Research Group

InfoMine

Association of Independent Consultants and Experts
in the Field of Mineral Resources, Metallurgy and Chemical Industry

Building Stone Market in Russia

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Overview

The subject of the present report is overview of the current situation on the market of building stone in Russia and the forecast of its development. The report consists of seven parts, contains 129 pages and includes 25 figures, 57 tables and an appendix. The report is a kind of the cabinet investigation. Data was used, as informational sources, from the State Statistics Committee of Russia, State Statistics Committee of CIS, Federal Customs Office of RF, official statistics of railway transportation of the Ministry for Communications of RF, branch and regional media, annual and quarterly reports from issuers of securities, as well as from web sites of manufacturing enterprises. Trucking transportation is not subject to compulsory statistical reporting in Russia, so, at the present report, only data are presented on the transportation via railway, as well as data from some enterprises.

The first chapter of the report contains information on reserves of raw materials for producing crushed stone, gravel and rubble stone in Russia. At present, only centralized stocktaking of building-stone reserves remains in Russia, while the reserves of sand-gravel materials are assessed at the regional level, which fact considerably complicates the evaluation of the current state of raw material base for producing the materials in question.

The second chapter of the report describes analyzing production statistics for the period from 1997 to 2006. In this section, data are presented on the volumes of production of crushed stone, gravel and rubble stone in Russia for the said period, dynamics of production of these items is traced, and regional pattern of production is presented.

In the third chapter, quality requirements are described for crushed stone used for construction work and for ballasting railways according to requirements of the current state standards, and existing classifications of the crushed stone are presented.

The fourth chapter of the report describes current state of some large manufacturers of building stone. Data are presented on the raw material base available, production technology and equipment used, range and quality of output product, production volumes and directions of deliveries of the products for the recent two years.

The fifth chapter describes analysis of external trade operations with building stone in Russia in 1997-2006. On the background of rather stable small volumes of export of this product, dynamic increasing of its import may be observed during recent years, which is caused by increasing demand on the home market and uneven allocation of production capacities for manufacturing high-quality products.

The sixth chapter of the report describes consumption of building stone in Russia. Production-consumption balance for the product is presented in this section. As experts say, consumption of crushed stone, gravel and rubble stone in Russia

has increased nearly two fold during the recent 8 years, and exceeded 148 million m^3. In addition, in the sixth chapter, price review is presented for the products in question, seasonality of supplies is analyzed, and branch and regional consumption patterns are evaluated.

In the seventh, last, chapter of the report, forecast is presented of development of the Russian market of building stone for the period to 2010. According to experts of "InfoMine", growth rate of consumption of building stone in Russia would remain in the nearest future on the level of not less 5% per year, and at favorable economic situation would be 9-11%, which fact would lead to increasing consumption of the product up to the level of 210-240 million m^3 in 2010.

Appendix contains addresses and contact information of the principal enterprises manufacturing building stone.

INTRODUCTION

The share of building stone (crushed stone, gravel, rubble stone) is at present over a half of the total volume of production of non-metallic building materials in the country.

Crushed stone is sharp-cornered fragments of rock up to 100 mm in size, formed at eroding the rock and occurring in the form of loose or semi-consolidated aggregations. It may be a result of grinding (and sometimes dispersing) rock and artificial stone materials (for example, metallurgical slag, brick) in the form of pieces, usually angular, 5-150 mm in size, used, depending on their properties, as fillers for concrete, for ballasting railways, at construction of motor roads, waterworks etc.

Rock of three large groups is used for producing crushed stone: magmatic or igneous (primary), sedimentary (secondary) and metamorphic.

Igneous rocks are the following: granite, diorite, gabbro, diabase etc. This rock possesses the best qualities for production of crushed stone for concrete and ballasting work, namely strength, frost-resistance, abradability, fragility.

Sedimentary rock, according to its particular genetic features, is divided into the following categories: fragmental (gravel-sand), carbonate (limestone, dolomite) and sandstone.

Sedimentary rock is not as strong as magmatic one. However, in most cases, its physical and mechanical properties meet the requirements of production of concrete materials.

Metamorphic (transformed) rock is a rock, which was formed at transformation of the primary and secondary rock (transformed igneous rock – granite gneiss; sedimentary – clay slate, limestone marble, quartzite). Their strength is in the middle between that of magmatic and sedimentary rock.

Gravel is a loose rock comprising a mixture of grains graveled to various degrees, such as fragments of minerals and rock of 5-70 mm fraction. As a rule, gravel is obtained by dressing natural sand-gravel mixtures. Gravel is used as filler for concrete, and sometimes in road building. Coarse gravel is a raw material for production of gravel-crushed stone.

Rubble stone comprises large irregularly shaped pieces of rock with edge of 150-500 mm obtained, as a rule, from limestone, dolomite, sandstone, and, rarely, granite. Cobblestone (boulders with edges up to 300 mm length) is a kind of rubble stone. In production of rubble stone, rock is used with compression breaking point up to 1000 kilogram-force per cm^2. Rubble stone is used for laying under-buildings, earth-retaining structures, sewer pipes, waterworks etc.

1. Reserves and Deposits of Raw Materials for Production of Building Stone

Mineral and raw material base of the industry of non-metallic building materials for producing crushed stone, gravel and rubble stone comprises deposits of building stone and sand-gravel materials.

It is rather difficult to obtain reliable data on the current state of deposits of mineral raw materials of that kind, because of unavailability of a centralized accounting system for some of them. Centralized accounting has only survived for building stone deposits. Summary data on reserves of sand-gravel materials and sand for building work were last published over 10 years ago (at the beginning of the 90s), and, at present, accounting of these non-metallic construction materials is carried out on the level of subjects of federation. Table 1 shows approximate composition and extent of exploitation of raw material base for producing non-metallic construction materials in Russia in 2004.

Table 1. Raw Material Base of Non-Metallic Construction Materials in Russia

Kind of raw material	*Amount of Deposits*			*Reserves, million m^3*		
	Total	*Exploited*	*Unexploited*	*Total*	*Exploited*	*Unexploited*
Building stone	1282	729	583	20559.3	12776.4	7782.9
Sand-gravel materials	1926	830	1096	10312	4279	6033

Source: FSUE "VNIPIIstromsyrye"

"Building Stone", the State Balance of Reserves of mineral raw materials, accounted in Russian Federation in 01.01.2000 1213 deposits of these raw materials for producing non-metallic construction materials.

Total balance reserves of A+B+C_1 categories in Russia are 20617.6 million m^3 (in 01.01.2000), of C_2 category – 9122.1 million m^3. Besides, 489.6 million m^3 of raw material reserves are considered as off-balance. The principal explored reserves of building stone (61.4%) are on the balance of mining enterprises and organizations, and 37.6% are accounted as state reserve. Table 2 shows regional structure of allocation of deposits of building stone in Russia.

Table 2. Regional Structure of Allocation of Building Stone Deposits in 2000

Federal districts	*Amount of deposits with balance reserves*	*A+B+C_1 Balance reserves*	
		Total, million m^3	*Share of reserves, %*
Central	123	3363.9	16.3
North-West	106	2594.9	12.6
South	165	1873.0	9.1
Volga	221	2751.3	13.3
Urals	150	4376.5	21.2
Siberia	257	3037.7	14.7
Far East	191	2620.3	12.8
Total in Russia	**1213**	**20617.6**	**100.0**

Source: "Building Stone", the State Balance of Mineral Resources of RF, 2001.

According to data from VNIPIIstromsyrye, at the beginning of 2004, resources of ***building stone*** were allocated rather evenly over the territory of Russia, Urals Federal District possessing a little more (22.1% of reserves), and South District, a little less (8.8% of reserves). Nearly half of reserves of ***sand-gravel materials*** are allocated in Siberia (25.3%) and Central (22.6%) Federal Districts, Urals District possessing the least reserves (6.2%). Table 3 shows regional structure of allocation of reserves of raw materials for producing non-metallic construction materials.

Table 3. Regional Structure of Reserves of Raw Materials for Producing Non-Metallic Construction Materials in Russia in 2004

Federal districts	*Building stone*			*Sand-gravel materials*		
	Amount of deposits	*Reserves, million m^3*	*Share of reserves, %*	*Amount of deposits*	*Reserves, million m^3*	*Share of reserves, %*
Central	126	3337	16.2	332	2334	22.6
North-West	132	2725	13.3	516	1065	10.3
South	167	1811	8.8	139	1500	14.5
Siberia	267	3036	14.8	343	2610	25.3
Far East	203	2641	12.8	200	927	9.0
Total in Russia	**1282**	**20559**	**100.0**	**1926**	**10312**	**100.0**

Source: FSUE "VNIPIIstromsyrye"

Extent of exploitation of base of raw materials for producing non-metallic construction materials is rather low (see Table 4). Thus, it is only 57% for building stone, and 43% for sand-gravel materials.

Table 4. Trends in the State of Raw Material Base for Producing Non-Metallic Construction Materials in Russia in 1987-2004

Year	*Amount of deposits*			*Reserves, million m^3*		
	Total	*including exploited*		*Total, million m^3*	*including exploited*	
		number	*%*		*million m^3*	*%*
Building stone						
1990	938	509	54	18222	10767	57
2000	1213	762	62.8	20617.6	12561.3	60.9
2004	1282	729	57	20559	12776	62
Change +/-	+344	+220	+3	+1737	+2009	+5
Sand-gravel materials						
1987	1079	537	50	9090	4435	49
2004	1926	830	43	10312	4279	41
Change +/-	+847	+293	-7	+1222	-156	-8

Source: FSUE "VNIPIIstromsyrye", "Building Stone", the State Balance of Mineral Resources of RF, 2001.

However, in some subjects of federation, first in those with intensively developing building industry and in those, which are suppliers of crushed stone of igneous rock for other regions of the country, extent of exploration is rather high. For example, in Karelia Republic, 41 out of 42 deposits of building stone are licensed for exploitation, in Leningrad Region, extent of exploitation of deposits is about 76%, and in Sverdlovsk Region, about 78%. Extent of exploitation of deposits of sand-gravel materials is much higher in some central regions than the average extent of exploitation over Russia. Thus, at present, in Yaroslavl Region, 78% of deposits of sand-gravel materials are being exploited, in Kaluga Region, 67%.

At that, increasing of deposits amount was not caused by exploration of new ones, but by registration of already discovered deposits, usually with small reserves, with a view of licensing their exploitation. As, at the same time, some decreasing of reserves occurred, the average size of deposits considerably decreased (see Table 5).

Table 5. Average Size of Deposits of Raw Materials for Producing Non-Metallic Construction Materials in Russia in 1987-2004

Kind of raw material	*Year*	*Average size of deposits, million m^3*		
		Average	*Exploited*	*Unexploited*
Building stone	1992	20.1	21.2	18.8
	2004	16.0	17.5	14.6
Sand-gravel materials	1987	8.4	8.3	8.6
	2004	5.4	5.2	5.5

Source: FSUE "VNIPIIstromsyrye"

Reserves of the industry of non-metallic construction materials, at current level of extracting raw materials, according to evaluation of VNIPIIstromsyrye, will be sufficient for 79-125 years, and considering reserves of unexploited deposits, for about 200 years. However, in many cases, though a territory possesses on the balance considerable reserves belonging to state reserves, it often happens that a considerable, and sometimes the most, part of these reserves cannot be exploited due to various reasons. Thus, the real raw material reserves of the industry of non-metallic construction materials may be considerably less than that stated by the State Balance of Mineral Reserves.

Table 6 shows the principal exploited deposits in RF, planned capacities for extraction building stone, and brands of the crushed stone produced.

Table 6. Principal Exploited Deposits of Building Stone

Deposit	***Mineral product***	***Planned productivity, raw materials, thousand m^3***	***Brand of crushed stone***
Central Federal District (126/78)			
Tula Region (35/20)			
Turdeyskoye	Limestone, dolomite	1360	Crushed stone 200-600
Gurovskoye	Limestone	1200	Crushed stone 600
Khomiakovskoye	Limestone	900	Crushed stone 600
Obidimskoye	Limestone	800	Crushed stone 600
Bernikovskoye	Limestone	450	Crushed stone 600
Dubninskoye	Limestone	400	Crushed stone 600
Sviridovskoye	Limestone	200	Crushed stone 600
Lianshinskoye	Limestone	200	Crushed stone 600
Riazan Region (20/13)			
Kasimovskoye	Carbonate rock	1500	Crushed stone 400 (fraction 5-20; 20-40; 40-70), rubble stone
Pogorelovo-Galinskoye	Limestone	1000	Crushed stone 200-600
Vilenskoye	Limestone	720	Crushed stone 400
Serebrianskoye	Limestone	470	Crushed stone
Korablinskoye	Limestone	250	Crushed stone 300 (fraction 5-20; 20-40)
Malo-Studenetskoye	Carbonate rock	250	Crushed stone
Kaluga Region (16/12)			
Zhiletovskoye	Limestone	1670	Crushed stone 600
Piatovskoye	Limestone	1400	Crushed stone 600 (fraction 5-20)
Polotniano-Zavodskoye	Limestone	830	Crushed stone 600 (fraction 5-20; 20-40; 40-70)
Kaluzhskoye	Limestone	650	Crushed stone 600