

Graphene

The Next Generation
Protective Coating
Revolutionizing
the Carwash Industry

NCS

Introduction

The carwash industry has seen a rapid adoption of graphene-based protective sealants, with a majority of carwash owners incorporating graphene into their operations as of 2023*. This widespread integration can be attributed to 1) the belief that graphene offers superior protect, seal and shine performance, 2) the allure of cutting-edge chemicals and 3) the importance of keeping up with the competition. However, a minority of carwash owners still remains hesitant to embrace graphene due to their limited understanding of its potential to drive sales gains and increase revenue from top tier memberships. This white paper aims to explore the use of graphene in the carwash industry and provide owners and operators with insights into the advantages of incorporating graphene products into their services.

What is Graphene?

Graphene is a form of carbon (like diamond or graphite) having extraordinary physical, electrical and thermal properties. Processed into an almost inconceivable one-atom thick layer, the carbon atoms are arranged in a hexagonal lattice, making it the thinnest known material and the first two-dimensional substance ever obtained. It was discovered in 2004 by Andre Geim and Konstantin Novoselov.

Graphene benefits in short:

- ▶ Ultimate strength
- ▶ Richness and shine
- ▶ Longest-lasting protectant
- ▶ Best water beading
- ▶ Eliminates water spots
- ▶ Repels dust and dirt
- ▶ Resists chips and cracks
- ▶ Cars stay cleaner

Geim and Novoselov's discovery of graphene earned them the Nobel Prize in Physics in 2010. Once obtained, graphene's unique properties quickly captured the attention of researchers worldwide. At a molecular level, it is 200 times stronger than steel, yet six times lighter. On top of that, graphene is flexible, transparent, anti-static (less dust) and highly hydrophobic (more water beading on cars).

Since its discovery, graphene has found applications in many fields. In electronics, it creates faster and more efficient transistors, leading to advancements in computing. Graphene-based sensors have shown promise in detecting various substances, including gasses and DNA molecules. Graphene-enhanced composites have also been developed, offering lighter and stronger materials in aerospace engineering.

Graphene by the Numbers

1
single layer of
carbon atoms

200x
stronger than
steel

\$865M
global market in
2022

The Ultimate Carwash Protective Coating

The use of graphene in the carwash industry marks a significant advancement in protect, seal and shine performance. Graphene coatings have quickly gained traction among carwashers due to their exceptional hardness and anti-static properties. By incorporating graphene surface hardening protectant products into their services, carwash owners can provide their customers the next level of long-lasting protection and aesthetic appeal, raising the bar in carwashing quality.

Benefits of Graphene:

- **Deep rich shine:** graphene coatings create stunning reflections, leave behind a silky smooth finish, and ensure a visually appealing appearance
- **Incredible hydrophobic properties:** one of the key advantages of graphene coatings is their exceptional hydrophobic nature. These coatings repel water and contaminants like no other product before, resulting in a cleaner and shinier car surface without spotting
- **Unparalleled durability:** graphene coatings provide longer protection from each application, with car owners enjoying long-lasting results
- **Anti-static properties:** high conductivity means anti-static, which in turn means dust and dirt-repellent performance.
- **Flexibility:** trusted by professional detailers worldwide, graphene coatings deliver flexibility that means they're less susceptible to cracking or chipping

History of Graphene:

2004

Discovered in by
scientists Andre
Geim and Konstantin
Novoselov

2010

Nobel Prize
in Physics

2012

Global graphene
market of \$9 million
(\$865 million in 2022)

2020

Graphene car
detailing products
introduced

Advantages of Graphene over Ceramic Coating

Like ceramic coatings, graphene uses nanotechnology to bond to your vehicle's paint surface, sealing and protecting at the molecular level. Both offer protection against UV rays, water, dirt, and contaminants. So why is graphene head and shoulders above? Graphene holds the advantage of being the strongest and thinnest material ever discovered on Earth. Thinner and stronger – it's indeed possible!

Here are a few of graphene's comparative benefits for wash owners:

- 1. Longer durability:** graphene's two-dimensional structure and honeycomb lattice structure contribute to its longer-lasting durability compared to ceramic coatings. This extended lifespan saves carwash owners and customers the hassle and cost associated with frequent reapplication.
- 2. Ultra-high gloss and depth of color:** the nanoparticle graphene layer leaves an incredibly rich, deepened gloss that significantly enhances the shine and appearance of the vehicle's paint. Side by side, ceramic simply cannot outshine graphene. This elevates the overall aesthetic appeal for customers.
- 3. Unrivaled hydrophobic properties:** graphene's chemical composition and honeycomb lattice structure provide it with a higher contact angle, enabling water to bead up and roll off more easily than ceramic alone. By reducing evaporation, graphene results in a cleaner surface with fewer water spots.
- 4. Superior dust-repellence:** Graphene's anti-static conductivity properties actively repel dust and microscopic particles, preventing them from settling on any surface coated with graphene. This proactive approach to dust management ensures a cleaner and better-maintained vehicle surface.

Carwash Owners' Perspectives

Through a survey conducted by NCS, it was found that many carwash owners now offer a graphene product at their wash. Carwash owners are enthusiastic about graphene-based products for several reasons:

- 1. Belief in graphene's superiority:** Carwash owners are attracted to graphene due to its reputed superior performance as a protect, seal and shine product. Graphene-based products are known for their exceptional cleaning capabilities, hydrophobic properties, and enhanced durability. These characteristics, combined with positive customer feedback, have convinced carwash owners of graphene's effectiveness.
- 2. Keeping pace with competition:** competition within the carwash industry is fierce, leading carwash owners to seek any advantage that can differentiate their services. With the majority of carwash owners incorporating graphene into their operations, those who have not adopted this technology risk being left behind. To stay competitive, owners are recognizing the need to offer graphene-based products to protect their brand and enhance customer satisfaction.

The Many Uses of Graphene in Industry:



Composites



Batteries



Electronics



Semiconductors



Aerospace



Water Purification



Automotive

Making Carwash Owners Aware

The NCS survey also highlighted the main factors preventing some carwash owners from offering graphene-based products:

1. Limited knowledge about graphene: Approximately 9% of carwash owners surveyed expressed a lack of awareness regarding graphene. Due to a lack of exposure to the material, they may not fully comprehend its potential or understand the advantages it provides.
2. Misunderstanding graphene's benefits compared to ceramics: A small subset of carwash owners (2%) who already provide ceramic products are unaware of graphene's advantages over ceramics. While they correctly perceive graphene as slightly more expensive, they fail to grasp the price/value equation given graphene's stand-out performance (you get what you pay for). Educating owners about graphene's benefits could help dispel these misconceptions and encourage wider adoption to satisfy customer demand.

Unbeatable Shine with Graphene Coatings

Deep, rich shine

Unparalleled gloss and color depth of car's paint surface

Exceptional hardness and flexibility

Stunning visual appeal

Rain-X® Graphene: The Next Generation of Protection

Carwash owners can enhance their services by utilizing Rain-X® Graphene, a product specifically designed for advanced vehicle protection.

Rain-X is a popular brand known for its automotive glass care products, including windshield wipers and glass treatments.

Rain-X® Graphene refers to a specific product that combines

Rain-X's expertise in glass care with graphene technology. Graphene has unique characteristics like exceptional strength, flexibility, and electrical conductivity. When incorporated into Rain-X products, it enhances the performance of glass treatments.



For instance, Rain-X graphene-based glass coatings provide improved water-repellency properties, making rainwater or other liquids bead up and roll off the treated surface more efficiently. This can help improve visibility during wet weather and reduce the need for windshield wipers. Additionally, graphene's strength and durability could enhance the longevity of the Rain-X treatment.

Rain-X® Graphene features nanoplatelets and a matrix of hydrophobic polymers, providing extreme durability. Its adaptive protection technology helps prevent chips and cracks, while its anti-static formula repels dust.

Monumental Results when Adding Rain-X® Graphene to the Menu

Sales gain
first 72 days:
\$131,720

Total package
membership increase:
1,221 for \$152,595

Total
estimated growth:
\$284,315.19

Case study of large NCS customer sales gains in 72 days after adding Rain-X® Graphene

Unbeatable Spot-Free Shine and Durability:

1. Rain-X® Graphene further enhances the hydrophobic properties of graphene coatings
2. Adaptive protection technology helps prevent chips and cracks
3. Anti-static formula repels dust
4. Enhances water-beading, slickness, and shine
5. Longest-lasting protection; imparts unbeatable gloss and color depth to vehicle surface.

Conclusion

Carwash owners' attitudes toward graphene in 2023 are overwhelmingly positive, with a majority incorporating graphene-based products into their wash. As the carwash industry continues to evolve, staying ahead of the competition becomes critical. Graphene, with its exceptional properties and innovative applications, presents a remarkable opportunity for carwash owners to enhance their services and exceed customer expectations. The use of graphene coatings elevates the carwashing process by providing long-lasting protection, a rich aesthetic appeal, hydrophobic properties, and active dust-repellence, making it an enticing choice for carwash owners looking to enrich their offerings. Embracing graphene will not only benefit individual businesses but also stimulate the industry's overall growth and customer satisfaction.

**SOURCE: 2023 NCS Carwash Owner Survey*