

In prior years, HSG's solar and semiconductor customers entered into long-term "take or pay" contracts which included up-front cash payments to secure capacity. During the last few years, and more significantly in 2019, the solar power panel industry experienced significant overcapacity in the market, resulting in declining sales volumes and market prices. As a result, HSG's solar business experienced lower market penetration, overall price declines, and settled contracts with customers that had committed volume and fixed pricing above the current market price. While these settlements positively impacted HSG's cash flow in 2019, they reduced expectations for future sales in HSG's solar business.

Due to the adverse change in HSG's solar business, HSG was required to assess the recoverability of its long-lived assets in the fourth quarter. Based on this assessment, HSG determined that the carrying values of HSG's solar asset group significantly exceeded its fair values. HSG engaged a third-party appraiser to assist in determining the fair value of the assets within in the solar asset group based on the highest and best use of the asset group. As a result of the fair value determination, HSG recognized a pre-tax asset impairment charge of \$916 million for the year ended December 31, 2019. Corning's share of the pre-tax impairment was \$369 million.

Due to the adverse changes above, the carrying values of HSG's solar business inventories were also affected resulting in an inventory write-down of \$257 million for the year. Corning's pre-tax share of the provision was \$105 million.

HSG adopted the new revenue standard on January 1, 2019 and the timing of HSG's revenue recognition for certain remaining performance obligations measured at January 1, 2019 was deferred for recognition. This deferral reduced the carrying amount of Corning's investment in HSG by \$239 million. During the fourth quarter, a significant number of the performance obligations were satisfied and \$434 million was recognized into HSG's net income. Corning's share of the equity earnings was \$208 million.

In addition, HSG settled certain revenue contracts in the fourth quarter, resulting in settlement gains of \$383 million in net income. Corning's share of the settlement gains was \$185 million.

Additional information about corporate investments is presented in Note 6 (Investments) to the consolidated financial statements.

## Competition

Corning competes with many large and varied manufacturers, both domestic and foreign. Some of these competitors are larger than Corning, and some have broader product lines. Corning strives to maintain and improve its market position through technology and product innovation. For the foreseeable future, Corning believes its competitive advantage lies in its commitment to research and development, reliability of supply, product quality and technical specification of its products. There is no assurance that Corning will be able to maintain or improve its market position or competitive advantage.

### Display Technologies Segment

Corning is the largest worldwide producer of glass substrates for high-performance display glass. The environment for high-performance display glass substrate products is very competitive and Corning believes it has maintained its competitive advantages by investing in new products, continually improving its proprietary fusion manufacturing process and providing a consistent and reliable supply of high quality products. Our process allows us to deliver glass that is larger, thinner and lighter, with exceptional surface quality and without heavy metals. Asahi Glass Co. Ltd. and Nippon Electric Glass Co. Ltd. are Corning's principal competitors in display glass substrates.

### Optical Communications Segment

Corning believes it maintains a leadership position in the segment's principal product groups, which include carrier and enterprise networks. The competitive landscape includes industry consolidation, price pressure and competition for the innovation of new products. These competitive conditions are likely to persist. Corning believes its large-scale manufacturing experience, fiber process, technology leadership and intellectual property provide cost advantages relative to several of its competitors. The primary competing producers of the Optical Communications segment are CommScope and Prysmian Group.

### Specialty Materials Segment

Corning has deep capabilities in materials science, optical design, shaping, coating, finishing, metrology and system assembly. We continue to address the emerging needs of the consumer electronics industry with the development of chemically strengthened glass. Corning® Gorilla® Glass is a thin-sheet glass that is better able to survive events that most commonly cause glass failure. Its advanced composition allows a deeper layer of chemical strengthening than is possible with most other chemically strengthened glasses, making it both durable and damage resistant. Our products and capabilities in this segment position the Company to meet the needs of a broad array of markets including display, semiconductor, aerospace, defense, astronomy, vision care, industrial, commercial, and telecommunications. For this segment, Schott, Asahi Glass Co. Ltd., Nippon Electric Glass Co. Ltd. and Heraeus are the main competitors.

### Environmental Technologies Segment

Corning believes it maintains a strong position in the worldwide market for automotive ceramic substrate and filter products, as well as in the heavy-duty and light-duty diesel vehicle markets. The Company believes its competitive advantage in automotive ceramic substrate products for catalytic converters and filter products for particulate emissions in exhaust systems is based on an advantaged product portfolio, collaborative engineering design services, customer service and support, strategic global presence and continued product innovation. Corning's Environmental Technologies products face principal competition from NGK Insulators, Ltd. and Ividen Co. Ltd.

### Life Sciences Segment

Corning seeks to maintain a competitive advantage by emphasizing product quality, global distribution, supply chain efficiency, a broad product line and superior product attributes. Our principal competitors include Thermo Fisher Scientific, Inc., Greiner Group AG, Eppendorf AG, Starstedt AG and Danaher Corporation. Corning also faces increasing competition from large distributors that have pursued backward integration or introduced private label products.