



## Graphene Window Coating

### Technical Specifications

Main ingredients (General terms): Polydimethylsiloxane (PDMS), Organic Polysilazane, Aliphatic Hydrocarbon Solvent, Silicone Resin, Polymer Resin, Siloxane Surfactants, Reduced Graphene Oxide

None of the materials listed in this product are considered carcinogens in NTP, IARC or OSHA. Material Safety Data Sheet available upon request for more specific information on composition.

Solubility with water (in bottle): Not miscible

Appearance and odour (in bottle): Brown viscous solution, non-pungent odour

Capabilities listed are maximum approximates and based on a single coat application on automotive glass window and windshield that has been cleaned, decontaminated, polished with fine sandpaper and appropriately prepared. This is not an indicator of performance when using on a surface pre-treated with Artdeshine coating products. More information for preferred after-care to maximise durability available.

Bonding durability (normal conditions): 1 Year

- 60 washes pH neutral or < pH 12
- Climate range -20°C to + 35°C

Bonding durability (extreme conditions): 1 Year

- 30 washes pH >12
- Climate range -40°C to + 40°C

Hydrophobic properties durability (normal conditions): 1 Year

- 60 washes pH neutral
- 30 washes pH >12

Durability will be reduced if wiper is frequently used as the blades will erode the coating product.

Average coating thickness: 0.4 – 0.7 µm (micrometre/micron)

Coating thickness effectiveness range: 0.3 – 0.5 µm (micrometre/micron)

Surface suitability: Formulated specially for glass windows/windshield. Can also be used on gloss/matte clear coats on automotive body or wheel, vinyl wraps, paint protection film (PPF) wraps, acrylic parts, chrome/stainless steel/metal parts, gloss/matte plastic trims and fittings

*(installing on other areas of automotive may affect durability)  
(windshield compatibility may vary with age, make, model of vehicle and wiper type, use this product at your own risk, wiper movement issues may occur)*

Chemical resistance: < pH12, > pH 5

Thermal threshold on treated surface (onset of degradation): 350°C

Liquid substance repellence of treated surface:

- Distilled water droplet average contact angle – 110-120°
- Vegetable oil droplet average contact angle – 80-90°

Hologram (swirls) reduction during application:



- Micro-mesh >7000
- FEPA sandpaper grade >P5000

Abrasion resistance: N/A

Force of friction on treated surface:  $F = 0.036N$  (0.006g foam applicator block sliding off treated surface)

- Coefficient of static friction  $\mu = 0.7$   
(based on inclination  $35^\circ$  when applicator block starts sliding off)
- Normal force  $N = 0.052N$   
(based on inclination  $35^\circ$  when applicator block starts sliding off)

Consumption rate: 2-3 ml/m<sup>2</sup> or 10ml all glass windows on mid-sized sedan.

Curing time (recommended):  
*Infrared assisted 40-50°C*

2 hours or 0.5 hour infrared assisted - Surface dry (unaffected contact with water/rain)  
7 days - Full curing

7 days with or without infrared assisted curing

- Unaffected contact with cleaning solutions
- Unaffected contact with contaminants (tree-sap/bird droppings etc.)
- Exposure to harsh environmental conditions

*(Exposure before curing may result in diminished bonding, early deterioration of coating, occurrences of water-spotting, etching or corrosion)*

Appearance after curing: Optically transparent.

Solvent incompatibility:

*N-Methylpyrrolidone (NMP), Tetrahydrofuran (THF), Chloroform, Ether.*

*(the use of products containing these solvents during application causes swelling/gelation)*

Products containing solvents such as acetone, 1-propanol, methanol, water, 2-propanol (IPA) in small amounts can be used with no significant impact.

*(Contact Artdeshine to find out about product compatibility.)*

## **Application**

Before application of Graphene Window Coating, ensure surface is stripped of all existing products (e.g. waxes, sealants and spray detailers, coatings etc.).

Working area should

- minimise levels of dust, moisture, heat and environment contaminants for maximum bonding effectiveness.
- Have sufficient lighting for better visibility of both top facing surfaces and side facing surfaces. Combination of warm (<3000K) and cool lighting (>4000K) will help with a proper installation.
- Have appropriate ventilation systems to avoid inhaling of vapours/gas
- No open flames, lighted cigarettes, running ovens or heating devices (blow torches, heat guns etc.)



Do not apply product under direct sunlight or a heated surface.

- Optimal surface temperature < 25°C.
- Optimal ambient temperatures < 32°C

If natural sedimentation occurs, shake the bottle well to evenly disperse the product and wait 1 minute before unscrewing cap slowly to release gas build-up

1. Make all necessary preparation like polishing, claying, decontamination, washing and cleaning before application process.
2. Utilise panel wipes, isopropyl alcohol (IPA), silicone removers to remove oil, fillers, polishing compounds and other products. (e.g. Artdeshine Silicone Remover)
3. Drip 8-10 (16-20 if priming applicator) drops of product by dragging tip of bottle in a straight line to and fro using Artdeshine Black MF Applicator Pad (any suede, microfiber applicator block or pads are suitable).
4. Apply onto surface no larger than 1m x 1m in circular motion and cross-hatch motion for even coverage.
5. Applied product should look like spreading liquid glue, not dripping wet.
6. Product will turn slightly blur or cloudy after 15-20 seconds.
7. Starting from the edges of applied area, wipe off excess with a clean and dry microfiber (MF) towel.
8. Using another clean and dry MF towel, buff off all residue, hazing, high-spots and smears in circular motion.
9. Check for any remaining high-spots, smearing, uneven colour tones and streaking, if these conditions do not occur, proceed to step 11.
10. *Resolve issues mentioned above by applying more product onto affected areas to dissolve and spread the product. (or make use of Artdeshine Graphene Leveling product)*

*Alternatively, use Graphene Detailer/Bio Nano Pro/Nano Gloss Paint Sealant/ damp MF towel to wipe over affected areas.  
Buff off with dry MF towel immediately until issues are resolved.  
This method may reduce slickness.*

11. Ensure surface is clear and surface feels slick. (smoothness can be felt when buffing with MF towel)
12. Repeat all steps for adjacent areas. Take extra care at edges where applied and un-applied surfaces meet. Always apply and buff over the edges to ensure smooth joining.

Multiple coats is not necessary and can be a wastage of product. A maximum of 2 coats will be more than sufficient and to cover any missed out areas during application. Graphene Window Coating is formulated to be highly repellent and additional coats will be repelled and not have effective bonding nor will it increase durability and protection.

Do not apply other coating, sealant, wax and spray detailer products before and after application as this will affect the performance and bonding of the coating.

Any issues should be resolved using above methods in the first 15 minutes after application as the coating will not have started curing.



Last resort removal 1 hour after application can be done with Artdeshine Silicone Remover or any panel wipes and IPA.

After 24 hours, any issues will have to be resolved by removal of the coating and re-applying. This can be done with sandpaper on glass or polishing machines using fine pads and compounds at low speeds.

### **Recommended After-Care (Before Full Curing)**

Before 0.5 hour (infrared assisted) or 2 hours:

- Do not allow surface to be exposed to rain or water.
- Do not allow surface to come into contact with harsh substances (bird droppings, plant sap, bug splatter, cleaners, shampoos etc.).
- If contact occurs, gently clean with damp MF towel or soft napkin using fresh water. Wipe dry with another dry MF towel or soft napkin.

Before 7 days with or without infrared assisted curing:

- Do not allow surface to come into contact with harsh substances (bird droppings, plant sap, bug splatter, cleaners, shampoos etc.).
- If contact occurs, wipe gently with damp MF towel or soft napkin using fresh water. If substance has dried, place slightly wet MF towel or wet napkin to soften before wiping off gently.
- Exposure to rainwater will not affect curing process.
- However, ensure that rainwater is not on the surface for prolonged periods by drying with MF towel when weather permits.
- Any harsh substances or rainwater on surface exposed to sunlight and heat may cause stains, marks and spotting on uncured coating.
  
- Cleaning can be done with a damp MF towel using fresh water. Wipe and dry gently.
- Cleaning can also be done with Artdeshine Graphene Detailer and Bio Nano Pro or any water soluble spray detailers in higher dilution with fresh water.

### **Recommended After-Care (After Full Curing)**

Every 1-2 weeks:

- Washing should be done with pH neutral shampoo. (e.g. Artdeshine Organic Cleaner or Citrus Cleaner)

Every 1-2 months (user preference):

- Washing can be done with Alkali shampoo (e.g. Artdeshine Organic Cleaner) no more than pH 12 for deeper cleansing and removal of oils/traffic film. Oil trapped in the pores or on the surface will affect the water repellence performance.

Every 2-4 months:

- Application of ceramic spray sealants. (e.g. Artdeshine Bio Nano Pro, Nano Gloss Paint Sealant or Graphene Detailer)

Every 4-6 months:

- Removal of embedded contaminants using fine grade clay bars or cloth. This is important in keeping the surface smooth and slick. A rough surface will affect the water repellence performance.



- Application of Graphene Maintenance Coating or ceramic spray sealants. (e.g. Artdeshine Bio Nano Pro/Nano Gloss Paint Sealant or Graphene Detailer) for slickness, gloss and water repellent properties.
- Application of Artdeshine RX Coating for better water repellent effect and self-cleaning properties.

Do not apply any other coating, wax or sealant products as additional or top coats unless recommended by Artdeshine as it may affect or alter the performance of Graphene Window Coating. Water soluble products like spray sealants are milder and more suitable. More information on product compatibility or other Artdeshine products for after-care is available through your distributors or contact Artdeshine directly for more information

### Storage and Warnings

This serves as basic and commonly needed information for safe handling and use of products. Material Safety Data Sheet available upon request for more specific information.

#### Shelf-life:

- 2 years unopened
- 6 months after unscrewing cap

#### Storage environment:

- < 30°C ambient temperature
- Cool and dry storage
- Do not store under direct sunlight
- Product is heat sensitive and gelation may occur if exposed to heat
- Do not store near open flames, ovens, heaters or flammable items

#### Sedimentation:

- May occur if stored still for more than 1 month
- Shake well until product is evenly dispersed or before use
- Always uncap carefully to release gas build-up after shaking bottle

Keep out of reach from children.

Always wear solvent resistant gloves when using. (Face and eye protection recommended)

Harmful if swallowed or ingested.

Irritant to eyes if contacted.

May cause skin irritation with prolonged un-protected use.

If swallowed: Rinse mouth. Do not induce vomiting. Call a doctor/physician.

If on skin . Rinse skin with soap and water/shower.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If inhaled: Move to well ventilated fresh air.

#### Warning symbols:

Do not inhale vapour and gas of product.  
Use in well ventilated areas.



Flash Point : 85°C

Extinguishing Media : Water, dry extinguishing material

Special Fire Fighting Procedures : Normal caution when dealing with chemicals

Unusual Fire and Explosion Hazards : None