab. 1. The standardized composition is characterized by the contents of portlandcement clinker and additives without taking into account plaster stone introduced above the 100% of cement mass.

Table 1. Standardized composition of oil-well cements in accordance with GOST 1581-96 requirements

Cement type	*Clinker content, %*	*Additive content, %*	
		Mineral admixture	*Special additives - lightening (including natural facilitating pozzolanic admixture) or weighting*
I	100	Not applicable	
I-G			
I-H			
II	80-94	6-20*	-
III	30-89	-	11-70

Note: * - aqueous origin admixtures are limited at the level of 10% of the cement mass
Source: FSUE "Standartinform"

Physicomechanical specifications characterizing cementing-technical properties of type I - III cements are presented in Tab. 2 - 3, and of type I-G and I-H cements in Tab. 4.

Table 2. Physical-mechanical properties of oil-well cements in accordance with GOST 1581-96

	Cement types value at application temperature				
	Low and normal		*Moderate and high temperate*		
	type I, II	*type III-Ob*	*type I, II*	*type III-Ob*	*type III-Ut*
Bending strength MPa, min., aged:					
1day	-	-	3,5	-	-
2 days	2,7	0,7	-	1,0	2,0
Fineness of grinding *:					
- sieve residue residue on screen with net № 008 per GOST 6613, %, max.	12,0	10,0	15,0	12,0	12,0
- specific surface , m^2/кg, min.	270	-	250	-	230
Dehydration, ml, max.	8,7	7,5	8,7	7,5	10,0
Cement grout flowing, mm, not less than for cement:					
nonplasticized	200	-	200	-	-
plasticized	220	-	220	-	-
Solidification time per consistence of 30 Bc**, min, min.	90				

Notes: * - fineness of grinding detection is allowed for cement type I only per specific surface, for cement type II and III-Ut – only per sieve residue;
** - Berden unit of consistency
Source: FSUE "Standartinform"

Table 3. Standardized density of cement grout of type III oil-well cement in accordance with GOST 1581-96

Density of cement grout definition for cement type III, g/cm³			
lighted		***weighted***	
average density notation	***density, ±0,04***	***average density notation***	***density, ±0,04***
Ob 4	1,40	Ut 0	2,00
Ob 5	1,50	Ut 1	2,10
Ob 6	1,60	Ut 2	2,20
		Ut 3	2,30

Source: FSUE "Standartinform"

Table 4. Physical-mechanical properties of types I-G and I-H oil-well cements in accordance with GOST 1581-96

Rate	***Definition for cement I-G and I-H types***	
	Minimum	***Maximum***
Compression strength, MPa, 8 hours after hardening by the temperature:		
38° C	2,1	-
60° C	10,3	3,5
Dehydration, ml	-	
Cement grout consistence in 15-30 minutes of test profile	-	30
Solidification time till 100 consistence, minutes	90	120

Source: FSUE "Standartinform"

Chemical properties of oil-well cements are presented in Tab. 5.

Table 5. Chemical properties of oil-well cements in accordance with GOST 1581-96

Characteristic	***Cement type definition***			
	I	***II***	***III***	***I-G and I-H***
Ignition loss, %, max.	5,0	-		3,0
Insoluble residue mass fraction, %, max	5,00	-		0,75
Sulphur oxide mass fraction (VI) SO_3, %:				
Minimum	1,5			-
Maximum	3,5			3,0
Chlorine-ion mass fraction $C1^-$, %, max	0,10			
Alkaline oxides sum mass fraction in equivalent Na_2O, %, max	-			0,75

Source: FSUE "Standartinform"

Portlandcement clinker as far as its chemical compositions is concerned is to meet the production regulations: therewith the mass fraction of magnesium oxide MgO in a clinker has to be 5,0% maximum. The mineralogical structure of a

clinker for sulphateresistant oil-well cements is to correspond to the values specified in Tab. 6.

Table 6. Mineralogical composition of portlandcement clinker for production of sulfate-resistant oil-well cements

Rate	*Cement clinker definition type and sulphateresistance*		
	Type I, II, III	*Type I-G and I-H*	
	CC	*CC-1*	*CC-2*
Tricalcium silicate contents C_3S, %:			
Minimum	-	48	48
Maximum	-	65	58
Tricalcium aluminate contents C_3A, %, max	5	3	8
Tricalcium aluminate C_3A and tetracalcium alumoferrite sum C_4AF, %, max	22	24*	-

Note: * - tetracalcium alumoferrite and doubled tricalcium aluminate sum
Source: FSUE "Standartinform"

Special additives introduced into the oil-well cement structure (lightening and making heavier) have provide for the reception of cement density specified in Tab. 3, and are not to cause destruction and corrosion of cement stone. Content of additives introduced into cement in the process of grinding are not to exceed the values, specified in Tab. 7.

Table 7. Norms of special additives introduction in the process of oil-well cements production, %

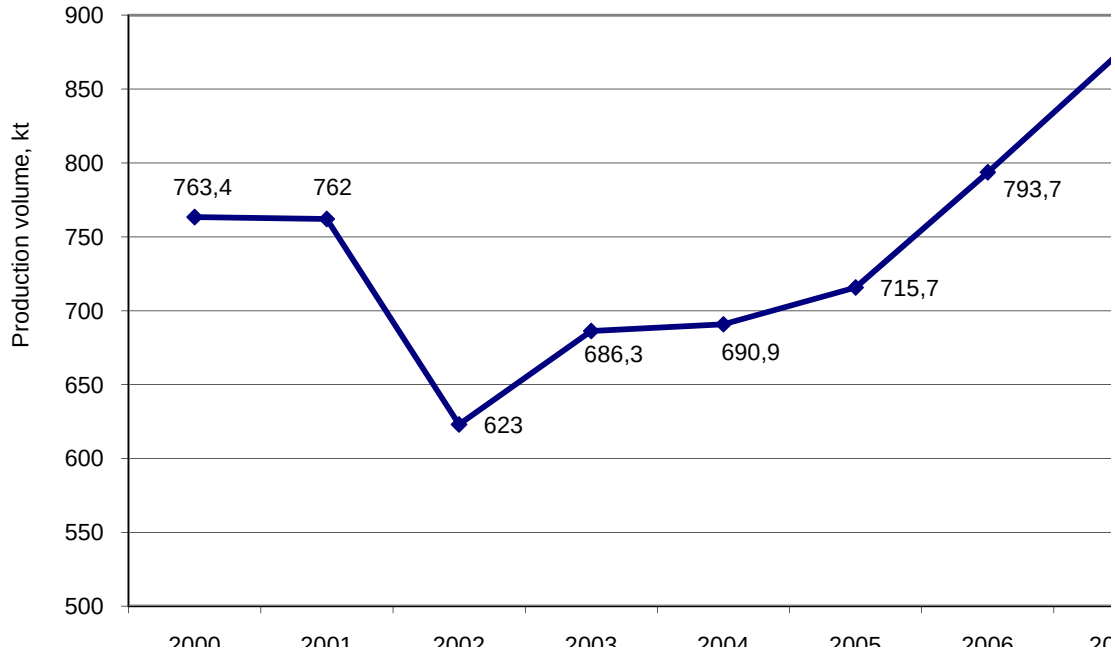
Cement type	*Admixtures content (in equivalent of admixture dry substance), %*					
	early-strength admixture	*solidification inhibitor*	*plastificators*	*waterproofing agent*	*water-retaining*	*Grinding intensificators, including organic**
I, II, III	0,5	0,3	0,5	0,5	1,5	1,00

Note: * - organic admixtures are 0,15% at most
Source: FSUE "Standartinform"

1.2. Oil-well cement manufacture statistics in Russia for 2000 - 2007

By the Rosstat data in 2000 oil-well cement production in Russia was carried out by 15 cement works. By 2006 the number of manufacturers of the given production was reduced down to 9 factories. The volume of oil-well cement manufacture in Russia after essential recession in 2002 began to increase again and in 2006 exceeded the parameter of 2000. By the 2006 results the volume of oil-well cement manufacture in Russia reached 793,7 thousand t (110,9% of the 2005 level). According to "Infomine" estimate, in 2007 growth rates of oil-well cement manufacture will be maintained at the level not below than the previous year. Thus the volume of its production will achieve the level of 875 thousand t. Dynamics of oil-well cement manufacture in Russia is presented in Fig. 1.

Figure 1. Dynamics of oil-well cement production in Russia in 2000-2007, thousand t



** - "Infomine" forecast*
Source: "Rosstat"

The largest Russian manufacturer of oil-well cements in the examined period is JSC "Sukholozhskcement" (Sverdlovsk region), in 2006 its share was 71,3% of the all-Russia manufacture of this production. The data on the volume of the given product manufacture by the Russian oil-well cement works in 2005-2006 are presented in Tab. 8.

Table 8. Oil-well cement production by Russian plants in 2005-2006, kt

Enterprise	*Region*	*Production volume, kt*		*2006/2005, %*
		2005	*2006*	
JSC "Sukholozhskcement"	Sverdlovsky region			
JSC "Volskcement"	Saratovsky region			
JSC "Gornozavodskcement"	Permsky region			
JSC "Soda"	Bashkortostan republic			
LLC "Topkinsky cement"	Kemerovsky region			
JSC "Novoroscement"	Krasnodarsky region			
JSC "Novotroitsky cementny zavod"	Orenburgsky region			
JSC "Ilinsky Zavod "Utiajelitel" - NPO "Burenie"	Krasnodarsky region			
JSC PO "Yakutcement"	Sakha republic (Yakutiya)			
Total:				

Source: "Rosstat", estimation "Infomine"

When you look at the data presented in Tab. 8 it becomes apparent that in 2006 the majority of cement works showed active growth of oil-well cement manufacture volumes. Leaders in production volumes escalation became JSC "Volskcement", JSC "Gornozavodskcement" and JSC PO Yakutcement, which 2-3 times increased their production parameters. In 2007 manufacture of oil-well cement at JSC "Spasskcement (Primorski Krai) was renewed. At the same time JSC "Novotroitsky cementny zavod" showed essential curtailment of oil-well cement production that was caused by the change of plant's proprietors and change of the nomenclature of commodity output. It should be also mentioned that manufacture of special oil-well cements is also run by several other Russian enterprises, buying straight cement from its direct manufacturers and introducing special additives into it. The largest among them are PJSC "Globus Ltd." (Sverdlovsk region) - about 20 thousand t per year, SPA "Betonity Urala Ltd." (Sverdlovsk region) - about 7 thousand t per year, etc.

More detailed information on the current status of the Russian cement works and oil-well cement assortment produced by them can be studied in section 1.4. of the report.