

History of Transitions Optical

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Transitions Optical, Inc., is one of the world's leading suppliers of "photochromic" plastic eyeglass lenses that automatically darken when exposed to ultraviolet light (i.e., sunlight) and then lighten again when removed from that light (such as when a wearer goes indoors). Based in Pinellas Park, Florida, near St. Petersburg, Transitions is a joint venture 51 percent owned by Pittsburgh-based PPG Industries, Inc. and 49 percent owned by the French firm Essilor International SA. The company applies its photochromic technology to plastic lens materials it purchases from manufacturers and then sells the coated lenses back to the manufacturers. Transitions, which was founded in 1990, has partnerships with nearly a dozen manufacturers, including all of the major lens makers, offering more than 100 lens options. The lenses protect eyes from ultraviolet light and offer glare reduction as well. In addition to its original lens manufacturing facility in Pinellas Park, the company operates five factories overseas, in Tuam, Ireland; Sumaré, Brazil; Adelaide, Australia; Laguna, the Philippines; and Chonburi, Thailand. Transitions also maintains sales and marketing offices in nine foreign countries: Canada, Mexico, Brazil, France, Australia, China, India, Japan, and Singapore.

FORMATION

Transitions Optical evolved out of the optical product operations of PPG Industries, a diversified manufacturer founded in 1883 and best known as a producer of paints, coatings, and glass products. PPG traced its involvement in optical products back to 1940 when a research team at a subsidiary of what was then called Pittsburgh Plate Glass Company developed CR-39 monomer. This material was used during World War II to line fuel tanks of military bombers to protect the tanks from bullet impacts. Left with a significant quantity of CR-39 after the war, PPG asked its chemists to explore other applications, which eventually, by the mid-1950s, led to lens makers using the monomer to produce eyeglass lenses. Over time, CR-39 became the most widely used ophthalmic plastic in the world.

In the 1960s Corning Incorporated became the first company to develop glass photochromic eyeglass lenses, which were successfully marketed under the PhotoGray brand. In 1973 researchers at PPG's Barbeton Technical Center began experimenting with applying photochromic technology to CR-39 monomer. While the company's research continued,

American Optical Corporation, then owned by Warner-Lambert Company, introduced the first plastic photochromic lenses. These lenses, marketed under the Photolite brand, did not prove to be a commercial success. PPG forged ahead, shifting its research to a Monroeville, Pennsylvania, research and development center and spending about \$30 million on the technology by the late 1980s. After discovering a new family of photochromics, the blue pyridobenzoxazines, in 1983, PPG researchers eventually succeeded by 1988 in producing a prototype of plastic photochromic lenses. Starting in July 1989 the lenses were test marketed under the Transitions trademark in partnership with Essilor International, Europe's largest ophthalmic company and one of the world leaders in ophthalmic lenses.

Satisfied with the results of the market testing, PPG and Essilor moved forward by forming a joint venture, Transitions Optical, Inc., 51 percent owned by PPG and 49 percent by Essilor. As the only producer of plastic photochromic lenses, the venture possessed great potential: Consumers were increasingly choosing plastic over glass because eyeglasses with plastic lenses were lighter and thus more comfortable than those using glass. By 1990, 60 percent of ophthalmic lenses were plastic.

As it turned out, Transitions did not employ the CR-39 monomer for its photochromic lenses as that commonly used plastic proved unsuitable in the Transitions production process. Using other proprietary monomers for the lenses, the joint venture employed a process called imbibing, in which photochromic dyes were deposited over the front surface of a lens, which was then heated to help the dyes penetrate into the pores of the lens material. A hard coating was then placed over the imbibed surface to seal and protect the photo-chromic dyes. Exposure to oxygen tended to destroy the molecules' ability to change from light to dark and back again, so the hard coating lengthened the life of the lens' photochromic effect by slowing the oxidation process.

PPG and Essilor selected a site in Pinellas Park, Florida, for Transitions' headquarters and first plant at least in part because Essilor's U.S. headquarters was located in nearby St. Petersburg. Production at the 138,000-square-foot plant began in early 1991. The company from the start partnered with a number of major optical manufacturers, including not just Essilor but several others. Transitions purchased partially finished lenses from the manufacturers, treated them using the imbibing process, and then sold them back to the same manufacturers, who were responsible for distributing the lenses. Transitions was thus able to concentrate solely on production and marketing. Heading the company as president was Jack M. Denison, a 30-year PPG employee who had previously served as operations manager of an industrial chemicals plant in Quebec. Richard C. Elias was appointed to the important position of vice-president of marketing

and sales. He had joined PPG in 1975 as a chemist and had held a variety of technical, business development, and marketing positions for the company's coatings business. He eventually served as leader of the research and business development group that developed Transitions lenses.

SPECTACULAR GROWTH

Transitions got off to a slow start in 1991, selling about 800,000 lens pairs and achieving revenues of just \$16.9 million. The new lenses failed to catch fire because of their performance—they did not get dark enough when exposed to sunlight and did not activate fast enough. In late October 1992 the company released its second-generation lenses, which were both quicker to activate and got darker. Sales took off, with more than one million lens pairs sold between November 1992 and February 1993 alone. Transitions secured added exposure by sponsoring the U.S. soccer team for the 1994 World Cup, which was played in the United States. Sales by that year jumped to \$95 million, while the workforce passed the 500-employee mark.

COMPANY PERSPECTIVES

Over the past 15 years, Transitions Optical has remained committed to advancing photochromic lens technology in order to provide the most comfortable, convenient protection from UV radiation and glare. As a result, Transitions Lenses have become the #1-recommended photochromic lenses worldwide.

Transitions Optical is dedicated to educating consumers about eye health and providing them with information to make informed decisions to protect themselves, including information on glare and the cumulative damage from UVA and UVB radiation which may contribute to serious age-related diseases of the eye and the skin around the eye.

While ramping up production at its Pinellas Park plant to meet the increasing demand, Transitions in early 1993 began pursuing growth outside the United States. That spring the company opened a sales and marketing office in Paris, and by the end of the year about 5 percent of its sales were coming from Europe. Then in April of the following year, Transitions opened a 17,000-square-foot manufacturing facility in Tuam, Ireland, located about 60 miles north of Galway. The new plant, which had a production capacity of seven million lenses per year, enhanced the company's penetration of the European market. Expansion into the Asia-Pacific region also began in 1994 with the opening of a sales office in Singapore.

In January 1995 Elias was promoted to president of Transitions Optical. That year sales jumped to \$147 million, making Transitions one of the fastest-growing companies in the United States. By this time the company had captured about 6.5 percent of the eyeglass lens market in the United States. Aiding this growth was a shift in marketing strategy. Transitions had initially focused on promoting its lenses to eye doctors and relying on them to suggest the product to patients. In 1995, however, the company launched a major television advertising campaign to promote the brand directly with consumers, who, it was hoped, would then ask eye doctors about the product. Overseas, meanwhile, Transitions opened another sales office, in São Paulo, Brazil, and a third production facility, in Adelaide, Australia. These and other initiatives helped the company capture a 2 percent share of the world eyeglass lens market.

In 1996 a sales office was opened in Toronto, Canada, and Transitions also introduced the XTRActive specialty lens. The XTRActive line was designed more for individuals typically spending most of their time outdoors. These lenses changed to an extra-dark gray tint when exposed to sunlight. Indoors, the lenses had a light gray tint, a selling point for some fashion-conscious customers. Another advantage of these lenses was that they did darken somewhat behind the windshield of a car. One of the drawbacks of standard Transitions lenses was that they darkened very little in cars because windshields block most of the ultraviolet light that triggers the darkening effect.

Transitions' global production network was further enhanced in the late 1990s by the opening of two more plants. In 1998 a production facility with an initial annual capacity of more than 900,000 units opened in Sumaré, Brazil. Then the following year production started at Transitions' fifth plant, located in Laguna, the Philippines. By this time, two more sales offices had also opened, in Tokyo and Bangalore, India. At the same time, the company continued to make improvements to its photochromic treatment and processes, introducing in 1997 the third generation of Transitions lenses, which reacted faster to changes in light and were able to turn darker than previous versions. The following year the first polycarbonate Transitions lenses hit the market. Polycarbonate lenses were a high-end product lighter, thinner, and more impact-resistant than standard plastic lenses. Also in 1998, Elias was promoted to general manager of optical products at PPG Industries. Reporting to Elias as president of Transitions Optical was Joseph E. Hudson, who had held a variety of positions since joining PPG in 1985.

In October 1998 Corning filed suit against Transitions alleging that the company was engaging in anticompetitive practices to prevent Corning from introducing a new line of plastic photochromic eyeglass lenses.

Corning contended that Transitions had threatened to cut off its supply of products to lens manufacturers taking on the new Corning product. One year later the parties reached a settlement over the suit, the terms of which were not disclosed. That year, Corning introduced its new SunSensors line, which immediately became an important new competitor to the Transitions lenses. Transitions ended the decade with a global workforce of around 1,000 and revenues of approximately \$300 million.

KEY DATES

1990:

PPG Industries, Inc. and Essilor International SA form the joint venture Transitions Optical, Inc., based in Pinellas Park, Florida.

1991:

Transitions begins producing its first-generation plastic photochromic eyeglass lenses.

1992:

Second-generation Transitions lenses are introduced.

1994:

Second production plant is opened in Tuam, Ireland.

1999:

First Asian plant, located in Laguna, the Philippines, begins production.

2005:

Transitions introduces its fifth-generation photochromic lenses.

2006:

Sixth production facility opens in Chonburi, Thailand.

SERIES OF NEW MODEL INTRODUCTIONS

In May 2000 Hudson resigned and Elias reassumed direct control of Transitions while continuing to head PPG's optical products unit. Later in the year the company cut 90 of the 565 jobs at its Pinellas Park facility as it shifted production of its more inexpensive lenses to overseas plants. That

year also saw the introduction of the first high-index Transitions lenses. High-index lenses, lighter and thinner than conventional glass or plastic lenses, were an increasingly popular choice for eyeglass wearers needing strong prescriptions (the stronger the prescription, the thicker a lens typically had to be).

In 2001 PPG introduced a new lens material called Trivex offering superior optics and high impact resistance in a light and thin plastic lens. Trivex lenses were immediately available with the Transitions photochromic coating. The following year Transitions unveiled its most advanced lenses yet; these were fourth-generation lenses, which changed faster from light to dark and back again. The new lenses grew darker six times faster than the previous generation and faded back to clear three-and-a-half times faster. In March 2003 the company launched a \$20 million global television advertising campaign supporting the new lenses. The ads placed more emphasis on protection from the sun than convenience and employed the tag line "Transitions. Right in any light." Surging demand pushed Transitions' 2003 production to 7.5 million pairs of lenses. In 2004 Transitions lenses became the first to earn the American Optometric Association's Seal of Approval for Ultraviolet Absorbers/Blockers.

By 2005, more than 98 percent of the lenses sold in the United States were plastic. At the same time, photo-chromic lenses' share of the eyewear market had increased to 14.5 percent, a sharp jump from the 9 percent level of 1999. Transitions, still the clear market leader, introduced its fifth-generation lenses in 2005. The new lenses were designed to address two of the continuing drawbacks of the light-sensitive lenses: They were clearer than previous models indoors, and they performed better (growing darker though not as dark as regular sunglasses) at high outdoor temperatures. In addition to backing the new lenses with a \$25 million print and broadcast advertising campaign, Transitions also launched an ambitious consumer education campaign called "Eye Didn't Know That!" that was designed to spur understanding about the technology behind the lenses and the need to protect the eyes—and, it was hoped, spur some sales as well. Also in 2005, Transitions lenses were the first to be granted the World Council of Optometry's Global Seal of Acceptance for Ultraviolet Absorbers/Blockers.

Transitions Optical was producing more than 100 lens options for nearly a dozen lens manufacturers by 2006. In the spring of that year, high-end sunglass maker Oakley, Inc. partnered with Transitions to unveil a line of Transitions nonprescription sunglass lenses that automatically adjusted the level of tint under varying ultraviolet light conditions. The Oakley line, aimed at the athletic and youth markets, was expected to convey some of Oakley's ultra-hipness to Transitions, which still retained the somewhat "geeky" image that had been associated with photochromic lenses from

their inception. Later in 2006, production began at the joint venture's sixth plant, a facility in Chonburi, Thailand, with an annual production capacity of nearly six million units. In June 2006 Brett Craig was named chief operating officer of Transitions Optical, with Elias remaining president. Craig had held several sales and sales/marketing management positions at PPG Industries from 1982 to July 1999, when he joined Transitions as general manager, Asia Pacific, later serving as general manager, Europe, Middle East, Africa.

In September 2006 Transitions in partnership with Torrance, California-based Younger Optics unveiled a new line of polarized driving sunglasses under the Drivewear brand that changed tint when exposed not only to ultraviolet rays but also to visible light. These lenses thus provided a solution to the problem of standard photochromic lenses, which could not darken behind windshields. The Drivewear lenses actually changed into three different colors: In low light, they were a light yellow/green; in bright sunlight, they turned a dark, reddish brown; and behind the wheel, they turned a dark copper tone, making traffic and signs appear clearer. By continuing to roll out innovative new products such as the Drivewear lenses, Transitions Optical appeared determined to maintain its position as the world leader in photochromic lenses.