

# The graphite production in the world economics essay



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Graphite is a multipurpose mineral with its properties on nonmetals and metals. Graphite products are used in many industries and industrial applications because of unique properties of graphite, such as stability in high temperatures and conductivity. Batteries, refractories, semiconductors, electrodes, fuel cells – this is not the total list of applications, where graphite products are an essential part. (Northern Graphite Corporation 2012)

China is a world leader in graphite production with its 86% of the total share. Also China dominates global graphite supply (more than 70%). India takes second place and has 5% share. Third place belongs to Brazil with 4% share. EU countries' share accounts to 4.3%. (British Geological Survey 2011)

Figure 2. Graphite production in the world (British Geological Survey 2011)

Europe has announced graphite as a material of strategic importance. Nowadays Europe is up to 95% dependent on graphite imports that are mainly from China. That's why there are many concerns about long term graphite supply security. (Rognvald Boyd, Geological Survey of Norway 2012)

Main European producers are Austria, Romania, Norway, Romania and Turkey. Finland and Sweden are the countries that have the richest potential in Europe for production of graphite according to their natural resources. (Rognvald Boyd, Geological Survey of Norway 2012) More detailed information about Finnish and Swedish graphite manufacturers is given in the “competitors” part of the report.

Major players on carbon and graphite market in the world are: Hexcel Corporation, Cabot Corporation, Carbone Lorraine, GRAFIL Inc., Toray Industries Inc., Morgan Crucible Company Plc, Toho Tenax Co. Ltd., Evonik Degussa GmbH, GrafTech International Ltd., HEG Ltd., Showa Denko Carbon Inc., Showa Denko K. K, SGL Carbon, Nippon Carbon Co Ltd., Mitsubishi Rayon Co. Ltd., Tokai Carbon Co. Ltd., Morgan Industrial Carbon, Zoltek Companies Inc. and Superior Graphite Co. (Northern Graphite Corporation 2012)

Asian-Pacific countries represent the fastest growing market for carbon and graphite globally and are difficult to compete with. But Schunk Group is a global player on carbon and graphite market and the company already has its own niche on the global market. Schunk has enough competitive potential, so our research should find the ways which would help the company to achieve its potential.

## **Market needs**

Nowadays graphite demand is approximately 1, 2 million tons annually on a global basis. (Focus Graphite Inc. 2012)

Graphite demand is closely tied to the steel industry where it is used as a liner for ladles and crucibles, as a component in bricks which line furnaces (“refractories”), and as an agent that increases the carbon content of steel. In the automotive industry it is used in gaskets, brake linings and clutch materials. Graphite also has a great number of other uses in batteries, reinforcements in plastics, fire retardants, and lubricants (Northern Graphite Corporation 2012)

The fact that graphite demand was increasing in the past few years provide a very good chance for Schunk. This chance is to increase company's sales profit among its own existing range of customers in end-use industries of graphite and find new customers in the most appropriate industries in Finland to cooperate with. For this purpose market research is essential to be conducted.

### **Market trend / growth**

Global economic crisis (2008-2009) had a negative influence on carbon and graphite market. Demand all over the world slumped and main consequences can be easily seen in the two major end-use industries of carbon and graphite: they are automotive, iron and steel. In spite of that fact, the market is improving in the last 3 years, because the global economy started to recover and market conditions are improving. The reason that all suppliers in the market are strongly chained and tied to each other is also a risk factor for end-users in Asia, Europe and the United States (Global Industry Analysts Inc. 2010)

Increasing consumption by the end-use industries improves the prospects of carbon and graphite market. After recession the carbon and graphite market is expected to register growth led by demand from a variety of industrial sectors in advanced as well as developing economies. Increase in demand could be also attributed to massive increase in carbon-based applications ranging from safer computers to outer space exploration. Global Industry Analysts Inc. 2010)

As it was mentioned, Asian-Pacific countries represent the fastest growing market for graphite and carbon, which is mostly driven by the Chinese and Indian markets. Such factors as low labor costs and existing graphite natural resources provide a sustainable market growth (especially in China) even during poor demand conditions. Holding strong position on the graphite market, China is expected to have almost infinite growth supported by overseas investments. (Global Industry Analysts Inc. 2010) Indian graphite industry has competitive advantages in technology, capacity expansions, reduced costs of operations, cost-effective and quality products. Taking into account all these factors and the continuing development of the steel sector in India it can be clearly explained why it is holding stable second place in the global graphite market for a long time. (Global Industry Analysts Inc. 2010)

But there are some new trends in the market. China has started to protect its domestic needs and control exports, including rare resources. One of the core future industries for graphite is growing electric vehicle market. So, there is a possible demand growth that is estimated by graphite and carbon market analysts as a double demand. There will be also extremely high competition between suppliers between West and East that could create a prosperous future for today's investors in the market. (Focus Graphite Inc. 2012)

Industrial Minerals said in its report that the price for 100 mesh 97% graphite concentrate fell to a \$1700 to \$2,000 per ton range from its \$2,400 highs earlier last year. Whether this trend continues during the course of this and the previous (2011) year is a matter of speculation, but it creates an

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opportunity to incorporate cyclical volatility into investment risk, where China's overwhelming productive capacity, if unleashed to its fullest, could financially flatten new entrants to the graphite supply market (Focus Graphite Inc. 2012)

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Figure 3. Graphite Price History from 2002 to 2012 (Focus Graphite Inc. 2012)

With the current recovery of the global economic situation and industries' recovery and renewal Schunk has good opportunity to find potential customers in Finland.

ADD TO BIBLIOGRAPHY

Rognvald Boyd, Geological Survey of Norway 2012) [http://critical-minerals-2012.geus.dk/presentations/2-2\\_Rognvald\\_Boyd\\_GEUS-20120521.pdf](http://critical-minerals-2012.geus.dk/presentations/2-2_Rognvald_Boyd_GEUS-20120521.pdf)

British Geological Survey 2011) <http://www.bgs.ac.uk/>

## **PEST analysis**

### **Political-Legal factors**

Increase in business legislation: domestic policies in different states – labour, tax legislation and so on, policies in mining industry – toughening of legislation, licensing, new tariffs and regulations. Business legislation is intended to protect companies from unfair competition, protect consumers from unfair business practices, protect society from unbridled business

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behavior, and charge businesses with the social costs of their products or production processes. Each new law may also have the unintended effect of sapping initiative and slowing growth. The European Commission has established new laws covering competitive behavior, product standards, product liability, and commercial transactions for the 27 member nations of the European Union. (Kotler & Keller 2011, 84)

Growth of special-interest groups. Political action committees (PACs) pressure business executives and lobby government officials in order to respect the rights of consumers, women, senior citizens, minorities, green movement. Companies all over the world have established public affairs departments to deal with these groups and issues. The consumerist movement organized citizens and government to strengthen the rights and powers of buyers in relationship to sellers. (Kotler & Keller 2011, 85)

All these factors – increase in business legislation that are obligatory to follow and growth of special-interest groups – are potential threats to Schunk because it's difficult to adapt to changing toughening of legislation rules.

## **Environmental factors**

Necessity of conformity with quality standards (ISO), including f. e. ISO14000 – Environmental management such as ISO14001 is an internationally accepted specification for an environmental management system (EMS). It specifies requirements for environmental policy and determine environmental aspects and impacts of management, activities, services, products. (ISO 2012)

Increase in electric vehicles use. Formation of potential consumers and establishment of new consumers in end-use industries. Some countries even legislate increased electric vehicles use (USA, Germany). These factors lead to increase in demand for graphite on new markets. (Kotler & Keller 2011, 87)

Schunk has different ISO certificates and has been examined to fulfil its requirements.

A good opportunity of formation of new customers has been appeared for Schunk because of increase in electric vehicles use.

## **Economic factors**

Demand of graphite and carbon strongly depends on the state of the economy. For instance, it slumped in 2008 and 2009, as a result of global economic crisis Finland has a strong economy and it wasn't damaged so hard as in other countries during global crisis. (Global Industry Analysts Inc. 2010)

Furthermore, graphite and carbon demand is in close relations with its major end-use industries. Global economic crisis (2008-2009) negatively impacted on automotive, iron and steel industries, which are the two major end-use applications of graphite and carbon. It resulted in the plummeting of demand in the market. Nevertheless, carbon and graphite market is improving in ensuing years, with the recovery of the global economic situation and market conditions for the industries. Consumption by the end-use industries is also growing and improving the prospects of the market. Graphite is used in large volumes in iron and steel industries for their modernizing. Other end-  
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use graphite industries are: automotive industry, electrical motor industry, railway industry, medical technology, semiconductor industry, pump industry, glass industry, and fiber optics industry. (Global Industry Analysts Inc. 2010)

All mentioned factors represent threats to Schunk, because economy situation all over the world can be forecasted but not with 100% probability. It hasn't been stable because of the financial crisis and is still recovering, including industry conditions.

### **Sociocultural factors**

Social atmosphere in Finland is stable and calm. There is no social tension, conflicts are rare. (Global Industry Analysts Inc. 2010).

Other sociocultural factors don't have so much influence on Schunk, because company's business is in business-to-business segment. So, f. e. such factor as existence of subcultures has its influence only if we are speaking about environmental issues and environmentally-concerned groups. It is important, because there is a worldwide tendency of increase of environmental concerns in society. Companies have to be environmentally-oriented and integrate environmental issues into their strategic plans and sustainability programs. (Kotler & Keller 2011, 80)

### **Technological factors**

Technological progress and innovations increase existing demand and make new markets for graphite. (Global Industry Analysts Inc. 2010)

There are positive demand trends and increasing number of applications for graphite use through technology innovation such as battery, solar, semiconductor, aerospace and nuclear power applications, including carbon-based applications in computers and space exploration. (Global Industry Analysts Inc. 2010)

Innovations create an excellent potential for the formation of new markets for Schunk's graphite production within its end-use industries. The research is dedicated to find out these markets and end-use industries.