

What drives the game of golf forward?

## Science

**DOW**<sup>®</sup>

From courses to golf clubs, science plays a key role in evolving the game of golf through technology advancements. Specifically, Dow solutions are working behind-the-scenes to improve the golf experience for players and spectators alike.

**The Game of Golf**  
Global interest in golf is on the rise, with recent data showing that:



The market size for golf clubs and balls was \$2.7 billion in 2018.<sup>1</sup>



31% of beginner golfers in 2018 were female.<sup>1</sup>



Golf is a global sport, with 33,000+ facilities in 208 of the world's 245 countries<sup>2</sup>

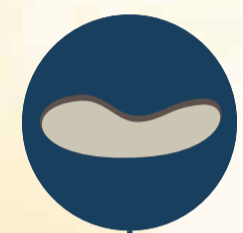


The top 20 golfing countries account for 89% of global supply of golf facilities<sup>2</sup>



### Apparel: Be fashion forward

Fashion has been an intrinsic part of the golf world for centuries. With Dow's latest innovations for textile manufacturing processes, golf apparel can be brighter and produced using less water and dye.



### Bunkers: Par for the course

Sand bunkers are an essential element of the golf game, adding challenges and enhanced aesthetics to the course. But poor bunker drainage systems can cause washout and affect playability after heavy rainfall.

Polyurethane technologies from Dow used in drainage systems circumvent undue labor costs through erosion protection. Polymers sprayed on top of gravel bind it together, maintaining bunker porosity and functionality.



### Personal care: Avoid hazards

Whether playing for fun or going for a Grand Slam, players should be worrying about their swing, not their skin or hair. Keeping fly-aways and sun rays at bay, lightweight, UV resistant polymer and silicone technologies formulated by Dow go to work to boost the performance of traditional personal care products like hair spray, moisturizer and sunscreen.



### Balls: Build your backspin

Next-gen golf balls are engineered to optimize ball trajectory control. Multi-layer, aerodynamic designs enhance bounce properties<sup>4</sup>, while Dow ionomer resins on the ball's surface help improve resilience, spin control and scuff resistance.



### Clubs: Take a swing

Today's clubs are built from steel, titanium and graphite<sup>3</sup>, with elastomer handle-grips. These soft-touch grips, formulated with Dow's patented polymer technology, help deliver a controlled, non-slip performance in dry and wet conditions.



### Courses: Keep the greens green

Keeping the turf lush and healthy is a key challenge for all golf courses. Dow surfactant technologies help reduce moisture loss on the green, decreasing water consumption of courses.



### Shoes: Find your dynamic balance

The latest copolymer technology for golf shoe midsoles is designed to enhance shock absorption mid-foot, where golfers typically end a stroke. Combined with innovative thermoplastic urethane solutions for more comfortable outsole cushioning, these lightweight technologies from Dow pack a powerful swing, with crucial support for injury prevention.



### Golf carts: Delivering durability

Compared with traditional air-filled tires, tire inserts built from Dow polyurethane elastomers reduce vehicle weight while improving shock absorption and durability.

## Did you know?



Worldwide in 2017, more than 550 new 18-hole golf courses were in active construction or advanced planning.<sup>2</sup>



The aerodynamic design of modern golf balls is optimized by 300-500 dimples on each ball.<sup>5</sup>



The earliest known form of golf was played in Scotland in the 1400s with wooden balls and clubs.



Two-piece balls are the norm for everyday use, but multi-layer options are trusted by pros for a softer club-to-ball connection.

<sup>1</sup><https://www.thengfq.com/2019/04/ngf-releases-2019-golf-industry-report/>

<sup>2</sup><https://www.randa.org>

<sup>3</sup><https://sites.psu.edu/xushunran/2015/10/15/evolution-of-golf-clubs-throughout-history/>

<sup>4</sup><http://www.madehow.com/Volume-3/Golf-Ball.html>

<sup>5</sup><https://www.thoughtco.com/how-many-dimples-are-on-a-golf-ball-4121328>

<sup>6</sup><https://www.usga.org/content/dam/usga/images/pace%20of%20play/trackingresearch.pdf>