Research Group

InfoMine

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

---

Review of Market of Limestone and Lime in Russia

Moscow
December 2005

Internet: www.infomine.ru
e-mail: info@infomine.ru

CONTENT

List of Tables

List of Figures

INTRODUCTION

Limestone is one of the most common rocks of the carbonate origin and is used in building engineering, metallurgy, chemical, pulp and paper, and sugar industry, as well as in cattle breeding and agriculture.

Limestone is a sedimentary rock, predominantly composed of calcite $CaCO_3$, plus impurities of dolomite, quartz, clays, oxides and hydroxides of iron and manganese, as well as pyrite, marcasite, phosphates, gypsum, organic matter. Chemistry of pure limestone is close to theoretical composition of calcite (56% CaO and 44% CO_2). The calcium carbonate rock, containing 4-17% MgO, is named dolomitized limestine; the rock, containing 25-50% clays, is named marl. Metamorphic alteration of limestone results in marble origination.

In structure of, limestones are subdivided into crystalline, organogenic, detritic and with mixed structure of. Pure limestones are white, and are colored gray by organic matter, and yellow-brown by iron oxides. In origin, organogenic, chemogenic and detritic limestones are distinguished. Most of limestone bodies occurs as layers from several meters up to kilometers thick.

When preparing the present report, InfoMine's experts used only the official data from the State Statistics Committee of Russia (Rosstat), State Customs Committee of Russia, and Ministry of Railways (MPS) of RF (Russia or Russian Federation), which had been got during the telephone conversations with the offices' management, as well as at their web sites. As in Russia only railway-transported goods are subject to the obligatory statistical accounting, hereinafter, in this report, expert evaluations are only presented for those deliveries of limestone and lime, which are carried out by motor transport, as well as data on some mining enterprises.

1. Reserves and Deposits of Limestone in Russia

1.1 Limestone Resources in Russia

There are several methods of the state accounting of the limestone deposits in Russia, reserves of which contain limestone for various uses. These deposits belong to the list of the State Balances of Mineral Resources of RF. Among them are the "Flux Limestone", "Carbonate Material for Chemical Industry", "Carbonate Material for Sugar and Pulp and Paper Industry", "Cement Industry" and "Building Stones".

1.1.1 Location and standing of the flux limestone deposits

At present, The State Balance of RF takes into consideration the reserves of 62 flux limestone deposits. The balance reserves of the flux limestone within category $A+B+C_1$ (balance demonstrated reserves) amounts to 6657.4 million tons, category C_2 (indicated reserves) – 1716.4 million tons, and that of the off-balance categories amounts to 70.2 million tons.

Table 1 shows the geographic distribution of the flux limestone balance reserves among the Federal Districts, Regions and other Subjects, and their weight in the total Russian reserves. The most part of the reserves (31.4%) is concentrated in the Siberian Federal District, to which 26.3% of the limestone mining fall. The second place takes the Urals (with 26.5% in the reserves and 23.4% in the mining), and the third, North-Western (with 15.9% and 12.2%, respectively) Federal Districts.

Table 1: Geographic Pattern of the Balance Reserves of Flux Limestone

Federal Districts, Federal Subject	***Quantity of Deposits***	***Reserves within category $A+B+C_1$, thousand tons***	***Share of the reserves of the Russian Federation, %***	***Reserves within category C_2, thousand tons***
Total in Russia	***62***			
Central	***7***			
Tula Region	2			
Lipetsk Region	3			
Belgorod Region	2			
North-Western	***7***			
Arkhangelsk Region	2			
Vologda Region	1			
Komi Republic	1			
Leningrad Region	3			
Southern	***1***			
Rostov Region	1			

Federal Districts, Federal Subject	***Quantity of Deposits***	***Reserves within category A+B+C1, thousand tons***	***Share of the reserves of the Russian Federation, %***	***Reserves within category C2, thousand tons***
Volga	***7***			
Perm Region	3			
Udmurtia Republic	1			
Bashkortostan Republic	2			
Orenburg Region	1			
Urals	***24***			
Sverdlovsk Region	12			
Chelyabinsk Region	12			
Siberian	***14***			
Krasnoyarsk krai	***5***			
Kemerovo region	***6***			
Khakassia	***1***			
Irkutsk region	***1***			
Chita region	***1***			
Far East	***2***			
Evreisky autonomous district	***1***			
Primorsky krai	***1***			
Russia, total	***62***			

Source: State Reserves Balance "Flux Limestones", 2004

28 deposits with balance reserves of limestone within category A+B+C_1 belong to the group of the exploited ones, the total being 2795.1 mln tonnes, or 42.0% of the reserves of Russian Federation. In the Siberian Federal district of Russia, there are 4 exploited deposits of the flux limestone, the greatest of which in reserves are Karachkinsky and Malo-Salairsky in Kemerovo oblast, as well as Mazulsky deposit in Krasnoyarsk krai.

% deposits of flux limestones refer to a group of being prepared for exploitation, including 2 deposits in Kemerovo oblast: Kiya-Shaltyr and Baskunskan.

29 deposits of flux limestones are standby; their balance demonstrated reserves category A+B+C_1 total2901.2 mln tonnes, or 43.6% of the total Russian reserves.

1.1.2. Location and standing of carbonate resources reserves for chemical industry

Resources of the carbonate raw materials for chemical industry are accounted among the deposits both of limestone and chalk, which are useful for production calcium carbide, chloride of lime and technological lime, soda ash, calcium chloride, chemically precipitated chalk, forage precipitate, which are used in producing rubber, as well as for obtaining lime milk for producing calcium borate.

Nowadays, State Balance of Reserves of Russia has taken into account reserves of 14 limestone and 2 chalk deposits with the total balance reserves within category $A+B+C_1$ amounting to 1260.6 million tons (including 1144.9 million tons of limestone), and within category C_2 – to751.5 million tons (724.8 of limestone). Off-balance resources amount up to 66.4 million tons.

Table 2 shows the distribution of the balance reserves of the carbonate raw materials for chemical industry among the Federal Districts and Federal Subjects, and their weights as compared with the total Reserves of the Russian Federation.

The main part of the balance reserves of limestone for chemical industry within category $A+B+C_1$ is located in the Siberia, Volga and Southern Federal Districts (38.5%, 36.3% and 20.3% respectively, of the total Reserves of Russia).

7 limestone deposits with the balance reserves of 648.4 million tons within category $A+B+C_1$ are considered as exploited ones. Their share comprises 56.6% of all accounted balance reserves of limestone within category $A+B+C_1$, and only one of them – Bilyutinsku (Buryatia) is located in the Siberian Federal District of Russia. The deposit of limestones are used in production of calcium carbide.

Besides, in the district, the sole deposit of limestone for chemical industry, being prepared for exploitation, is located: reserves of Section No. 2 of Tsagan-Khodinsky deposit (Irkutsk oblast) are 9.9 mln t or 0.8% of the total Russian reserves.

Of 6 standby deposit of limestone for chemical industry, 4 are located in the Siberian District, and their balance demonstrated reserves total 327.1 mln tonnes or 71.4% of the total standby reserves of Russia.

Table 2: Location of carbonate resources reserves for chemical industry

Federal District, Region	*Quantity of deposits*	*Reserves of category $A+B+C_1$, kt*	*Share in total Russian reserves, %*	*Reserves of C2 category, kt*
Central				
Tula region				
Southern				
Krasnodar krai				
North Osetia-Alania				

Volga				
Perm region				
Bashkortostan				
Siberian				
Krasnoyarsk krai				
Irkutsk region				
Buryatia				
Chita region				
Far East				
Primorsky krai				
Total:				

Source: State Balance "Carbonate Raw Materials for Chemical Industry", 2004

1.1.3. Location and standing of carbonate resources reserves for pulp-and-paper and sugar industry

The State Reserves Balance of Russia includes now 10 deposits fit for sugar industry, containing limestone with the volume of balance reserves of 513 millions tons within category $A+B+C_1$, and the reserves of 103 mln tons within category C_2, as well as 8 limestone deposits for pulp and paper industry with the balance reserves of 70 million tons within category $A+B+C_1$, and 7 million tons within category C_2.

The balance of mining businesses includes 7 deposits fit for pulp and paper industry with the balance reserves within category $A+B+C_1$ of 66432 thousand of tons and 8 deposits for sugar industry with the reserves of 485271 thousand tons within category $A+B+C_1$. The geological organizations of the Geological Committee of Russia take into account 2 limestone deposits for sugar industry with the balance reserves of 27277 thousand tons within category $A+B+C_1$, and 1 limestone deposit for pulp and paper industry with the balance reserves of 3808 thousand tons within category $A+B+C_1$.

Table 3 shows the geographic pattern of distribution of the balance reserves of limestone fit for sugar and pulp and paper industries, as well as their shares in the All-Russian Reserves.

As is seen, 67.05% of the carbonate raw materials balance reserves are concentrated in the Northern Territory of Russian Federation, where large deposits, such as Shvakinsky and Ust-Pinezhsky (Arkhangelsk Region) are located. 47.6% of the balance reserves of carbonate raw materials for sugar industry fall to the North-Caucasian Territory.

Table 3: Location of carbonate resources reserves for pulp-and-paper and sugar industry

Federal District, Region	*Quantity of deposits*	*Reserves of category A+B+C1, kt*	*Share in total Russian reserves, %*	*Reserves of C2 category, kt*	*Federal District, Region*
North-Western		***3***			
Arkhangelsk region	Pulp-and-paper industry	2			
Komi Republic	Pulp-and-paper industry	1			
Central		***5***			
Kaluga region	Pulp-and-paper industry	1			
Tula region	Sugar industry	1			
Lipetsk region	Sugar industry	3			
Southern		***4***			
Krasnodar krai	Sugar industry	3			
Stavropol krai	Sugar industry	1			
Volga		***2***			
Perm region	Pulp-and-paper industry	2			
Urals		***3***			
Sverdlovsk region	Pulp-and-paper industry	2			
Bashkortostan	Sugar industry	1			
Siberian					
Altai krai	Pulp-and-paper industry	1			
Russia, total:		**18**			
	Pulp-and-paper industry	**8**			
	Sugar industry	**10**			

Source: State Balance of Reserves "Carbonate resources for pulp-and-paper and sugar industry", 2001

The group of being exploited deposits includes 9 deposits; among them are 6 deposits for sugar industry and 3 deposits for pulp and paper industry. Explored reserves of the deposits for sugar industry amount to 390077 thousand tons within category A+B+C_1, or 76.1% of the reserves of Russia. Reserves for pulp and paper

industry amount to 29351 thousand tons within category A+B+C_1, or 41.8% of the store of Russia.

The most important deposits in terms of the reserves are the following: Dzhegonas (20.1%) in Stavropol krai, Khadzhokhsky (15.8%) in Krasnodar krai, Khmelinetsky (15.0%) in Lipetsk Region and Porechensky (13.5%) in Tula Region.

In the Siberian Federal District, only one deposit of limestones, suitable for pulp-and-paper industry – Kamyshensky (Altai krai) – is located (the deposit is standby and is not planned for exploitation).

1.1.4. Location and standing of carbonate resources reserves for cement industry

The State Reserves Balance of cement raw materials includes now 92 deposits of carbonate rocks, including 64 deposits of limestone. The carbonate rocks, taken into account in the Balance, are mainly presented by limestone, as well as chalk and marl. Total balance reserves of the carbonate rock over the Russian Federation being 11,298.7 million tons, including 6728 mln tonnes limestone, within A+B+C_1 category.

Geographic distribution of the cement raw materials balance deposits by the Federal Regions and Federal Subjects, as well as their shares in the All-Russian Balance, is shown in Table 4.

The exploited resources of cement raw materials in Russian Federation are not distributed quite evenly over the territory. This is owed by the fact that only a part of the reserves of grade (low-magnesia) carbonate rock is located in favorable conditions, e. g. close to railways and in low-complicated mining conditions for exploiting the deposits, etc. The main part of reserves (69%) is situated in the European part of RF. In the territory of the Siberian Federal District, 21 deposits of carbonate resources for cement industry are located, with total reserves of 1.7 bln tonnes or 17.1% of the total Russian reserves.

Table 4: Location of limestone reserves for cement industry

Federal District, Region	*Quantity of deposits*	*Reserves of category A+B+C_1, kt*	*Share in total Russian reserves, %*	*Reserves of C2 category, kt*
Central	***15***			
Tver region	1			
Kostroma region	2			
Moscow region	3			
Vladimir region	2			
Tula region	1			
Ryazan' region	4			
Orel region	1			