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Analysis of the silicomanganese market worldwide: a review

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Abstract. This article presents data on the production and trade turnover of silicomanganese (SiMn) in the world and Kazakhstan. Based on these studies, it is possible to predict the future state of silicomanganese. The global silicomanganese market is expected to grow from \$25.98 billion in 2022 to \$28.33 billion in 2023 at a cumulative annual growth rate (CAGR) of 9%. The Russian-Ukrainian war has undermined the chances of a global economic recovery after the Covid-19 pandemic, at least in the short term. The war between the two countries led to economic sanctions against many countries, rising commodity prices and supply chain disruptions, which caused inflation of goods and services and affected many markets around the world. The global silicomanganese market is expected to reach \$38.35 billion in 2027 with an average annual growth rate of 7.9%. It is expected that the growing demand for steel products will contribute to the further growth of the silicomanganese market. Steel products are products that are made from iron and metal in factories by various methods and mixed with alloys such as carbon, zinc and others. Silicomanganese is used to produce various types of steel for various purposes, such as carbon steel, alloy steel, manganese steel. Such use leads to an increase in demand for silicomanganese in the production of steel products. For example, in 2022, according to the World Steel Association (WSA), the Belgian international trade organization for Ferrous Metallurgy, steel consumption will increase by 0.4% in 2022, reaching 1.840 million tons. Steel consumption will increase by 2.2% in 2023, reaching 1.881 million tons. Thus, the growing demand for steel products stimulates the silicomanganese market.

Keywords: *silicomanganese, manganese ore, steel, market analysis, export, import.*

1. Introduction

Silicomanganese can be marketable and transferable. Commercial silicomanganese is used for deoxidation and alloying of steel. Advanced silicomanganese is used as a silicon-containing material for the silicothermic production of medium- and low-carbon ferromanganese and metallic manganese [1].

Silicomanganese is produced from mixtures of manganese sources (ores and ferromanganese slags), quartz, fluxes, reducing agents, as well as remelts and low-quality products in various quantities. The slow recovery of SiMn production in 2021 was held back by a decline in Chinese production.

Global SiMn production increased by 2% in 2021 to about 17.4 million tons, but it was still lower than the 17.8 million tons produced in 2019 before the Covid19 disruptions, due to a slowdown in Chinese production in the second half of 2021.

However, in 2021, about 285.000 additional tons of CIM were produced compared to the previous year, mainly due to increased production in Asia, excluding China (+21%), CIS countries (+17%) and Africa (+63%). The Chinese central government has ordered many large energy consumers to reduce their electricity consumption in the third quarter of 2021, which affected several large manganese alloy factories and Angan chemical plants.

China's SiMn production decreased by 654,000 tons (-5%) compared to the previous year, and China now accounts for 66% of global silica manganese supplies (from 72% in 2020), followed by India with 13% and Ukraine with 4% of global SiMn production in 2021. SiMn production in India in 2021 increased by 26% compared to the previous year, to 2.25 million tons, due to high demand from domestic steel mills and foreign consumers (in Japan, Taiwan, Europe, the Middle East, etc.). (Figures 1, 2) [2].

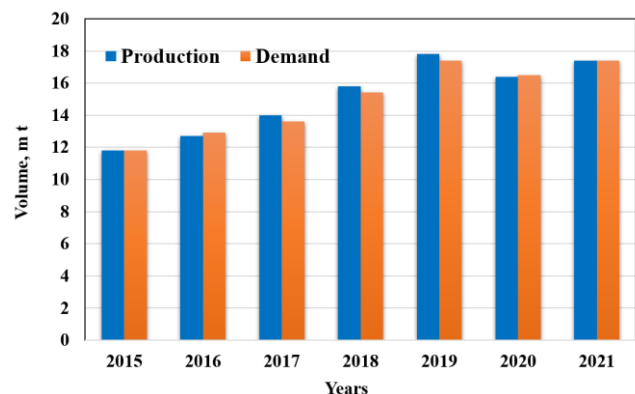


Figure 1. *Global production and demand for silicomanganese in 2015-2021*

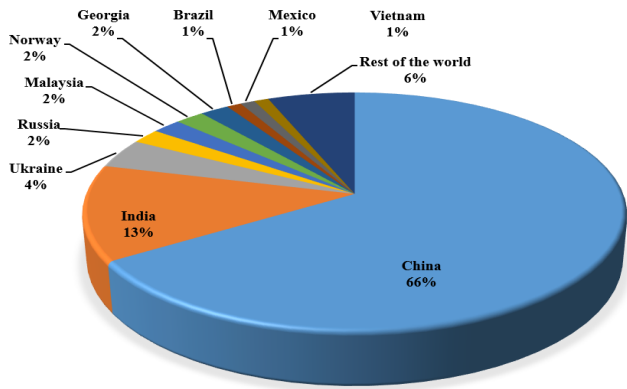


Figure 2. The global share of silicomanganese production in 2021

According to the Observatory of Economic Complexity (OEC) [3] in 2021, silicomanganese was ranked 717th in the world in terms of sales with a total trade volume of \$5.06 billion. In the period from 2020 to 2021, exports of silicomanganese increased by 80.9%, from \$2.8 billion to \$5.06 billion. Silicomanganese trade accounts for 0.024% of the total world trade.

Exports In 2021, the largest exporters of silicomanganese were India (\$1.24 billion), Ukraine (\$754 million), Georgia (\$472 million), Norway (\$401 million) and Malaysia (\$361 million).

Imports In 2021, the largest importers of silicomanganese were the United States (\$491 million), Turkey (\$388 million), Italy (\$372 million), Japan (\$341 million) and Germany (\$340 million).

Figure 3 shows the evolution of the market concentration of silicomanganese exports. In 2021, market concentration measured using Shannon Entropy, was 3.94. This means that most of the exports of Ferro-silico-manganese are explained by 15 countries.

Major players in the silicomanganese market are Anglo American plc., Assmang Proprietary Limited, Brahm Group, Eramet Group, Gulf Ferro Alloys Company, Henan Xibao Metallurgy Materials Group, Jindal Steel & Power Ltd., Mesa Minerals Limited, NIPPON DENKO CO. LTD., OM Holdings Ltd., Pertama Ferroalloys Sdn. Bhd., Steel Authority of India Limited, Sakura Ferro alloys, Tata Steel Limited, Maithan Alloys Ltd., Nava Bharat, and Rohit Ferro Tech Ltd. [4].

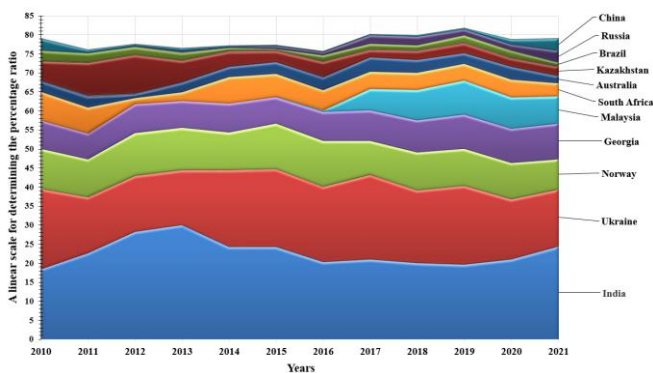


Figure 3. Percentage of SiMn exporting countries in 2010-2021

2. Materials and methods

2.1. The world's leading producers of SiMn

China. Guangxi, located in southwestern China, is one of the most important provinces of ferrous metallurgy. Steel production is about 70 million tons per year. In 2021, 50 million tons of steel were smelted. The silicomanganese factories in Guangxi are scattered, the main industrial areas are Guilin, Baixe, Chongjie, Qingzhou, Guigan, Laibing, Hachi and Fangchengan. According to incomplete statistics, Guangxi has 69 manganese and silicon production plants, which include 142 manganese and silicon furnaces with a monthly production capacity of 421 thousand tons, which is 26.56% of the total production of silica manganese in the country.

Guangxi silicomanganese producers purchase imported manganese ores mainly from the port of Qinzhou, and local manganese ores from Guangxi, Hunan, Guizhou and other places. He also buys manganese-rich slag in Hunan Province and surrounding areas. In 2021, Jinzhou Port imported about 7.5 million tons of manganese ores. The cost of silica manganese includes manganese ore, coke, electricity, etc. (electrode paste, auxiliary materials, labor, financial costs, etc.). 60% of silica manganese sales go directly to steel mills, and 40% to metallurgical plants.

In the first quarter of 2022, the silica manganese market in Guangxi is operating at a high level. Due to high energy costs, manganese ore prices have also experienced a period of growth. Combined with rising coke and transportation costs, the total production costs of silica manganese producers are on the high side. The highest cost of production in March was close to 9.000 yuan/ton, in relation to the price of products, manufacturers' profits decreased or even suffered losses. There are many small and medium-sized enterprises that have suspended production, it has been suspended since the end of 2021, and the readiness of manufacturers to resume production is low [5].

India. For the production of 1 ton of silicomanganese in India, 4.750 to 5.250 kWh of electricity is consumed. Silicomanganese has become a more important alloy than ferromanganese. In 2018, it became the leading producer of silicomanganese worldwide. Silicomanganese has also started to be produced by a number of small ferroalloy manufacturers. The production of silicomanganese, which amounted to about 311.326 tons in 2017-18, increased to 345.291 tons in 2018-19 [6].

Plants producing 75,000 tons of silicomanganese per year are located in Nandinidi near Bhilai, and plants producing 37.000 tons of silicomanganese per year are located in Bobbili, Vizianagaram County.

Manganese deposits in India intended for the extraction of silicomanganese are mainly located in Madhya Pradesh (Balaghat, Chindwara and Jabua districts), Maharashtra (Bhandara and Nagpur districts), Gujarat (Panchmahal district) and Odisha (Sundargarh district).

In addition, India is currently one of the world's largest importers of manganese ores. In 2019-2020, the production of manganese ores increased sharply from 2.78 million tons to 4.32 million tons. Manganese ore was supplied to India from South Africa (67%), Australia (11%), Gabon (5%), Brazil and the United Arab Emirates (4% each) and Singapore (3%) [7].

The Republic of South Africa. The Mogale Alloys plant in South Africa produces 55.000 tons of SiMn per year. Mogale Alloys is located in Krugersdorp, West Rand, Gauteng Province, South Africa. SiMn 20 MV·A in two electric arc furnaces (with submerged arc (SAF)) Using the carbothermic reduction method, it extracts manganese-containing raw materials from four types, namely Wessels, Mamatvan and UMK ores, as well as raw materials for BHP agglomeration. Bituminous coals from local suppliers Forzando and Msobo in Mpumalanga are used as a reducing agent. Quartzite comes from South African producers located at Marble Square in Limpopo.

SiMn is mainly used for the export market, when slag is discharged off-site and gases are released into the atmosphere after purification.

The chemical composition of SiMn produced at the Mogale Alloys plant is characteristic of Class B (ASTM A483/A483M-10, 2010 standard). A three-dimensional product is produced: two large fractions are sold, and a smaller fraction is used as a mattress for molds [8].

Norway. There are 14 different metallurgical companies operating in Norway, with a total of 27 plants across the country. This report provides an overview of the various plants. In addition to the company's history and updated production volume for 2019, information on raw materials and material flows - from mines to factories, as well as on production processes at factories - is presented here. Most of the information is obtained directly from companies.

Eramet Norway is part of the French multinational industrial group Eramet, which is a world leader in the production of metal alloys. The Group produces nickel and manganese, as well as high-quality special alloys. Eramet is a fully integrated mining and metals company operating in 20 countries around the world. It was founded in 1985 as a uniting organization for several companies, in particular, the nickel company Société Le Nickel (founded in 1880), the metallurgical company AUBERT & DUVAL (founded in 1907) and the mining company COMILOG (founded in 1953). After the merger, the company expanded its range of investment areas. Eramet currently has three plants in Norway [9]. In 2019, a total of 530.000 metric tons of ferromanganese and silicomanganese were produced at the three plants.

The advantage of Eramet Norway is access to manganese ore from the parent company's own mine in Moanda in Gabon, West Africa. Eramet is the second largest producer of manganese ore through its subsidiary COMILOG [10]. Quartz is mined at Eramet's own quartz quarries in Snekkevik, Norway.

In November 2017, it was announced that Ferroglobe PLC had acquired all shares in Glencore Manganese steel plants in Mo and Ran and in Dunkirk, France. The acquisition was completed in February 2018, and the new name of the plant in Mo and Rana became «Ferroglobe Mangan Norge AS». Production with the new owners continued as before. The acquisition of smelters in Norway and France has transformed Ferroglobe into one of the world's largest producers of ferromanganese and silicomanganese [11].

Ferroglobe Mangan Norge produces ferromanganese and silicomanganese as primary products. The volume of production varies depending on the market. In 2019, the plant produced 5.692 metric tons of ferromanganese and 89.571 metric tons of silicomanganese [12].

Ferroglobe Mangan Norge receives raw materials on the open market, and the number of suppliers is limited. The ore is mainly mined in Brazil and South Africa, while the coke is mainly supplied from Poland, Ukraine and Russia. The electrode mass is obtained in Norway or Poland, and the high-carbon slag is obtained from a subsidiary in France. They get quartz from one of the Elkem quarries in Mornes and dolomite from a local quarry. Ferroglobe Mangan Norge considers the supply of raw materials to be fairly stable and reliable, but in the future, there may be a problem with obtaining raw materials of sufficiently good quality [13].

Two different types of slag are formed in the FeMn and SiMn production processes. Both types are classified as by-products, not as waste. The slag from the production of ferromanganese is extracted in their own furnaces, as it contains enough manganese to be the raw material for the production of SiMn. The slag from SiMn is sold to another company, which grinds it to various fractions for further use in various projects, for example, in road construction and stabilizing masses for building houses [13, 14].

Georgia. Georgian Manganese Limited Liability Association (Georgian Manganese LLC) is one of the largest manufacturers of silicomanganese in Georgia, which includes the Zestafon Ferroalloy Plant (ZFP), Chiatura Mining and Processing Plant (CHMPP), the Vartsikhe 2005 hydroelectric power plant.

The Zestafoni Ferroalloy Plant (ZFP) melts various grades of silicomanganese and ferromanganese. The main industrial raw materials (manganese ore) are transported from Australia, South Africa (South Africa), Gabon, Ghana and the Chiatura Mining and Processing Plant (CHMPP), and coke is transported from Ukraine. Quartzite is supplied from deposits in Ukraine, Turkey, Bulgaria and Madneuli (Bolnis region) [15].

Aresem Corp LLC owns a ferroalloy enterprise (silicomanganese production) in the city of Rustavi. On June 13, 2019, the Minister of Environmental Protection and Agriculture of Georgia issued an environmental decision on the production of ferroalloys by Bulat LLC, which was also transferred to Aresem Corp LLC by order of the Minister of Environment and Agriculture of Georgia.

According to the EIA report for 2021, the design capacity of the enterprise is 4.380 tons of ferroalloy-silicomanganese per year. To produce the specified amount of silicomanganese as a raw material during the year, the enterprise needs: Manganese ore - 10293 tons/year; coke - 1839.6 tons/year; quartz - 1752 tons/year; dolomite - 876 tons/year;

In 2018, pilot smelting was carried out at the Rustavi Metallurgical Plant in an electric furnace with a capacity of 5 MW for ore extraction in three variants involving the use of slag with different manganese content.

Chiatura manganese concentrate (Mn - 44%; SiO₂ - 14%) was used in all melting options, as well as metallized coated slags with different total manganese content, which according to the melting options look as follows: I - option - Mn - 28-30%; II - option - Mn - 23-25% and III - option Mn - 18-20%. A technology has been proposed that provides for the use of scrap in factory conditions by pouring it directly into the foundry, which ensures an increase in the amount of alloy, a decrease in phosphorus content and energy costs. The economic effect of the installation amounted to 59247 USD [16].

Ukraine. The Nikopol Ferroalloy Plant is the largest producer of ferroalloys in Ukraine, and the Zaporizhia Ferroalloy Plant with more than 80 years of history provides 30-35% of Ukrainian production and 1-2% of global ferroalloy production is the second largest producer of ferroalloys. There are 29 electric arc furnaces in Zaporozhye, 2 DC electric furnaces. Ferroalloys are exported to Russia, Belarus, Kazakhstan, EU countries, Turkey, Egypt, Japan, South Korea, etc.

According to the Association of Ferroalloy Manufacturers of Ukraine (AFMU), 662.7 thousand tons of silicomanganese will be produced at the Nikopol and Zaporizhia ferroalloy plants in 2021, which is 18.4% more than last year [17].

Ukrainian manganese ore is not exported, but is used only for domestic consumption. In 2021, Ukraine exported 509.000 tons of silica manganese, which is 12% more than in the same period last year, of which 272.000 tons were exported to Europe and 139.000 tons to Turkey.

Under the leadership of Academician of the National Academy of Sciences of Ukraine M. I. Gasik, a new type of carbon reductants has been developed for the production of ferroalloys in electric furnaces of the Yasinovsky Coke Chemical Plant - a special coke nut with a fraction of 10-25 mm with high reactivity and electrical resistance. This was successfully tested at the Nikopol Ferroalloy Plant for melting silicomanganese and at the Stakhanov Ferroalloy Plant for melting ferrosilicon.

Like the entire mining and metallurgical complex of Ukraine, ferroalloy and mining enterprises of the industry have suffered greatly from the consequences of the military aggression of the Russian Federation against Ukraine. Missile strikes on the Ukrainian energy infrastructure at the end of last year significantly worsened the situation for the ferroalloy industry, which is more dependent on stable energy supplies than others. As a result of these strikes, industry enterprises partially or completely suspended their work [18].

Ferroalloy enterprises of Ukraine in January-August 2022 reduced output by 32% compared to the same period of the previous year – to 399.46 thousand tons. In particular, for 8 months of last year, production decreased as follows:

- silicomanganese – by 22.2%, to 356.5 thousand tons;
- ferromanganese – by 70.7%, up to 20.7 thousand tons;
- ferrosilicon (in terms of 45%) – by 63.4%, up to 19.7 thousand tons;
- metallic manganese – by 62.4%, up to 1.8 thousand tons.

After October, due to the impact of strikes on the country's energy infrastructure and the reduction in production in this regard, enterprises stopped providing updated statistics. The average workload of industry enterprises at the end of 2022 was at the level of 30% compared with 60-70% in April-May.

Pokrovsky Mining and Processing Plant (PGOC) produced 497.1 thousand tons of manganese concentrate in 8 months of 2022, which is 34.4% less than in the same period of 2021. PGOC also produced 29.55 thousand tons of iron ore agglomerate (-84.8%) in January-August and supplied it to the Dnipro Metallurgical Plant. In turn, in 2022, the Manganese GOK reduced the production of manganese concentrate by 41.2% to 324 thousand tons.

In total, in January-November 2022, industry enterprises exported 318.8 thousand tons of ferroalloys, which is 48% less than in the same period of 2021. Export revenue for 11 months of 2022 decreased by 42.7% to \$532.3 million [19].

Russia. In the conditions of a planned economy until the 1990s, the main sources of manganese raw materials were the Nikopol manganese ore region in Ukraine, the Atasuysky ore region in Kazakhstan and, to a lesser extent, the Chiatursky district in Georgia. There are no prepared deposits of high-quality manganese ores in Russia within the existing transport infrastructure. The production of silicomanganese was carried out at enterprises in Ukraine (PJSC Nikopol Ferroalloy Plant and PJSC Zaporizhia Ferroalloy Plant), as well as at enterprises in Russia (JSC Chelyabinsk Electrometallurgical Combine, PJSC Kosogorsky Metallurgical Plant, JSC Satkinsky Iron Smelter and JSC Klyuchevsky Ferroalloy Plant) and Kazakhstan (Aksu ferroalloy plant) [20].

Supplies of silicomanganese were carried out mainly from Ukraine (up to 240 thousand tons/year), but since 2014 they began to decrease and stopped in 2017. The replacement of the outflow of this ferroalloy was offset by an increase in supplies from Kazakhstan and, especially, from Georgia (up to 114 thousand tons/year). The export of silicomanganese (2-66 thousand tons/year or 1-22% of production) is heterogeneous over time, the largest deliveries were mainly to the Netherlands and Belarus, as well as a counterflow to Kazakhstan. Surges in the volume of exports of silicomanganese in 2004-2005 and 2017-2018 (up to 75% of production) are due to high global prices for it during these periods.

In general, it can be stated that manganese concentrate and manganese metal are completely import-dependent products, silicomanganese is moderately import – dependent, and ferromanganese is import – independent.

Thus, manganese raw materials in the sum of all types are significantly import-dependent [21].

2.1. Production of silicomanganese in Kazakhstan

The largest producer of silicomanganese in Kazakhstan is JSC Aksu Ferroalloy Plant, which is a branch of JSC TNK Kazchrome (Eurasian ERG Group). The plant consists of four main smelting workshops with 26 powerful electric furnaces, as well as auxiliary units. The production capacity is more than 1 million tons of ferroalloys per year, of which about 200 thousand tons are silicomanganese. The company produces the following products: high-carbon ferrochrome, ferrosilicochrome, ferrosilicon, silicomanganese. The company's products are exported to the markets of Western Europe, the USA, Japan, China, and Russia [22].

The largest consumers of silicomanganese in the Republic of Kazakhstan are domestic metallurgical companies, such as: ArcelorMittal Temirtau JSC, KSP Steel LLP, Casting LLP, Kazakhmys Corporation JSC. Also, consumers of silicomanganese are companies engaged in the production of medium-grade rolled products, for example Kazferstal LLP, FerumVtor LLP. Insignificant volumes of consumption are accounted for by machine-building companies and companies producing electrodes used for welding, such as: JSC «Almaty Heavy Machinery Plant», JSC «Machine-Building Plant named after S.M. Kirov», JSC «Vostokmashzavod», LLP «Pavlodar Machine-Building Plant», LLP «Zhezdy-El» [23].

According to the Observatory of Economic Complexity (NPP), the largest amount of silicomanganese was exported to Russia in 2021. In 2021, the volume of exports of these products to Russia in monetary terms amounted to 87.800 thousand US dollars, or 71.5% of all exports. Japan accounts for about 22.9% of the total exports of silicomanganese. Uzbekistan, Kyrgyzstan, Tajikistan and Turkey account for a small part of exports (Figure 4).

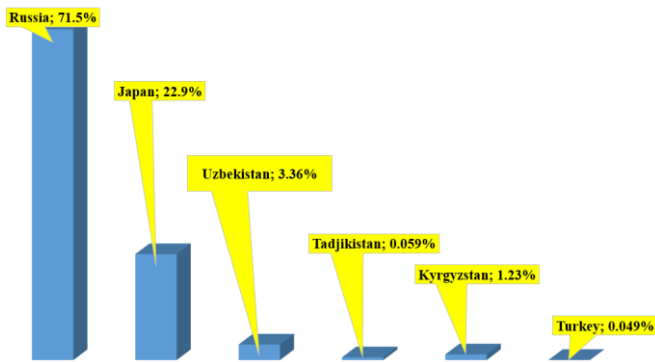


Figure 4. Kazakhstan's exports of silicomanganese in 2021

Accordingly, in 2021, the largest amount of silicomanganese was imported to Kazakhstan from Russia and Turkey [3-4].

3. Results and discussion

3.1. Prospects for the production of silicomanganese

2022 was no different - manganese prices soared in the first half of the year after a sharp decline in supply brought on by challenging weather, COVID-19 restrictions in Australia and Russia's war in Ukraine. Slowing demand in China, typically a hotbed for infrastructure projects, put the brakes on manganese prices in the second half of the year.

Looking forward, analysts expect increasing infrastructure activity and demand for steel to boost the manganese market in 2023 and beyond. The metal is strongly dependent on demand from China, which requires large amounts of electrolytic manganese to produce steel for construction. Interest in battery applications for manganese could also be a positive force moving into the future as the green energy transition progresses. Benchmark Mineral Intelligence projects that demand for manganese will increase by eight-fold over the next decade on rising demand for electric vehicle batteries.

Immediately after the beginning of the military aggression of the Russian Federation in Ukraine, prices for ferroalloys rose sharply, as markets panicked, and buyers stocked up on products for the future. The spring increase in prices for ferroalloys improved the financial condition of producers, especially against the background of rising energy costs. However, this trend was not long-lasting, because end users were forced to reduce production.

In China, it is planned to halve the production of ferroalloys, which will entail a shortage of supply in the local market, and then an increase in domestic and world prices for ferroalloys. At the same time, European ferroalloy production is seriously affected by the energy crisis that began even before the Russian invasion of Ukraine [19].

But metallurgy is a much more sustainable industry than agriculture when it comes to external pressures. Alloys such as ferromanganese and silicomanganese, which Georgia specializes in, are necessary for the production of steel as deoxidizing and strengthening agents. Prices for these alloys have risen amid European concerns about supply disruptions from Ukraine, which is also a major producer of them: before the war, about 30 percent of silicomanganese was supplied to the European Union from Ukraine [4].

Increasing investments in silicomanganese is a key trend gaining popularity in the silicomanganese market. The largest companies operating in the silicomanganese market pay special attention to expanding their production capacities by increasing production volumes and investments in the market. For example, in August 2022, Arab Alloys, an Egyptian ferroalloy manufacturer, invested \$32.795 million (1 billion Egyptian pounds) to create an industrial complex for the production of ferroalloys in the Suez Canal Economic Zone (SCZone) to produce 48.000 tons of ferrosilicon. It will also produce silicomanganese, which is mainly used in ferrous metallurgy, as well as metallic silicon, which is mainly used in the aluminum business. In addition, in October 2022, Pertama Ferroalloys (PFA), a Malaysian supplier of ferroalloys and silicomanganese, will invest 600 million US dollars (2.81 billion ringgit) in the second phase of expansion of its ferroalloy plant, which will become the first enterprise for smelting manganese alloys and ferrosilicon.

In January 2020, Vedanta Limited an India-based mining company acquired Ferro Alloys Corporation for \$12 million. The acquisition adds ferro alloys such as silicomanganese in the portfolio of Vedanta Limited. Ferro Alloys Corporation is an India-based producer of ferro alloys such as silicomanganese.

4. Conclusions

The most important reasons why Kazakhstan has full capacity to produce silicomanganese:

- sufficiency of manganese ores;

Onshore manganese reserves are large but unevenly distributed; reserves in the United States are of very poor quality and potentially involve high production costs. South Africa accounts for an estimated 70% of the world's manganese reserves. According to the U.S. Geological Survey, Kazakhstan produced 90.000 tons of manganese in 2021 and 110.000 tons in 2022. And the reserves of manganese ores amount to about 5 million tons.

- low electricity prices;

According to the data GlobalPetrolPrices.com for 2023, the average price of electricity for enterprises is 0.163\$ dollars per kWh. The lowest price is \$0.008 per kWh (Syria), and the highest is US \$0.645 per kWh (Italy). The calculations used a consumption of 1.000.000 kWh per year. In Kazakhstan, the price of electricity is 0.064\$ dollars per kWh.

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Әлемдегі ферросиликомарганец нарығын талдау: шолу

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Аңдатпа. Бұл мақалада әлемдегі және Қазақстандағы ферросиликомарганецтің өндірісі мен сауда айналымы туралы мәліметтер келтірілген. Осы зерттеулерге сүйене отырып, ферросиликомарганецтің болашақ күйін болжауға болады. Әлемдік силикомарганец нарығының көлемі 2022 жылы 25.98 миллиард доллардан 2023 жылы 28.33 миллиард долларға дейін өседі деп күтілуде, жылдық жиынтық өсу қарқыны (CAGR) 9%. Ресей - Украина соғысы кем дегенде қысқа мерзімде Covid-19 пандемиясынан кейін әлемдік экономиканы қалпына келтіру мүмкіндігін бұзды. Екі ел арасындағы соғыс көптеген елдерге экономикалық санкциялар, тауарлар бағасының өсуі және жеткізілім тізбегінің бұзылуы әкелді, бұл тауарлар мен қызметтердің инфляциясын тудырды және бүкіл әлемдегі көптеген нарықтарға әсер етті. 2027 жылы силикомарганецтің әлемдік нарығының көлемі орташа жылдық өсу қарқыны 7.9%-бен 38.35 млрд доллар жетеді деп күтілуде. Болат өнімдеріне сұраныстың артуы силикомарганец нарығының одан әрі өсуіне ықпал етеді деп күтілуде. Болат өнімдері әртүрлі әдістермен зауыттарда темір мен металдан жасалған және көміртегі, мырыш және басқалары сияқты қорытпалармен араласатын өнімдер деп аталады. Силикомарганец көміртекті болат, легирленген болат, марганец болаты сияқты әртүрлі мақсаттағы Болаттың әртүрлі түрлерін өндіру үшін қолданылады. Бұл қолдану болат өнімдерін өндіруде силикомарганецке сұраныстың артуына әкеледі. Мысалы, 2022 жылы Бельгияның халықаралық қара металлургия Сауда Ұйымы - Дүниежүзілік Болат қауымдастығының (WSA) мәліметтері бойынша болат тұтыну 2022 жылы 0.4%-ға артып, 1840,2 миллион тоннаға жетеді. Болат тұтыну 2023 жылы 2.2%-ға артып, 1 881.4 миллион тоннаға жетеді, осылайша болат өнімдеріне сұраныстың артуы силикомарганец нарығын ынталандырады.

Негізгі сөздер: ферросиликомарганец, марганец кені, болат, нарықты талдау, экспорт, импорт.

Анализ рынка ферросиликомарганца в мире: обзор

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Аннотация. В данной статье представлены данные о производстве и торговом обороте ферросиликомарганца в мире и Казахстане. Основываясь на этих исследованиях, можно предсказать будущее состояние ферросиликомарганца. Ожидается, что объем мирового рынка силикомарганца вырастет с 25.98 млрд долларов в 2022 году до 28.33 млрд долларов в 2023 году при совокупном годовом темпе роста (CAGR) 9%. Российско-украинская война подорвала шансы на восстановление мировой экономики после пандемии Covid-19, по крайней мере, в краткосрочной перспективе. Война между этими двумя странами привела к экономическим санкциям в отношении многих стран, росту цен на сырьевые товары и сбоям в цепочках поставок, что вызвало инфляцию товаров и услуг и затронуло многие рынки по всему миру. Ожидается, что в 2027 году объем мирового рынка силикомарганца достигнет 38.35 млрд долларов при среднегодовом темпе роста 7.9%. Ожидается, что растущий спрос на стальную продукцию будет способствовать дальнейшему росту рынка силикомарганца. Стальной продукцией называют продукцию, которая изготавливается из железа и металла на заводах различными методами и смешивается с такими сплавами, как углерод, цинк и другие. Силикомарганец используется для производства различных типов стали различного назначения, таких как углеродистая сталь, легированная сталь, марганцевая сталь. Такое использование приводит к увеличению спроса на силикомарганец при производстве стальной продукции. Например, в 2022 году, по данным Всемирной сталелитейной ассоциации (WSA), бельгийской международной торговой организации черной металлургии, потребление стали увеличилось на 0.4% в 2022 году, достигнув 1840.2 млн тонн. Потребление стали увеличится на 2.2% в 2023 году, достигнув 1 881.4 млн т. Таким образом, растущий спрос на стальную продукцию стимулирует рынок силикомарганца.

Ключевые слова: *ферросиликомарганец, марганцевая руда, сталь, анализ рынка, экспорт, импорт.*

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