

CORNING INC /NY
Form 10-K
February 12, 2019
Index

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

Form 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF
1934
For the transition period from ____ to ____

Commission file number: 1-3247

CORNING INCORPORATED

(Exact name of registrant as specified in its charter)

NEW YORK	16-0393470
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

ONE RIVERFRONT PLAZA, CORNING, NY	14831
(Address of principal executive offices)	(Zip Code)
607-974-9000	

Edgar Filing: CORNING INC /NY - Form 10-K

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, \$0.50 par value per share	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes ☐ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act.

Yes ☐ No ☐

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☐ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files.)

Yes ☐ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment of this Form 10 K.

Edgar Filing: CORNING INC /NY - Form 10-K

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company,” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer	Accelerated filer
Non-accelerated filer	Emerging growth company
Smaller reporting company	

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes	No
-----	----

As of June 30, 2018, the aggregate market value of the registrant’s common stock held by non-affiliates of the registrant was \$22 billion based on the \$27.51 price as reported on the New York Stock Exchange.

There were 786,761,073 shares of Corning’s common stock issued and outstanding as of January 31, 2019.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant’s Definitive Proxy Statement dated March 22, 2019, and filed for the Registrant’s 2019 Annual Meeting of Shareholders are incorporated into Part III of this Annual Report on Form 10-K, as specifically set forth in Part III.

© 2019 Corning Incorporated. All Rights Reserved.

Index

PART I

Corning Incorporated and its consolidated subsidiaries are hereinafter sometimes referred to as the “Company,” the “Registrant,” “Corning,” or “we.”

This report contains forward-looking statements that involve a number of risks and uncertainties. These statements relate to our future plans, objectives, expectations and estimates and may contain words such as “believes,” “expects,” “anticipates,” “estimates,” “forecasts,” or similar expressions. Our actual results could differ materially from what is expressed or forecasted in our forward-looking statements. Some of the factors that could contribute to these differences include those discussed under “Forward-Looking Statements,” “Risk Factors,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and elsewhere in this report.

Item 1. Business

General

Corning traces its origins to a glass business established in 1851. The present corporation was incorporated in the State of New York in December 1936. The Company’s name was changed from Corning Glass Works to Corning Incorporated on April 28, 1989.

Corning Incorporated is a leading innovator in materials science. For more than 165 years, Corning has combined its unparalleled expertise in glass science, ceramic science, and optical physics with deep manufacturing and engineering capabilities to develop category-defining products that transform industries and enhance people’s lives. We succeed through sustained investment in research and development, a unique combination of material and process innovation, and deep, trust-based relationships with customers who are global leaders in their industries.

Corning’s capabilities are versatile and synergistic, which allows the company to evolve to meet changing market needs, while also helping our customers capture new opportunities in dynamic industries. Today, Corning’s markets include optical communications, mobile consumer electronics, display technology, automotive emissions control products, and life sciences vessels. Corning’s industry-leading products include damage-resistant cover glass for mobile devices; precision glass for advanced displays; optical fiber, wireless technologies, and connectivity solutions

for state-of-the-art communications networks; trusted products to accelerate drug discovery and delivery; and clean-air technologies for cars and trucks.

Corning operates in five reportable segments: Display Technologies, Optical Communications, Environmental Technologies, Specialty Materials and Life Sciences, and manufactures products at 108 plants in 15 countries.

Display Technologies Segment

Corning's Display Technologies segment manufactures glass substrates for high performance displays, including organic light-emitting diode ("OLEDs") and liquid crystal displays ("LCDs") that are used primarily in televisions, notebook computers and flat panel desktop monitors. This segment develops, manufactures and supplies high quality glass substrates using technology expertise and a proprietary fusion manufacturing process, which Corning invented and is the cornerstone of the Company's technology leadership in the display glass industry. Our highly automated process yields glass substrates with a pristine surface and excellent thermal dimensional stability and uniformity – essential attributes in the production of large, high performance display panels. Corning's fusion process is scalable and we believe it is the most cost-effective process in producing large size substrates.

© 2019 Corning Incorporated. All Rights Reserved.

Index

We are recognized for providing product innovations that enable our customers to produce larger, lighter, thinner and higher-resolution displays. Some of the product innovations that we have launched over the past ten years utilizing our world-class processes and capabilities include the following:

- Corning® EAGLE XG® Glass, the industry's first LCD glass substrate that is free of heavy metals;
- Corning® EAGLE XG® Slim Glass, a line of thin glass substrates which enables lighter-weight portable devices and thinner televisions and monitors;
- Corning IRIS™ Glass, a light-guide plate solution which enables televisions and monitors to be less than 5-mm thick;
- The family of Corning LOTUS™ Glass, high-performance display glass developed to enable cutting-edge technologies, OLEDs and next generation LCDs. These substrate glasses provide industry-leading levels of low total pitch variation, resulting in brighter, more energy-efficient displays with higher resolutions for consumers and better yields for panel makers; and
- The world's first Gen 10 and Gen 10.5 glass substrates in support of improved efficiency in manufacturing large-sized televisions.

Corning has display glass manufacturing operations in South Korea, Japan, Taiwan and China, and services all its glass customers in all regions directly, utilizing its manufacturing facilities throughout Asia.

Patent protection and proprietary trade secrets are important to the Display Technologies segment's operations. Refer to the material under the heading "Patents and Trademarks" for information relating to patents and trademarks.

The Display Technologies segment represented 29% of Corning's segment net sales in 2018.

Optical Communications Segment

Corning invented the world's first low-loss optical fiber in 1970. Since that milestone, we have continued to pioneer optical fiber, cable and connectivity solutions. As global bandwidth demand driven by video usage grows exponentially, telecommunications networks continue to migrate from copper to optical-based systems that can deliver the required cost-effective bandwidth-carrying capacity. Our experience puts us in a unique position to design and deliver optical solutions that reach every edge of the communications network.

This segment is classified into two main product groupings – carrier network and enterprise network. The carrier network group consists primarily of products and solutions for optical-based communications infrastructure for services such as video, data and voice communications. The enterprise network group consists primarily of

optical-based communication networks sold to businesses, governments and individuals for their own use.

Our carrier network product portfolio encompasses an array of optical fiber products, including Vascade submarine optical fibers for use in submarine networks; LEAF optical fiber for long-haul, regional and metropolitan networks; SMF-28 ULL fiber for more scalable long-haul and regional networks; SMF-28e+ single-mode optical fiber that provides additional transmission wavelengths in metropolitan and access networks; ClearCurve ultra-bendable single-mode fiber for use in multiple-dwelling units and fiber-to-the-home applications; and Corning® SMF-28® Ultra Fiber, designed for high performance across the range of long-haul, metro, access, and fiber-to-the-home network applications, combining the benefits of industry-leading attenuation and improved macrobend performance in one fiber. A portion of our optical fiber is sold directly to end users and third-party cabling globally. Corning's remaining fiber production is cabled internally and sold to end users as either bulk cable or as part of an integrated optical solution. Corning's cable products support various outdoor, indoor/outdoor and indoor applications and include a broad range of loose tube, ribbon and drop cable designs with flame-retardant versions available for indoor and indoor/outdoor use.

© 2019 Corning Incorporated. All Rights Reserved.

Index

In addition to optical fiber and cable, our carrier network product portfolio also includes hardware and equipment products, including cable assemblies, fiber optic hardware, fiber optic connectors, optical components and couplers, closures, network interface devices, and other accessories. These products may be sold as individual components or as part of integrated optical connectivity solutions designed for various carrier network applications. Examples of these solutions include our FlexNAP™ terminal distribution system, which provides pre-connectorized distribution and drop cable assemblies for cost-effectively deploying fiber-to-the-home (“FTTH”) networks; and the Centrix™ platform, which provides a high-density fiber management system with industry-leading density and innovative jumper routing that can be deployed in a wide variety of carrier switching centers.

To keep pace with surging demand for mobile bandwidth, Corning has a full complement of operator-grade distributed antenna systems (“DAS”), including the recently developed Optical Network Evolution wireless platform. The ONE™ Wireless Platform (“ONE”) is the first all-optical converged cellular and Wi-Fi® solution built on an all-optical backbone with modular service support. It provides virtually unlimited bandwidth, and meets all wireless service needs of large-scale enterprises at a lower cost than the typical DAS solution.

In addition to our optical-based portfolio, Corning’s carrier network portfolio also contains select copper-based products including subscriber demarcation, connection and protection devices, xDSL (different variations of digital subscriber lines) passive solutions and outside plant enclosures. In addition, Corning offers coaxial RF interconnects for the cable television industry as well as for microwave applications for GPS, radars, satellites, manned and unmanned military vehicles, and wireless and telecommunications systems.

Our enterprise network portfolio also includes optical fiber products, including ClearCurve ultra-bendable multimode fiber for data centers and other enterprise network applications; InfiniCor fibers for local area networks; and more recently ClearCurve VSDN ultra-bendable optical fiber designed to support emerging high-speed interconnects between computers and other consumer electronics devices. The remainder of Corning’s fiber production is cabled internally and sold to end users as either bulk cable or as part of an integrated optical solution. Corning’s cable products include a broad range of tight-buffered, loose tube and ribbon cable designs with flame-retardant versions available for indoor and indoor/outdoor applications that meet local building code requirements.

Corning’s hardware and equipment for enterprise network applications include cable assemblies, fiber optic hardware, fiber optic connectors, optical components and couplers, closures and other accessories. These products may be sold as individual components or as part of integrated optical connectivity solutions designed for various network applications. Examples of enterprise network solutions include the Pretium EDGE platform, which provides high-density pre-connectorized solutions for data center applications, and continues to evolve with recent updates for upgrading to 40/100G applications and port tap modules for network monitoring; the previously mentioned ONE Wireless platform, which spans both carrier and enterprise network applications; and our recently introduced optical connectivity solutions to support customer initiatives.

In December 2017, Corning announced that it had entered into agreements with the 3M Company (3M) to purchase substantially all its Communication Markets Division (“CMD”) in a cash transaction. During 2018, Corning acquired substantially all of CMD for \$841 million.

Corning believes that this transaction will augment its Optical Communications segment’s global market access and expand its broad portfolio of high-bandwidth optical connectors, assemblies, hardware, and accessories for carrier networks, enterprise LAN, and data center solutions.

Our optical fiber manufacturing facilities are in North Carolina, China and India. Cabling operations are in North Carolina, Germany, Poland, China and smaller regional locations. Our manufacturing operations for hardware and equipment products are in Texas, Arizona, Mexico, Brazil, Denmark, Germany, Poland, Israel, Australia and China.

© 2019 Corning Incorporated. All Rights Reserved.

Index

Patent protection is important to the segment's operations. The segment has an extensive portfolio of patents relating to its products, technologies and manufacturing processes. The segment licenses certain of its patents to third parties and generates revenue from these licenses, although the royalty income is not currently material to this segment's operating results. Corning is licensed to use certain patents owned by others, which are considered important to the segment's operations. Refer to the material under the heading "Patents and Trademarks" for information relating to the Company's patents and trademarks.

The Optical Communications segment represented 37% of Corning's segment net sales in 2018.

Specialty Materials Segment

The Specialty Materials segment manufactures products that provide more than 150 material formulations for glass, glass ceramics and fluoride crystals to meet demand for unique customer needs. Consequently, this segment operates in a wide variety of commercial and industrial markets that include display optics and components, semiconductor optics components, aerospace and defense, astronomy, ophthalmic products, telecommunications components and cover glass that is optimized for display devices.

Our cover glass, known as Corning® Gorilla® Glass, is a thin sheet glass designed specifically to function as a cover glass for display devices such as mobile phones, tablets and notebook PCs. Elegant and lightweight, Corning Gorilla Glass is durable enough to resist many real-world events that commonly cause glass failure, while maintaining optical clarity, touch sensitivity, and damage resistance, enabling exciting new applications in technology and design. In 2018, Corning unveiled its latest Corning Gorilla Glass innovation, Corning® Gorilla® Glass 6, which is designed to be stronger than previous formulas and provide further protection against breakage. Gorilla Glass 6 survives higher drop heights than Gorilla Glass 5, and survives repeated drops.

Corning Gorilla Glass is manufactured in Kentucky, South Korea, Japan and Taiwan.

Semiconductor optics manufactured by Corning includes high-performance optical material products, optical-based metrology instruments, and optical assemblies for applications in the global semiconductor industry. Corning's semiconductor optics products are manufactured in New York.

Other specialty glass products include glass lens and window components and assemblies and are made in New York, New Hampshire and France, and sourced from China.

Patent protection is important to the segment's operations. The segment has a growing portfolio of patents relating to its products, technologies and manufacturing processes. Brand recognition and loyalty, through well-known trademarks, are important to the segment. Refer to the material under the heading "Patents and Trademarks" for information relating to the Company's patents and trademarks.

The Specialty Materials segment represented approximately 13% of Corning's segment net sales in 2018.

Environmental Technologies Segment

Corning's Environmental Technologies segment manufactures ceramic substrates and filter products for emissions control in mobile applications around the world. In the early 1970s, Corning developed an economical, high-performance cellular ceramic substrate that is now the standard for catalytic converters in vehicles worldwide. As global emissions control regulations tighten, Corning has continued to develop more effective and durable ceramic substrate and filter products for gasoline and diesel applications. For example, in response to the growing popularity of gasoline direct injection engines, Corning introduced gasoline particulate filters to help automakers reduce particulate emissions generated by these engines. Corning manufactures substrate and filter products in New York, Virginia, China, Germany and South Africa. Corning sells its ceramic substrate and filter products worldwide to catalyzers and manufacturers of emission control systems who then sell to automotive and diesel vehicle or engine manufacturers. Although most sales are made to the emission control systems manufacturers, the use of Corning substrates and filters is generally required by the specifications of the automotive and diesel vehicle or engine manufacturers.

© 2019 Corning Incorporated. All Rights Reserved.

Index

Patent protection is important to the segment's operations. The segment has an extensive portfolio of patents relating to its products, technologies and manufacturing processes. Corning is licensed to use certain patents owned by others, which are also considered important to the segment's operations. Refer to the material under the heading "Patents and Trademarks" for information relating to the Company's patents and trademarks.

The Environmental Technologies segment represented 11% of Corning's segment net sales in 2018.

Life Sciences Segment

As a leading developer, manufacturer and global supplier of laboratory products for over 100 years, Corning's Life Sciences segment works with researchers and drug manufacturers seeking to increase efficiencies, reduce costs and compress timelines. Using unique expertise in the fields of materials science, polymer surface science, cell culture and biology, the segment provides innovative solutions that improve productivity and enable breakthrough research.

Life Sciences products include consumables (such as plastic vessels, specialty surfaces, cell culture media and serum), as well as general labware and equipment, that are used for advanced cell culture research, bioprocessing, genomics, drug discovery, microbiology and chemistry. Corning sells life sciences products under these primary brands: Corning, Falcon, Pyrex and Axygen. The products are marketed globally, primarily through distributors, to pharmaceutical and biotechnology companies, academic institutions, hospitals, government entities, and other facilities. Corning manufactures these products in the United States in California, Illinois, Maine, Massachusetts, New York, North Carolina, Utah and Virginia and outside of the U.S. in China, France, Mexico and Poland.

Patent protection is important to the segment's operations. The segment has a growing portfolio of patents relating to its products, technologies and manufacturing processes. Brand recognition and loyalty, through well-known trademarks, are important to the segment. Refer to the material under the heading "Patents and Trademarks" for more information.

The Life Sciences segment represented 8% of Corning's segment net sales in 2018.

All Other

All other segments that do not meet the quantitative threshold for separate reporting have been grouped as “All Other.” This group is primarily comprised of the results of the pharmaceutical technologies business and new product lines and development projects, as well as certain corporate investments such as Eurokera and Keraglass equity affiliates.

The All Other segment represented 2% of Corning’s segment net sales in 2018.

Additional explanation regarding Corning and its five reportable segments, as well as financial information about geographic areas, is presented in Management’s Discussion and Analysis of Financial Condition and Results of Operations and Note 17 (Reportable Segments) to the Consolidated Financial Statements.

Corporate Investments

Dow Corning Corporation and Hemlock Semiconductor Group (“HSG”). Prior to May 31, 2016, Corning and The Dow Chemical Company (“Dow Chemical”) each owned half of Dow Corning Corporation (“Dow Corning”), an equity company headquartered in Michigan that manufactures silicone products worldwide. Dow Corning was the majority-owner of HSG, a market leader in the production of high purity polycrystalline silicon for the semiconductor and solar energy industries.

On May 31, 2016, Corning completed the strategic realignment of its equity investment in Dow Corning pursuant to the Transaction Agreement announced in December 2015. Under the terms of the Transaction Agreement, Corning exchanged with Dow Corning its 50% stock interest in Dow Corning for 100% of the stock of a newly formed entity, which held an equity interest in HSG and approximately \$4.8 billion in cash.

© 2019 Corning Incorporated. All Rights Reserved.

Index

Prior to realignment, HSG, a consolidated subsidiary of Dow Corning, was an indirect equity investment of Corning. Upon completion of the exchange, Corning now has a direct equity investment in HSG. Because our ownership percentage in HSG did not change as a result of the realignment, the investment in HSG is recorded at its carrying value, which had a negative carrying value of \$383 million at the transaction date. The negative carrying value resulted from a one-time charge to this entity in 2014 for the permanent abandonment of certain assets. Excluding this charge, the entity is profitable and recovered its equity during 2018.

Pittsburgh Corning Corporation. Prior to the second quarter of 2016, Corning and PPG Industries, Inc. each owned 50% of the capital stock of Pittsburgh Corning Corporation (“PCC”). PCC filed for Chapter 11 reorganization in 2000 and the Modified Third Amended Plan of Reorganization for PCC (the “Plan”) became effective in April 2016. In the second quarter of 2016, Corning contributed its equity interests in PCC and Pittsburgh Corning Europe N.V. as required by the Plan and recognized a gain of \$56 million for the difference between the fair value of the asbestos litigation liability and carrying value of the investment.

Additional information about corporate investments is presented in Note 5 (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, its commitment to reliability of supply and 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, providing a consistent and reliable supply, and continually improving its proprietary fusion manufacturing process. This 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.

© 2019 Corning Incorporated. All Rights Reserved.

Index

Specialty Materials Segment

Corning has deep capabilities in materials science, optical design, shaping, coating, finishing, metrology, and system assembly. Additionally, we are addressing 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 Ibiden 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 and Starstedt AG. Corning also faces increasing competition from large distributors that have pursued backward integration or introduced private label products.

Raw Materials

Corning's manufacturing processes and products require access to uninterrupted power sources, significant quantities of industrial water, certain precious metals, and various batch materials. Availability of resources (ores, minerals,

polymers, helium and processed chemicals) required in manufacturing operations, appears to be adequate. Corning's suppliers, from time to time, may experience capacity limitations in their own operations, or may eliminate certain product lines. Corning believes it has adequate programs to ensure a reliable supply of raw and batch materials as well as precious metals. For many of its materials, Corning has alternate suppliers that would allow operations to continue without interruption in the event of specific materials shortages.

Certain key materials and proprietary equipment used in the manufacturing of products are currently sole-sourced or available only from a limited number of suppliers. To minimize this risk, Corning closely monitors raw materials and equipment with limited availability or which are sourced through one supplier. However, any future difficulty in obtaining sufficient and timely delivery of components and/or raw materials could result in lost sales due to delays or reductions in product shipments, or reductions in Corning's gross margins.

Patents and Trademarks

Inventions by members of Corning's research and engineering staff continue to be important to the Company's growth. Patents have been granted on many of these inventions in the United States and other countries. Some of these patents have been licensed to other manufacturers. Many of our earlier patents have now expired, but Corning continues to seek and obtain patents protecting its innovations. In 2018, Corning was granted about 520 patents in the U.S. and over 1,430 patents in countries outside the U.S.

© 2019 Corning Incorporated. All Rights Reserved.

Index

Each business segment possesses a patent portfolio that provides certain competitive advantages in protecting Corning's innovations. Corning has historically enforced, and will continue to enforce, its intellectual property rights. At the end of 2018, Corning and its wholly-owned subsidiaries owned over 11,600 unexpired patents in various countries of which over 4,400 were U.S. patents. Between 2019 and 2021, approximately 11% of these patents will expire, while at the same time Corning intends to seek patents protecting its newer innovations. Worldwide, Corning has about 10,300 patent applications in process, with about 2,500 in process in the U.S. Corning believes that its patent portfolio will continue to provide a competitive advantage in protecting the Company's innovation, although Corning's competitors in each of its businesses are actively seeking patent protection as well.

While each of our reportable segments has numerous patents in various countries, no one patent is considered material to any of these segments. Important U.S.-issued patents in our reportable segments include the following:

- Display Technologies: patents relating to glass compositions and methods for the use and manufacture of glass substrates for display applications.
- Optical Communications: patents relating to (i) optical fiber products including low-loss optical fiber, high data rate optical fiber, and dispersion compensating fiber, and processes and equipment for manufacturing optical fiber, including methods for making optical fiber preforms and methods for drawing, cooling and winding optical fiber; (ii) optical fiber ribbons and methods for making such ribbon, fiber optic cable designs and methods for installing optical fiber cable; (iii) optical fiber connectors, hardware, termination and storage and associated methods of manufacture; and (iv) distributed communication systems.
- Environmental Technologies: patents relating to cellular ceramic honeycomb products, together with ceramic batch and binder system compositions, honeycomb extrusion and firing processes, and honeycomb extrusion dies and equipment for the high-volume, low-cost manufacture of such products.
- Specialty Materials: patents relating to protective cover glass, ophthalmic glasses and polarizing dyes, and semiconductor/microlithography optics and blanks, metrology instrumentation and laser/precision optics, glass polarizers, specialty fiber, and refractories.
- Life Sciences: patents relating to methods and apparatus for the manufacture and use of scientific laboratory equipment including multiwell plates and cell culture products, as well as equipment and processes for label independent drug discovery.

Products reported in All Other include development projects, new product lines, and other businesses or investments that do not meet the threshold for separate reporting.

Approximate number of patents granted to our reportable segments follows:

	Number of patents worldwide	U.S. patents	Important patents expiring between 2019 and 2021
Display Technologies	1,700	340	6
Optical Communications	5,060	2,340	27
Environmental Technologies	1,100	380	14
Specialty Materials	1,600	680	7
Life Sciences	560	240	1

Many of the Company's patents are used in operations or are licensed for use by others, and Corning is licensed to use patents owned by others. Corning has entered into cross-licensing arrangements with some major competitors, but the scope of such licenses has been limited to specific product areas or technologies.

Corning's principal trademarks include the following: Axygen, Corning, Celcor, ClearCurve, DuraTrap, Eagle XG, EDGE8, Gorilla, HPFS, LEAF, PYREX, Steuben, Falcon, SMF-28e, UniCam, Valor, Willow, LOTUS and IRIS.

© 2019 Corning Incorporated. All Rights Reserved.

Index

Protection of the Environment

Corning has an extensive program to ensure that its facilities are in compliance with state, federal and foreign pollution-control regulations. This program has resulted in capital and operating expenditures each year. To maintain compliance with such regulations, capital expenditures for pollution control in operations were approximately \$11.3 million in 2018 and are estimated to be \$21.1 million in 2019.

Corning's 2018 consolidated operating results were charged with approximately \$47 million for depreciation, maintenance, waste disposal and other operating expenses associated with pollution control. Corning believes that its compliance program does not place it at a competitive disadvantage.

Employees

At December 31, 2018, Corning had approximately 51,500 full-time employees. From time to time, Corning also retains consultants, independent contractors, temporary and part-time workers.

Executive Officers of the Registrant