

**UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA**

UNITED STATES OF AMERICA  
U.S. Department of Justice  
Antitrust Division  
450 Fifth Street NW, Suite 8700  
Washington, DC 20530,

*Plaintiff,*

v.

SHOWA DENKO K.K.  
13-9 Shiba Daimon 1-chome  
Minato-ku  
Tokyo 105-8518, Japan,

SGL CARBON SE  
Soehnleinstrasse 8  
65201 Weisbaden, Germany,

and

SGL GE CARBON HOLDING LLC (USA)  
10130 Perimeter Parkway, Suite 500  
Charlotte, NC 28216,

*Defendants.*

**COMPLAINT**

The United States of America, acting under the direction of the Attorney General of the United States, brings this civil antitrust action to enjoin Showa Denko K.K.'s ("SDK") proposed acquisition of SGL Carbon SE's ("SGL Carbon") global graphite electrode business and to obtain other equitable relief. The United States alleges as follows:

## I. NATURE OF THE ACTION

1. On October 20, 2016, SDK announced an agreement to acquire SGL Carbon's global graphite electrode business for approximately \$264.5 million. SDK and SGL Carbon manufacture and sell large ultra-high power ("UHP") graphite electrodes, a critical input needed to melt scrap steel in electric arc furnaces ("EAFs") at steel mills. SDK and SGL Carbon are two of the three leading suppliers of large UHP graphite electrodes utilized in EAFs in the United States and have a combined market share of approximately 56 percent.

2. The proposed acquisition would eliminate vigorous head-to-head competition between SDK and SGL Carbon for the business of U.S. EAF customers. For a significant number of U.S. EAF steel mills, SDK and SGL Carbon are two of the top suppliers of large UHP graphite electrodes, and the competition between SDK and SGL Carbon has resulted in lower prices, higher quality electrodes, and better service. Notably, SDK and SGL Carbon are two of only three firms that operate manufacturing facilities in North America in an industry where a local manufacturing presence is important to customers to ensure reliability of supply at an affordable cost. The proposed acquisition likely would give SDK the ability to raise prices or decrease the quality of delivery and service provided to these customers.

3. As a result, the proposed acquisition likely would substantially lessen competition in the manufacture and sale of large UHP graphite electrodes sold to EAF steel mills in the United States in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18, and should be enjoined.

## II. JURISDICTION AND VENUE

4. The United States brings this action pursuant to Section 15 of the Clayton Act, as amended, 15 U.S.C. § 25, to prevent and restrain defendants from violating Section 7 of the Clayton Act, 15 U.S.C. § 18.

5. Defendants manufacture and sell large UHP graphite electrodes throughout the United States. They are engaged in a regular, continuous, and substantial flow of interstate commerce, and their activities in the manufacture and sale of large UHP graphite electrodes have a substantial effect upon interstate commerce. The Court has subject matter jurisdiction over this action pursuant to Section 15 of the Clayton Act, 15 U.S.C. § 25, and 28 U.S.C. §§ 1331, 1337(a), and 1345.

6. Defendants have consented to venue and personal jurisdiction in this district. This court has personal jurisdiction over each defendant and venue is proper in this district under Section 12 of the Clayton Act, 15 U.S.C. § 22, and 28 U.S.C. § 1391(c).

## III. DEFENDANTS AND THE PROPOSED ACQUISITION

7. Defendant SDK is a corporation organized under the laws of Japan and headquartered in Tokyo, Japan. SDK is one of Japan's leading chemical companies and graphite electrodes are a primary line of business. SDK, which operates in approximately 14 countries, had revenues of approximately \$5.8 billion in 2016. SDK's worldwide revenues from sales of graphite electrodes in 2016 were \$248 million, and its U.S. revenues from sales of graphite electrodes in 2016 were approximately \$85 million.

8. Defendant SGL Carbon is a publicly-owned company organized under the laws of Germany and headquartered in Wiesbaden, Germany. SGL Carbon is a leading manufacturer of carbon-based products, ranging from carbon and graphite products to carbon fibers and

composites, and its operations extend to 34 countries. In 2016, SGL Carbon had global revenues of approximately \$885 million. SGL Carbon's worldwide revenues from sales of graphite electrodes in 2016 were approximately \$326.6 million, and its U.S. revenues from sales of graphite electrodes in 2016 were approximately \$58.6 million.

9. Defendant SGL GE Carbon Holding LLC (USA) ("SGL US"), an indirect, wholly-owned subsidiary of SGL Carbon, is a Delaware limited liability company headquartered in Charlotte, North Carolina. SGL US is the sole shareholder of SGL GE Carbon LLC, which owns the assets of SGL US's operations in the United States, including SGL's Hickman and Ozark graphite electrode plants.

10. Pursuant to an October 20, 2016 Sale and Purchase Agreement, SDK agreed to acquire all of the corporate entities comprising SGL Carbon's graphite electrodes global operations, including SGL US, for approximately \$264.5 million.

#### **IV. TRADE AND COMMERCE**

##### **A. Industry Background**

11. Graphite electrodes are used as conductors of electricity to generate sufficient heat to melt scrap metal in EAFs or to refine steel in ladle metallurgical furnaces. In a typical EAF operation, a series of electrodes (usually three) are attached to a crane-like device with connecting pins to form columns that are suspended over a large bucket of scrap steel. Large amounts of electricity are sent through the electrodes and the resulting heat melts the scrap into liquid.

12. Graphite electrodes are consumed as they are used and continually need to be replaced with fresh electrodes. Electrodes are designed in a range of sizes to fit the characteristics of each furnace and are suited to the electrical properties of a specific EAF. In

particular, the opening through which electrodes are inserted into the furnace is only wide enough to admit electrodes of a certain diameter.

13. Graphite electrodes are subdivided into three grades: low power, high power, and UHP, where grade refers to the level of current-carrying capacity of the graphite electrode. EAFs typically utilize large UHP graphite electrodes that are between 18 and 32 inches in diameter and are characterized by an ability to withstand high currents and significant thermal stasis. Given that they are the most sophisticated products used for the most demanding steelmaking applications, large UHP graphite electrodes are produced by a smaller number of manufacturers than low power and high power graphite electrodes.

14. EAF steel mills, which are part of a vital U.S. industry involved in the manufacture and sale of steel and steel products used for many applications, represent an average of 45 percent of all domestic steel production. Large UHP graphite electrodes constitute a material operational input cost to these EAF steel mills that affects their ability to compete vigorously with steel made in blast furnaces both domestically and internationally. Over the past three years, U.S. EAF steel mills collectively averaged \$262 million in large UHP graphite electrode purchases, and that number is expected to increase in the coming years due to a recent increase in steel demand and a decrease in the volume of steel imported into the United States.

15. Large UHP graphite electrodes are purchased through an annual bid process where manufacturers are invited to bid for an entire year or partial year's supply. Manufacturers are qualified through a trialing process where graphite electrodes are evaluated based on both commercial risks and the total cost per ton of melted steel. EAF customers evaluate electrode suppliers based on the reliability and efficiency of their electrodes, the timeliness of electrode delivery, the supplier's commercial business practices, and ongoing technical service

capabilities. Many customers prefer qualified suppliers with domestic manufacturing capability (which helps ensure reliable on-time delivery) and a robust local service operation (which enables prompt deployment of established technical expertise and support). EAF customers typically avoid suppliers that develop a reputation for graphite electrode breakages even when they offer electrodes at steep discounts because the costs of temporarily shutting down a furnace to remove broken electrode pieces can be significantly greater than the potential short-term savings from cheaper electrodes.

16. Large UHP graphite electrodes are priced by the pound, and quantities are described using metric tons. A typical U.S. EAF furnace operating at an average utilization rate may spend up to \$4 million per year on electrodes for that furnace. Electrodes usually are ordered in advance and are expected to be shipped in a timely manner by truck to each steel mill, where they are stored until used, although some customers have consignment arrangements with manufacturers that keep inventories of graphite electrodes in the manufacturers' own warehouses.

**B. The Relevant Product Market**

17. There are no functional substitutes for large UHP graphite electrodes for U.S. EAF steel mills. Without large UHP graphite electrodes, an EAF steel mill cannot be operated and must be idled. Moreover, each EAF steel mill requires large UHP graphite electrodes of a specific diameter; a customer cannot substitute a different size graphite electrode than that for which its EAF is outfitted because the electrode would not fit and could not handle the level of current. Thus, it is likely that every individual size of large UHP graphite electrodes is a separate relevant product market. Because market participation by manufacturers is similar, and potential

anticompetitive effects likely are similar across the entire range of sizes, all large UHP graphite electrodes can be grouped together in a single market for purposes of analysis.

18. A small but significant increase in the price of large UHP graphite electrodes sold to EAF steel mills would not cause customers of such electrodes to substitute a different kind of electrode or any other product, or to reduce purchases of such electrodes in volumes sufficient to make such a price increase unprofitable. Accordingly, the manufacture and sale of large UHP graphite electrodes sold to EAF steel mills is a line of commerce and relevant product market within the meaning of Section 7 of the Clayton Act.

**C. The Relevant Geographic Market**

19. Individual U.S. EAF customers solicit bids from large UHP graphite electrode producers and these producers develop individualized bids based on each U.S. EAF customer Request for Proposal (“RFP”). This bidding process enables large UHP graphite electrode producers to engage in “price discrimination,” *i.e.*, to charge different prices to different EAF customers. A small but significant increase in the prices of large UHP graphite electrodes can therefore be targeted to customers in the United States, and would not cause a sufficient number of these customers to buy electrodes from customers outside the United States so as to make such a price increase unprofitable. Since the availability of domestic technical services is important to U.S. customers, these customers would not buy electrodes from customers outside the United States. Accordingly, the United States is a relevant geographic market within the meaning of Section 7 of the Clayton Act.

**D. Anticompetitive Effects**

20. SDK and SGL Carbon have market shares of approximately 35 and 21 percent, respectively, in the relevant market. The third major seller of large UHP graphite electrodes to

U.S. EAF customers has a market share of 22 percent. The remaining competitors combined account for only 22 percent of the market and are comprised of firms based in Japan, India, Russia, and China.

21. As articulated in the Horizontal Merger Guidelines issued by the Department of Justice and the Federal Trade Commission (the “Horizontal Merger Guidelines”), the Herfindahl-Hirschman Index (“HHI”), discussed in Appendix A, is a widely-used measure of market concentration. Market concentration is often a useful indicator of the level of competitive vigor in a market and the likely competitive effects of a merger. The more concentrated a market, the more likely it is that a transaction would result in a meaningful reduction in competition and harm consumers. Markets in which the HHI exceeds 2,500 points are considered highly concentrated, and transactions that result in highly concentrated markets and increase the HHI by more than 200 points are presumed to be likely to enhance market power.

22. In the market for the manufacture and sale of large UHP graphite electrodes used in U.S. EAF steel mills, the pre-merger HHI is 2230 and the post-merger HHI is 3693, representing an increase in the HHI of 1,463. Under the Horizontal Merger Guidelines, the proposed acquisition will result in a highly concentrated market and is thus presumed likely to enhance market power.

23. In addition to increasing concentration, SDK’s acquisition of SGL Carbon’s global graphite electrode business would eliminate head-to-head competition between SDK and SGL Carbon to supply large UHP graphite electrodes to U.S. EAF steel mills. SDK and SGL Carbon both have a strong reputation for high-quality graphite electrodes, a robust local manufacturing presence, an established delivery infrastructure, and superior technical service capabilities and support, including proprietary software specifically designed to assist steel mills

in the installation and efficient maintenance of electrodes within their EAFs. SDK and SGL Carbon compete directly on price, quality, delivery, and technical service, and the competition between them has directly benefitted U.S. EAF customers.

24. Only one other significant competitor besides SDK and SGL Carbon sells large UHP graphite electrodes in the U.S. and has a similar reputation for quality, shipment and delivery logistics, and local technical service. The transaction is likely to lead to higher prices because, for most customers, it will reduce the number of significant bidders from three to two.

25. Although other firms have participated in the U.S. market with limited sales, none of these firms individually or collectively are positioned to constrain a unilateral exercise of market power by SDK after the acquisition. The most significant of these firms, based in Japan, has a long history of sales of large UHP graphite electrodes in the United States, a good reputation for quality, and an enduring small presence in the market. However, it and the remaining small firms that have made sales to U.S. EAF steel mills are disadvantaged by their lack of domestic manufacturing capability, limited delivery and technical service infrastructure, and high costs. Some additionally are disadvantaged because of lower product quality. The response of other participants in the relevant market therefore would not be sufficient to constrain a unilateral exercise of market power by SDK after the acquisition.

26. For all of these reasons, the proposed transaction likely would substantially lessen competition in the manufacture and sale of large UHP graphite electrodes sold to U.S. EAF steel mills and lead to higher prices and decreased quality of delivery and service.

**E. Difficulty of Entry**

27. Entry of additional competitors into the manufacture and sale of large UHP graphite electrodes sold to U.S. EAF steel mills is unlikely to be timely, likely, or sufficient to

prevent the harm to competition caused by the elimination of SGL Carbon as an independent supplier. Over the past two decades, several firms have attempted to make a meaningful entry into the U.S. market, notably from India and China, but have not been able to make substantial sales or become preferred suppliers.

28. Firms attempting to enter into the manufacture and sale of large UHP graphite electrodes sold to U.S. EAF steel mills face significant entry barriers in terms of cost and time. First, a new entrant into this business must be able to construct a manufacturing facility, which entails substantial time and expense. Second, such an entrant must have the technical capabilities necessary to design and manufacture high quality graphite electrodes that meet customer requirements for performance and reliability. Third, both new entrants and graphite electrode manufacturers who do not currently participate in the U.S. market must typically demonstrate competence to EAF customers in the U.S. through a lengthy qualification and trial period during which the supplier must establish a strong performance record and avoid product breakages that can cause EAF outages. Fourth, an entrant must have a strong local infrastructure in place to assure customers of reliable delivery and the prompt deployment of qualified expertise, including technical services associated with installation and maintenance of the electrodes.

29. As a result of these barriers, entry into the market for the manufacture and sale of large UHP graphite electrodes sold to U.S. EAF steel mills would not be timely, likely, or sufficient to defeat the substantial lessening of competition that likely would result from SDK's acquisition of SGL Carbon's global graphite electrode business.

**V. VIOLATION ALLEGED**

30. The acquisition of SGL Carbon's global graphite electrode business by SDK likely would substantially lessen competition for the manufacture and sale of large UHP graphite electrodes sold to U.S. EAF steel mills in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18.

31. Unless enjoined, the transaction likely would have the following anticompetitive effects, among others:

- a. competition between SDK and SGL Carbon in the market for the manufacture and sale of large UHP graphite electrodes sold to U.S. EAF steel mills would be eliminated; and
- b. prices for large UHP graphite electrodes sold to U.S. EAF steel mills likely would be less favorable, and quality of delivery and service likely would decline.

**VI. REQUESTED RELIEF**

32. The United States requests that this Court:

- a. adjudge and decree SDK's proposed acquisition of SGL Carbon's global graphite electrode business to be unlawful and in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18;
- b. preliminarily and permanently enjoin and restrain defendants and all persons acting on their behalf from consummating the proposed acquisition or from entering into or carrying out any contract, agreement, plan, or understanding, the effect of which would be to combine SGL Carbon's global graphite electrode business with the operations of SDK;
- c. award the United States its costs of this action; and
- d. award the United States such other and further relief as the Court deems just and proper.

Respectfully submitted,

FOR PLAINTIFF UNITED STATES OF AMERICA



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**APPENDIX A  
DEFINITION OF HHI**

The term “HHI” means the Herfindahl-Hirschman Index, a commonly accepted measure of market concentration. The HHI is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers. For example, for a market consisting of four firms with shares of 30, 30, 20, and 20 percent, the HHI is 2,600 ( $30^2 + 30^2 + 20^2 + 20^2 = 2,600$ ). The HHI takes into account the relative size distribution of the firms in a market. It approaches zero when a market is occupied by a large number of firms of relatively equal size and reaches a maximum of 10,000 points when it is controlled by a single firm. The HHI increases both as the number of firms in the market decreases and as the disparity in size between those firms increases.

Markets in which the HHI is between 1,500 and 2,500 points are considered to be moderately concentrated and markets in which the HHI is in excess of 2,500 points are considered to be highly concentrated. *See Horizontal Merger Guidelines* § 5.3 (issued by the U.S. Department of Justice and the Federal Trade Commission on August 19, 2010).

Transactions that increase the HHI by more than 200 points in highly concentrated markets will be presumed likely to enhance market power. *Id.*